

Automation
Power management

Command and Signaling
Switching, protecting
and driving motors

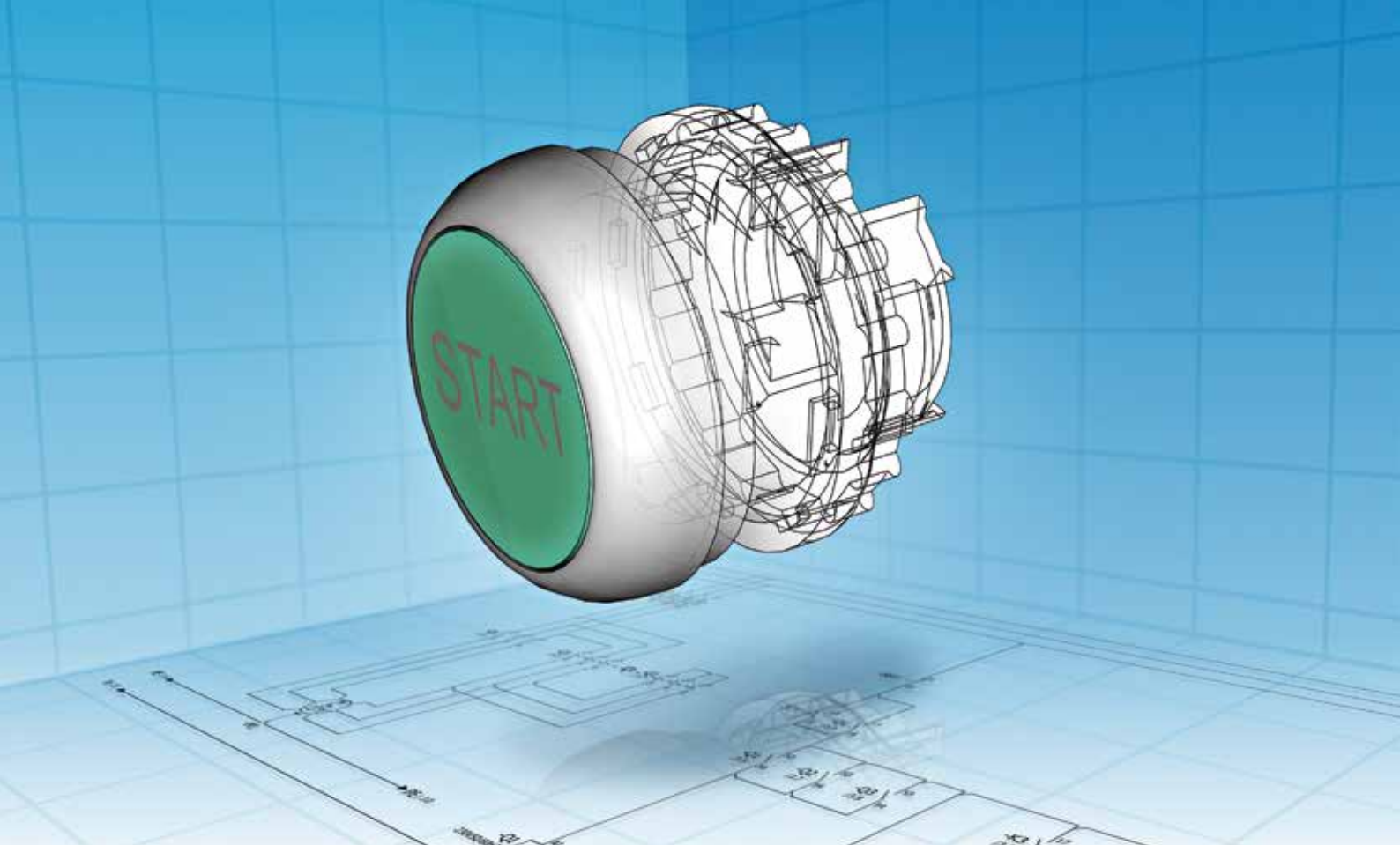
Eaton.com

Solutions for machinery and systems



EAT•N

Powering Business Worldwide



Planning safety and process optimization – eCAD and mCAD data at the push of a button



- Data and macros for 22,000 articles
- Available for download on the EPLAN Data Portal
- Available for version P8

To optimally support our customers during the planning process, we provide CAD data for our products. Both electrical and mechanical design data can be conveniently and accessed via the internet, quickly and around the clock. This reduces the processing times for switchgear, equipment and machinery during the planning phase, thereby minimizing errors and saving costs.



- Models for approximately 20,000 products
- 80 different neutral and native formats

eCAD: We provide product data and macros for the EPLAN Electric P8 planning system via the EPLAN Data Portal. The portal contains more than 22,000 products, which are available for download.

mCAD: We provide 2D and 3D data for about 20,000 products. More than 80 different neutral and native formats guarantee compatibility with customer-specific project planning systems. The models can either be obtained online from the Partcommunity portal or integrated directly into the planning software via the CADENAS Partsolution software.



Get more information

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Providing and communicating data

Operation and visualization

Control

Signaling and monitoring

Switching and operating motors

Power management

Service and support



The latest machine-building trends

Future fit with Eaton



Eaton.com/Brightlayer

Machine building megatrend: digitalization and IoT

Eaton has been driving the digitalization of the machine building sector for many years. For more than 10 years, our SmartWire-DT system has been providing digital information from peripheral control devices, sensors and motor starters to the control cabinet. SmartWire-DT delivers comprehensive data ranging from current values to the switching states of individual components. Our new catalog again expands our portfolio of digital switchgear, frequency converters and programmable controllers. With the Brightlayer Industrial Suite, the collected data can be securely transmitted, visualized and evaluated quickly and easily. And the NubisNet gateways, which are available for both wired and wireless networks, are guaranteed to meet our stringent cyber security requirements.

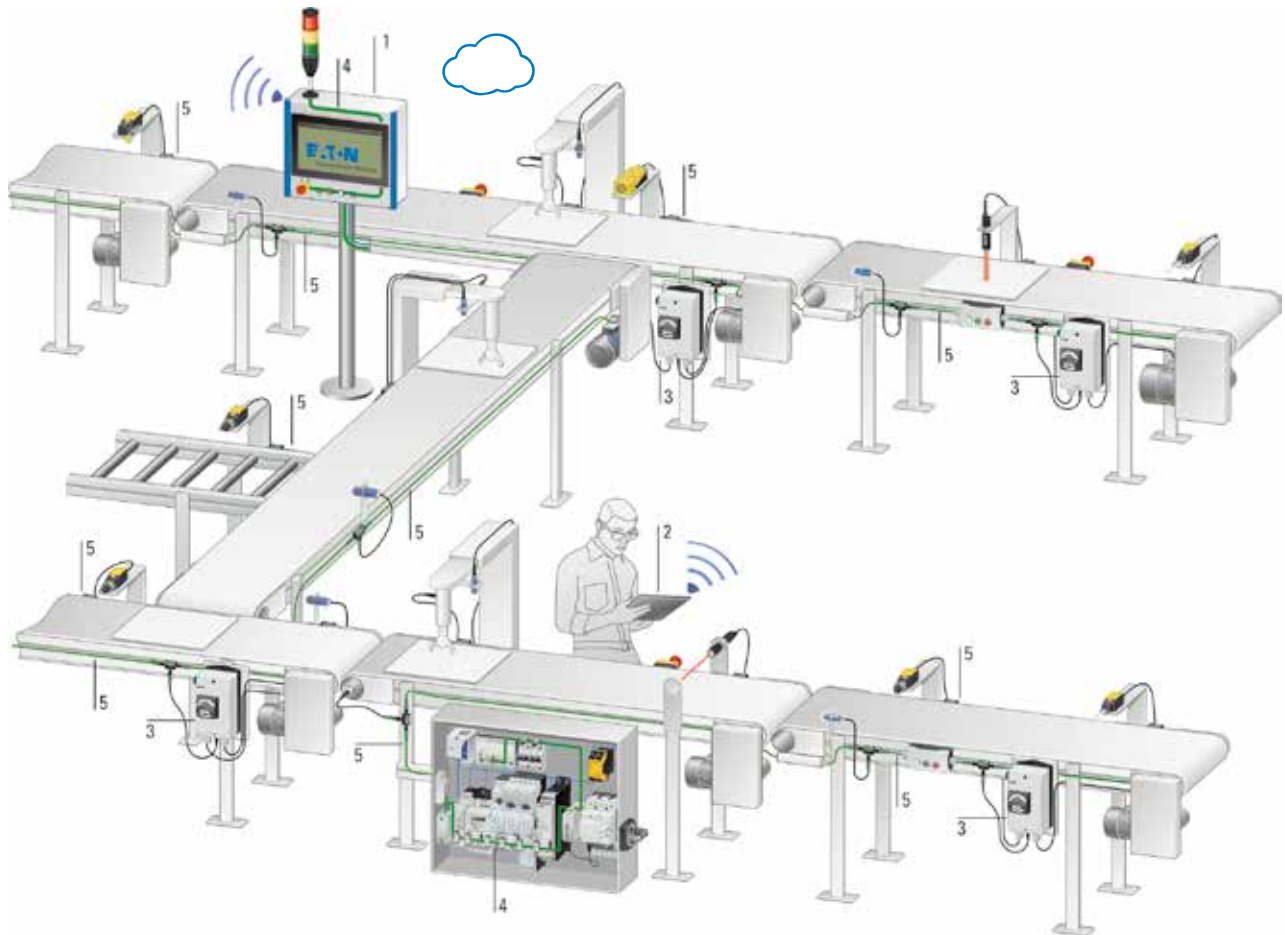
Energy efficiency is another of one today's hot topics



Our new **NZM PXR** digital circuit breaker is an outstanding example of what digitalization can do. In addition, it also offers Class 1 energy metering, which is important for the implementation of energy management systems and the ISO 50001 standard. The latest update of the ErP Directive for electric motors, which came into force in 2021/2023, is already looming large, as are the discussions about the introduction of an energy efficiency label for machines. Our motor starters and variable frequency drives offer solutions that meet or even exceed the current regulations. Contact us to find out more, for example if you want to improve the energy efficiency of existing systems or integrate **energy metering** into your machine or plant.



Eaton.com/ErP



- 1 NubisNet gateways provide data from machines and systems to the Brightlayer Cloud to optimize machine performance and processes, deliver better energy management and improve maintenance planning and logistics, etc.
- 2 Data from the cloud can be visualized on mobile devices. Smartphones and tablets can also be used for control inputs.
- 3 Enclosed distributed motor starters or variable frequency drives up to IP66 enable on-site control of assembly lines, pumps and fans as well as other industrial applications.
- 4 In addition to SmartWire-DT and Modbus, various other bus systems are available for connecting Eaton switchgear and supplying data to the control system.
- 5 SmartWire-DT with IP67 protection can be used to connect peripheral sensors or distributed drive systems, signal towers and pilot devices.

MOEM Solution Center

Implement megatrends successfully with the help of the Eaton Solution Team

When it comes to current and future challenges, including megatrends such as the Internet of Things (IoT) and energy efficiency, choosing the right partner is essential. The Eaton Innovation & MOEM Solution Center supports machine builders and system integrators in their efforts to find and create unique solutions tailored to their individual needs. The starting point of any project are consultations on new machine designs and the search for the ideal system architecture. A good example of such a project is the retrofitting of existing machines with an IoT connection, but

our service portfolio also includes support with programming, computer-aided engineering (CAE), the mechanical design of control cabinets, and commissioning. The Solution Team focuses on customer needs and market requirements in order to develop solutions that combine standard components with customized products.

We support you in every phase of the machine life cycle

Customer-driven innovation

Are you facing the challenge of launching a completely new machine generation or system type? We'll give you peace of mind by supporting you with customized products based on the latest megatrends and innovations. Our Innovation Center will also support you in this process.



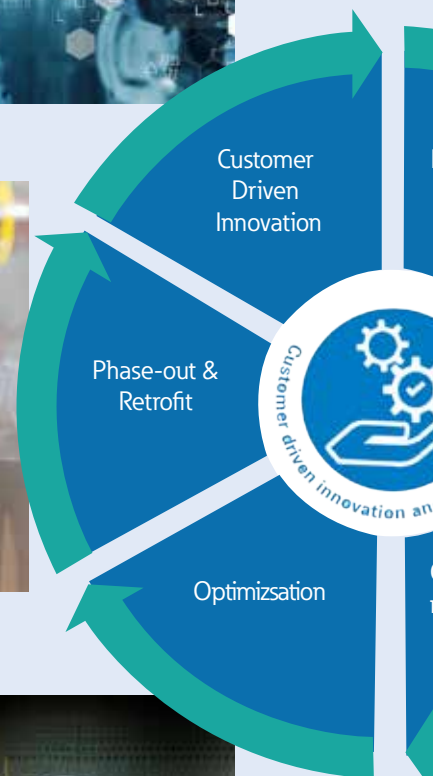
Phase-out and retrofit

Before you decide to phase out your machine, we can still help you to optimize its energy consumption. This may include analyzing the machine and examining the possibility of incorporating new drive technologies, for example, or connection to a cloud via an IoT solution to give you an edge in the market even at this later stage of the machine life-cycle. Should the machine or system nevertheless be phased out, we can assist you with appropriate life-cycle management tools.



Optimization

Optimization starts once your machines and systems have been in operation for a certain period of time. During this phase, we'll work together with you to adapt your application to market requirements or to implement new machine guidelines, for example, aided by our certified network of solution and technology partners.





Contact us if you need an optimized solution tailored to your individual requirements:

SolutionCenter@eaton.com



Project planning and engineering

We will support you right from the start, whether it's drawing up performance specifications or the design of the right control cabinet and the corresponding system architecture.

During this phase, we'll create initial 3D CAD models or provide you with an industrial prototype, and we'll also handle the application software development for your control and visualization systems.

Project planning
& engineering

Installation &
commissioning

Operation &
maintenance

Application expertise



Installation and commissioning

You'll also benefit from our expertise during the commissioning and learning phase of your new machine and system. Together with our colleagues from the Eaton After Sales Service, we stand ready to support you throughout this process, whether you require special machine measurements and analytics or application software modifications, for instance. We'll also be happy to assist you during acceptance testing.



Operation and maintenance

Once your machine or system is operational, either at your own premises or those of your end customers, our technical support hotline will be at your service in the event of a fault or if you have any questions about our products. Our After Sales Service will also support you on site. In addition, we offer you a fast spare parts service that is optimized to match your needs.

Win-win with Push-in: technology + procurement

Eaton's push for Push-in



Download the brochure:
Eaton.com

Simplify and optimize the installation and design of your machines and systems with Eaton's tool-free Push-in technology, which can be used anywhere in the world without any restrictions.

Compared to conventional screw terminals, the connection time can thus be reduced by up to 50 percent. Even compared to cage clamps, this represents significant time savings.

Connections made by means of Push-in terminals are secure and maintenance-free, even under harsh environmental conditions and vibrations.



We have significantly expanded our Push-in portfolio

Products with Push-in technology can be easily identified by means of the Push-in icon.



SmartWire-DT
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XN300
Page 3/20



easyE4
Page 3/7



RMQ-Titan
Page 2/36



XC300
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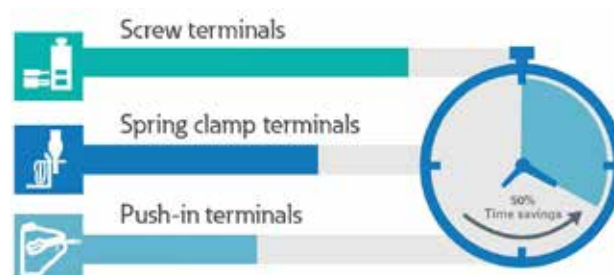
DILM
Page 5/4 ff.

Technical advantages

- Tool-free installation of ferrule-terminated wires
- Easy to use
- Suitable for global use, including UL Type E
- Same footprint as standard contactors
- Can be integrated into established busbar systems
- Compatible with three-phase busbar blocks
- Only one tool required for disassembly and cable removal

Cost advantages

- Time savings
- Secure connections without any rework
- Globally available and approved
- Optimal installation and servicing



We have significantly expanded our Push-in portfolio

In this updated product overview for machinery, we have again significantly expanded our portfolio of Push-in products. In particular, we've added many contactors, motor-protective circuit breakers and motor starters with Push-in technology. Our overall portfolio also includes controllers, power supplies for the SmartWire-DT intelligent communication system,

as well as control relays, circuit breakers, variable frequency drives and the pilot devices of the RMQ series. Eaton thus offers a comprehensive range of products based on this highly efficient connection technology, all from a single source.



PKZ
Page 5/32 ff.



MSC motor starters
Page 5/50 ff.



DB1
Page 5/96



EMS2
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NZM
Page 6/10 ff.



PXS24
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Our flip catalog: Get information, select, order – the fast and easy way!

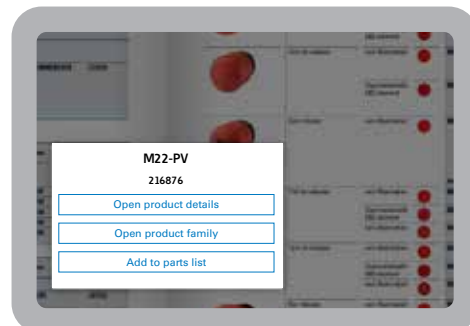
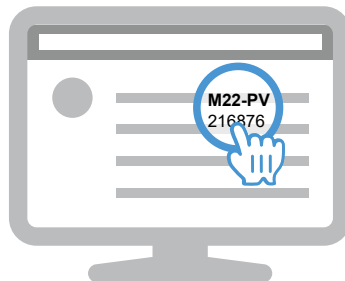


This product overview is designed as a quick selection aid for our core range of machine building products. And to make it even more powerful, we have an online version with comprehensive extra features available: our digital flip catalog. The result? Getting information and placing orders is easier and faster than ever before.

How does our digital flip catalog work? Easy: Its contents are linked to the Eaton online catalog and to the relevant product pages on the Internet, meaning that clicking on a part number or article number will take you directly to all the pertinent product information. In other words, the flip catalog is the perfect way to obtain comprehensive, up-to-date information, perfectly complementing our hard copy catalog.

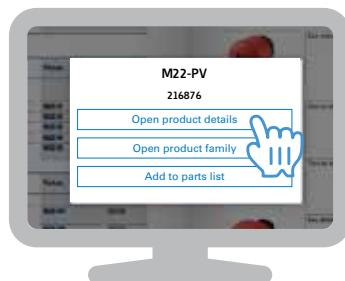
Explore our flip catalog and its powerful features

Click on the article and three links will open:



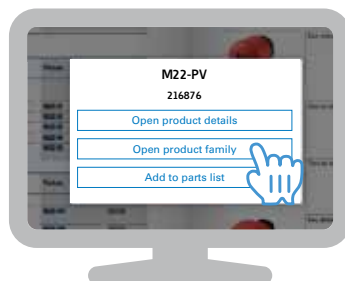
Technical data at a glance

The first offers product details with all technical data and dimensional drawings. You can also download CAD data here, release characteristics, manuals, assembly instructions and other information. For each product you will find the complete technical information for each product.



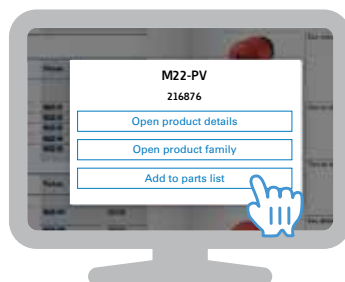
The complete range for each product and further information at the click of a mouse

The second link will take you to the article number or the types to the product family page of the article. Here you will find not only a lot of information. Via the link „Products“ in the header you will get an overview of additional accessories, articles with extended performance ranges and additional product variants. For entry pages with general information about the product, the function takes you directly to the more detailed product pages on the Internet.



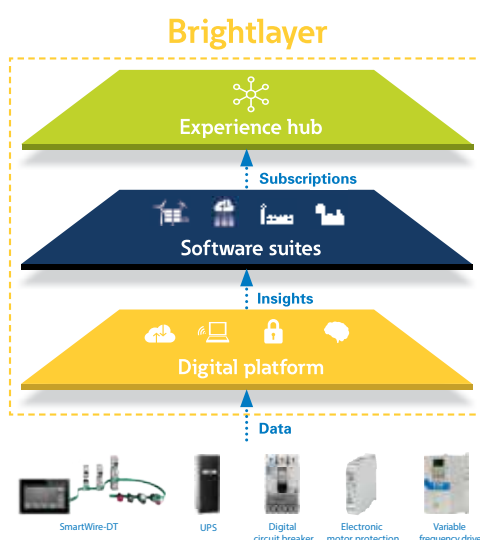
Simply generate parts lists and place orders

With the third link you have the possibility to select articles and compile a watch list. To request an offer, the online catalog and the watch list can be sent to the Eaton Sales department via email by clicking the „Next“ button. Or you can download the list as an Excel file, for later use.





Increasing efficiency with advanced analytics



With Brightlayer Industrial Machinery (Brightlayer IM), Eaton offers a toolset for data acquisition, advanced analytics, and remote maintenance within an easy-to-use platform. Data acquisition, visualization, alerting, and streaming analysis tools provide all the necessary information to make the right decisions. Using only one piece of hardware and the same GW hardware, secure connections are established for remote maintenance, to maintain and update local software and settings, and to support local operators online. Energy efficiency is a second focus point of the toolset, which helps users measure and analyze energy consumption to provide a basis for improvements.

As a specialist in motor protection and control, Eaton has paid special attention to the condition and operation of motors. The digital twin for the motor application provides all the important motor data and alarms in a single widget.

With Brightlayer IM, machine manufacturers have been able to significantly increase their service efficiency. They are also able to offer new digital services to their end users.



Make your application “smart”

Operating and maintaining machines and applications remotely is becoming increasingly vital in today's industrial applications. The advantages for both the operator and the service organization are obvious: data provides helpful information and supports predictive activities that prevent downtime. Remote access to the application helps speed up service while reducing service costs. A win-win situation for both partners, which also enables them to enter new business models such as service level agreements and pay-per-use.



Optimized productivity!

Real-time status monitoring and anomaly detection are already standard in machine building today. However, to further optimize productivity, it is necessary not only to react but to act predictively. By using predictive maintenance algorithms based on real-time data from machines and production processes, machine manufacturers can help their end users reduce downtime and optimize processes, enabling them to achieve additional efficiency gains.



Easy connection of new and existing machines

The modularity and flexibility of the Brightlayer IM toolset enables easy integration of PLCs and third-party devices. This facilitates the implementation of a digitalization concept for both new and existing machines, as it is unusual for production plants to be fully rebuilt and equipped with new machines. And it is often existing machines that have the greatest potential for process improvements.



Getting existing machines IoT-ready

To make existing facilities IoT-ready when retrofitting, it's not just cloud connectivity that needs to be borne in mind. In particular, additional sensors and measurement equipment could make the business case for such a measure financially unviable. Smart devices from Eaton, such as PKE, DE11, or NZM, offer integrated sensor technology with the same footprint as conventional switchgear. The use of such devices makes it possible to make installed systems IoT-ready with an acceptable level of effort.



Solution Center

Eaton's Solution Architect and Application Engineering team supports and assists in finding and creating unique solutions tailored to individual requirements. Based on your digitalization goals, we support you in developing a concept that covers your entire machine and system portfolio. Based on your requirements, the Solution Center can set up a test environment including hardware and software. They can help you set up the analysis algorithms to get the best results from your data.

Three steps to a smart machine

Step 1: get your machine IoT-ready with intelligent components

The first step is the selection of the required environmental and process data. Intelligent devices such as electronic motor starters, variable frequency drives, or sensors transmit their data via a fieldbus connection to the central control unit or directly to the NubisNet gateway.

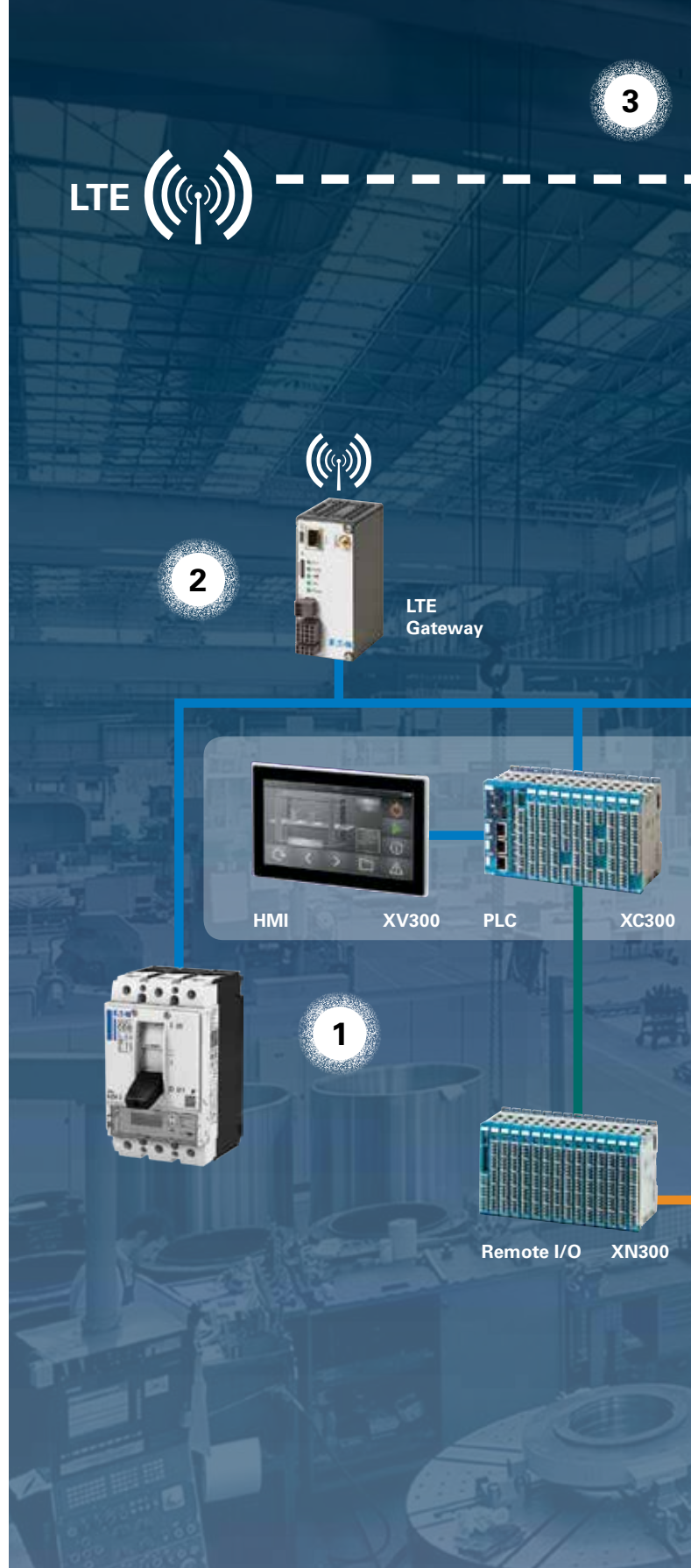
Eaton's intelligent products for motor control and motor and system protection offer a wide range of process data and integrated communication interfaces. They are designed to fit into exactly the same space as their electromechanical counterparts. In many cases, this enables additional data acquisition and cloud connection without major modifications to the control cabinet.

Step 2: conveniently manage the transfer of your data to the cloud

Each customer application comes with different requirements for the data transfer to the cloud. With the Eaton IoT gateways, the data can be easily structured and transferred to the cloud via LAN, WiFi, or LTE networks. This significantly reduces the cost of data traffic and provides flexibility to find the best connection option. The data transfer rate can be set individually for each message value and adjusted at any time. Should the data connection be interrupted, the generated messages will be automatically cached and sent with the correct time stamp after the connection is restored.

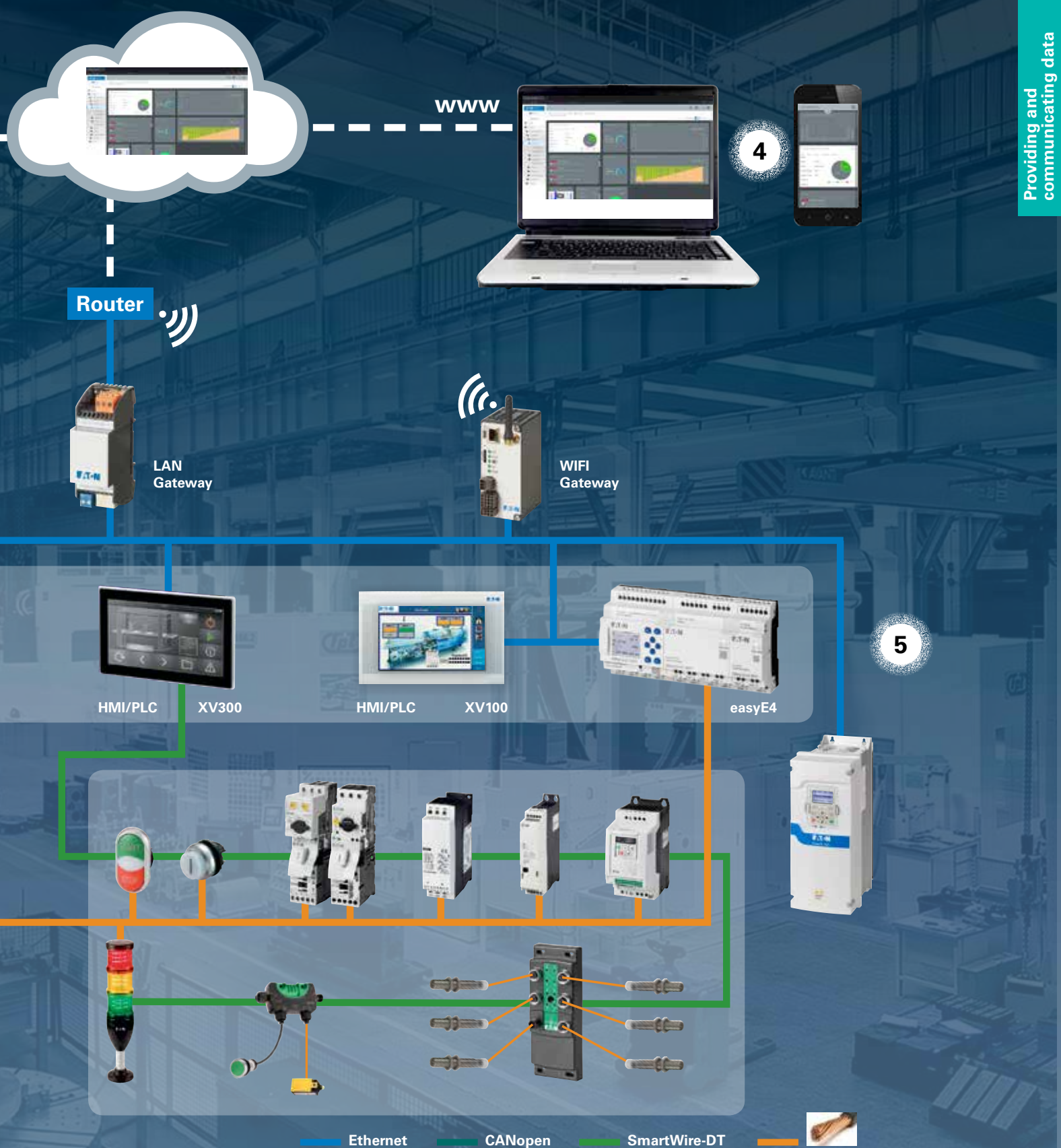
Step 3: monitor, alert, analyze

Once data transmission is established, the Brightlayer IoT platform gives you all the tools you need to create powerful monitoring dashboards, generate smart alerts, and analyze data online. Even remote access to the facility can be easily initiated via the NubisNet gateways.



Flexible access to machine data and analyses,

Whether from your office PC or on the road using your smartphone or tablet. You can either create ad hoc analyses or download data to investigate unusual events. Your historical data can be easily analyzed by creating powerful dashboards with business intelligence tools such as Power BI.



Share data, dashboards, and analytics results easily with your end users. And if your customers already have their own cloud, Brightlayer IM offers powerful interfaces for sharing information between different cloud systems.



Click & connect with the digital twin for motor applications

The digital twin for motor applications is the virtual representation of your power train in the cloud. In just a few clicks, the widget integrates with your dashboards and provides all the information you need in one place: motor data, alerts specific to this motor, parameter settings, and installed systems. Smart alarms are easily created and inform you of any deviations from normal operating values. It is the ideal tool to quickly inform you about the condition of your drive train.



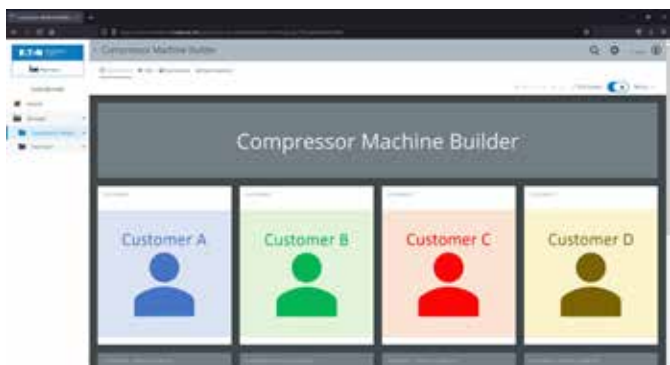
Cybersecurity in every phase of the product lifecycle

Protecting industrial control systems from the growing number of cyberattacks requires defense with depth, with automation components as the last line of defense. Eaton has developed a secure development life cycle (SDLC) process that extends from product design through deployment and maintenance to ensure maximum cybersecurity at every stage of the product lifecycle. Eaton is the first company worldwide to have its development processes evaluated and certified according to both UL 2900 and IEC 62443 – two of the most important industry standards for cybersecurity.



Acquisition of sensor and additional I/O data

The easyE4 control relay and SmartWire-DT cabling system are additional tools for acquiring I/O and sensor data both inside and outside the control cabinet. While SWD offers long cable runs of up to 600 m, the easyE4 relay offers a wide range of I/O modules and flexibility. Several of these controllers can also be connected via the easyNet plug-and-play connection. And of course, the easyE4 can help you solve local control challenges, as well as simple on-the-edge data analysis that helps you reduce traffic to the cloud.



Brightlayer dashboard - the ultimate tool for all your installations

Sign up for a workspace with endless possibilities. With the dashboard start access, you can add all your customers with all their websites and organize them in clear folder structures. Dashboard Flex lets you brand your workspace with your company branding and gives you access to powerful online analytics tools.






NubisNet IoT gateways

Eaton's NubisNet IoT gateways take care of your data. They maintain a secure connection to the Brightlayer cloud (or other cloud of your choice) via encrypted MQTT. They control data traffic for you via LAN, WiFi, or LTE networks. And they collect and send the data at a frequency chosen by you (ECO to PERFORMANCE).



Brightlayer starter kits

Two starter kits are available for Brightlayer IM. One starter kit contains a LTE gateway, the other a LAN gateway. Free access to a dashboard start service is also included. Sample applications for CODESYS PLC or easyE4 are ready for download so that users can see their data in the cloud within just a few hours. All protected by Eaton's exceptional cybersecurity measures.

	Description	Part no.	Article no.
Software			
	Digital twin for your motor applications, for example	BL-DIGITAL-TWIN(DEVICE)-BASIC-(MONTHLY)	599980147
	Cloud portal including dashboard software	BL-DASHBOARD-START-(MONTHLY)	599980150
	Cloud portal including dashboard software and customer tenant with analytics software	BL-DASHBOARD-FLEX-(MONTHLY)	599980151
	Cloud portal including dashboard software, customer tenant with analysis software and data lake option	BL-DASHBOARD-FLEXPLUS-(MONTHLY)	599980152
	Data rate per message every 30 minutes	BL-DATA-RATE-ECO-(MONTHLY)	599980153
	Data rate per message every 5 minutes	BL-DATA-RATE-BASIC-(MONTHLY)	599980154
	Data rate per message every minute	BL-DATA-RATE-STANDARD-(MONTHLY)	599980155
	Data rate per message every second	BL-DATA-RATE-PERFORMANCE-(MONTHLY)	599980156
	External memory per 250 MB data (10 years)	BL-DATALAKE-10-250 (MONTHLY)	599980157
	External memory per 100 MB data (10 years)	BL-DATALAKE-10-100 (MONTHLY)	599980158
	Internal memory per 10 MB data per year	BL-OPSTORE-1-10 (MONTHLY)	599980159
	Internal memory per 1 MB data per year	BL-OPSTORE-1-1 (MONTHLY)	599980160
	License for a VPN connection	BL-VPN-CONNECT+(MONTHLY)	599980161
Antennas			
	LTE antenna for IoT gateway for wall mounting	NN-ANTENNA-LTE-WALL	199361
	LTE rod antenna for IoT gateway	NN-ANTENNA-LTE-STUB	199362
	LTE antenna for IoT gateway with magnetic socket	NN-ANTENNA-LTE-MAGN	199360
	WLAN rod antenna for IoT gateway	NN-ANTENNA-WLAN-STUB	199514
NubisNet IoT gateways			
	LAN NubisNet IoT and VPN gateway	NN-GW-100-LAN	199379
	WiFi NubisNet IoT and VPN gateway	NN-GW-100-WLAN	199380
	LTE NubisNet IoT and VPN gateway	NN-GW-100-LTE-EU	199381
	LTE NubisNet IoT and VPN gateway (US)	NN-GW-100-LTE-US	199359
Starter kits			
	Brightlayer Industrial LAN starter kit	NN-STARTER-KIT-LAN	199451
	Brightlayer Industrial LTE starter kit	NN-STARTER-KIT-LTE	199455



SmartWire-DT: an innovative wiring system for greater productivity



Download the catalog:
Eaton.com/catalog

Customers today expect more compact designs that offer higher performance, shorter delivery times and the right price. To meet these expectations, manufacturers need to build machines quickly, with smaller control cabinets and using intelligent, energy-saving components. When it comes to higher efficiency, system availability is key. SmartWire-DT is a unique wiring solution that also enables the communication between switchgear inside and outside the control panel. More and more machine builders and system integrators around the world are discovering how easy it is to integrate SmartWire-DT into machines and small control cabinets. Compared to conventional systems, SmartWire-DT can reduce the amount of wiring by up to 85 %. Digital and analog data can be used to improve performance and avoid downtime, which significantly increases the efficiency of machines and systems.





Simplify wiring. Reduce costs. Improve flexibility.

Until now, control cables were commonly used to connect machine components to the I/O modules of a PLC. Thanks to SmartWire-DT, both these modules and the control cables are now a thing of the past. Our intelligent wiring system makes it possible to connect all associated devices, which translates into lower installation costs for machine builders.

Less complexity means more compact machines

The elimination of PLC I/O modules and associated control cables results in more compact control cabinets and machines while simplifying the design and configuration of automation structures.

Simplified wiring technology

By replacing conventional, time-consuming control-circuit wiring with one single cable, SmartWire-DT simplifies the connection of switchgear and pilot devices as well as sensors and actuators outside of the control panel. This guarantees safe and error-free installation with significantly shorter commissioning times.

Greater flexibility

By means of industrial fieldbus gateways, SmartWire-DT can be connected to any PLC, regardless of the manufacturer. This gives machine builders more flexibility and enables them to better meet the demands of their customers.

Using Eaton controllers to implement more compact machines

For small and medium-sized machines, Eaton offers HMI/PLCs, compact PLCs and control relays with integrated SmartWire-DT communication interface, enabling machine builders to develop simpler and more compact automation solutions.



Enhanced communication capabilities for improved system efficiency

The planning, installation and control of industrial systems requires multiple drives, controllers and pilot devices, alongside local sensors and actuators. System automation poses many challenges, especially where continuous availability is required. SmartWire-DT is an intelligent wiring system that can supply additional information about the installed devices, and is a key criterion for higher availability and preventive maintenance.

More data leads to greater availability

More detailed information ensures better process control, more detailed diagnostics, reduced downtime, and higher availability. SmartWire-DT switchgear provides continuous real-time data on motor load, allowing operators to intervene before an overload occurs and the system fails. Monitoring motor-current values also supports the implementation of preventive maintenance, which translates into improved system availability and significant efficiency gains.

Expansion made easy

With SmartWire-DT, adding expansions during operation is easy. New devices can be easily connected to the communication cable, both inside and outside the control panel. Thanks to the maximum length of up to 600 m, it is also possible to implement distributed control architectures.



XSOFT-CODESYS-based automation

The XC152 series of compact controllers combines a modern control architecture with comprehensive communication interfaces in a single device.

An HMI/PLC integrates state-of-the-art IT technology with the functions of conventional PLC and HMI devices by merging control, visualization and data management tasks together in a single device. In both cases, the built-in SmartWire-DT interface makes the communication with the switchgear significantly easier.



SmartWire-DT – even more simple with easySoft

Thanks to the SmartWire-DT communication module, the easyE4 control relays offer maximum flexibility for different types of applications. Instead of individually wiring the switchgear inputs and outputs to the control relay, they are simply connected via the SmartWire-DT ribbon cable. The program input takes place as usual by means of easySoft from version 7.3x.



Different gateways for connection to any network

To support communication with any controller, Eaton offers gateways for a wide range of standard fieldbus systems, including PROFIBUS-DP, CANopen, EtherNet/IP, Modbus/TCP, PROFINET, Powerlink and SERCOS III.



Control and signaling made easy

The conventional wiring of pilot devices is highly complex, as each contact or indicator light needs to be separately wired to the controller's input/output modules. With SmartWire-DT, however, pilot devices can be connected with a simple "click." Various functions that previously had to be installed separately, for example in the case of double pushbuttons with LED indicators, now require only one SmartWire-DT function element. Moreover, our SL4/7 signal towers can also be connected to SmartWire-DT.



SmartWire-DT: comprehensive information about your motor

Via SmartWire-DT, the PKE motor-protective circuit breakers up to 65 A can be easily integrated into automation systems. In addition to the trip setting, the function element also reports the switch status and the trip reason. The transmission of information about the motor current and the thermal motor load provides advance warning of errors and possible shutdowns due to overload, which in turn increases the serviceability and availability of the system.



Compact motor starters

In combination with SmartWire-DT, the EMS2 electronic motor starter provides compact control and monitoring of motor feeders up to 3 kW (400 V) at a width of only 22.5 mm. Moreover, the integrated functions for DOL starting, reversing starting, motor protection and emergency stop up to SIL 3 eliminate the need for multiple standard components and the associated wiring. Using SmartWire-DT to control and monitor the drive of the electronic motor starter speeds up wiring and enables critical machine states to be detected early.



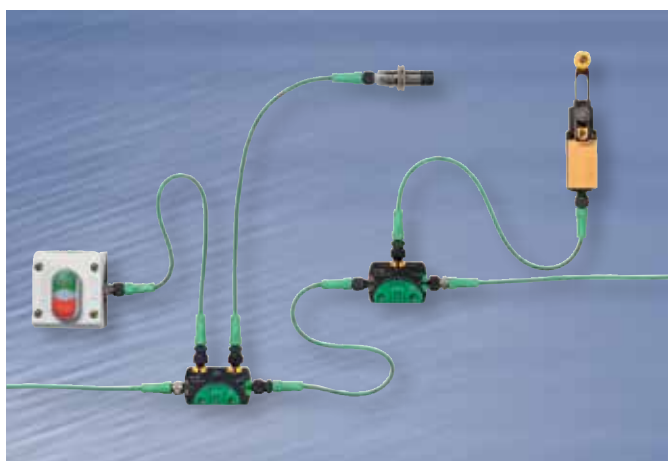
PowerXL variable frequency drives/variable speed starters – efficient communication

The variable frequency drives and variable speed starters of the PowerXL family can also be combined with SmartWire-DT. All that is required is a simple plug-in SmartWire-DT function element, which eliminates the need for any control-circuit wiring. This interface can be used to centrally configure the variable frequency drives, to transmit control commands to the devices via the network, and to read out diagnostics data.



DS7 soft starters – direct access to all parameters

The DS7 soft starters cover the power range from 1.1 kW to 110 kW, and with SmartWire-DT you now have easy and convenient access to all parameters of the connected soft starter. Users are able to read and overwrite the potentiometer settings and to directly retrieve status, error and diagnostic messages, which ensures maximum data transparency. And thanks to the plug-in technology, connecting the function element, which also includes the soft starter's power supply, is fast and error-free.



Connecting sensors directly inside the machine

The IP67 I/O modules for SmartWire-DT systems provide a fine-grained I/O solution with a high degree of protection that can be used directly on a machine. Due to the small number of I/O channels, the IP67 I/O modules also permit the direct integration of individual sensors and actuators into the SmartWire-DT system at field level, which reduces the amount of wiring required. This means that any number and sequence of digital and analog sensors and actuators can be easily connected, while expansions can be simply added by means of additional modules.

One system, countless possibilities

The distributed intelligence of SmartWire-DT is changing the automation industry, as the digital and analog I/O level of the controller can now be replaced by interface modules mounted on standard switchgear. Gateways to all standard industrial fieldbus systems facilitate easy access to SmartWire-DT networks, regardless of the control system. At the same time, it is also possible to have SmartWire-DT technology integrated into our controllers, thereby enabling the implementation of linear automation structures with only few components that are easy to configure.

Powerful technology

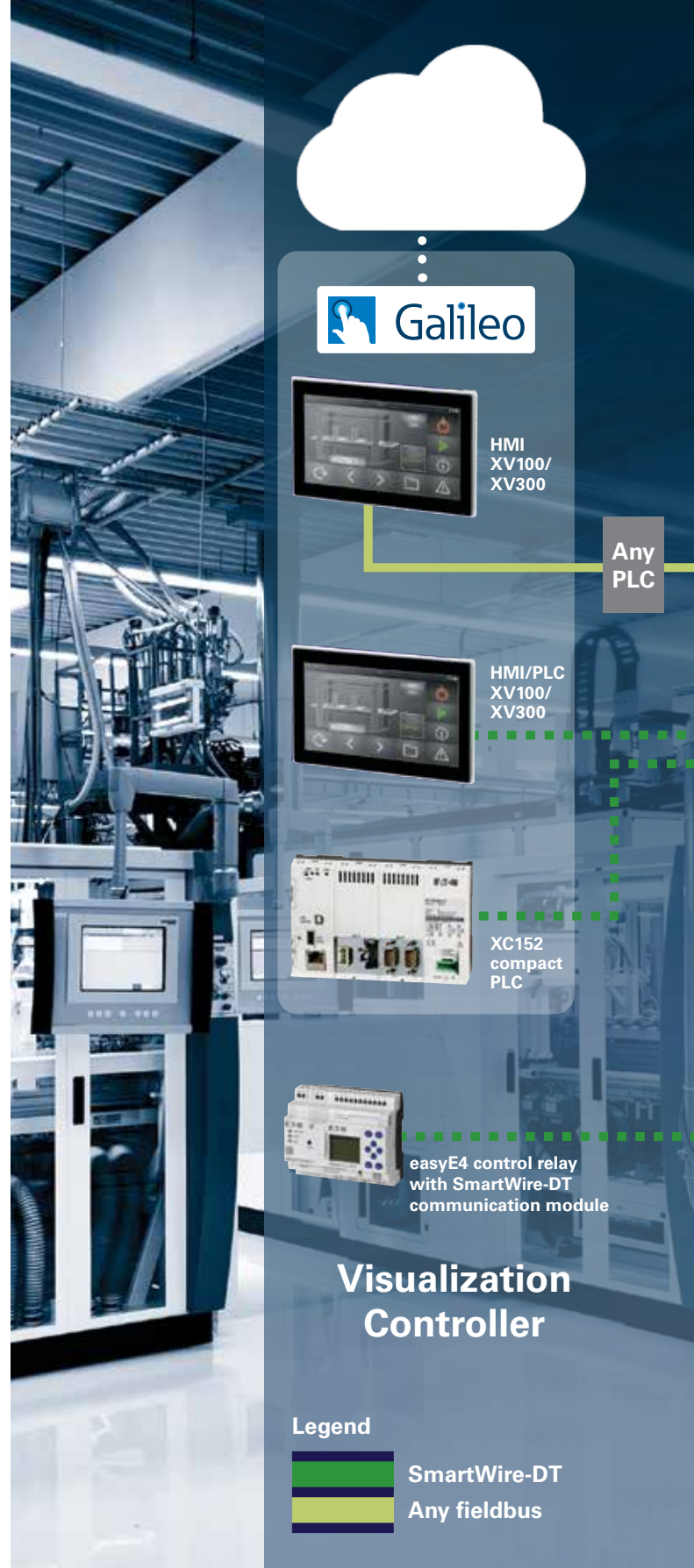
Up to 99 devices can be connected to one SmartWire-DT cable. The maximum cable length is 600 m, and the maximum volume of cyclical process data is 1,000 bytes. The SmartWire-DT cables also include the power supply needed for the SmartWire-DT modules and for the installed switchgear (e.g. contactors).

Flexible integration into any automation environment

Fieldbus gateways facilitate the connection of the SmartWire-DT communication system to your controller. SmartWire-DT uses industrial fieldbus systems to communicate and relies on the relevant standardized configuration mechanisms.

SmartWire-DT modules

Different SmartWire-DT modules are available. Special function modules replace the electrical interfaces to contactors, pushbuttons, pilot devices and auxiliary contacts. Smart devices such as electronic motor-protective circuit-breaker, soft starters, and drives transmit digital and analog information (e.g. current, overload, etc.) directly to the SmartWire-DT network.



Inside and outside the control cabinet

SmartWire-DT can also be used to directly connect sensors and actuators in the field. This involves the use of T-connectors, which are available as digital and analog I/O modules with protection type IP67.

Operation

Start motor

Input/output

SmartWire-DT gateway



SL signal tower



Pilot devices
RMO-Titan



Pilot devices in
surface mounting
enclosures



NZM
circuit breaker



Module for NZM



PKE 65 motor-
protective circuit
breaker



Circuit protection

FAZ miniature
circuit breaker



FRC residual current
circuit breaker



DC1, DA1 variable
frequency drives



DE1/DE11 variable
speed starter



DS7 soft
starter



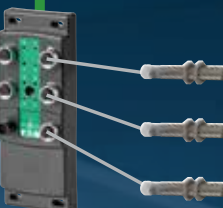
EMS2 electronic
motor starter



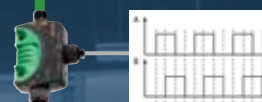
Motor-starter
combination
with PKE/PKZ

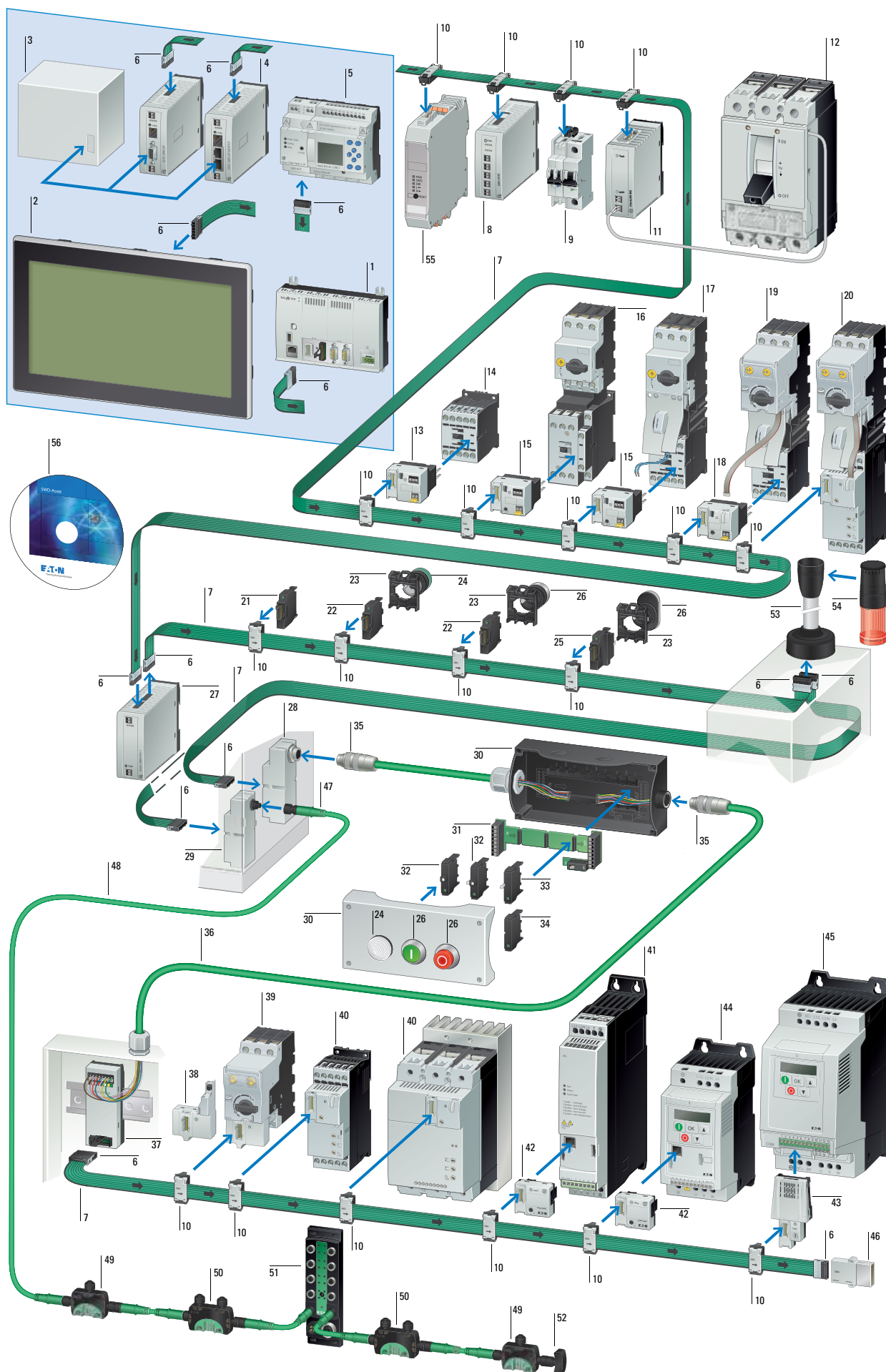
Modules IP20,
EU5E-SWD-...

Digital
Analog
Temperature



Modules IP67, EU1E-SWD-... / EU2E-SWD-...





Moeller series

1 Compact PLC	18 SWD PKE module (motor starter)	31 SWD PCB for function elements, base mounted	46 SWD network termination for SWD ribbon cable, 8-pole
2 Touch panel	19 Motor starter with PKE electronic motor protection	32 SWD LED elements for base mounting	47 M12 connector, 5-pole
3 PLC with fieldbus interface	20 DS7 soft starter with PKE electronic motor protection	33 SWD function elements for base mounting	48 Round cable, 5-pole
4 Gateways	21 SWD universal module, front mounting	34 SWD universal modules, base mounted	49 SWD I/O modules IP67, 2 I/Os
5 easyE4 control relay	22 SWD LED elements, front mounting	35 SWD plug-in connector, 8-pole	50 SWD I/O modules IP67, 4 I/Os
6 SWD blade terminal, 8-pole	23 RMQ-Titan mounting clamps for flush mounting plates	36 SWD round cable, 8-pole	51 SWD I/O modules IP67, max. 16 I/Os
7 SWD ribbon cable, 8-pole	24 RMQ-Titan indicator light	37 SWD flat/round cable adapter for DIN-rail mounting	52 SWD bus-termination resistor, IP67, for SWD round cable, 5-pin
8 SWD I/O modules	25 SWD function elements for front mounting	38 SWD PKE module (motor-protective circuit breaker)	53 Base module for SL4/SL7 signal towers
9 SWD module for circuit breakers and residual current circuit breakers	26 SWD operating elements	39 PKE motor-protective circuit breaker	54 SL4/SL7 signal towers
10 SWD external device plug, 8-pole	27 SWD power feed module	40 DS7 soft starter	55 EMS2 electronic motor starter
11 SWD interface for NZM	28 SWD control-panel cable gland from ribbon cable to 8-pole round cable, M20	41 DE1 variable speed starter	56 SmartWire-DT planning and ordering tool (SWD-Assist)
12 NZM circuit breaker	29 SWD control-panel cable gland from ribbon cable to 5-pole round cable, M12	42 SWD function element for DC1 variable frequency drives/DE1 variable speed starters	
13 SWD contactor module	30 RMQ-Titan surface mounting enclosure	43 SWD function element for DA1 variable frequency drives	
14 DILM contactor		44 DC1 variable frequency drive	
15 SWD contactor module with manual-0-automatic switch		45 DA1 variable frequency drive	
16 Motor-protective circuit breaker			
17 MSC motor starter			

Features

SmartWire-DT coordinators

Touch panel

With SmartWire-DT master interface and PLC function TFT LCD screen (3.5", 5.7", 7", 10" or 15") with additional fieldbus interfaces, Ethernet, web server

Compact PLC

With SmartWire-DT master interface
Additional fieldbus interfaces, Ethernet, web server

Control relay

With SmartWire-DT master interface

Gateways

To connect SmartWire-DT to fieldbus systems (e.g. CANopen, PROFIBUS, PROFINET ...)
Supply voltage for the SmartWire-DT modules
Control-voltage feeder unit for motor starters or contactors
Supports up to 99 SmartWire-DT modules

SmartWire-DT modules

I/O modules for connecting digital and analog input/output signals, with IP20, IP67 degree of protection

DS7 soft starter with integrated SWD connection

Function element for connecting:

- RMQ-Titan pilot devices
- SL4/7 signal towers
- DILM contactors
- PKZ/PKE motor-protective circuit breakers
- PKE32/PKE65 circuit breakers
- NZM2/NZM3/NZM4 circuit breakers
- Miniature circuit breakers
- DE1 variable speed starter
- DC1, DA1, DG1, DM1 variable frequency drives
- XNH fuse switch-disconnectors

SmartWire-DT Assist (SWD-Assist)

Simplifies the design of SmartWire-DT networks, with integrated plausibility check

Can be used to generate order lists








Online functionality:


- Configuration check and comparison
 - All input/output data can be displayed and the outputs can be set
 - Parameters and diagnostics data can be displayed
- Free download at [Eaton.com/software](https://eaton.com/software)


SmartWire-DT accessories




To ensure the functioning of the SWD ribbon, various connecting elements are required:




- Power feed module
- SWD connecting cables
- Cable glands for SWD enclosures and control panels
- Plugs and connectors
- Links
- Couplings, cable adapters
- Bus-termination resistors
- Tools
- Programming accessories





Display size (in)		Built-in interfaces										Part no.	Article no.
		1 x Ethernet 10/100 Mbps	2 x Ethernet 10/100 Mbps	1 x RS232	1 x RS485	1 x USB host 2.0	1 x USB device	1 x CANopen®/ easyNet	1 x PROFIBUS/MPI	1 x SmartWire-DT			
Touch display with integrated controller													
XV100 Windows CE 5.0 (license included), approvals: cUL (UL508) SD card slots: 1 Resistive touch with TFT display, 64k colors Standard front with standard membrane (fully enclosed)													
XV-102, with marine approval													
Plastic enclosure and plastic front plate													
	3.5 QVGA, 320 x 240	✓	-	-	-	-	✓	-	-	✓	XV-102-BE-35TQRC-10	153524	
	5.7 VGA, 640 x 480	✓	-	-	✓	✓	✓	✓	-	✓	XV-102-E6-57TVRC-10	153525	
		✓	-	-	✓	✓	✓	-	✓	✓	XV-102-E8-57TVRC-10	153526	
	7 WVGA, 800 x 480	✓	-	-	✓	✓	✓	✓	-	✓	XV-102-E6-70TWRC-10	153527	
		✓	-	-	✓	✓	✓	-	✓	✓	XV-102-E8-70TWRC-10	153528	
XV-152													
Metal enclosure and metal front plate													
	5.7 VGA, 640 x 480	✓	-	-	✓	✓	✓	✓	-	✓	XV-152-E6-57TVRC-10	166700	
		✓	-	-	✓	✓	✓	-	✓	✓	XV-152-E8-57TVRC-10	166701	
	8.4 VGA, 640 x 480	✓	-	-	✓	✓	✓	✓	-	✓	XV-152-E6-84TVRC-10	166702	
		✓	-	-	✓	✓	✓	-	✓	✓	XV-152-E8-84TVRC-10	166703	
	10.4 VGA, 640 x 480	✓	-	-	✓	✓	✓	✓	-	✓	XV-152-E6-10TVRC-10	166704	
✓		-	-	✓	✓	✓	-	✓	✓	XV-152-E8-10TVRC-10	166705		
XV300, for front mounting - XV313, for rear mounting Windows Embedded Compact 7 Pro, approvals: cUL, marine approvals for 7" and 10.1" devices SD card slots: 1 PLC license included Capacitive multi-touch (PCT), number of colors: 16 million													
	7 WSVGA, 1024 x 600 Version: plastic enclosure with glass front in plastic bezel	✓	-	✓	✓	✓	✓	✓	-	✓	XV-303-70-BE0-A00-1C	179655	
		-	✓	✓	✓	✓	✓	✓	-	✓	XV-303-70-CE0-A00-1C	179656	
		✓	-	✓	✓	✓	✓	✓	✓	✓	XV-303-70-BE2-A00-1C	179657	
		-	✓	✓	✓	✓	✓	✓	✓	✓	XV-303-70-CE2-A00-1C	179658	
	10.1 WSVGA, 1024 x 600 Version: plastic enclosure with glass front in plastic bezel	✓	-	✓	✓	✓	✓	✓	-	✓	XV-303-10-BE0-A00-1C	179667	
		-	✓	✓	✓	✓	✓	✓	-	✓	XV-303-10-CE0-A00-1C	179668	
		✓	-	✓	✓	✓	✓	✓	✓	✓	XV-303-10-BE2-A00-1C	179669	
		-	✓	✓	✓	✓	✓	✓	✓	✓	XV-303-10-CE2-A00-1C	179670	
	15.6 WSVGA, 1366 x 768 Version: die-cast aluminum enclosure with glass front in aluminum bezel	-	✓	✓	✓	✓	✓	✓	-	✓	XV-303-15-CE0-A00-1C	191075	
		-	✓	✓	✓	✓	✓	✓	✓	✓	XV-303-15-CE2-A00-1C	191076	
XV-313 Rear mounting													
Windows Embedded Compact 7 Pro, approvals: cUL 61010-2-201, marine approval SD card slots: 1 PLC license included Capacitive multi-touch (PCT), number of colors: 16 million Front type: anti-glare tempered glass front without bezel													
	7 WSVGA, 1024 x 600 Front type: anti-glare tempered glass front without bezel	-	✓	✓	✓	✓	✓	✓	-	✓	XV-313-70-CE0-A00-1C	191003	
	10.1 WSVGA, 1024 x 600 Front type: anti-glare tempered glass front without bezel	-	✓	✓	✓	✓	✓	✓	-	✓	XV-313-10-CE0-A00-1C	191002	






Built-in interfaces								Part no.	Article no.
1 x Ethernet 10/100 Mbps	1 x RS232	1 x RS485	1 x USB host 2.0	1 x CANopen®/easyNet	1 x PROFIBUS/MPI	1 x SmartWire-DT			
XC compact PLCs									
Supply voltage 24 V DC Memory card slot OPC server, integrated web server Application / marker / retained data 64 MB/4 KB/32 KB Cycle time for 1 k instructions (bit, byte) 0.04 ms; approvals: cUL, marine approval									
	✓	✓	-	✓	-	-	✓	XC-152-E3-11	167850
	✓	-	✓	✓	✓	-	✓	XC-152-E6-11	167851
	✓	-	✓	✓	-	✓	✓	XC-152-E8-11	167852



















		Baud rate	Number of SmartWire-DT modules	Part no.	Article no.
SmartWire-DT communication module for the easyE4 control relay					
Combines the functionality of the easyE4 with direct connection to the SmartWire-DT communication system Supply voltage 24 V DC Screw terminal					
	Connection of SmartWire-DT modules with a total of up to 244 digital inputs/outputs and/or up to 88 analog inputs/outputs can be connected via one SmartWire-DT ribbon	125/250 kBd	Max. 99	EASY-COM-SWD-C1	199452


Gateways					
For connecting the SmartWire-DT communication system to industrial fieldbus systems. For supplying the SWD modules and switchgear with power					
	For connection to the CANopen® fieldbus Fieldbus connection via 9-pole SUB-D plug Separate RS232 diagnostics interface (RJ45)	Up to 1 Mbit/s	Max. 99	EU5C-SWD-CAN	116307
	For connection to the PROFIBUS-DP fieldbus Fieldbus connection via 9-pole SUB-D socket Separate RS232 diagnostics interface (RJ45)	Up to 12 Mbit/s	Max. 58	EU5C-SWD-DP	116308
	For connection to the Ethernet-IP/MODBUS-TCP fieldbus Fieldbus connection via Ethernet switch Separate RS232 diagnostics interface (RJ45)	10/100 Mbit/s	Max. 99	EU5C-SWD-EIP-MODTCP	153163
	For connection to the PROFINET fieldbus as a PROFINET I/O device Fieldbus connection via Ethernet switch Separate USB diagnostics interface (mini USB)	100 Mbit/s	Max. 99	EU5C-SWD-PROFINET	170124
	For connection to the POWERLINK fieldbus (as a slave) Fieldbus connection via Ethernet hub Separate USB diagnostics interface (mini USB)	100 Mbit/s	Max. 99	EU5C-SWD-POWERLINK	171797
	For connection to the EtherCAT fieldbus (as a slave) Fieldbus connection via Ethernet switch Separate USB diagnostics interface (mini USB)	100 Mbit/s	Max. 99	EU5C-SWD-ETHERCAT	177354
	For connection to the SERCOS III fieldbus (as a slave); Fieldbus connection via Ethernet switch Separate USB diagnostics interface (mini USB)	100 Mbit/s	Max. 99	EU5C-SWD-SERCOS	184982




	Inputs Digital	Analog	Outputs Relay Transistor Analog			Part no. 	Article no.
I/O modules (IP20)							
Digital modules IP20							
For connecting digital I/O signals							
		8	-	-	-	EU5E-SWD-8DX	116381
	Outputs are short-circuit proof	4	-	-	4	EU5E-SWD-4D4D	116382
	Outputs are short-circuit proof	4	-	-	4	EU5E-SWD-4D4D-R	191941
		4	-	2	-	EU5E-SWD-4D2R	116383
	Outputs are short-circuit proof	-	-	-	8	EU5E-SWD-X8D	144061
	Inputs with power supply for sensors	4	-	-	-	EU5E-SWD-4DX	144060
Analog modules IP20							
For connecting analog I/O signals							
	Configurable inputs: 0 - 10 V, 0 - 20 mA	-	4	-	-	EU5E-SWD-4AX	144062
	Configurable inputs/outputs: 0 - 10 V, 0 - 20 mA	-	2	-	2	EU5E-SWD-2A2A	144063
	Configurable inputs: PT100, PT1000, Ni1000 Temperature range °C: PT100, PT1000: -50 - +200 Ni1000: -50 to +150	-	4	-	-	EU5E-SWD-4PT	144064
	Configurable inputs: PT100, PT1000, Ni1000 Temperature range °C: PT100, PT1000: -100 - +400 Ni1000: -50 to +200	-	4	-	-	EU5E-SWD-4PT-2	172560




Description		Output current	Digital inputs	Transistor outputs	Part no.	Article no.
I/O modules (IP67), block module						
Digital modules IP67						
For connecting digital I/O signals						
	-	-	4	-	EU6E-SWD-4DX	174735
	-	-	8	-	EU6E-SWD-8DX	174736
	Inputs/outputs are freely configurable, max. 8 outputs are short-circuit proof.	0.5 A	≤ 8	≤ 8	EU6E-SWD-8DD	174742
	With power supply	0.5 A	2	2	EU6E-SWD-2D2D-1	183264
		0.5 A	4	4	EU6E-SWD-4D4D-1	183266
		0.5 A	-	4	EU6E-SWD-4XD-1	183268
		0.5 A	-	8	EU6E-SWD-8XD-1	183270
		2 A	2	2	EU6E-SWD-2D2D-2	183265
		2 A	4	4	EU6E-SWD-4D4D-2	183267
		2 A	-	4	EU6E-SWD-4XD-2	183269
	-	-	16	-	EU8E-SWD-16DX	174744
	Inputs/outputs are freely configurable, max. 16 outputs are short-circuit proof	0.5 A	≤ 16	≤ 16	EU8E-SWD-16DD	174750
	With power supply	0.5 A	4	4	EU8E-SWD-4D4D-1	183272
		0.5 A	8	8	EU8E-SWD-8D8D-1	183273
		0.5 A	-	8	EU8E-SWD-8XD-1	183274
		0.5 A	-	16	EU8E-SWD-16XD-1	183271






	Description	Inputs		Outputs		Part no.	Article no.
		Digital	Analog	Transistor	Analog		
I/O modules (IP67) T connector							
Digital modules IP67							
For connecting digital I/O signals							
	-	1	-	-	-	EU1E-SWD-1DX	174710
	-	2	-	-	-	EU1E-SWD-2DX	174711
	Optional inputs/outputs configurable Max. 2 Outputs are short-circuit proof	≤ 2	-	≤ 2	-	EU1E-SWD-2DD	174715
	-	2	-	-	-	EU2E-SWD-2DX	174725
	-	4	-	-	-	EU2E-SWD-4DX	174726
	Optional inputs/outputs configurable Max. 4 outputs are short-circuit proof Plug configuration (X1: 2 E/A, X2: 2 E/A)	≤ 4	-	≤ 4	-	EU2E-SWD-4DD	174732
	Optional inputs/outputs configurable Max. 4 Outputs are short-circuit proof Plug configuration (X1: 1 E/A, X2: 3 E/A)	≤ 4	-	≤ 4	-	EU2E-SWD-4DD-1	180406
Analog modules IP67							
For connecting analog I/O signals							
	Input: 0-10 V	-	1	-	-	EU1E-SWD-1AX-1	174717
	Input: 0-20 mA	-	1	-	-	EU1E-SWD-1AX-2	174718
	Output: 0-10 V	-	-	-	1	EU1E-SWD-1XA-1	174719
	Output: 0-20 mA	-	-	-	1	EU1E-SWD-1XA-2	174720
	Configurable inputs: PT100, PT1000, Ni1000 Temperature range °C: PT100, PT1000: -100 - +400 Ni1000: -50 - +200	-	2	-	-	EU2E-SWD-2PT	174733
Counter module IP67							
For connecting a counter							
	Counter/incremental encoder 24 V DC, Max. 30 kHz	-	-	-	-	EU1E-SWD-1CX	174721

Contacts		Color	Front mounting Part no.	Article no.	Base mounting Part no.	Article no.
SmartWire-DT RMQ connections						
For combination with RMQ-Titan M22-... control elements Function elements with LED are dimmable						
Function elements						
	1 changeover contact	Without LED	M22-SWD-K11	115964	M22-SWD-KC11	115995
	2 changeover contacts	Without LED	M22-SWD-K22	115965	M22-SWD-KC22	115996
	1 changeover contact		M22-SWD-K11LED-W	115972	M22-SWD-K11LEDC-W	116003
			M22-SWD-K11LED-B	115973	M22-SWD-K11LEDC-B	116004
			M22-SWD-K11LED-G	115974	M22-SWD-K11LEDC-G	116005
			M22-SWD-K11LED-R	115975	M22-SWD-K11LEDC-R	116006
	2 changeover contacts		M22-SWD-K22LED-W	115978	M22-SWD-K22LEDC-W	116009
			M22-SWD-K22LED-B	115979	M22-SWD-K22LEDC-B	116010
			M22-SWD-K22LED-G	115980	M22-SWD-K22LEDC-G	116011
			M22-SWD-K22LED-R	115981	M22-SWD-K22LEDC-R	116012
	-		M22-SWD-LED-W	115966	M22-SWD-LEDC-W	115997
	-		M22-SWD-LED-B	115967	M22-SWD-LEDC-B	115998
	-		M22-SWD-LED-G	115968	M22-SWD-LEDC-G	115999
	-		M22-SWD-LED-R	115969	M22-SWD-LEDC-R	116000
	-		M22-SWD-LED-RGB	197576	M22-SWD-LEDC-RGB	195898

Description	Tube length	For use with	Part no.	Article no.
Signal tower base modules				
For horizontal installation, cover included, max. 5 modules				
	100 mm	SL4-L-... SL4-BL-... SL4-FL-... SL4-AP-...	SL4-SWD	171311
	100 mm	SL7-L-... SL7-BL-... SL7-FL-... SL7-AP-...	SL7-SWD	171459





Description	Configuration	Part no.	Article no.
Potentiometer			
	Front element for SWD potentiometer Can only be used in conjunction with the M22-SWD-R function element	M22-R-SWD	179292
	Function element for SWD potentiometer Can only be used in conjunction with the M22-R-SWD front element	M22-SWD-R	179293
	Standard pack consists of: M22-R-SWD, M22-SWD-R, M22-A	M22-R-SWD-R	179294





Encoder			
	Front element for SWD encoder With actuation function Can only be used in conjunction with the M22-SWD-INC function element	M22-INC-SWD	179981
	Function element for SWD encoder Can only be used in conjunction with the M22-INC-SWD front element	M22-SWD-INC	179982
	Standard pack consists of: M22-INC-SWD, M22-SWD-INC, M22-A	M22-INC-SWD-INC	179983










Description	For use with	Part no. Article no.
Contactor modules^{1),2)} For connecting contactors to SmartWire-DT One module is needed for each contactor.		
 Messages Switch state of the contactor, status of the digital inputs 1 and 2 Commands Contactor actuation	DILM(C)7... - DILM(C)32 DILM38 DILA MSC-D(E)-...(24VDC)	DIL-SWD-32-001 118560
 1-0-A switch for manual or automatic operation. Messages Switch state of the contactor, status of the digital inputs 1 and 2, switch state of the 1-0-A switch Commands Contactor actuation	DILM(C)7... - DILM(C)32 DILM38 DILA MSC-D(E)-...(24VDC)	DIL-SWD-32-002 118561
PKE module (motor-starter combinations)¹⁾ For connecting MSC-DEA... PKE motor-starter combinations with PKE-XTUA-... trip blocks and a rated motor output of 15 kW/400 V to SmartWire-DT One module is needed per contactor and PKE.		
 For mounting on a DILM contactor with 24 V DC control voltage. One module is needed for each contactor. An additional SWD contactor module is required to control reversing starters. 1 electrical interlock for surface mounting of reversing starters. 1-0-A switch for manual or automatic operation. Selectable overload relay function (ZMR) for switching off the contactor in the event of overload. Cable for connecting the module and the PKE-XTUA-... trip block included as standard. Messages Switch position of contactor/PKE/1-0-A switch Motor current in % Thermal motor image in % Trip indications (overload, short circuit, etc.) Set value of the overload release Set time lag (CLASS) Part no. of trip block Commands Contactor actuation Activation of the overload relay function (ZMR)	DILM(C)7... - DILM(C)32 MSC-DEA	PKE-SWD-32 126895
PKE module (motor-protective circuit breaker) For connecting motor-protective circuit breakers with PKE-XTU(W)A-... trip blocks (motor protection) to SmartWire-DT		
 To be fitted on PKE motor-protective circuit breakers Messages PKE contactor state Motor current in % Thermal motor image in % Trip indications (overload, short circuit, etc.) Set value of the overload release Set time lag (CLASS) Part no. of trip block Commands Remote disconnection of motor-protective circuit breakers	PKE12 PKE32 PKE65	PKE-SWD-SP 150614
PKE module (circuit breaker) For connecting PKE circuit breakers with PKE-XTU(W)ACP-... trip blocks (motor protection) to SmartWire-DT For two M22-SWD-K22... function elements		
 For side mounting on PKE circuit breakers Messages PKE contactor state All phase currents in % Thermal load in % Trip indications (overload, short circuit, etc.) Set value of the overload release Set value of the short-circuit release Part no. of trip block Commands Remote disconnection of circuit breaker	PKE32 PKE65	PKE-SWD-CP 172735






Notes

- If the contactor coils have a current consumption > 3 A (UL: 2 A), an additional power feed module must be used.
A2 connections must not be bridged
The DILM 12-XRL and PKZM0-XRM12 wiring sets may not be used.
- Connection terminals for electrical interlocking are not suitable for use with safety technology.

Description		Setting range of overload release I_r A 	Part no. 	Article no.
Electronic motor starter				
For connection to SmartWire-DT to implement expanded diagnostics				
	DOL starters (complete devices)	0.18 - 3	EMS2-D0-T-3-SWD	192383
		1.5 - 7 (AC-53a) 9 (AC-51)	EMS2-D0-T-9-SWD	192387
	Reversing starters (complete devices)	0.18 - 3	EMS2-R0-T-3-SWD	192384
		1.5 - 7 (AC-53a) 9 (AC-51)	EMS2-R0-T-9-SWD	192388
	DOL starters (complete devices)	0.18 - 3	EMS2-D0S-T-3-SWD	192385
		1.5 - 7 (AC-53a) 9 (AC-51)	EMS2-D0S-T-9-SWD	192389
	Reversing starters (complete devices)	0.18 - 3	EMS2-R0S-T-3-SWD	192386
		1.5 - 7 (AC-53a) 9 (AC-51)	EMS2-R0S-T-9-SWD	192390

	Rated operational current of device (AC-53) I_o A	Assigned motor rating At 400 V, 50 Hz P kW		At 460 V, 60 Hz P HP	Part no. Article no.
Soft starters					
Soft starters for three-phase loads, mains supply voltage (50/60 Hz) U_{LN} 200-480 V AC Control voltage U_c = 24 V DC, supply voltage U_s = 24 V DC					
	4	1.5	2		DS7-34DSX004N0-D 134943
	7	3	5		DS7-34DSX007N0-D 134945
	9	4	5		DS7-34DSX009N0-D 134946
	12	5.5	10		DS7-34DSX012N0-D 134947
	16	7.5	10		DS7-34DSX016N0-D 134948
	24	11	15		DS7-34DSX024N0-D 134949
	32	15	25		DS7-34DSX032N0-D 134950
	41	22	30		DS7-34DSX041N0-D 134952
	55	30	40		DS7-34DSX055N0-D 134953
	70	37	50		DS7-34DSX070N0-D 134954
	81	45	60		DS7-34DSX081N0-D 134955
	100	55	75		DS7-34DSX100N0-D 134956
	135	75	100		DS7-34DSX135N0-D 134957
	160	90	125		DS7-34DSX160N0-D 134958
	200	110	150		DS7-34DSX200N0-D 134959

Terminal type		For use with	Part no. Article no.
Power XL™ variable frequency drives			
Fieldbus interface (optional)			
	For connecting DA1 variable frequency drives (IP20/IP55) to SmartWire-DT Plug-in module with slot for SWD4-8SF2-5 external device plug	DA1 (IP20, IP55)	DX-NET-SWD1 169129
	For connecting DE1 variable speed starters and DC1 variable frequency drives (IP20) to SmartWire-DT Plug-in module (at the front) with slot for SWD4-8SF2-5 external device plug	DE1, DC1 (IP20)	DX-NET-SWD3 169131
	For connecting DG1 and DM1 variable frequency drives (IP20) to SmartWire-DT	DG1 (IP20)	DXG-NET-SWD-IP20 744-F0190-00P
	For connecting DG1 variable frequency drives (IP54) to SmartWire-DT	DG1 (IP54)	DXG-NET-SWD-IP54 744-F0191-00P
Description			Part no. Article no.
NZM molded-case circuit breakers			
SWD interface for NZM The module establishes a data connection between an NZM2/NZM3/NZM4 with the digital release and SmartWire-DT.			
	Module for connecting the digital NZM with PXR20/25 electronic over-current release to a SmartWire-DT network The PXR-RCAM-MRTU-I communication module is required for this function. Wiring is carried out by the customer Measured values and event data can be read out with the module and configuration parameters can also be written Operation of the remote operator is possible using the relay module NZM...-...2A...		PXR-RCAM-SWD 199860
Description		Mounting type	Part no. Article no.
xEffect protective switchgear			
The module establishes a connection to MCBs, RCCBs and RCBOs			
	Auxiliary contacts Accessories for residual current operated circuit breakers with overcurrent protection Accessories for residual current circuit breakers Accessories for miniature circuit breakers	For mounting on left side of: FI For mounting on right side of: LS, FI/LS	MCB-HK-SWD 177175
Description			Part no. Article no.
Power feed module			
	For supplying voltage to connect additional motor starters and contactors to the SWD ribbon cable For forming emergency-stop groups for motor starters and contactors		EU5C-SWD-PF1-1 116309
	For supplying voltage to connect additional SmartWire-DT modules to the SWD ribbon cable To supply additional control voltage for motor starters and contactors For forming emergency-stop groups for motor starters and contactors		EU5C-SWD-PF2-1 116380
	For supplying voltage to connect additional SmartWire-DT modules (IP67) and the associated sensors/actuators		EU1S-SWD-PF1-2 174724

Description		Degree of protection (IEC/EN 60529, EN50178, VBG 4)	Length m	Part no. Article no.
SWD connecting cables				
SWD ribbon cable For connecting SmartWire-DT modules inside the control panel				
	8-pole Not pre-assembled	IP20	100	SWD4-100LF8-24 116026
	8-pole Pre-assembled with two SWD4-8MF2 blade terminals	IP20	10	SWD4-10LF8-24-2S 116029
		IP20	5	SWD4-5LF8-24-2S 116028
		IP20	3	SWD4-3LF8-24-2S 116027
		IP20	0.5	SWD4-M5LF8-24-2S 197658
SWD round cable For connecting pilot devices inside CI surface mounting enclosures				
	8-pole HK-S0-Li2YY, 8 mm diameter	IP67	50	SWD4-50LR8-24 116030
		IP67	250	SWD4-250LR8-24 144878
SWD round cable For connecting peripheral SmartWire-DT modules				
	5-pole Pre-assembled with M12 socket and M12 plug, A coded	IP67	0.1	SWD4-M1LR5-2S 174760
		IP67	0.3	SWD4-M3LR5-2S 174761
		IP67	0.6	SWD4-M6LR5-2S 174762
		IP67	1	SWD4-1LR5-2S 174763
		IP67	1.5	SWD4-1M5LR5-2S 174764
		IP67	2	SWD4-2LR5-2S 174765
		IP67	3	SWD4-3LR5-2S 174766
		IP67	4	SWD4-4LR5-2S 174767
		IP67	5	SWD4-5LR5-2S 174768
		IP67	10	SWD4-10LR5-2S 174769
		IP67	20	SWD4-20LR5-2S 174770
I/O round cable For direct connection of sensors/actuators to IP67 SWD modules				
	5-pole Pre-assembled on one side with M12 plug, A coded	IP67	0.3	SWD4-M3LR5-S 174771
		IP67	0.6	SWD4-M6LR5-S 174772
		IP67	1	SWD4-1LR5-S 174697
		IP67	2	SWD4-2LR5-S 174698
I/O round cable For direct connection of sensors/actuators to IP67 SWD modules				
	5-pole Pre-assembled with M12 socket and M12 plug, A coded	IP67	0.3	SWD4-M3LR5-1-2S 179543
		IP67	0.6	SWD4-M6LR5-1-2S 179544
		IP67	1	SWD4-1LR5-1-2S 179545
		IP67	2	SWD4-2LR5-1-2S 179546

	Description	Function	Degree of protection (IEC/EN 60529, EN50178, VBG 4)	Length m	Part no. Article no.
Cable glands for SWD enclosures and control panels					
	8-pole M20 socket 8 pre-assembled cables for connection to M22-SWD-I... PCBs	For flush mounting in M22-I... surface mounting enclosure	IP67	0.15	SWD4-SF8-20 116031
	8-pole M20 plug 8 pre-assembled cables for connection to M22-SWD-I... PCBs		IP67	0.15	SWD4-SM8-20 116032
	Connection to round cable via socket Connection to ribbon cable with SWD4-8MF2 blade terminal 8-pole Pluggable on either side To supply additional control voltage for motor starters and contactors.	For transition from the SWD ribbon cable to the SWD4-...LR8-24 round cable	IP67	-	SWD4-SFL8-20 121380
	Connection to round cable via plug Connection to ribbon cable with SWD4-8MF2 blade terminal 8-pole Pluggable on either side To supply additional control voltage for motor starters and contactors.		IP67	-	SWD4-SML8-20 121381
	SmartWire-DT control-panel cable gland for 8-pole ribbon cable to the 5-pole round cable, separate 24 V DC / 4 A power supply for round cable	For transition from the SWD ribbon cable to the SWD4-...LR5-2S round cable	IP67	-	SWD4-SFL8-12 174756
	From IP67 to IP20, from 5-pole round cable to 8-pole ribbon cable, integrated 15 V DC / 180 mA power supply unit for SmartWire-DT modules on the ribbon cable	For transition from the SWD4-...LR5-2S round cable to the SWD ribbon cable	IP67	-	SWD4-SML8-12 174755
	Control-panel cable gland for 5-pole SWD4-...LR8-24 round cable, M12, M12 plug/socket	For flush mounting in enclosure	IP67	-	SWD4-SML5-12 174757
	5-pole M12 socket, A coded 5 pre-assembled cables	For flush mounting in enclosure	IP67	1	SWD4-PRF5-1-S 174758
	5-pole M12 plug, A coded 5 pre-assembled cables	For flush mounting in enclosure	IP67	1	SWD4-PRM5-1-S 174759
	5-pole M12 socket, A coded 5 pre-assembled cables	For flush mounting in enclosure	IP67	0.15	SWD4-PRF5-2-S 179541
	5-pole M12 plug, A coded 5 pre-assembled cables	For flush mounting in enclosure	IP67	0.15	SWD4-PRM5-2-S 179542
	Description	Function	Degree of protection (IEC/EN 60529, EN50178, VBG 4)		Part no. Article no.
SWD plugs and plug-in connections					
	8-pole SmartWire-DT external device plug that can be connected at any point on the ribbon cable. The external device plug can be used to connect the function elements of any SmartWire-DT module inside the control panel.	For connecting the ribbon cable to SmartWire-DT modules inside the control panel	IP20		SWD4-8SF2-5 116022
	8-pole SmartWire-DT blade terminal that can be installed at either end of the SmartWire-DT ribbon cable. The following components can be connected: SmartWire-DT coordinators such as the easy800-SWD / SWD gateways, SWD power feed modules, SWD couplings, SWD bus-termination resistors, SWD control-panel cable glands	For connecting the ribbon cable to a gateway, power feed module, coupling or SWD4-RC8-10 bus-termination resistor	IP20		SWD4-8MF2 116023
	Cover cap with monitoring function for M12 sockets on the SWD connector (IP67)	Cover cap with monitoring function for M12 socket	IP67		SWD4-ACAP-10 174751
	Cover cap for M12 sockets on the SWD connector (IP67)	Cover cap for M12 socket	IP67		SWD4-PCAP-F 174752
	Cover cap for M12 plugs on the SWD connector (IP67)	Cover cap for M12 plug	IP67		SWD4-PCAP-M 174753

	Description	Function	Degree of protection (IEC/EN 60529, EN50178, VBG 4)	Part no. Article no.
SWD plugs and plug-in connections				
	8-pole socket Straight Solder connector	Connector for 8-pole SWD4-... LR8-24 round cables	IP67	SWD4-SF8-67 116033
	8-pole plug Straight Solder connector		IP67	SWD4-SM8-67 116034
	Splitter with IP67 degree of protection, with M12 plug for two M12 sockets with I/O signal on pin 4	For splitting the I/O signals of an M12 I/O connection	IP67	SWD4-SP-4124 174703
	Splitter with IP67 degree of protection, with M12 plug for two M12 sockets with I/O signal on pin 2		IP67	SWD4-SP-4122 174704
	Splitter with IP67 degree of protection, with M12 plug for two 4-pole M8 sockets with I/O signal on pin 4		IP67	SWD4-SP-4084 174705
	Splitter with IP67 degree of protection, with M12 plug for two 4-pole M8 sockets with I/O signal on pin 2		IP67	SWD4-SP-4082 174706
	Splitter with IP67 degree of protection, with M12 plug for two 3-pole M8 sockets		IP67	SWD4-SP-3084 174707
	5-pole socket Straight Screw terminal	Connector for 5-pole SWD4-... LR5-... round cables	IP67	SWD4-SF5-67 179547
	5-pole connector Straight Screw terminal	Connector for 5-pole SWD4-... LR5-... round cables	IP67	SWD4-SM5-67 179548
SWD coupling				
	Coupling via two 8-pole blade terminals	For connecting SWD ribbon cables via an SWD4-8MF2 blade terminal	IP20	SWD4-8SFF2-5 116024
SWD cable adapters				
	For connecting a ribbon cable (plug) to a round cable (terminal)	SWD cable adapters	IP20	SWD4-8FRF-10 121377
	SWD power supply module for the modules (IP20) of a local SWD segment	SWD power supply module	IP20	SWD4-FFR-PF1-1 168880
	SWD cable adapter to set up a local SWD segment	SWD cable adapters	IP20	SWD4-FFR-ST1-1 168881
	To set up a local SWD network with SWD modules (IP67)	Local SmartWire-DT branch	IP67	EU2A-SWD-PBWN 174734
SWD bus-termination resistor				
	SmartWire-DT bus-termination resistor; to be connected to the SWD4-8MF2 blade terminal at the end of the SmartWire-DT ribbon cable	SWD bus-termination resistor for the SmartWire-DT ribbon cable	IP20	SWD4-RC8-10 116020
	SWD bus-termination resistor with IP67 degree of protection is connected to the 5-pole round cable SWD4-...LR5.. or directly to the SWD T connectors (IP67 I/O modules)	for M12 SWD bus termination (IP67)	IP67	SWD4-RC5-10 174754

	Function	Degree of protection (IEC/EN 60529, EN50178, VBG 4)	Part no. Article no.
Link			
	For bridging open slots for SWD4-8SF2-5 external device plugs	-	SWD4-SEL8-10 116021
RMQ			
	For two M22-SWD-K22... function elements For two M22-SWD-NOP universal modules	-	M22-SWD-A4 116016
	For mounting 1 base-mounted function element	-	M22-SWD-I1-LP01 115990
	For mounting 2 base-mounted function elements	-	M22-SWD-I2-LP01 115991
	For mounting 3 base-mounted function elements	-	M22-SWD-I3-LP01 115992
	For mounting 4 base-mounted function elements	-	M22-SWD-I4-LP01 115993
	For mounting 6 base-mounted function elements	-	M22-SWD-I6-LP01 115994
	For bridging open slots on the PCB	-	M22-SWD-SEL8-10 116698
Universal module			
	For configured SWD modules on the SWD ribbon cable that have not yet been installed	IP20	M22-SWD-NOP 147637
	For configured SWD modules on the M22-SWD-I... PCB that have not yet been installed	IP20	M22-SWD-NOPC 147638
	For configured SWD modules on the SWD4-...LR5-2S round cable that have not yet been installed	IP67	EU1M-SWD-NOP 174716
Tools for plugs			
	Crimping tool for connecting external device plugs to the ribbon cable	-	SWD4-CRP-1 116025
	Crimping tool for contact making between blade terminals and ribbon cable	-	SWD4-CRP-2 116699
Programming accessories			
	For transferring user programs to a PLC and for SmartWire-DT network diagnostics	-	EU4A-RJ45-CAB1 106726
	For transferring user programs to a PLC and for SmartWire-DT network diagnostics	-	EU4A-RJ45-USB-CAB1 115735

HMI Webpanel



XH-303

- 7"; 10,1"; 15,6"
- built-in devices, plastic, capacitive multi-touch

GALILEO visualization tool



- HMI
- HMI/PLC
- PLC
- Industrial PC

HMI and HMI/PLC



XV-303

- 7"; 10,1"; 15,6"
- built-in devices, plastic, capacitive multi-touch

XV-313

- 7" and 10,1"
- built-in devices, plastic, capacitive multi-touch



XV-363

- 5,7"; 10,4"; 12,1"
- built-in devices, metal, infrared touch



XV-102

- 3,5"; 5,7"; 7"
- built-in devices, plastic, resistive

XV-152

- 5,7"; 8,4"; 10"
- built-in devices for, metal, resistive

Industrial PC



XP-504

- 10,1"; 15,6"; 21,5"
- built-in devices, metal, capacitive multi-touch



Pushbuttons, flush / extended

IP66, IP67, IP69 –
momentary / maintained



Mushroom pushbuttons

IP66, IP67, IP69 –
momentary / maintained



Double actuator pushbuttons

IP66 –
extended / flush



4-position pushbuttons

IP66



Indicator lights, flush or extended

IP66, IP67, IP69



Illuminated pushbuttons, flush or extended

IP66, IP67, IP69 –
momentary / maintained



Potentiometers

IP66 –
selectable
resistance value



Selector switches / illuminated selector switches

IP66



Key-operated buttons

IP66 –
momentary / maintained
2/3 positions



Joystick

IP66 –
momentary / maintained
2 or 4 positions
horizontal or vertical



Pushbuttons, flush

IP66, IP67, IP69 –
momentary / maintained



Indicator lights, flush

IP66, IP67, IP69



Illuminated pushbuttons, flush

IP66, IP67, IP69 –
momentary / maintained



Potentiometers

IP66 –
selectable
resistance value



Selector switches / illuminated selector switches

IP66



Key-operated buttons

IP66 –
momentary / maintained
2/3 positions



Joystick

IP66 –
momentary / maintained
2 or 4 positions
horizontal or vertical

Emergency-stop/ emergency switching-off buttons

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Mushroom-shaped, 30 mm

IP66, IP69
pull- or turn-to-release
illuminated/non-
illuminated



Mushroom-shaped, 38 mm

IP66, IP69
pull- or turn-to-release
illuminated/non-
illuminated



Palm shaped 45 and 60 mm

IP66, IP69
pull- or turn-to-release,
mechanical switch-
position indicator

Bulkhead interfaces**for USB 3.0**

IP65 with closed cover
IP20 open

**RJ45 cat 5e**

IP65 with closed cover
IP20 open, with plug
connected

Contact and LED elements

For front and base
mounting, screw/
spring-loaded
terminals, LED
elements

Self-monitoring contacts (SMC)

Single-channel,
dual-channel, dual
channel with signaling
contact, for front and
base mounting

**Contact and LED elements,
self-monitoring contacts (SMC),
Flat Rear**

For front mounting,
Cage Clamp / push-in,
LED elements

SmartWire-DT connections

For front and base
mounting, with and
without LED

**Pushbuttons, flush**

IP66, IP67,
IP69 (at the front),
IP65 (at the rear)

**Illuminated
pushbuttons, flush**

IP66, IP67,
IP69 (at the front),
IP65 (at the rear)

**Indicator lights, flush**

IP66, IP67,
IP69 (at the front),
IP65 (at the rear)

**Selector switches**

IP69 (at the front),
IP65 (at the rear)

**Key-operated
pushbuttons**

IP66 (at the front)
IP65 (at the rear)

**Emergency-stop/
emergency
switching-off buttons****RMQ-Titan C22
compact**

without cable
IP67, IP69K

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Encoders

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**Encoders**

IP65
with confirmation
function, adjustable
16-bit value range

**Pushbuttons, flush**

IP66, IP67,
IP69 (at the front),
IP65 (at the rear)
momentary /
maintained

**Illuminated
pushbuttons, flush**

IP66, IP67,
IP69 (at the front),
IP65 (at the rear)
momentary /
maintained

**Indicator lights, flush**

IP66, IP67,
IP69 (at the front),
IP65 (at the rear)

FAK switches

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Foot and palm switches

IP67, IP69
momentary

**Emergency-stop/emergency
switching-off buttons**

IP66, IP67, IP69
tamper-proof
maintained

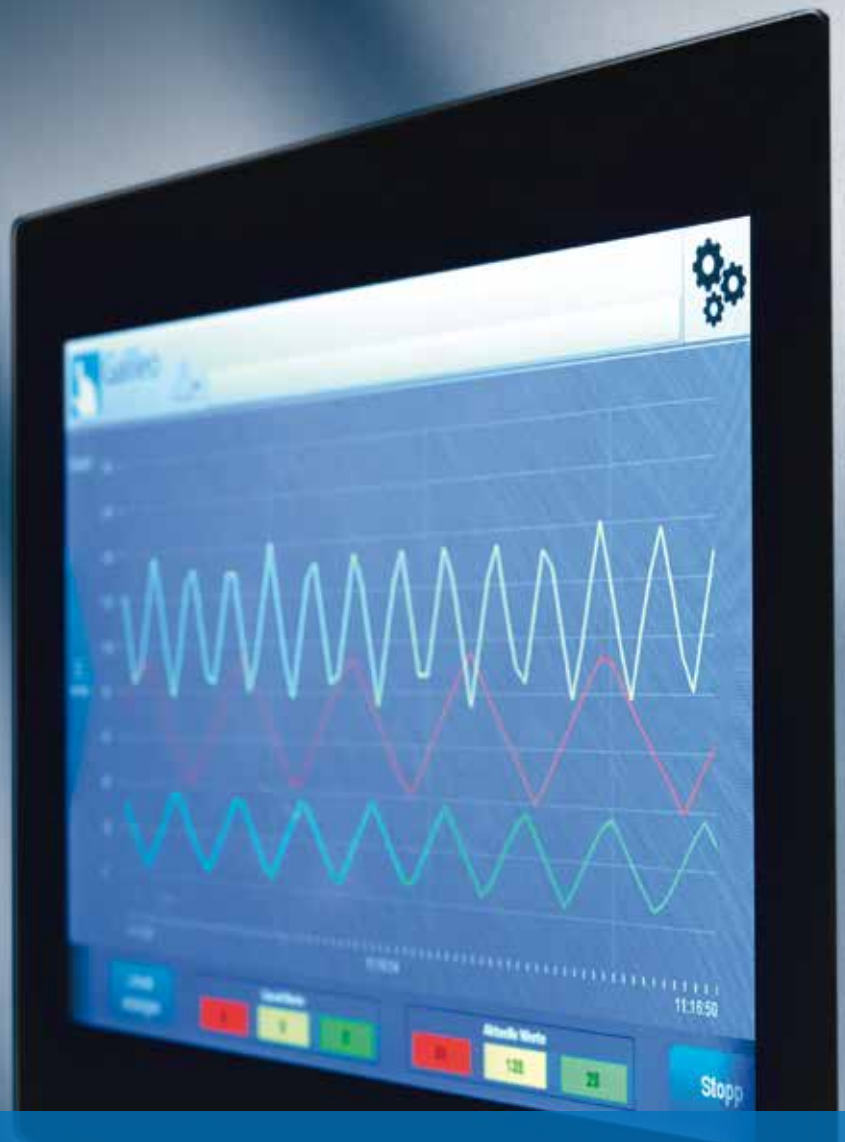
Signal towers

Page 4/24 ff.

IP66 complete devices**Base modules, light modules and
acoustic modules****Signal towers compact**

Meeting the demands of the next generation

The future of machine operation



In line with the current trend towards digitalization, the operating and communication levels of machines are becoming ever more important. The next generation of machine operators and entrepreneurs already have different expectations when it comes to the operating level: Apart from design aspects, user acceptance of the entire machine now depends on features such as high-resolution graphics, gesture control and the integration of mobile display devices.

Eaton will support you along the way, from the design of the operating concept all the way to implementation. Our innovative XV300 touch display not only offers the same ease of use as a smartphone, but it can also be connected to smart factories or the cloud via the OPC UA industrial standard.

Pilot devices continue to be indispensable for many core functions. With their high-quality design and larger size, they make it possible to implement attractive machine designs that complement other types of input devices.



40 %
of people aged
32 to 45 believe
that they use better
IT tools at home than at
work.



Slimmer, sleeker and more striking than ever

The new premium design of Eaton's XV300 HMIs and RMQ-Titan pilot devices adds value to your machine. The XV300 HMI for rear mounting will merge with the body of the machine to form a single unit. And its premium black finish will catch everyone's eye.

Since pilot devices frequently control the core functions of a machine, they are usually prominently positioned. In order to make them stand out and meet the demands for innovative design, Eaton has equipped its RMQ-Titan pilot devices with larger, extremely flat front elements featuring a metallic surface. Update the look and feel of your machine with the proven and versatile devices from our RMQ family.

The future of machine operation

Intuitive user guidance, precise gesture control, integration of multimedia elements – the latest generation of Eaton devices offers the same ease of use that you've come to expect from your smartphone or tablet.

Role-based operating concepts open up new possibilities for machine builders and end customers when it comes to human-machine interaction. For example, you can determine who can see what, where and on which visualization device, and what types of interventions users are able to perform.

Find out more about the latest trends in
machine operation at Eaton.com/HMI.

Flexible machine control and operation

Visualization and control

Our new HMI devices are seamlessly integrated into Eaton's overall machine control concept. The touch panels of the XV100 and XV300 series can either be used as HMIs only or as HMI/PLCs with XSOFT-CODESYS programming. Our latest generation of devices also includes the ultra-fast and compact XC controllers, as well as the XN300 remote I/Os. All devices can be connected by means of various fieldbus types. And the XP500 industrial PC complements this extensive portfolio.

Pilot devices – design is increasingly important

Eaton launched its new RMQ Flat Design series to meet customer demands for slimmer pilot devices with a premium appearance. The new RMQ-Titan Flat Design front elements are not only stylish to look at, but are also rugged and highly functional. In addition, the easy-to-install RMQ-AFX mounting module secures the pilot devices in place and ensures easy installation.



Stylish, sturdy and efficient

With the practical all-in-one devices of the RMQ *compact* solution, the cables, connectors and housings are already integrated. Thanks to their high degree of protection at the front (up to IP69K) and the back (IP65), the devices are fully protected against dirt and liquids. In fact, they can even be directly installed in woodworking or metalworking machinery without the need for any additional enclosures. A cost-effective solution, from project planning through ordering and warehousing all the way to assembly.



Automation and visualization



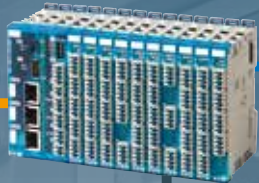
XV300 HMI



XV300 HMI/PLC



XP500 industrial PC



XC300 PLC



XC152 compact PLC



XN300 remote I/O



XC300 PLC



XN300 remote I/O

Operation & visualization

Command and signaling

High degree of protection at the front (of up to IP69K)



Flat Front



Flat Front



RMQ-Titan



RMQ-Titan

All-around protection: up to IP69K at the front, IP65 at the back



RMQ compact solution



RMQ compact solution



Signal tower



Surface-mounting enclosure

SWD I/O modules



Safety Technology



easySafety

Safety

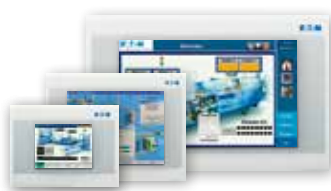
Emergency-stop buttons



— Ethernet — CAN — SWD — Wiring — Modbus TCP/IP



GALILEO – visualization at a whole new level



Eaton's powerful and comprehensive GALILEO visualization program can be used to configure any device from the XV and XP touch panel families.

The powerful and intuitive GALILEO project planning tool is easy to master, while also meeting all the requirements of on-site machine operation. This Eaton-developed visualization software has been designed to meet the needs of any industry and offers integrated project planning for all XV devices and PC runtime solutions. Project engineers have all GALILEO functions at their disposal, without any limitations regarding screens or nested variables.

GALILEO WEB is an integral part of GALILEO, making it possible to create HTML5-based web visualizations with one simple click, even for users without any programming knowledge. Accessing the XV visualization from any remote device, such as a PC, tablet or laptop, is therefore quick and easy.



Get more information



Easy and intuitive to use and test

- An intuitive and powerful project planning tool
- Reduce the project planning and commissioning times by simulating the project on a PC
- All projects are fully forward-compatible, thereby protecting your investment in the long run
- All functions are available without any limitations regarding the number of nested variables or images



Tailored to the needs of the international machine building sector

- Pre-defined, language-specific keypad configurations
- Automatic online language switching if a different language is selected
- Option to change runtime-related units (e.g. from °C to °F or from cm to inches)
- Unicode support (including Asian character sets)
- The Excel text import/export option enables the creation of error-free translations



Wide range of communication options

- The protocols of most control systems will GALILEO to be used in conjunction with PLC systems from other manufacturers
- Communication with XSOFT-CODESYS-V2 and XSOFT-CODESYS-V3 controllers
- Easy import of PLC variables in XML format
- Secure and easy connection to the control level and to Office environments
- Remote client/server and OPC client
- Option to connect a webcam



Additional GALILEO highlights

- Integrated web visualization
- The integrated video player can play MPEG-4 videos
- Graphics can be resized without loss of quality (scalable vector graphics)
- Design features such as styles, color gradients, semi-transparency and full transparency
- Gesture controls (swipe, scroll, zoom)
- Object groups can be reused
- Viewing window for easy scrolling through sub-screens that are too large to be displayed at once
- Supports switching between 16:9 and 4:3 aspect ratios
- Single-line and multi-line alarm messages with integrated variables
- Variables, objects, bitmaps and styles can be copied between projects

The right visualization software for every device

	XV-102-A...	XV-102-H...	XV-102-B/-D/-E...	XV-152...	XV-3x3-...	XC-152-...	XP-504...2B
GALILEO 8	•	•	•	•		•	•
GALILEO 10		•	• ¹⁾	•	•	•	•
GALILEO 10 web server					•		•

¹⁾ except for the XV-102 with monochrome 3.5" display

Description	Part no. Article no.
GALILEO	
Licensing certificate for GALILEO visualization software MS Windows™-based intelligent and intuitive visualization tool, single-user license	SW-GALILEO-S 171500
Licensing certificate for GALILEO visualization software MS Windows™-based intelligent and intuitive visualization tool, multi-user license	SW-GALILEO 140379
GALILEO Open license for PC For continuous, unrestricted use of the GALILEO runtime system on a standard PC	LIC-GALILEO-OPEN-PC 140385



XH300 HMI web panel: web content visualized flexibly



XH300-Brochure

Visualizations based on HTML 5, as is already the case with commercially available mobile devices such as smartphones or tablets, are also used in the networked world of automation. The XH300 web panel supports you in the decentralized visualization of web-based content - in a convenient way.

Thanks to the high-performance processor and enough RAM memory, even complex web content can be displayed on the devices. The web panels with capacitive multi-touch technology are available in a modern design, in three different sizes. Whether in machine or building automation, IoT or smart home applications - the XH300 are suitable for use in numerous areas of application. This also includes harsh industrial environments.



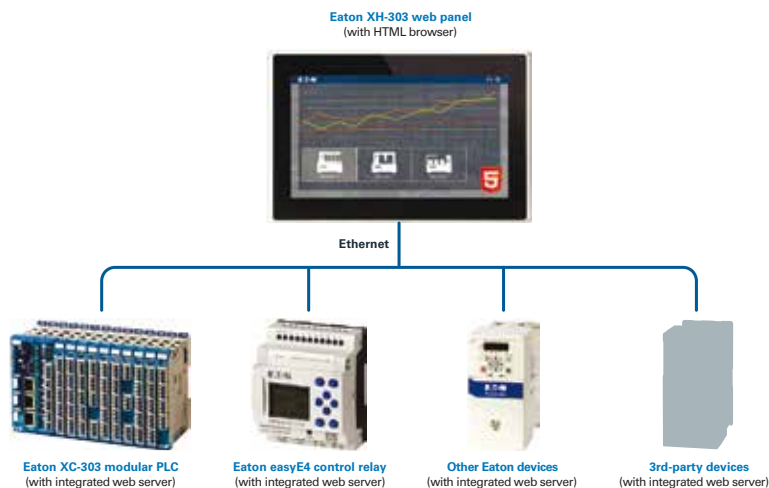
Get more information

Web visualization for a wide range of devices

The Chromium-compatible web browser of the XH-303 web panel supports HTML 5 web servers as well as VNC server. This means that even complex websites can be loaded quickly and flexibly.

Regardless of whether it is dashboards of cloud applications or visualizations that run on local devices with a web server. The latter is for example possible with Eaton's XC modular controllers or the easyE4 control relay. They are simply connected to the XH300 web panel via Ethernet.

The connection of devices from other manufacturers to an XH-303 web panel is also possible. Thanks to the optional VNC client that can be activated with devices without an integrated web server.

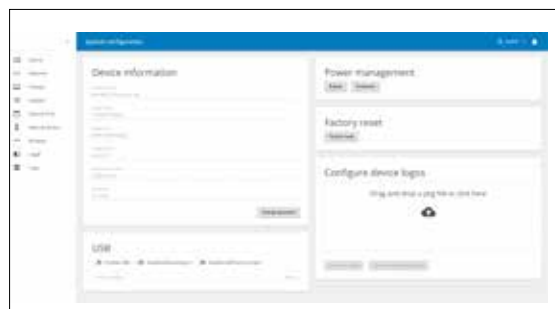



Interfaces on board

All XH300 variants have an integrated Ethernet interface via which the web panel can be connected to other devices from the Eaton portfolio. This allows visualizations of local devices with an integrated web server to be displayed flawlessly. A USB port, which can be used to update the firmware of the XH300 devices or to export log files, is also available.

Commissioning made easy

An integrated web configuration tool, which efficiently supports the user with the extensive configuration options, is available for commissioning. Access can be either with the local browser or with a browser installed on a connected device.



	Screen size inch	Resolution pixels	Built-in interfaces		Part no.	Article no.
			1 x Ethernet 10/100/1000 Mbit	1 x USB-Host 2.0		
XH-303						
Web browser: HTML 5 Approvals: CE, cUL Projected Capacitive Touch (PCT) Number of colors: 64 k.						
	7"	1024 x 600	✓	✓	XH-303-70-A10-A00-2B	199882
	10.1"	1280 x 800	✓	✓	XH-303-10-A10-A00-2B	199883
	15.6"	1366 x 768	✓	✓	XH-303-15-A10-A00-2B	199884



XV HMI/PLC: Systematic visualization and control



All devices can also be used in portrait mode

With the XV system of HMI/PLC touch panels, Eaton offers machine builders and system integrators a coordinated product range that can be precisely matched to various performance classes.

In combination with powerful processors, the intelligent implementation of the PLC runtime as part of a lean and efficient embedded platform strategy leads to modern, scalable and cost-effective automation concepts. The use of the CODESYS programming standard and the comprehensive interfaces illustrate the openness of the system. Display sizes from 3.5" to 15", plastic and metal versions, and the option of using capacitive, resistive, or infrared touch panels allow for an extremely wide range of applications.

A unique technology: XV panel with integrated SmartWire-DT master interface. The control wiring has been replaced by a single cable, which makes it easy to connect the switching, signaling and operating devices as well as any sensors and actuators outside the control panel.



Get more information

XV300 – the new face of modern industry

Intuitive user guidance, precise gesture control, multimedia integration – industrial applications that offer the same ease of use that we have come to expect from smartphones and tablets.

The new XV300 panels with capacitive multi-touch or infrared technology are not only easy to operate, but are also redefining the possibilities of human-machine interaction. Modern, high-resolution devices that meet your needs – even in harsh industrial environments.

General features

- Can be used either in portrait or landscape mode
- Removable SD card
- Interface combinations: 1 or 2 Ethernet interfaces 10/100Mbps, CAN, PROFIBUS-DP/MPI, SmartWire-DT, RS485, RS232
- Integrated web server
- HMI / HMI/PLC functionality
- High system performance and a powerful graphics processing unit
- PLC function programmable with XSOFT-CODESYS V2 and V3
- Visualization via GALILEO, XSOFT-CODESYS or Visual Designer
- UL approval
- Marine approval for the 7" and 10" XV-303/313 devices



XV-303

- Capacitive multi-touch panel for front mounting
- Display sizes: 7", 10.1" and 15" in 16:9 format
- Flat front panel made from non-reflective tempered glass
- Plastic housing
- Interfaces: 1 or 2 x Ethernet, 1 x CAN, 1 x RS232, 1 x RS485
- Optional: 1 x Profibus-DP, SmartWire-DT



XV-313

- Capacitive multi-touch panel for rear mounting
- Display sizes: 7" and 10.1" in 16:9 format
- Flat front panel made from non-reflective tempered glass
- Plastic housing with aluminum bezel
- Flush-mounted, resulting in a flat surface without any sharp edges
- Interfaces: 1 or 2 x Ethernet, 1 x CAN, 1 x RS232, 1 x RS485
- Optional: 1 x Profibus-DP, SmartWire-DT



XV-363

- Infrared touch panel for front mounting
- Display sizes: 5.7", 10.4" and 12.1" in 4:3 format
- Laminated safety glass, non-reflective
- Metal housing with aluminum bezel
- The dimensions are identical to those of the XV(S)400 series
- PLC function can be added later by means of 181585 (LIC-PLC-A)
- Communication options: 2 x Ethernet, 1 x CAN, 1 x RS232, 1 x RS485
- Optional: 1 x Profibus-DP

SmartWire-DT on board

SmartWire-DT is an integral component of Eaton's automation concept, which is characterized by flexible solutions with fewer components and less engineering: SmartWire-DT supports the integration of the communication and I/O level directly into the control, display and switching devices. In addition to executing control commands, the PLC can thus directly access digital and analog data, from sensors all the way to circuit breakers. This eliminates the need for a separate gateway and I/O layer.



XV100 – compact and powerful control devices

The **XV100** touchscreen panels are based on a common hardware platform. They are available with different housings and come with a wide range of interface options. All devices are UL certified and are also suitable for marine applications. The touchscreen panels can either be used as control and display devices (HMI) only, or with additional PLC functionality.

General features:

- Can be used either in portrait or landscape mode
- Removable SD card
- Multiple interface combinations are possible: CAN, PROFIBUS/MPI, SmartWire-DT, 1 x Ethernet interface 10/100 Mbps, RS485, RS232
- Integrated web server
- HMI / HMI/PLC functionality
- PLC function programmable with XSOFT-CODESYS V2 and V3
- Visualization via GALILEO or XSOFT-CODESYS TargetVisu
- UL approval



XV-102

Resistive touchscreen panel in plastic housing with plastic bezel

- Display sizes: 3.5" and 5.7" in 4:3 format; 7" in 16:9 format
- Affordable devices that can be tailored to the needs of the application at hand, either as a simple HMI, an HMI/PLC, or with the option to add PLC functionality later on.
- Shallow mounting depth
- Marine approval



XV-152

Resistive touch panel in metal housing with aluminum bezel

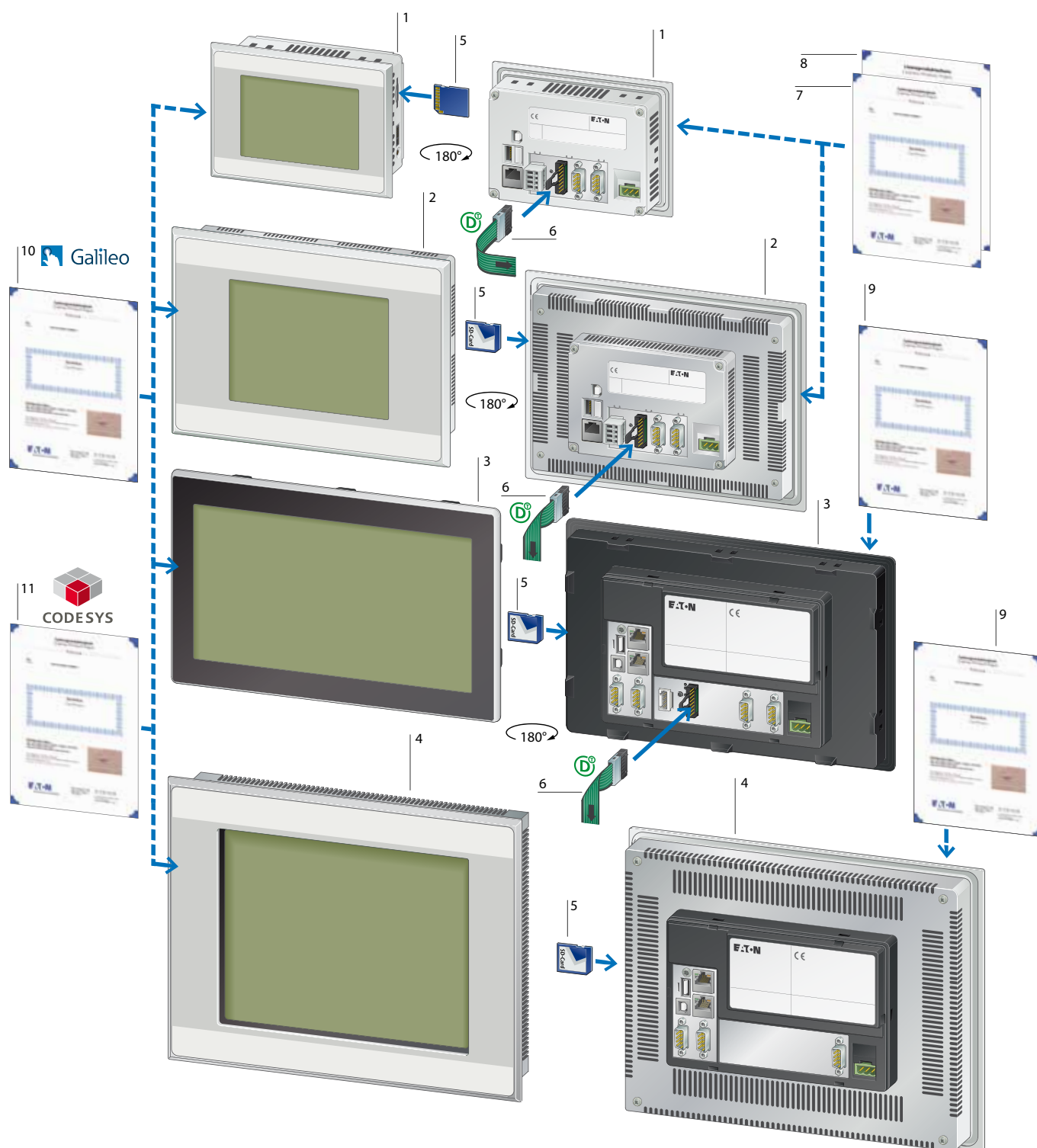
- Display sizes: 5.7"; 8.4"; 10.4" in 4:3 format
- For both HMI and HMI/PLC applications (the PLC functionality can also be added later)
- The dimensions are identical with those of the XV(S)400 devices



XC-152 – compact PLC

Compact PLCs combine high processing power with a wide range of communication interfaces.

- OS: Windows CE 5
- Processor: RISC CPU, 32 bit, 400 MHz
- USB Device 2.0/USB host 2.0
- Ethernet interface
- Different communication interfaces are available (depending on the model): RS232, RS485, PROFIBUS/MPI and CAN
- SmartWire-DT interface (depends on the model)
- Program, data and retain variable memory: 64 MB
- External memory: 1 x SD card
- Programming: XSOFT-CODESYS
- Web server: CODESYS
- Target visualization: GALILEO/CODESYS (remote visualization possible)










- 1 XV-102 touch display with/without PLC, resistive touch 3.5", 5.7" in 4:3 format, 7" in 16:9 format
- 2 XV-152 touch display with/without PLC, resistive touch 5.7", 8.4" and 10.4" in 4:3 format
- 3 XV-303/XV-313 touch display with/without PLC, capacitive multi-touch 7", 10.1" and 15.6" in 16:9 format
- 4 XV-363 touch display with/without PLC, infrared touch 5.7", 10.4" and 12.1" in 4:3 format
- 5 SD memory card

- 6 SmartWire-DT
- 7 PLC licensing certificate for XV-1x2
- 8 Licensing certificate for XV-1x2 communication expansion
- 9 PLC licensing certificate for XV-3x3
- 10 GALILEO licensing certificate
- 11 XSOFT-CODESYS-2/3 licensing certificate




XV300

HMI/PLC touch display

PLC license		Built-in interfaces										Part no.	Article no.
		1 x Ethernet 10/100 Mbps	2 x Ethernet 10/100 Mbps	1 x RS232	1 x RS485	1 x USB-Host2.0	1 x USB device	1 x CANopen®/easyNet	1 x PROFIBUS/MPI	1 x SmartWire-DT			
XV-303 for front mounting													
Windows Embedded Compact 7 Pro													
Approvals: cUL 61010-2-201, 7" and 10" devices: marine approvals, BV, LR													
SD card slots: 1													
Resolution 7" and 10.1": 1024 x 600 pixels													
Resolution 15.6": 1366 x 768 pixels													
Capacitive multi-touch (PCT), number of colors: 16 million													
7", front type: anti-glare tempered glass with plastic bezel													
	can be retrofitted with article no. 181585 LIC-PLC-A	✓	-	✓	✓	✓	✓	✓	-	-	XV-303-70-B00-A00-1B	179647	
		-	✓	✓	✓	✓	✓	✓	-	-	XV-303-70-C00-A00-1B	179648	
		✓	-	✓	✓	✓	✓	✓	✓	-	XV-303-70-B02-A00-1B	179651	
		-	✓	✓	✓	✓	✓	✓	✓	-	XV-303-70-C02-A00-1B	179652	
	includes PLC license	✓	-	✓	✓	✓	✓	✓	-	-	XV-303-70-B00-A00-1C	179649	
		-	✓	✓	✓	✓	✓	✓	-	-	XV-303-70-C00-A00-1C	179650	
		✓	-	✓	✓	✓	✓	✓	✓	-	XV-303-70-B02-A00-1C	179653	
		-	✓	✓	✓	✓	✓	✓	✓	-	XV-303-70-C02-A00-1C	179654	
		✓	-	✓	✓	✓	✓	✓	-	✓	XV-303-70-BE0-A00-1C	179655	
		-	✓	✓	✓	✓	✓	✓	-	✓	XV-303-70-CE0-A00-1C	179656	
		✓	-	✓	✓	✓	✓	✓	✓	✓	XV-303-70-BE2-A00-1C	179657	
		-	✓	✓	✓	✓	✓	✓	✓	✓	XV-303-70-CE2-A00-1C	179658	
	10.1", front type: anti-glare tempered glass with plastic bezel												
		can be retrofitted with article no. 181585 LIC-PLC-A	✓	-	✓	✓	✓	✓	✓	-	-	XV-303-10-B00-A00-1B	179659
			-	✓	✓	✓	✓	✓	✓	-	-	XV-303-10-C00-A00-1B	179660
			✓	-	✓	✓	✓	✓	✓	✓	-	XV-303-10-B02-A00-1B	179663
-			✓	✓	✓	✓	✓	✓	✓	-	XV-303-10-C02-A00-1B	179664	
includes PLC license		✓	-	✓	✓	✓	✓	✓	-	-	XV-303-10-B00-A00-1C	179661	
		-	✓	✓	✓	✓	✓	✓	-	-	XV-303-10-C00-A00-1C	179662	
		✓	-	✓	✓	✓	✓	✓	✓	-	XV-303-10-B02-A00-1C	179665	
		-	✓	✓	✓	✓	✓	✓	✓	-	XV-303-10-C02-A00-1C	179666	
		✓	-	✓	✓	✓	✓	✓	-	✓	XV-303-10-BE0-A00-1C	179667	
		-	✓	✓	✓	✓	✓	✓	-	✓	XV-303-10-CE0-A00-1C	179668	
		✓	-	✓	✓	✓	✓	✓	✓	✓	XV-303-10-BE2-A00-1C	179669	
		-	✓	✓	✓	✓	✓	✓	✓	✓	XV-303-10-CE2-A00-1C	179670	
15.6", front type: anti-glare tempered glass with plastic bezel													
		can be retrofitted with 181585 LIC-PLC-A	-	✓	✓	✓	✓	✓	✓	-	-	XV-303-15-C00-A00-1B	191071
			-	✓	✓	✓	✓	✓	✓	✓	-	XV-303-15-C02-A00-1B	191073
		includes PLC license	-	✓	✓	✓	✓	✓	✓	-	-	XV-303-15-C00-A00-1C	191072
	-		✓	✓	✓	✓	✓	✓	✓	-	XV-303-15-C02-A00-1C	191074	
	-		✓	✓	✓	✓	✓	✓	-	✓	XV-303-15-CE0-A00-1C	191075	
	-		✓	✓	✓	✓	✓	✓	✓	✓	XV-303-15-CE2-A00-1C	191076	



PLC license		Built-in interfaces										Part no.	Article no.
		1 x Ethernet 10/100 Mbps	2 x Ethernet 10/100 Mbps	1 x RS232	1 x RS485	1 x USB-Host 2.0	1 x USB device	1 x CANopen®/easyNet	1 x PROFIBUS/MPI	1 x SmartWire-DT			
XV-313 for rear mounting													
Windows Embedded Compact 7 Pro, approvals: cUL 61010-2-201, marine approvals													
SD card slots: 1													
Resolution: WSVGA 1024 x 600 pixels													
capacitive multi-touch (PCT), number of colors: 16 million													
Front type: anti-glare tempered glass without bezel													
Can be installed in walls with a thickness of 1.5 mm													
7"													
	includes PLC license	✓	-	✓	✓	✓	✓	✓	-	-	XV-313-70-B00-A00-1C	179671	
		-	✓	✓	✓	✓	✓	✓	-	✓	XV-313-70-CE0-A00-1C 	191003	
		-	✓	✓	✓	✓	✓	✓	-	-	XV-313-70-C00-A00-1C	191059	
10.1"													
	includes PLC license	✓	-	✓	✓	✓	✓	✓	-	-	XV-313-10-B00-A00-1C	179672	
		-	✓	✓	✓	✓	✓	✓	-	✓	XV-313-10-CE0-A00-1C 	191002	
		-	✓	✓	✓	✓	✓	✓	-	-	XV-313-10-C00-A00-1C	191060	
		✓	-	✓	✓	✓	✓	✓	-	-	XV-313-10-B00-A11-1C *	197898	



*Can be installed in walls with a thickness of 2 mm




PLC license		Built-in interfaces										Part no.	Article no.
		1 x Ethernet 10/100 Mbps	2 x Ethernet 10/100 Mbps	1 x RS232	1 x RS485	1 x CANopen®/easyNet	1 x USB device	1 x USB-Host 2.0	1 x PROFIBUS/MPI	1 x SmartWire-DT			
XV-363 for front mounting													
Windows Embedded Compact 7 Pro, Approvals: cULus, Card slots: for SD card: 1 Resolution: 640 x 480 (5.7" and 10.4"); 800 x 600 (12.1") Infrared touch, number of colors: 65 k Front type: Laminated safety glass, non-reflective													
5.7"													
	can be retrofitted with article no. 181585 LIC-PLC-A	-	✓	✓	✓	✓	✓	✓	-	-	XV-363-57-C00-A00-1B	197664	
		-	✓	✓	✓	✓	✓	✓	✓	-	XV-363-57-C02-A00-1B	197667	
10.4"													
	can be retrofitted with article no. 181585 LIC-PLC-A	-	✓	✓	✓	✓	✓	✓	-	-	XV-363-10-C00-A00-1B	197665	
		-	✓	✓	✓	✓	✓	✓	✓	-	XV-363-10-C02-A00-1B	197668	
12.1"													
	can be retrofitted with article no. 181585 LIC-PLC-A	-	✓	✓	✓	✓	✓	✓	-	-	XV-363-12-C00-A00-1B	197666	
		-	✓	✓	✓	✓	✓	✓	✓	-	XV-363-12-C02-A00-1B	197669	

XV100

HMI / HMI/PLC touch display with PLC



	Screen diagonal Inch	PLC license	Built-in interfaces					Part no.	Article no.
			1 x RS232	1 x RS485	1 x USB-Host 2.0	1 x CANopen®/ easyNet	1 x PROFIBUS/MPI		
XV100 without PLC									
Resistive touch Approvals cUL (UL508), marine approvals SD card slots: 1 1 x Ethernet 10/100 Mbps 1 x USB device									
Number of colors 32 grey levels									
	3.5	no PLC function possible	-	-	-	-	-	XV-102-A0-35MQR-10	141759
			-	-	-	-	✓	XV-102-A2-35MQR-10	141820
			✓	-	-	-	-	XV-102-A3-35MQR-10	141821
			-	✓	-	-	-	XV-102-A4-35MQR-10	141822
			✓	-	-	✓	-	XV-102-A5-35MQR-10	141823
Number of colors: 64 k									
	3.5	no PLC function possible	✓	-	-	-	-	XV-102-H3-35TQRL-10	171158
			-	✓	-	-	-	XV-102-H4-35TQRL-10	171159
	5.7		✓	-	✓	-	-	XV-102-H3-57TVRL-10	171160
			-	✓	✓	-	-	XV-102-H4-57TVRL-10	171161
	7		✓	-	✓	-	-	XV-102-H3-70TWRL-10	171162
			-	✓	✓	-	-	XV-102-H4-70TWRL-10	171163



	PLC license	Built-in interfaces					Part no.	Article no.
		1 x RS232	1 x RS485	1 x CANopen®/ easyNet	1 x PROFIBUS/MPI	1 x SmartWire-DT		
XV100 3.5"								
Resistive touch, QVGA 320 x 240 pixels Approvals cUL (UL508), marine approvals SD card slots: 1 1 x Ethernet 10/100 Mbps 1 x USB device								
Number of colors 32 grey levels								
	included	-	-	-	-	-	XV-102-B0-35MQR-10-PLC	140012
		✓	-	-	-	-	XV-102-B3-35MQR-10-PLC	140013
		✓	-	✓	-	-	XV-102-B5-35MQR-10-PLC	140015
		-	✓	✓	-	-	XV-102-B6-35MQR-10-PLC	140016
		-	✓	-	✓	-	XV-102-B8-35MQR-10-PLC	140017
Number of colors: 64 k								
	Can be retrofitted with article no. 142581 LIC-PLC-MXP-COMPACT	-	-	-	-	-	XV-102-B0-35TQR-10	140007
		-	-	-	✓	-	XV-102-B2-35TQR-10	140008
		✓	-	-	-	-	XV-102-B3-35TQR-10	140009
		-	✓	-	-	-	XV-102-B4-35TQR-10	140010
		✓	-	✓	-	-	XV-102-B5-35TQR-10	140011
	included	-	-	-	-	-	XV-102-B0-35TQR-10-PLC	140018
		✓	-	-	-	-	XV-102-B3-35TQR-10-PLC	140019
		-	✓	-	-	-	XV-102-B4-35TQR-10-PLC	140020
		✓	-	✓	-	-	XV-102-B5-35TQR-10-PLC	140021
		-	✓	✓	-	-	XV-102-B6-35TQR-10-PLC	140022
		-	✓	-	✓	-	XV-102-B8-35TQR-10-PLC	140023
		-	-	-	-	✓	XV-102-BE-35TQRC-10	153524

PLC license		Built-in interfaces						Part no.	Article no.
		1 x RS232	1 x RS485	1 x CANopen®/easyNet	1 x USB-Host 2.0	1 x PROFIBUS/MPI	1 x SmartWire-DT		
XV100 5.7"									
Resistive touch, VGA 640 x 480 pixels Approvals cUL (UL508), marine approvals SD card slots: 1 Number of colors: 64 k 1 x Ethernet 10/100 Mbps 1 x USB device									
	Can be retrofitted with article no. 142581 LIC-PLC-MXP-COMPACT	✓	-	-	✓	-	-	XV-102-D0-57TVR-10	142530
		✓	✓	-	✓	-	-	XV-102-D4-57TVR-10	150620
		✓	✓	✓	✓	-	-	XV-102-D6-57TVR-10	142531
		✓	✓	-	✓	✓	-	XV-102-D8-57TVR-10	142532
	included	✓	✓	✓	✓	-	-	XV-102-D6-57TVRC-10	142533
		✓	✓	-	✓	✓	-	XV-102-D8-57TVRC-10	142534
		-	✓	✓	✓	-	✓	XV-102-E6-57TVRC-10	153525
		-	✓	-	✓	✓	✓	XV-102-E8-57TVRC-10	153526
XV100 7"									
Resistive touch, WVGA 800 x 480 pixels Approvals cUL (UL508), marine approvals SD card slots: 1 Number of colors: 64 k 1 x Ethernet 10/100 Mbps 1 x USB device									
	Can be retrofitted with article no. 142581 LIC-PLC-MXP-COMPACT	✓	-	-	✓	-	-	XV-102-D0-70TWR-10	142535
		✓	✓	-	✓	-	-	XV-102-D4-70TWR-10	150621
		✓	✓	✓	✓	-	-	XV-102-D6-70TWR-10	142536
		✓	✓	-	✓	✓	-	XV-102-D8-70TWR-10	142537
	included	✓	✓	✓	✓	-	-	XV-102-D6-70TWRC-10	142538
		✓	✓	-	✓	✓	-	XV-102-D8-70TWRC-10	142539
		-	✓	✓	✓	-	✓	XV-102-E6-70TWRC-10	153527
		-	✓	-	✓	✓	✓	XV-102-E8-70TWRC-10	153528
XV150 5.7"									
Resistive touch, VGA 640 x 480 pixels, recommended cutout diameter 198 x 142 mm Approvals cUL (UL508), SD card slots: 1 Number of colors: 64 k 1 x Ethernet 10/100 Mbps 1 x USB-Host 2.0 1 x USB device									
	Can be retrofitted with article no. 142581 LIC-PLC-MXP-COMPACT	✓	-	-	✓	-	-	XV-152-D0-57TVR-10	150525
		✓	✓	-	✓	-	-	XV-152-D4-57TVR-10	150526
		✓	✓	✓	✓	-	-	XV-152-D6-57TVR-10	150527
		✓	✓	-	✓	✓	-	XV-152-D8-57TVR-10	150528
	included	✓	✓	✓	✓	-	-	XV-152-D6-57TVRC-10	150529
		✓	✓	-	✓	✓	-	XV-152-D8-57TVRC-10	150600
		-	✓	✓	✓	-	✓	XV-152-E6-57TVRC-10	166700
		-	✓	-	✓	✓	✓	XV-152-E8-57TVRC-10	166701

XV150

HMI/PLC touch display with PLC

PLC license		Built-in interfaces					Part no.	Article no.
		1 x RS232	1 x RS485	1 x CANopen®/easyNet	1 x PROFIBUS/MPI	1 x SmartWire-DT		
XV150 8.4"								
Resistive touch, VGA 640 x 480 pixels, recommended cutout diameter 261 x 194 mm Approvals cUL (UL508), SD card slots: 1 Number of colors: 64 k 1 x Ethernet 10/100 Mbps 1 x USB-Host 2.0 1 x USB device								
	Can be retrofitted with article no. 142581 LIC-PLC-MXP-COMPACT	✓	-	-	-	-	XV-152-D0-84TVR-10	150601
		✓	✓	-	-	-	XV-152-D4-84TVR-10	150602
		✓	✓	✓	-	-	XV-152-D6-84TVR-10	150603
		✓	✓	-	✓	-	XV-152-D8-84TVR-10	150604
	included	✓	✓	✓	-	-	XV-152-D6-84TVRC-10	150605
		✓	✓	-	✓	-	XV-152-D8-84TVRC-10	150606
		-	✓	✓	-	✓	XV-152-E6-84TVRC-10	166702
		-	✓	-	✓	✓	XV-152-E8-84TVRC-10	166703
XV150 10.4"								
Resistive touch, VGA 640 x 480 pixels, recommended cutout diameter 329 x 238 mm Approvals cUL (UL508), SD card slots: 1 Number of colors: 64 k 1 x Ethernet 10/100 Mbps 1 x USB-Host 2.0 1 x USB device								
	Can be retrofitted with article no. 142581 LIC-PLC-MXP-COMPACT	✓	-	-	-	-	XV-152-D0-10TVR-10	150607
		✓	✓	-	-	-	XV-152-D4-10TVR-10	150608
		✓	✓	✓	-	-	XV-152-D6-10TVR-10	150609
		✓	✓	-	✓	-	XV-152-D8-10TVR-10	150610
	included	✓	✓	✓	-	-	XV-152-D6-10TVRC-10	150611
		✓	✓	-	✓	-	XV-152-D8-10TVRC-10	150612
		-	✓	✓	-	✓	XV-152-E6-10TVRC-10	166704
		-	✓	-	✓	✓	XV-152-E8-10TVRC-10	166705

Description	for use with	Part no.	Article no.
Memory cards			
 SD memory card with at least 1 GB without operating system	XV-3... XV-1..	MEMORY-SD-A2-S	181638
SD memory card with at least 256 MB without operating system	XV-3... XV-1..	MEMORY-SD-A1-S	139807
XV licensing certificates			
 Licensing certificate for PLC upgrade	XV-3.3-...-...-1B	LIC-PLC-A	181585
Licensing certificate for PLC upgrade	XV-1...-B... and XV-1...-D...	LIC-PLC-MXP-COMPACT	142581
Licensing certificate 40 points	XV-1...	LIC-OPT-1ST-LEVEL	140391
Licensing certificate 80 points	XV-1...	LIC-OPT-2ND-LEVEL	140392

Notes

Licensing for XV300 panel

To add the PLC function to the XV-3.3-...-1B panel, an additional license must be purchased. The LIC-PLC-A licensing certificate is required for this purpose.

Licensing for XV100 panel

The panels of the XV100 device family come with a set number of license points that are stored in the device. These license points are required in order to perform certain device functions:

- XSOFT-CODESYS runtime for the PLC function (not possible on the XV-102-A... and XV-102-H...)
- GALILEO runtime for visualization
- Communication interfaces (e. g. Ethernet, CANopen, Siemens MPI)

The standard devices are supplied with the following default license points:

- 140 license points: XV100 (without PLC function)
- 240 license points: XV100 with PLC function





Additional license points must be purchased if the license points of the device are not sufficient for the required functions, or if the XV panel is to be upgraded with the PLC function. One or more licensing certificates are required for this purpose. The following licensing certificates are available:

- Licensing certificate for the PLC function: To add the PLC function to the XV-1...-B... or XV-1...-D... devices, an additional license must be purchased. The LIC-PLC-MCP-COMPACT licensing certificate is required for this purpose.
- Licensing certificates for extended communication with GALILEO (LIC-OPT-...)

Determining the required license points

Add the necessary license points for each visualization/communication function. Communication options for several devices with the same protocol only have to be counted once. From this number, subtract the points already stored in the device (e.g. 140 points). The result indicates the number of the license points that need to be installed by adding licensing certificates for the communication options (LIC-OPT-...).

Detailed information and examples are available at www.eaton.eu/XV under the "Licensing" tab in the section on XV devices

Built-in interfaces								Application / marker / retained data kB	Part no. Article no.
	1 x CANopen® / easyNet	1 x Ethernet 10/100 Mbps	1 x USB host	1 x SmartWire-DT	1 x RS232	1 x RS485	1 x PROFIBUS-DP/MPI		
XC compact PLC 24 V DC power supply Memory card slot RUN/STOP switch and LED display OPC server Web server Remote server Approvals: CE, cULus, DNV GL									
XC152 Compact PLC									
	-	✓	✓	-	✓	✓	✓	64 MB / 4 KB / 32 KB	XC-152-D8-11 167849
	-	✓	✓	✓	✓	-	-	64 MB / 4 KB / 32 KB	XC-152-E3-11 167850 
	✓	✓	✓	✓	-	✓	-	64 MB / 4 KB / 32 KB	XC-152-E6-11 167851 
	-	✓	✓	✓	-	✓	✓	64 MB / 4 KB / 32 KB	XC-152-E8-11 167852 
	✓	✓	✓	-	✓	✓	-	64 MB / 4 KB / 32 KB	XC-152-D6-11 167855



XP500 industrial PC with multi-touch panel: powerful and flexible as a modular system



Two-finger zooming, scrolling and swiping – introducing intuitive operation to the industrial world.

The powerful industrial PCs in the XP500 series provide a high-end HMI solution. The XP500 series is characterized by modularity, durability and intuitive operation - all packed into a high-quality, sleek design.

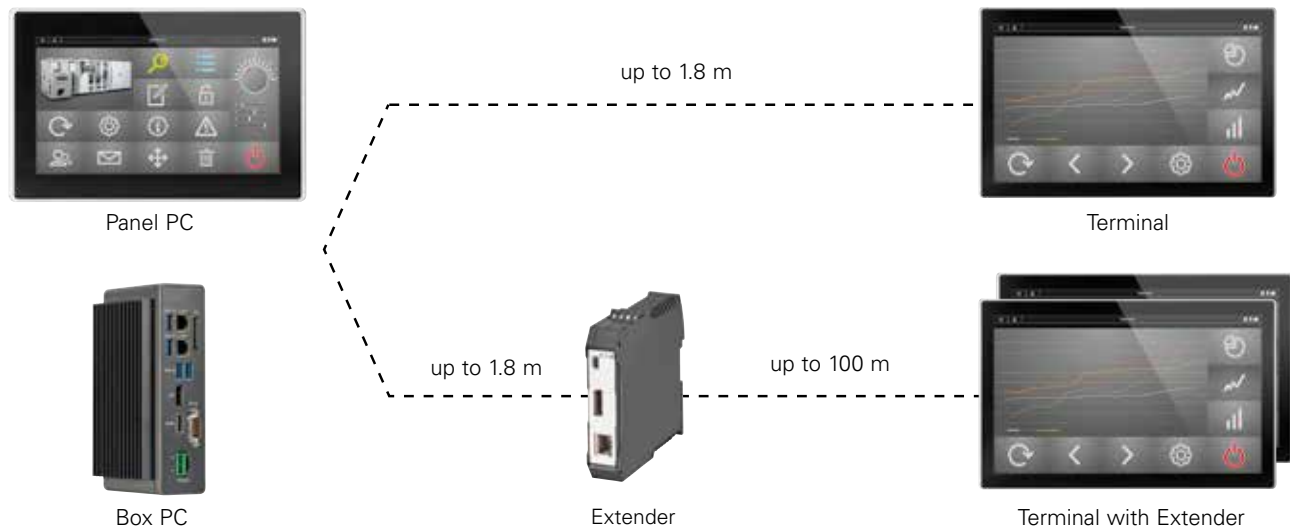
The product range centers around the capacitive multi-touch devices, which offer widescreen displays measuring 10.1, 15.6 and 21.5 inches. These devices enable precise, multi-finger operation of the user interface.






As well as standard applications, the XP-504 devices offer the opportunity to „grow“ with modular systems for the first time.

A multi-part modular system forms the basis for implementing various applications and expanding systems. The visualization is particularly ideal for configuring expandable systems in a future-proof and flexible manner.

Flexible in the application

For users who want to use the XP500 industrial PC flexibly in the machine or system, there are various possible combination options. For short distances of up to 1.8 meters, either the Ppanel PC or box PC can be used in combination with a terminal. In modular machines in which the transmission of USB data or full Full HD video data over a distance of up to 100 meters, the extender module can be used in combination with terminals with an onboard extender.



Product type		Built-in interfaces										Display Widescreen	Resolution Pixel	Part no.	Article no.
		2 x Ethernet 10/100/1000 Mbps	4 x USB 3.0	1 x USB 2.0	1 x USB-B	1 x RS232/RS422/485	1 x DP	1 x HDMI	1 x DVI-I	1 x RJ45					
XP-504															
DualCore CPU 1,60 GHz, integrated high-performance graphics processor, 8 GB RAM, 64 GB mSATA, 8 GB SD-card, Windows 10 Enterprise LTSC, GALILEO Open Runtime license, CE, cUL508, cUL Class 1 Div 2															
	Panel PC	✓	✓	-	-	✓	✓	✓	-	-	10.1"	1280 x 800	XP-504-10-A10-A01-2B	199996	
		✓	✓	-	-	✓	✓	✓	-	-			XP-504-10-A10-A01-2V ¹⁾	199997	
		✓	✓	-	-	✓	✓	✓	-	-	15.6"	1366 x 786	XP-504-15-A10-A01-2B	199998	
		✓	✓	-	-	✓	✓	✓	-	-			XP-504-15-A10-A01-2V ¹⁾	199999	
		✓	✓	-	-	✓	✓	✓	-	-	21.5"	1920 x 1080	XP-504-21-A10-A01-2B	360002	
		✓	✓	-	-	✓	✓	✓	-	-			XP-504-21-A10-A01-2V ¹⁾	360003	
	Terminal	-	-	-	✓	-	✓	-	✓	-	10.1"	1024 x 600	XP-504-10-TERMINAL	EP-400137	
		-	-	-	✓	-	✓	-	✓	-	15.6"	1366 x 768	XP-504-15-TERMINAL	EP-400138	
		-	-	-	✓	-	✓	-	✓	-	21.5"	1920 x 1080	XP-504-21-TERMINAL	EP-400139	
	Terminal with extender	-	-	-	-	-	-	-	-	✓	10.1"	1024 x 600	XP-504-10-TERMINAL-EXT	EP-400140	
		-	-	-	-	-	-	-	-	✓	15.6"	1366 x 768	XP-504-15-TERMINAL-EXT	EP-400141	
		-	-	-	-	-	-	-	-	✓	21.5"	1920 x 1080	XP-504-21-TERMINAL-EXT	EP-400142	
	Box PC	✓	✓	-	-	✓	✓	✓	-	-	XP-504-BOXPC-A10-A00-2B				
		✓	✓	-	-	✓	✓	✓	-	-	XP-504-BOXPC-A10-A00-2V ¹⁾				
Distance max. 100 m Video data: Full-HD, 1920 x 1080 px at 60 Hz Transmission cable: CAT 6a / CAT 7 / AWG 22 CE, cUL508, cUL Class 1 Div 2															
	Extender module	-	-	✓	-	-	✓	-	-	✓	XP-504-EXT-MODUL				EP-400013

¹⁾ Visual Designer



Proven and versatile: RMQ-Titan pilot devices

Product selection made easy



For the pushbutton
configurator, visit:
Eaton.com/config/rmq

Combining a modern design with optimum functionality. The perfect look for use in machines and systems. The ergonomic pushbuttons are adapted to the shape of a fingertip, making them even easier to operate.

Thanks to their high degree of protection (IP67/IP69K), the RMQ-Titan pilot devices are suitable for a wide range of applications. The RMQ *compact* solution series not only features a compact design, but also a very high degree of protection (IP65) at the rear.

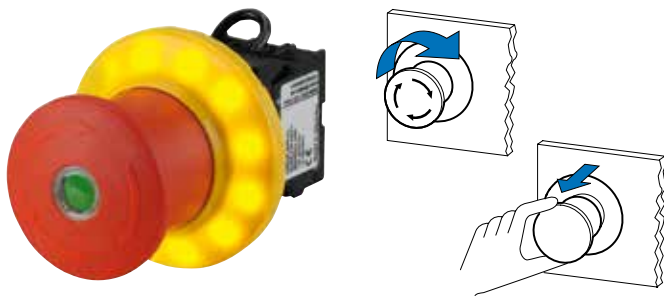
The emergency-stop buttons of the RMQ-Titan series enable safe machine operation. They offer a high degree of flexibility and can also be used for emergency switching-off applications. The palm-shaped and mushroom-shaped models are available in diameters of 30 mm, 38 mm, 45 mm and 60 mm.

Thanks to their comprehensive approvals, including marine approvals, the pilot devices of the RMQ family are suitable for global use.

With SmartWire-DT, the RMQ-Titan pilot devices can be easily and cleverly connected.



Get more information



Safe shutdown with RMQ-Titan

The emergency-stop buttons are available either with or without key, with pull-to-release or turn-to-release mechanism, non-illuminated, and illuminated with standard LEDs or a mechanical switch position indicator (green/red) at the center of the pushbutton. The self-monitoring contact elements ensure comprehensive operational safety, even in the event of faulty installation or if actuated with excessive force.



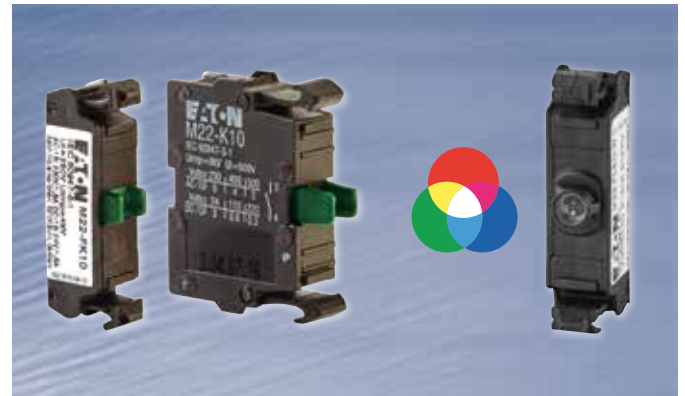
For direct installation in machine rooms

The devices of the RMQ *compact* solution series already come with pre-installed cables, connectors and housings. This all-in-one solution features a special enclosure for protection against dust, fine particles and liquids with IP67/ IP69 degree of protection at the front and IP65 at the rear. The devices are therefore suitable for use directly in machine rooms without any additional housing.



RMQ-Titan flat pushbuttons

The sleek pushbuttons of the RMQ-Titan series contribute to a cutting-edge machine design that can be tailored to the needs of different areas of application. The flat, modular pushbuttons are the perfect match for the flat contact and LED elements of the RMQ-Titan series. The flush transition between actuator and bezel makes them ideal for cutting-edge applications.



Flat and modular: Flat rear elements

With a mounting depth of only 30 mm, these sleek contact and LED elements save space on small control panels. The series stands out for its unique modular design in terms of the available control elements, contacts, LED colors and accessories. The flat multi-color LED elements allow for new intelligent machine operating concepts.



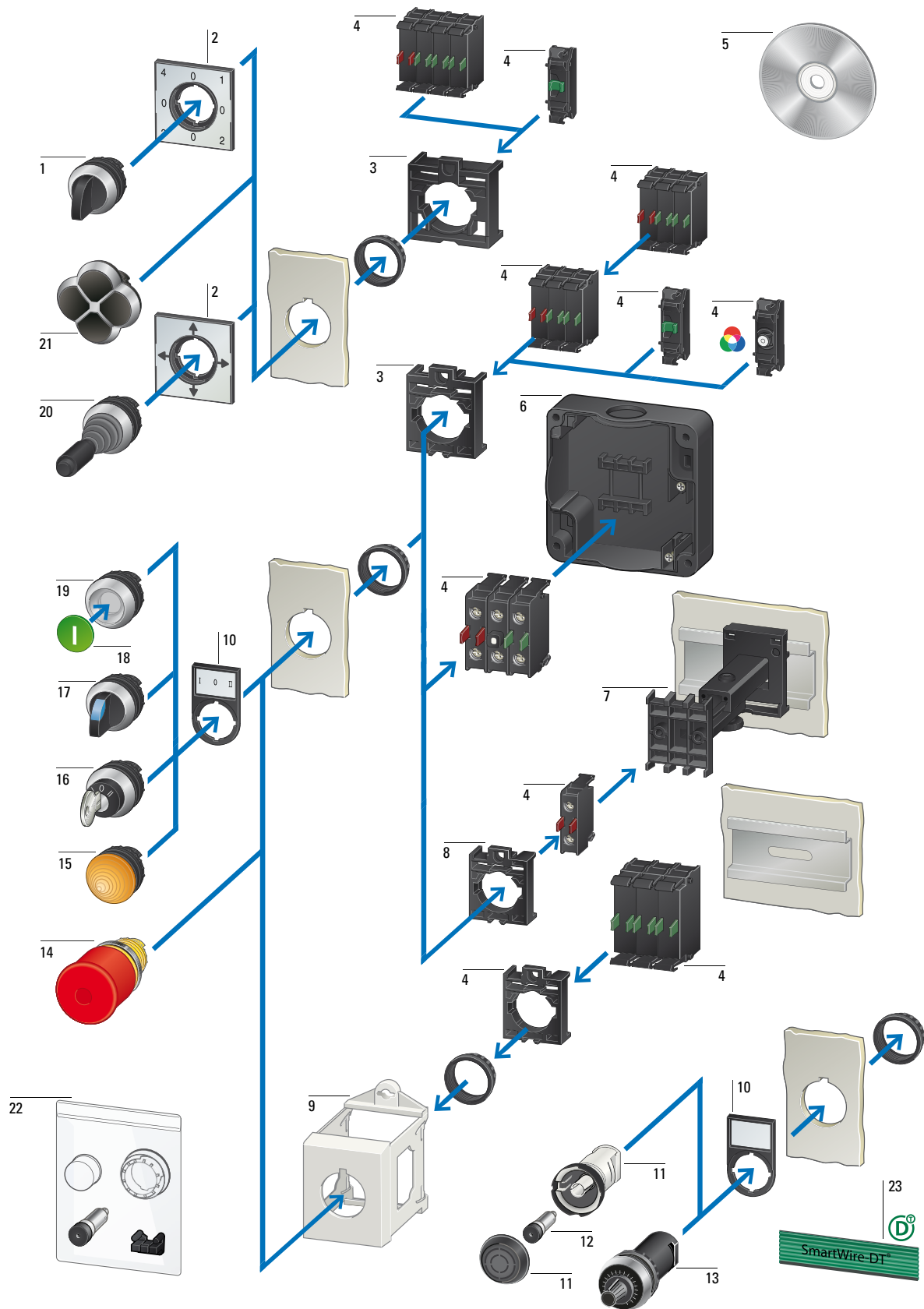
Fast and flexible labeling – the label editor

With the label editor function in the pushbutton configurator, you can easily create company- and project-specific labels, logos or images for the RMQ button plates and housings.



Compelling all around

Our new emergency-stop button combines functionality and safety with a unique and space-saving design. Thanks to the innovative 360° illuminated RGB LED ring with seven colors, the pushbutton can be adapted to a broad range of applications. And the high degree of protection (IP69) means that it can be used in almost all environments. This compact emergency-stop button is available in diameters of 22 mm and 30 mm. With a size of only 30 mm, the pushbutton is the perfect match for cutting-edge panels, machines and many other applications.



- | | | | | | | | |
|---|--------------------------|----|--------------------------|----|--|----|---------------------------|
| 1 | 4-way selector switches | 7 | Telescopic clip | 13 | Potentiometers | 19 | Pushbuttons |
| 2 | Labels with label mounts | 8 | Centering adapters | 14 | Emergency-stop/emergency switching-off buttons | 20 | Joystick |
| 3 | Mounting adapters | 9 | IVS top-hat rail adapter | 15 | Indicator lights | 21 | 4-way pushbuttons |
| 4 | Contact/LED elements | 10 | Label mounts | 16 | Key-operated pushbuttons | 22 | Accessory |
| 5 | Customized inscriptions | 11 | Acoustic devices | 17 | Selector switches | 23 | SmartWire-DT ribbon cable |
| 6 | Enclosures | 12 | Buzzers | 18 | Button plates/lenses | | |

Double actuator pushbuttons

IP66
White lens



Extended pushbuttons and indicator lights



momentary

M22-DDL-GR 216698



M22-DDL-GR-X1/X0 216700



M22-DDL-GR-GB1/GB0 216702



M22-DDL-WS 216704



M22-DDL-WS-X1/X0 216706



M22-DDL-WS-GB1/GB0 216708



M22-DDL-S-X4/X5 218145



M22-DDL-S-X7/X7 216710



M22-DDL-S-X226/X26 105227

Flush pushbuttons and indicator lights



M22-DDLF-GR-X1/X0 284814



M22-DDLF-WS-X1/X0 284816


































Pushbutton I and indicator light are flush, pushbutton 0 is extended



M22-DDLM-GR-X1/X0 284830






















M22-DDLM-WS-X1/X0 284832








			Button plate	Part no.	Article no.	Part no.	Article no.
Pushbuttons							
IP67, IP69							
	flush		momentary			maintained ¹⁾	
			M22-D-S	216590	M22-DR-S	216613	
			M22-D-W	216592	M22-DR-W	216615	
			M22-D-R	216594	M22-DR-R	216617	
			M22-D-G	216596	M22-DR-G	216619	
			M22-D-Y	216598	M22-DR-Y	216621	
			M22-D-B	216600	M22-DR-B	216623	
		-	M22-D-GR	132671			
			M22-D-X	216602	M22-DR-X	216625	
			M22-D-R-X0	216605	M22-DR-R-X0	216628	
			M22-D-G-X1	216607	M22-DR-G-X1	216630	
			M22-D-S-X0	216609	M22-DR-S-X0	216632	
			M22-D-W-X1	216611	M22-DR-W-X1	216634	
			extended		M22-DH-S	216636	M22-DRH-S
	M22-DH-W			216638	M22-DRH-W	216665	
	M22-DH-R			216641	M22-DRH-R	216667	
	M22-DH-G			216643	M22-DRH-G	216669	
	M22-DH-Y			216646	M22-DRH-Y	216671	
	M22-DH-B			216649	M22-DRH-B	216673	
	M22-DH-R-X0			216655	M22-DRH-R-X0	216675	
	M22-DH-G-X1			216657	M22-DRH-G-X1	216677	
	M22-DH-S-X0			216659	M22-DRH-S-X0	216679	
	M22-DH-W-X1			216661	M22-DRH-W-X1	216681	
	Guard ring			-	M22-DG-X	220921	
Mushroom pushbuttons							
IP67, IP69							
	Mushroom		momentary			maintained ¹⁾	
			M22-DP-S	216712	M22-DRP-S	216743	
			M22-DP-R	216714	M22-DRP-R	216745	
			M22-DP-G	216716	M22-DRP-G	216747	
			M22-DP-Y	216718	M22-DRP-Y	216749	
			M22-DP-R-X0	216720	M22-DRP-R-X0	216751	
			M22-DP-G-X1	216722	M22-DRP-G-X1	216753	
			M22-DP-S-X0	216724	M22-DRP-S-X0	216755	
			M22-DP-W-X1	216726	M22-DRP-W-X1	216757	












Note

¹⁾ Stay-put/spring-return function can be changed on the device

Mushroom head				Part no.	Article no.	
Stop buttons, switching-off buttons						
38 mm diameter yellow base IP66, IP69						
	Non-illuminated	Pull-to-release		M22S-PV	225528	
	Non-illuminated	Turn-to-release		M22S-PVT	271499	
	Illuminated with LED element	Pull-to-release		M22S-PVL	230962	
	Illuminated with LED element	Turn-to-release		M22S-PVLT	271540	
	Non-illuminated	Turn-to-release		M22Y-PVT	147403	
		Function: └> = momentary └ = maintained	Button plate	Part no.	Article no.	
Selector switches						
IP66 stay-put/spring-return function can be changed by means of the M22-XC-Y configuration adapter						
	with rotary head	2 positions	└> 40°		M22-W	216853
		2 positions	└ 60°		M22-WR	216855
		2 positions	└ 60°		M22-WR-X92	216857
		2 positions	└ 60°	AUTO HAND	M22-WR-X91	216859
						
		3 positions ¹⁾	40° < > 40°		M22-W3	216861
		3 positions ¹⁾	60° < > 60°		M22-WR3	216863
		3 positions ¹⁾	60° < > 60°		M22-WR3-X94	226838
	4 positions ²⁾			M22-WR4	279419	
	with thumb grip	2 positions	└> 40°	-	M22-WK	216865
		2 positions	└ 60°	-	M22-WRK	216867
		2 positions (V position)	< 60°	-	M22-WKV	216874
		3 positions ¹⁾	40° < > 40°	-	M22-WK3	216870
		3 positions ¹⁾	60° < > 60°	-	M22-WRK3	216872
		4 positions ²⁾			M22-WRK4	279431



Note¹⁾ with plunger bridge for middle contact²⁾ Not compatible with configuration adapters, use M22-A4 mounting adapter instead → accessories

Key withdrawable at position						Part no.	Article no.
Key-operated pushbuttons							
IP66 not suitable for master key systems with 1 key stay-put/spring-return function can be changed by means of the M22-XC-Y configuration adapter key withdraw configuration can be changed by means M22-XC-...configuration adapter							
	2 positions	 40°	-	0	-	M22-WS	216881
	2 positions	 60°	-	0	I	M22-WRS	216887
	2 positions	 60°	-	0	-	M22-WRS-A1	229092
	3 positions	40°  40°	-	0	-	M22-WS3	216894
	3 positions	60°  60°	I	0	II	M22-WRS3	216900










Function: Description				Part no.	Article no.
> = momentary > = maintained					
Joystick					
with metal shaft IP66					
	2 positions		with one operating point per operating direction	M22-WJS2H	178570
			with 2 operating points per operating direction	M22-WJS2H-2P ¹⁾	178565
			with one operating point per operating direction	M22-WJS2V	178571
			with 2 operating points per operating direction	M22-WJS2V-2P ¹⁾	178564
			with one operating point per operating direction	M22-WRJS2H	178574
			with one operating point per operating direction	M22-WRJS2V	178575
	4 positions		with one operating point per operating direction	M22-WJS4	178568
			with 2 operating points per operating direction	M22-WJS4-2P ¹⁾	178563
			with one operating point per operating direction	M22-WRJS4	178566
			with one operating point per operating direction		

Note




























¹⁾ These joysticks are combined with the M22-K10 normal NO contacts and the M22-K10P NO early-make contacts.


			Part no.	Article no.
Pushbuttons				
Extended pushbuttons IP66				
	4-way	Opposing pushbuttons, not mechanically interlocked	M22-D4-S	279411
	4-way	Opposing pushbuttons, not mechanically interlocked	M22-D4-S-X7	286336
	4-way		M22-D14-S-X7	286338
		Opposing pushbuttons, mechanically interlocked		

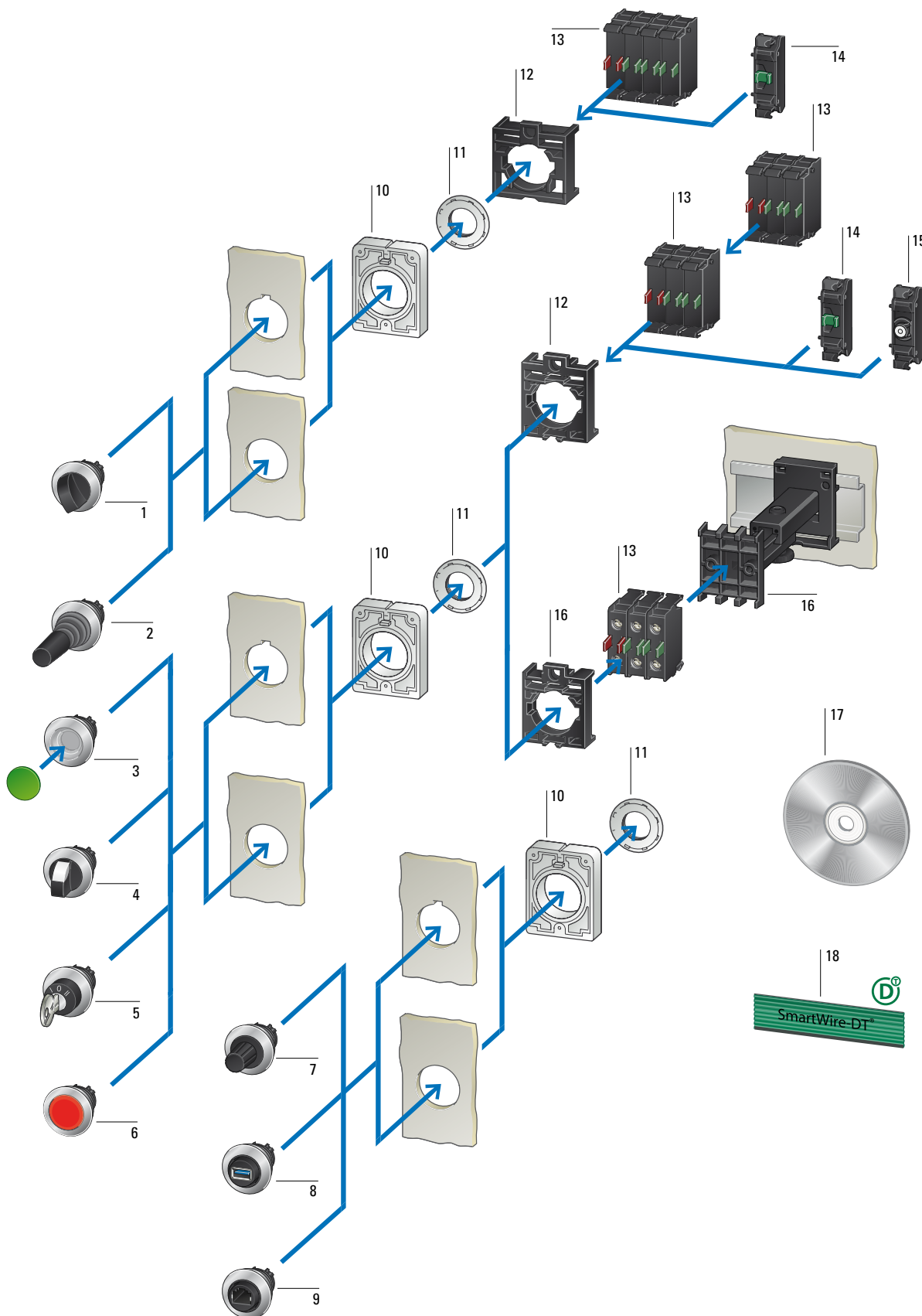
		Lens	Part no.	Article no.
Indicator lights				
IP67, IP69				
	flush		M22-L-W	216771
			M22-L-R	216772
			M22-L-G	216773
			M22-L-Y	216774
			M22-L-B	216775
			M22-L-A	164374
		without lens	M22-L-X	216776
	extended, conical		M22-LH-W	216778
			M22-LH-R	216779
			M22-LH-G	216780
			M22-LH-Y	216781
			M22-LH-B	216782
			M22-LH-A	164375

Button plate		Part no.	Article no.	Part no.	Article no.
Illuminated pushbuttons					
IP67, IP69					
		momentary		maintained ¹⁾	
		M22-DL-W	216922	M22-DRL-W	216944
		M22-DL-R	216925	M22-DRL-R	216946
		M22-DL-G	216927	M22-DRL-G	216948
		M22-DL-Y	216929	M22-DRL-Y	216950
		M22-DL-B	216931	M22-DRL-B	216952
		M22-DL-A	167429	M22-DRL-A	167431
	without button plate	M22-DL-X	216933	M22-DRL-X	216954
		M22-DL-R-X0	216936	M22-DRL-R-X0	216957
		M22-DL-G-X1	216938	M22-DRL-G-X1	216959
		M22-DL-W-X0	216940	M22-DRL-W-X0	216961
		M22-DL-W-X1	216942	M22-DRL-W-X1	216963
		M22-DLH-W	216965	M22-DRLH-W	216788
		M22-DLH-R	216967	M22-DRLH-R	216789
		M22-DLH-G	216969	M22-DRLH-G	216796
		M22-DLH-Y	216971	M22-DRLH-Y	216799
		M22-DLH-B	216973	M22-DRLH-B	216802
		M22-DLH-A	167433	M22-DRLH-A	167435
		M22-DLH-R-X0	216975	M22-DRLH-R-X0	216804
		M22-DLH-G-X1	216977	M22-DRLH-G-X1	216805
		M22-DLH-W-X0	216979	M22-DRLH-W-X0	216806
		M22-DLH-W-X1	216981	M22-DRLH-W-X1	216807
Guard ring	without button plate	M22-DGL-X	230961		
					

















Note
¹⁾ Stay-put/spring-return function can be changed on the device

Function: <div> <div>└─></div> = momentary <div>└─┘</div> = maintained </div>			Part no.	Article no.
Illuminated selector switches				
with thumb grip IP66 stay-put/spring-return function can be changed with the M22-XC-Y configuration adapter				
<div>2 positions</div> 	└─> 40°		M22-WLK-W	216812
	└─> 40°		M22-WLK-R	216814
	└─> 40°		M22-WLK-G	216816
	└─> 40°		M22-WLK-Y	216818
	└─> 40°		M22-WLK-B	216820
	└─┘ 60°		M22-WRLK-W	216823
	└─┘ 60°		M22-WRLK-R	216825
	└─┘ 60°		M22-WRLK-G	216827
	└─┘ 60°		M22-WRLK-Y	216829
	└─┘ 60°		M22-WRLK-B	216831
<div>V positions</div>	└─┘ 60°		M22-WLKV-W	284393
	└─┘ 60°		M22-WLKV-R	284394
	└─┘ 60°		M22-WLKV-G	284395
	└─┘ 60°		M22-WLKV-Y	284396
	└─┘ 60°		M22-WLKV-B	284397
<div>3 positions</div> 	40° <└─┘ 40°		M22-WLK3-W	216833
	40° <└─┘ 40°		M22-WLK3-R	216835
	40° <└─┘ 40°		M22-WLK3-G	216837
	40° <└─┘ 40°		M22-WLK3-Y	216839
	40° <└─┘ 40°		M22-WLK3-B	216841
	60° └─┘ 60°		M22-WRLK3-W	216843
	60° └─┘ 60°		M22-WRLK3-R	216845
	60° └─┘ 60°		M22-WRLK3-G	216847
	60° └─┘ 60°		M22-WRLK3-Y	216849
	60° └─┘ 60°		M22-WRLK3-B	216851














Resistance R kΩ		Part no.	Article no.
Potentiometers			
<div>IP66</div> 	1	M22-R1K	229489
	2.2	M22-R2K2	171157
	4.7	M22-R4K7	229490
	10	M22-R10K	229491
	47	M22-R47K	229492
	100	M22-R100K	229493
	470	M22-R470K	229494










- | | | |
|------------------------------------|------------------------------------|---------------------------|
| 1 M30 4-position selector switches | 8 M30 bulkhead interfaces, USB 3.0 | 15 Flat Rear LED elements |
| 2 M30 joysticks | 9 M30 bulkhead interfaces, RJ45 | 16 Telescopic clip |
| 3 M30 pushbuttons | 10 Anti-rotation tab RMQ-AFX | 17 Customized inscription |
| 4 M30 selector switches | 11 Threaded ring | 18 SWD ribbon cable |
| 5 M30 key-operated pushbuttons | 12 Mounting adapters | |
| 6 M30 indicator lights | 13 Contact elements | |
| 7 SWD encoders, M30 potentiometers | 14 Flat Rear contact elements | |





	Button plate	Part no.	Article no.	Part no.	Article no.
Pushbuttons					
IP67, IP69 metal bezel front dimensions ø 36 mm					
	flush		momentary	maintained¹⁾	
			M30C-FD-S	M30C-FDR-S	182942
			M30C-FD-W	M30C-FDR-W	182943
			M30C-FD-R	M30C-FDR-R	182944
			M30C-FD-G	M30C-FDR-G	182945
			M30C-FD-Y	M30C-FDR-Y	182946
			M30C-FD-B	M30C-FDR-B	182947
			M30C-FD-GR		
			M30C-FD-S-X0	M30C-FDR-S-X0	182937
			M30C-FD-W-X1	M30C-FDR-W-X1	182938
			M30C-FD-W-X11		
			M30C-FD-R-X0	M30C-FDR-R-X0	182936
			M30C-FD-G-X1	M30C-FDR-G-X1	182931
			M30C-FD-B-X217		
			M30C-FD-GR-X66		
		without button plate	M30C-FD-X	M30C-FDR-X	182948








Note ¹⁾ Stay-put/spring-return function can be changed on the device













		Function: ↳ = momentary └ = maintained	Button plate	Part no.	Article no.
Selector switches					
IP66 stay-put/spring-return function can be changed with the M22-XC-Y configuration adapters					
	with rotary head	2 positions	↳ 40°		M30C-FW 187087
		2 positions	└ 60°		M30C-FWR 187088
		2 positions	└ 60°		M30C-FWR-X92 187114
		2 positions	└ 60°	AUTO HAND 	M30C-FWR-X91 187113
		3 positions ¹⁾	40° < > 40°		M30C-FW3 187089
		3 positions ¹⁾	60° < > 60°		M30C-FWR3 187090
		3 positions ¹⁾	60° < > 60°		M30C-FWR3-X94 187108
		4 positions ²⁾			M30C-FWR4 187091
		2 positions	↳ 40°	-	M30C-FWK 187103
		2 positions	└ 60°	-	M30C-FWRK 187109
		2 positions (V position)	└ 60°	-	M30C-FWKV 187102
		3 positions ¹⁾	40° < > 40°	-	M30C-FWK3 187104
		3 positions ¹⁾	60° < > 60°	-	M30C-FWRK3 187110
		4 positions ²⁾			M30C-FWRK4 187112

Note ¹⁾ with plunger bridge for middle contact
²⁾ Not compatible with configuration adapters, use M22-A4 mounting adapter instead → accessories

Key withdrawable at position						Part no.	Article no.
Key-operated pushbuttons IP66 not suitable for master key systems with 1 key stay-put/spring-return function can be changed with the M22-XC-Y configuration adapters key withdraw configuration can be changed with the M22-XC-...configuration adapter							
	2 positions	 40°	-	0	-	M30C-FWS	187068
	2 positions	 60°	-	0	I	M30C-FWRS	187092
	2 positions	 60°	-	0	-	M30C-FWRS-A1	187047
	3 positions	40°  40°	-	0	-	M30C-FWS3	187069
	3 positions	60°  60°	I	0	II	M30C-FWRS3	187094




























Function:  = momentary  = maintained				Description	Part no.	Article no.
Joystick with one operating point per operating direction with metal shaft IP65						
	2 positions	—			M30C-FWRJS2H	187078
					M30C-FWRJS2V	187065
	4 positions				M30C-FWJS4	187077


		Lens	Part no.	Article no.
Indicator lights				
IP67, IP69				
	flush		M30C-FL-W	183287
			M30C-FL-R	183282
			M30C-FL-G	183283
			M30C-FL-Y	183285
			M30C-FL-B	183284
			M30C-FL-A	183286





Button plate		Part no.	Article no.	Part no.	Article no.
Illuminated pushbuttons					
IP67, IP69					
	flush		momentary	maintained¹⁾	
			M30C-FDL-W	182925	M30C-FDRL-W 182950
			M30C-FDL-R	182926	M30C-FDRL-R 182951
			M30C-FDL-G	182927	M30C-FDRL-G 182952
			M30C-FDL-Y	182928	M30C-FDRL-Y 182953
			M30C-FDL-B	182940	M30C-FDRL-B 182954
	without button plate		M30C-FDL-A	182924	M30C-FDRL-A 182949
			M30C-FDL-X	182941	M30C-FDRL-X 182955
			M30C-FDL-R-X0	182958	M30C-FDRL-W-X0 182934
			M30C-FDL-G-X1	182957	M30C-FDRL-W-X1 182935
			M30C-FDL-G-X32	182968	M30C-FDRL-R-X0 182933
			M30C-FDL-Y-X162	182965	M30C-FDRL-G-X1 182932

Note

¹⁾ Stay-put/spring-return function can be changed on the device

			Part no.	Article no.
Function: <div> <div> <div></div> <div></div> </div> <div> <div></div> <div></div> </div> </div> = momentary = maintained				
Illuminated selector switches				
with thumb grip IP66 metal bezel front dimensions Ø 36 mm stay-put/spring-return function can be changed with the M22-XC-Y configuration adapters				
2 positions 	<div> <div></div> <div>40°</div> </div>		M30C-FWLK-W	187128
	<div> <div></div> <div>40°</div> </div>		M30C-FWLK-R	187122
	<div> <div></div> <div>40°</div> </div>		M30C-FWLK-G	187121
	<div> <div></div> <div>40°</div> </div>		M30C-FWLK-Y	187129
	<div> <div></div> <div>40°</div> </div>		M30C-FWLK-B	187120
	<div> <div></div> <div>60°</div> </div>		M30C-FWRLK-W	187026
	<div> <div></div> <div>60°</div> </div>		M30C-FWRLK-R	187025
	<div> <div></div> <div>60°</div> </div>		M30C-FWRLK-G	187024
	<div> <div></div> <div>60°</div> </div>		M30C-FWRLK-Y	187027
	<div> <div></div> <div>60°</div> </div>		M30C-FWRLK-B	187023
V positions	<div> <div></div> <div>60°</div> </div>		M30C-FWLKV-W	187126
	<div> <div></div> <div>60°</div> </div>		M30C-FWLKV-R	187125
	<div> <div></div> <div>60°</div> </div>		M30C-FWLKV-G	187124
	<div> <div></div> <div>60°</div> </div>		M30C-FWLKV-Y	187127
	<div> <div></div> <div>60°</div> </div>		M30C-FWLKV-B	187123
3 positions 	<div> <div>40°</div> <div></div> <div>40°</div> </div>		M30C-FWLK3-W	187118
	<div> <div>40°</div> <div></div> <div>40°</div> </div>		M30C-FWLK3-R	187117
	<div> <div>40°</div> <div></div> <div>40°</div> </div>		M30C-FWLK3-G	187116
	<div> <div>40°</div> <div></div> <div>40°</div> </div>		M30C-FWLK3-Y	187119
	<div> <div>40°</div> <div></div> <div>40°</div> </div>		M30C-FWLK3-B	187115
	<div> <div>60°</div> <div></div> <div>60°</div> </div>		M30C-FWRLK3-W	187134
	<div> <div>60°</div> <div></div> <div>60°</div> </div>		M30C-FWRLK3-R	187133
	<div> <div>60°</div> <div></div> <div>60°</div> </div>		M30C-FWRLK3-G	187132
	<div> <div>60°</div> <div></div> <div>60°</div> </div>		M30C-FWRLK3-Y	187022
	<div> <div>60°</div> <div></div> <div>60°</div> </div>		M30C-FWRLK3-B	187131

Resistance		Scale/inscripti ^o n	Part no.	Article no.
Potentiometers, IP65				
3 separate screw connections accuracy of resistance value: ± 10% (linear) Metal bezel Rated power P = 0.5 W				
	1	Standard scale/inscription	M30C-FR1K	187029
	2.2		M30C-FR2K2	187034
	4.7		M30C-FR4K7	187030
	10		M30C-FR10K	187035
	47		M30C-FR47K	187031
	100		M30C-FR100K	187032
	470		M30C-FR470K	187033




Contact configuration				Part no.	Article no.	Part no.	Article no.	
N/O = normally open		N/C = normally closed ¹⁾						
Contact elements								
IP20								
Single contact				Screw terminals		Cage Clamp ²⁾		
	Front mounting	1 N/O	-	M22-K10	216376	M22-CK10	216384	
		-	1 N/C ⊖	M22-K01	216378	M22-CK01	216385	
		1 NO early-make	-	M22-K10P	110835			
		-	1 NC late-break ⊖	M22-K01D	262165	M22-CK01D	262510	
	Base mounting	1 N/O	-	M22-KC10	216380	M22-CKC10	216386	
		-	1 N/C ⊖	M22-KC01	216382	M22-CKC01	216387	
Double contact								
	Front mounting	2 N/O	-			M22-CK20	107898	
		-	2 N/C ⊖			M22-CK02	107899	
		1 N/O	1 N/C ⊖			M22-CK11	107940	
Self-monitoring contact elements ³⁾								
	Front mounting	1 N/O	1 N/C ⊖	M22-K01SMC10	121472			
		1 N/O	2 N/C ⊖	M22-K02SMC10	121474			
	Base mounting	1 N/O	1 N/C ⊖	M22-KC01SMC10	121473			
		1 N/O	2 N/C ⊖	M22-KC02SMC10	121720			
		1 N/O	3 N/C ⊖	M22-KC03SMC10	173028			
		2 N/O	2 N/C ⊖	M22-KC12SMC10	173029			
	Combination of contact element with screw terminals, M22-A mounting adapter and M22-XSMC signal contact actuator. ³⁾							
		Front mounting	1 N/O	3 N/C ⊖	M22-AK03SMC10	173026		
2 N/O			2 N/C ⊖	M22-AK12SMC10	173027			



























Note

¹⁾ ⊖ = Safety function implemented with positive opening according to IEC/EN 60947-5-1

²⁾ Cage Clamp is a registered trademark of Wago Kontakttechnik GmbH/Minden, Germany

³⁾ The N/O contact is actuated when mounted on the pushbutton

		Part no.	Article no.
Mounting adapters			
Mounting adapter (front mounting) for 3 contact/LED elements			
	For the M22-(C)K... contact elements and M22-(C)LED... LED elements Sequence numbers on mounting adapter	M22-A	216374
Mounting adapter (front mounting) for 4 contact elements			
	For use with M22-WR4, M22-D4, M22-WJ..., M22-WRJ... for the M22-(C)K contact elements	M22-A4	279437
Front mounting			
	For two M22-SWD-K22... function elements for use with M22-WR4, -WRJ4, -D4 in conjunction with M22-(SWD)-K	M22-SWD-A4	116016

Rated operational voltage U_e V			Part no.	Article no.	Part no.	Article no.
LED elements						
IP20						
<div>Front mounting</div> 	12-30 V AC/DC, 50/60 Hz		Screw terminals		Cage Clamp¹⁾	
			M22-LED-W	216557	M22-CLED-W	216569
			M22-LED-R	216558	M22-CLED-R	216570
			M22-LED-G	216559	M22-CLED-G	216571
	85-264 V AC, 50/60 Hz		M22-LED-B	218057	M22-CLED-B	218061
			M22-LED230-W	216563	M22-CLED230-W	216575
			M22-LED230-R	216564	M22-CLED230-R	216576
			M22-LED230-G	216565	M22-CLED230-G	216577
	85-264 V AC, 50/60 Hz		M22-LED230-B	218059	M22-CLED230-B	218063
			M22-LED230TA-W²⁾	182905		
			M22-LED230TA-R²⁾	182906		
			M22-LED230TA-G²⁾	182907		
<div>Base mounting³⁾</div> 	12-30 V AC/DC, 50/60 Hz		M22-LED230TA-B²⁾	182908		
			M22-LEDC-W	216560	M22-CLEDC-W	216572
			M22-LEDC-R	216561	M22-CLEDC-R	216573
			M22-LEDC-G	216562	M22-CLEDC-G	216574
	85-264 V AC, 50/60 Hz		M22-LEDC-B	218058	M22-CLEDC-B	218062
			M22-LEDC230-W	216566	M22-CLEDC230-W	216578
			M22-LEDC230-R	216567	M22-CLEDC230-R	216579
			M22-LEDC230-G	216568	M22-CLEDC230-G	216580
			M22-LEDC230-B	218060	M22-CLEDC230-B	218064
						
						
						

Note
¹⁾ Cage Clamp is a registered trademark of Wago Kontakttechnik GmbH/Minden, Germany




²⁾ With interference signal protection

³⁾ for use with the M22-I... surface mounting enclosures

RMQ-Titan pilot devices

Contact elements, LED elements (Flat Rear)





Moeller series











Terminal type		Contact configuration N/O = normally open N/C = normally closed ¹⁾		Part no.	Article no.
Contact elements (Flat Rear with Cage Clamp, push-in)					
Cage Clamp is a registered trademark of Wago Kontakttechnik GmbH/Minden, Germany					
	Cage Clamp ²⁾ , push-in		1 N/C ⊖	M22-FK01	180791
		1 N/O		M22-FK10	180792
Self-monitoring contact elements (Flat Rear with Cage Clamp, push-in)					
N/O is actuated when mounted on the pushbutton					
	Cage Clamp, push-in		1 N/C ⊖	M22-FK01SMC10	180793
Complete assembly (Flat Rear with Cage Clamp, push-in)					
Combination of contact element and M22-FK01SMC10 self-monitoring contact element, M22-A mounting adapter, and M22-XSMC signal contact actuator. The N/O in the self-monitoring contact element is actuated when mounted with M22-XSMC.					
	Cage Clamp, push-in		3 N/C ⊖	M22-AFK03SMC10	180794










Note:

¹⁾ ⊖ = Safety function implemented with positive opening according to IEC/EN 60947-5-1

²⁾ Cage Clamp is a registered trademark of Wago Kontakttechnik GmbH/Minden, Germany


Rated operational voltage		Rated operational current	Power consumption	Color	Part no.	Article no.
U _e V		I _e mA	P W			
LED elements (Flat Rear with Cage Clamp, push-in)						
	12-30 V AC/DC, 50/60 Hz (standard 24 V AC/DC)	8 - 15	0.26 at 24 V		M22-FLED-W	180795
					M22-FLED-B	180796
					M22-FLED-G	180797
					M22-FLED-R	180798
	24 V DC	10 - 15	0.36 at 24 V		M22-FLED-RG	180799
		8 - 15	0.36 at 24 V		M22-FLED-RGB	180800


				Part no.	Article no.
Acoustic devices, IP40					
	without buzzer with BA 9s lamp socket			M22-AMC	229015
	incl. buzzer BA9s. continuous tone, 18 - 30 V DC			M22-AMC-AM	198271
	incl. buzzer BA9s. pulse tone, 24 V DC			M22-AMC-AMP	198272
Buzzer for acoustic devices					
	Continuous tone, 18 - 30 V DC			M22-XAM	229025
	Pulsed tone, 24 V DC (+10 %/-15 %)			M22-XAMP	229028
for use with		Width in mm	Height in mm	Part no.	Article no.
Legend holders without label					
	IP66				
	for pushbuttons	30	50	M22S-ST-X	216392
	for double actuator pushbuttons	30	75	M22S-STDD-X	216394
	for M30... front elements	35.4	55.5	M30S-FST-X	197110
Insert labels					
	-	27	18	M22-XST	216480
			Cable length in m	Part no.	Article no.
M22 bulkhead interface, USB socket and RJ45 socket					
Front mounting IP65 (with closed cover), IP20 (with plug connected)					
	USB 3.0 socket, type A	-		M22-USB	147539
	pre-assembled cable with permanently connected USB 3.0 Type A plug	0.6		M22-USB-SA	107412
		1.5		M22-USB-SA-150	147543
	RJ45 socket, 8/8, Cat 5e	-		M22-RJ45-SA	107413
	RJ45 socket, 8/8 Cat 6a	-		M22-RJ45-CAT6A	EP-400122
M30C bulkhead interfaces, USB socket and RJ45 socket (Flat Front)					
Front mounting IP65 (with closed cover), IP20 (with plug connected)					
	USB 3.0 socket, type A	-		M30C-FUSB	187082
	pre-assembled cable with permanently connected USB 3.0 Type A plug	0.3		M30C-FUSB-30	187083
		0.6		M30C-FUSB-60	187084
		1.5		M30C-FUSB-150	187085
	RJ45 socket, 8/8, Cat 5e	-		M30C-FRJ45	187086


	Number of locations	Contact configuration		Key withdrawable at position		Button plate	Part no.	Article no.
		N/O = normally open N/C = normally closed ¹⁾						
Pushbuttons								
	1	1 N/O	1 N/C ⊖	-	-		M22-D-G-X1/KC11/I	216522
	1	1 N/O	1 N/C ⊖	-	-		M22-D-R-X0/KC11/I	216521
	2	2 N/O	2 N/C ⊖	-	-	 	M22-I2-M1	216529
	3	3 N/O	3 N/C ⊖	-	-	  	M22-I3-M1	216532
Key-operated buttons								
	1	1 N/O	1 N/C ⊖	0	I	-	M22-WRS/KC11/I	216526


Note

























1) ⊕ = Safety function implemented with positive opening according to IEC/EN 60947-5-1

Mounting locations	Degree of protection	Part no.	Article no.
Surface-mounting enclosure			
with stainless steel screws			
	1	IP67, IP69	M22-I1216535
	2	IP67, IP69	M22-I2216537
	3	IP67, IP69	M22-I3216538
	4	IP67, IP69	M22-I4216539
	6	IP66	M22-I6216540

	Mounting locations	Cable entries	Degree of protection	Part no.	Article no.
Flat surface-mounting enclosures, M22					
	1 x 22.5	at the side: 1 x M20, at the rear: 1 x M20	IP66, IP67, IP69	M22-FI1	197230
	2 x 22.5	at the rear: 1 x M20, at the side: 2 x M20 (1 on each side)		M22-FI2	197232
	3 x 22.5			M22-FI3	197233
	4 x 22.5			M22-FI4	197234

Flat surface-mounting enclosures, M30					
	1 x 30.5	at the side: 1 x M20, at the rear: 1 x M20	IP66, IP67, IP69	M30-FI1	197235
	2 x 30.5	at the rear: 1 x M20, at the side: 2 x M20 (1 on each side)		M30-FI2	197236
	3 x 30.5			M30-FI3	197237
	4 x 30.5			M30-FI4	197238

Flat surface-mounting enclosures, M22 and M30					
	1 x 22.5 3 x 30.5	at the rear: 1 x M20, at the side: 2 x M20 (1 on each side)	IP66, IP67, IP69	M30-FI4-PV	197239

				Part no.	Article no.	Part no.	Article no.
Emergency-stop/emergency switching-off buttons							
tamper-proof according to ISO 13850/EN 418 IP66, IP69							
	Pull-to-release	non-illuminated		Diameter = 38 mm M22-PV-ESS 178983			
		non-illuminated		M22-PV 216876			
		illuminated with LED element		M22-PVL 216878			
	Turn-to-release	non-illuminated		M22-PVT 263467			
		illuminated with LED element		M22-PVLT 263469			
	Key-release	non-illuminated		M22-PVS 216879			
				Diameter = 45 mm		Diameter = 60 mm	
 	Pull-to-release	non-illuminated		M22-PV45P 152862		M22-PV60P 152864	
		illuminated with LED element		M22-PVL45P 152860		M22-PVL60P 152861	
		non-illuminated		M22-PV45P-MPI ¹⁾ 152863		M22-PV60P-MPI ¹⁾ 152865	
	Turn-to-release	non-illuminated		M22-PVT45P 121462		M22-PVT60P 121464	
		illuminated with LED element		M22-PVLT45P 121460		M22-PVLT60P 121461	
		non-illuminated		M22-PVT45P-MPI ¹⁾ 121463		M22-PVT60P-MPI ¹⁾ 121465	
	Key release	non-illuminated		M22-PVS45P-MS1 121468		M22-PVS60P-MS1 121469	
		non-illuminated		M22-PVS45P-RS 121466		M22-PVS60P-RS 121467	
Small E-Stop diameter = 30 mm				22 mm installation		30 mm installation	
	Pull-to-release	non-illuminated		M22-PV30 197535		M30-PV30 197543	
		illuminated with LED element		M22-PVL30 197537		M30-PVL30 197545	
	Turn-to-release	non-illuminated		M22-PVT30 197536		M30-PVT30 197544	
		illuminated with LED element		M22-PVLT30 197538		M30-PVLT30 197546	

Note

Max. number of contacts: 4 x M22-(C)K01, ...10 or 2 x M22-(C)K02, ...20, ...11

¹⁾ with mechanical position indicator


switch-position indicator red → button actuated


switch-position indicator green → button not actuated




RMQ-Titan pilot devices


Complete units for emergency stop/emergency switching off

Moeller series

for use with	Part no.	Article no.
Surface-mounting enclosure		
with stainless steel screws IP67, IP69		
	-	
M22-XPV60... illuminated ring	M22-IY1	216536
	M22-IY1-XPV60	167798









Mounting locations	Cable entries	Degree of protection	Part no.	Article no.
Flat surface-mounting enclosures, M22				
	1 x 22.5	at the side: 1 x M20, at the rear: 1 x M20	IP66, IP67, IP69	M22-FIY1 197231

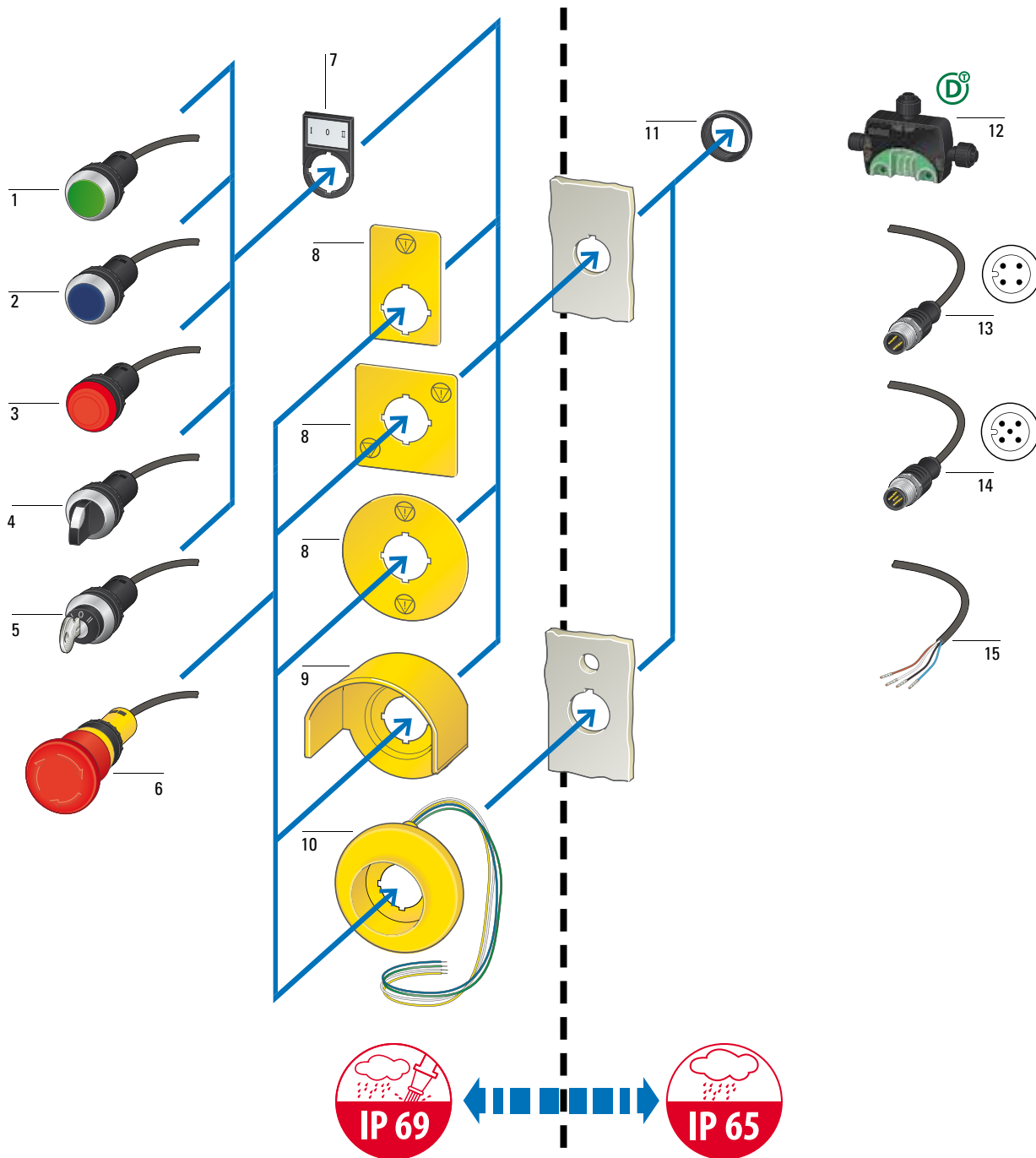
Lock mechanism	Contact configuration	Part no.	Article no.	Part no.	Article no.
	N/O = normally open N/C = normally closed				
Emergency-stop/emergency switching-off buttons					
tamper-proof according to ISO 13850/EN 418 non-illuminated					
Mushroom-shaped		Diameter = 38 mm			
Pull-to-release	- 1 N/O 1 N/C ⊕	M22-PV/KC11/IY	216525		
					
Key release	- 1 N/O 1 N/C ⊕	M22-PVS/KC11/IY	216523		
					
Palm shape		Diameter = 45 mm		Diameter = 60 mm	
Turn-to-release	- 2 N/C ⊕ 1 N/O 1 N/C ⊕	C22-PVT45P-K02	121611	C22-PVT60P-K02	121613
		C22-PVT45P-K11	121610	C22-PVT60P-K11	121612

Illumination	Unlocking	Contact configuration	Part no.	Article no.
		N/O = normally open N/C = normally closed		
30 mm button diameter				
Tamper-proof as defined in ISO 13850/EN 418				
IP66 and IP69 protection type				
	- Pull release	1 N/O 1 N/C ⊕	M22-PV30/FK11/FIY1	199348
	- Twist release	1 N/O 1 N/C ⊕	M22-PVT30/FK11/FIY1	199349
	LED-element red/green Pull release	1 N/O 1 N/C ⊕	M22-PVL30/FK11/RG/FIY1	199350
	LED-element red/green Twist release	1 N/O 1 N/C ⊕	M22-PVLT30/FK11/RG/FIY1	199351
	- Pull release	- 2 N/C ⊕	M22-PV30/FK02/FIY1	199352
	- Twist release	- 2 N/C ⊕	M22-PVT30/FK02/FIY1	199353
	LED-element red/green Pull release	- 2 N/C ⊕	M22-PVL30/FK02/RG/FIY1	199354
	LED-element red/green Twist release	- 2 N/C ⊕	M22-PVLT30/FK02/RG/FIY1	199355

Note

⊕ = Safety function implemented with positive opening according to IEC/EN 60947-5-1

	Inscription	Form	Language	Part no.	Article no.
Emergency-stop labels					
	IP66				
	Symbol (5638) for emergency stop	Diameter = 90 mm	-	M22-XAK-ESS	180469
	Symbol (5638) for emergency stop	Diameter = 60 mm	-	M22-XBK-ESS	180472
	Symbol (5638) for emergency stop	33 x 50 mm	-	M22-XZK-ESS	180470
	Symbol (5638) for emergency stop	33 x 50 mm	-	M22-XZK-ESS2	180474
	Symbol (5638) for emergency stop	50 x 50 mm	-	M22-XYK-ESS	180471
Emergency switching-off legend plates					
	IP66				
		Diameter = 90 mm	de, en, fr, it	M22-XAK1	216465
		Diameter = 60 mm	de, en, fr, it	M22-XBK1	216483
	Emergency switching-off	33 x 50 mm	de	M22-XZK-D99	216471
		50 x 50 mm	de, en, fr, it	M22-XYK1	216484
		Rated operating voltage U_e V	Diameter d mm	Part no.	Article no.
LED luminous ring					
	IP67, IP69				
	three groups of 4 LEDs each (connected in series), can be actuated separately (e.g. for continuous light)	24 V AC/DC	60 mm	M22-XPV60-Y-24	121477
	one group of 8 LEDs (connected in series)	120 V AC	60 mm	M22-XPV60-Y-120	121476
	one group of 8 LEDs (connected in series)	230 V AC	60 mm	M22-XPV60-Y-230	138280
Guard ring					
	IP65				
	for devices with diameter 38/45/60 mm	-	-	M22-XGPV	231273
	for devices with button diameter 30 mm	-	-	M22-XGPV30	198596
Sealable shroud					
	IP65				
	for devices with a mushroom diameter of 38 mm transparent, with integrated isolator, can be reused after emergency-stop/emergency switching-off operation the adjacent holes in the 30 x 50 grid must be sealed off by means of blind plugs M22(S)-B	-	-	M22-PL-PV	216397







- 1 C22 pushbuttons
- 2 C22 illuminated pushbuttons
- 3 C22 indicator lights
- 4 C22 selector switches
- 5 C22 key-operated pushbuttons
- 6 C22 emergency-stop/emergency switching-off buttons






- 7 Label mounts
- 8 Emergency-stop legend plates, IP66
- 9 Guard ring
- 10 Illuminated ring
- 11 Threaded ring
- 12 SWD I/O module
- 13 Cable with M12A plug, 4-pole










- 14 Cable with M12A plug, 5-pole
- 15 Cable end open, 4-pole




Different cable lengths see Eaton.com/rmq

Connection type		Mushroom head	Contact configuration ¹⁾ N/O = normally open N/C = normally closed		Part no.	Article no.
Emergency-stop/emergency switching-off buttons						
non-illuminated tamper-proof according to ISO 13850, EN 418 P66, IP67, IP69 (at the front) IP65 (at the rear) yellow base cable length: 0.2 m Mushroom-shaped, Ø 38 mm						
 Pull-to-release	Cable (black) with M12A plug, 5-pole			2 N/C ⊕	C22-PV-K02-P10	185184
 Turn-to-release	Cable (black) with M12A plug, 5-pole			2 N/C ⊕	C22-PVT45P-K02-P10	185183












Button plate	Contact configuration ¹⁾ N/O = normally open N/C = normally closed		momentary Part no.	Article no.	maintained Part no.	Article no.	
Pushbuttons							
Silver bezel IP66, IP67, IP69 (at the front), IP65 (at the rear) flush cable length: 0.2 m							
 Cable (black) with M12A plug, 4-pole			1 N/C ⊕	C22-D-R-K01-P1	185675	C22-DR-R-K01-P1	185684
				C22-D-S-K01-P1	185676	C22-DR-S-K01-P1	185685
	without button plate			C22-D-X-K01-P1	185678	C22-DR-X-K01-P1	185687
		1 N/O		C22-D-G-K10-P1	185674	C22-DR-G-K10-P1	185683
				C22-D-W-K10-P1	185677	C22-DR-W-K10-P1	185686
	without button plate			C22-D-X-K10-P1	185680	C22-DR-X-K10-P1	185689



Button plate	LED	Contact configuration ¹⁾ N/O = normally open N/C = normally closed		momentary Part no.	Article no.	maintained Part no.	Article no.
Illuminated pushbuttons							
Silver bezel LED rated operating voltage: 24 V AC/DC IP66, IP67, IP69 (at the front), IP65 (at the rear) flush cable length: 0.2 m							
 Cable (black) with M12A plug, 4-pole			1 N/C ⊕	C22-DL-R-K01-24-P1	185555	C22-DRL-R-K01-24-P1	185559
			1 N/O	C22-DL-B-K10-24-P1	185553	C22-DRL-B-K10-24-P1	185557
				C22-DL-G-K10-24-P1	185554	C22-DRL-G-K10-24-P1	185558
				C22-DL-W-K10-24-P1	185556	C22-DRL-W-K10-24-P1	185560







					Part no.	Article no.
Mounting ring tool						
 for threaded ring; can be used with cordless screwdriver					C22-MS	179955



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



¹⁾ ⊕ = Safety function implemented with positive opening according to IEC/EN 60947-5-1
for different cable lengths see online catalog

Connection type		Lens	LED	Part no.	Article no.
Indicator lights					
flush LED rated operating voltage: 24 V AC/DC IP66, IP67, IP69 (at the front), IP65 (at the rear) cable length: 0.2 m					
	Cable (black) with M12A plug, 4-pole			C22-L-B-24-P1	185119
				C22-L-G-24-P1	185120
				C22-L-R-24-P1	185121
				C22-L-W-24-P1	185122
				C22-L-Y-24-P1	185123

Function:		Contact configuration		Part no.	Article no.
 = momentary		N/O = normally open	N/C = normally closed		
 = maintained					

Selector switches					
Silver bezel with thumb grip IP66 (at the front), IP65 (at the rear) cable length: 0.2 m					
	2 positions Cable (black) with M12A plug, 4-pole	 40°	1 N/O		C22-WK-K10-P1 186098
		 60°			C22-WRK-K10-P1 186103
	3 positions Cable (black) with M12A plug, 4-pole	40°  40°	2 N/O		C22-WK3-K20-P1 186106
		60°  60°			C22-WRK3-K20-P1 186109

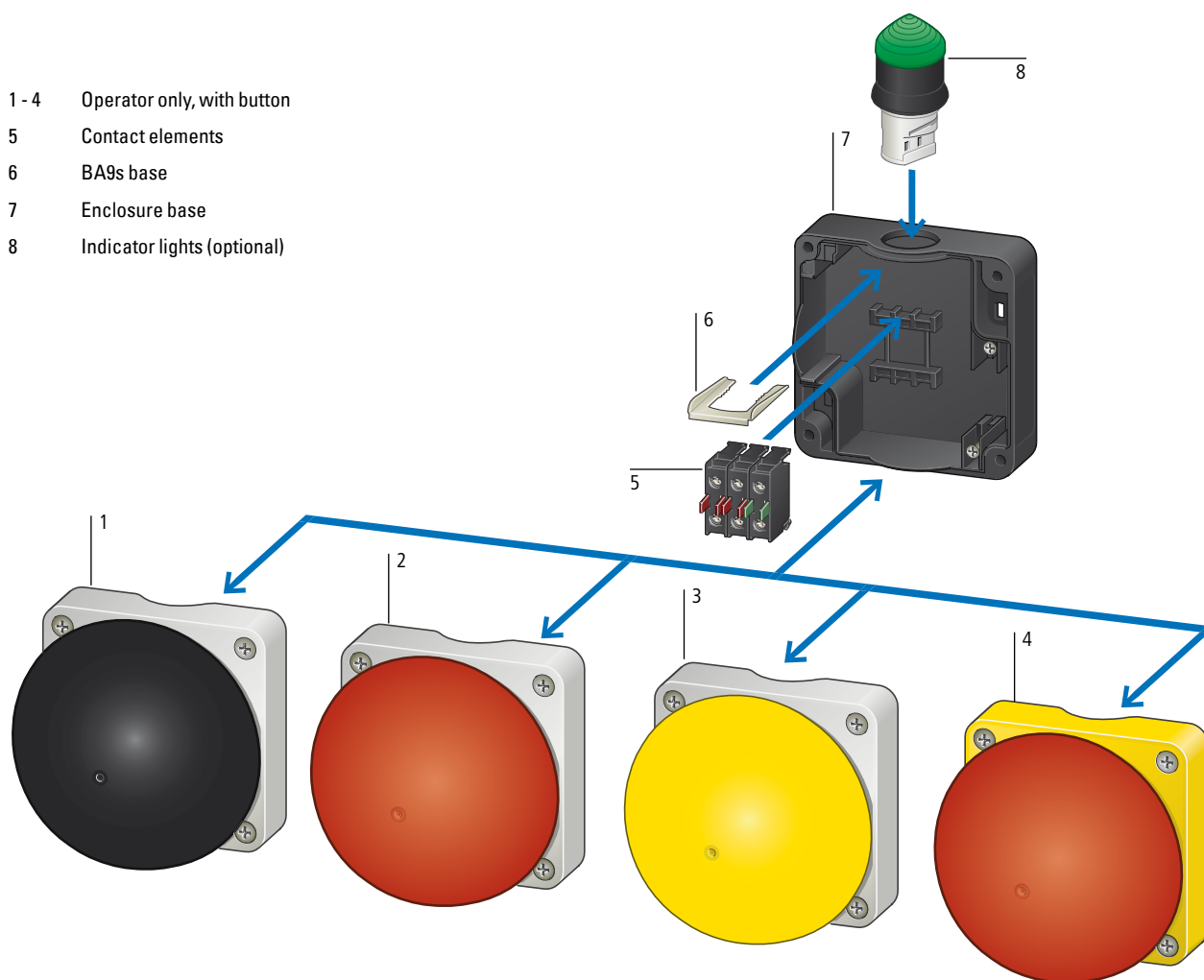
Function:		Key withdrawable at position	Contact configuration		Part no.	Article no.
 = momentary	 = maintained		N/O = normally open	N/C = normally closed		




Key-operated pushbuttons					
Silver bezel MS1 lock mechanism not suitable for master key systems with 1 key IP66 (at the front), IP65 (at the rear) cable length: 0.2 m					
	2 positions Cable (black) with M12A plug, 4-pole	 40°	0	1 N/O	C22-WS-MS1-K10-P1 186194
		 60°	I 0		C22-WRS-MS1-K10-P1 186199
	3 positions Cable (black) with M12A plug, 4-pole	40°  40°	0	2 N/O	C22-WS3-MS1-K20-P1 186202
		60°  60°	I 0 II		C22-WRS3-MS1-K20-P1 186205

Notes

for different cable lengths see online catalog

- 1 - 4 Operator only, with button
- 5 Contact elements
- 6 BA9s base
- 7 Enclosure base
- 8 Indicator lights (optional)



	Function	Color			Contact configuration		Part no. Article no.
		Button	Enclosure top	Enclosure base	⊖ = Safety function implemented with positive opening according to IEC/EN 60947-5-1 N/O = normally open N/C = normally closed open		
Foot and palm switches, IP67, IP69							
	momentary	●	●	●	1 N/O	1 N/C ⊖	FAK-S/KC11/I 229749
	momentary	●	●	●	1 N/O	1 N/C ⊖	FAK-R/KC11/I 229746
	maintained	●	●	●	-	1 N/C ⊖	FAK-R/V/KC01/IY 229747
		●	●	●	1 N/O	1 N/C ⊖	FAK-R/V/KC11/IY 229748
		●	●	●	-	2 N/C ⊖	FAK-R/V/KC02/IY 256790



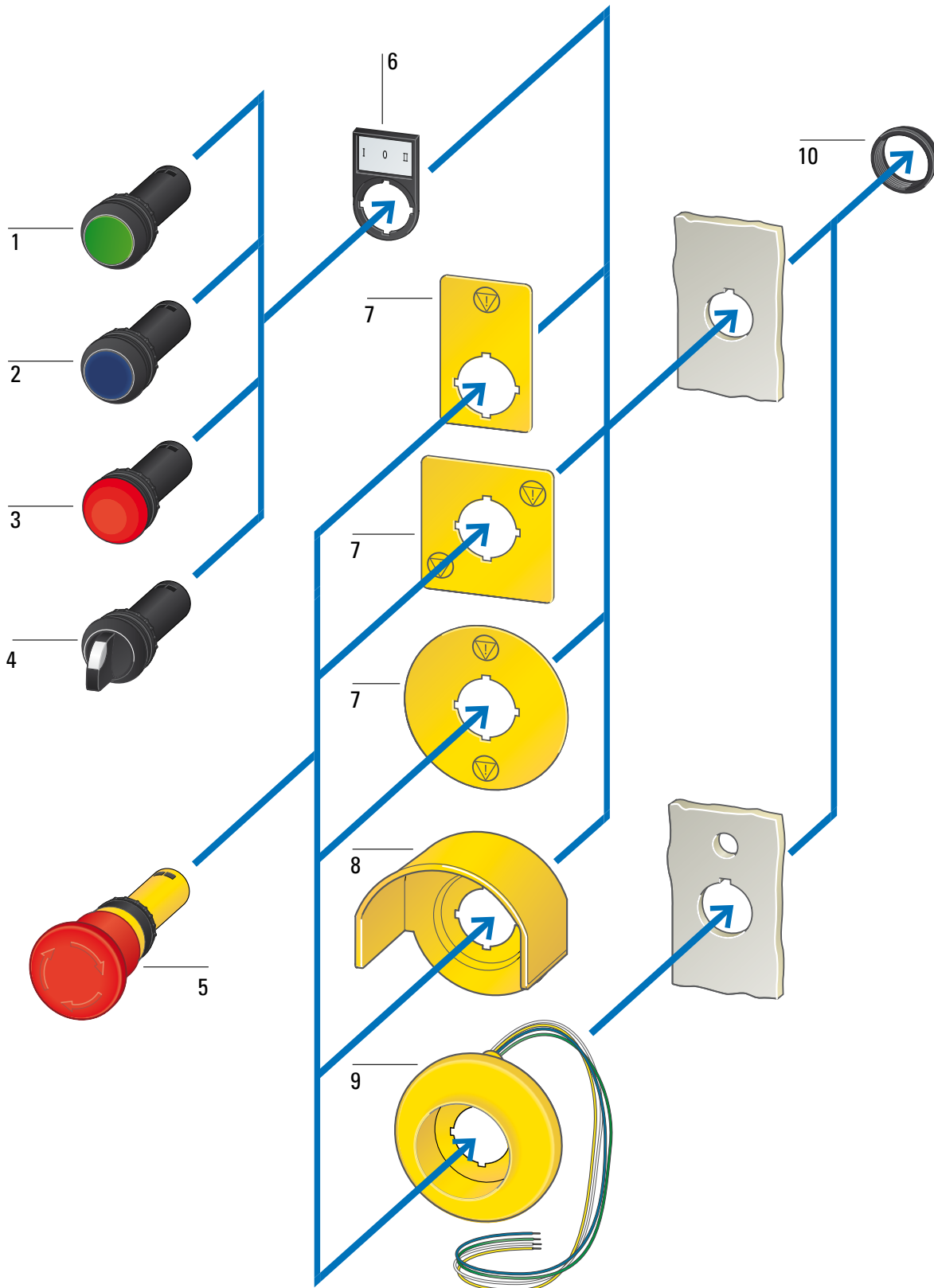
RMQ-Titan C22 compact pilot devices

The C22 compact product range from the tried-and-tested RMQ-Titan family range impresses with control and signaling devices in a compact design. The products have a classic design with black front rings. In addition to pushbuttons, selection buttons and indicator lights the range also includes standard E-STOP buttons. The push and selection buttons are available as either latching or momentary versions available in different colors.

Thanks to the monoblock design and the integrated contacts, the contacts, the C22 compact series offers an "all-in-one" solution for quick and easy quick and easy installation. Thanks to their compact design the RMQ-Titan C22 compact control and signaling devices are suitable for use in a wide variety of industrial areas.










Get more information














- 1 C22 compact pushbuttons
- 2 C22 compact illuminated pushbuttons
- 3 C22 compact indicator lights
- 4 C22 compact selector switches
- 5 C22 compact controlled stop/emergency-stop buttons

- 6 Label mounts
- 7 Controlled STOP legend plates, IP66
- 8 Guard ring
- 9 Illuminated ring
- 10 Threaded rings










Schließung	Contact configuration ⊖ = Safety function implemented with positive opening as defined in IEC/EN 60947 -5-1 N/O = Normally open contact N/C = Normally closed contact	Part no.	Article no.
Controlled stop/emergency stop buttons			
IP67, IP69K Mushroom plunger red (RAL 3000) without illumination			
Turn-release			
45 mm diameter	- - 2 N/C ⊖	C22-PVT45P-K02	121611
	- 1 N/O 1 N/C ⊖	C22-PVT45P-K11	121610
60 mm diameter			
	- - 2 N/C ⊖	C22-PVT60P-K02	121613
	- 1 N/O 1 N/C ⊖	C22-PVT60P-K11	121612

	Button plate	Contact configuration N/O = Normally open contact N/C = Normally closed contact		momentary Part no. Article no.	maintained Part no. Article no.	
Pushbuttons						
IP67, IP69K						
	flat		1 N/O	-	C22S-D-G-K10 121492	C22S-DR-G-K10 121545
			-	1 N/C	C22S-D-R-K01 121498	C22S-DR-R-K01 121551
			-	1 N/C	C22S-D-S-K01 121501	C22S-DR-S-K01 121554
			1 N/O	-	C22S-D-W-K10 121495	C22S-DR-W-K10 121548
		without button plate	-	1 N/C	C22S-D-X-K01 121526	C22S-DR-X-K01 121579
		without button plate	1 N/O	-	C22S-D-X-K10 121530	C22S-DR-X-K10 121583

	Color lens	Color LED	Rated operational voltage LED	Part no.	Article no.
Indicator light					
IP67, IP69K					
			24 V AC/DC	C22-L-B-24	121630
				C22-L-G-24	121628
				C22-L-R-24	121627
				C22-L-W-24	121626
				C22-L-Y-24	121629



Notes

C22 compact indicator lights are also available with an operational voltage of 120 V AC and 230 V AC

	Color button plate	Color LED	Rated operational voltage	Contact configuration		momentary	maintained
				N/O = Normally open contact	N/C = Normally closed contact	Part no. Article no.	Part no. Article no.
Illuminated pushbutton actuator							
IP67, IP69K							
flat 			24 V AC/DC	1 N/O	-	C22S-DL-B-K10-24 136632	C22S-DRL-B-K10-24 136680
				1 N/O	-	C22S-DL-G-K10-24 136635	C22S-DRL-G-K10-24 136683
				-	1 N/C	C22S-DL-R-K01-24 136638	C22S-DRL-R-K01-24 136686
				1 N/O	-	C22S-DL-W-K10-24 136641	C22S-DRL-W-K10-24 136689

Notes

C22 compact illuminated pushbutton actuators are also available with an operational voltage of 120 V AC and 230 V AC

	Function:	Contact configuration		momentary
	> = momentary > = maintained	N/O = Normally open contact	N/C = Normally closed contact	Part no. Article no.
Changeover switch				
IP65 with thumb-grip 2 positions 	> 40°	-	1 N/C	C22S-WK-K01 121584
	> 40°	1 N/O	-	C22S-WK-K10 121588
3 positions 	40° < > 40°	-	2 N/C	C22S-WK3-K02 121604
	40° < > 40°	2 N/O	-	C22S-WK3-K20 121606



easyE4 control relay

- 12 I/Os per base device
- Can be expanded to 188 I/Os
- DC, UC and AC versions are available
- Ethernet interface
- Up to 8 base devices in one network cluster
- Available with and without display
- Connection via screw or Push-in terminals
- SD card for program download and more



easyE4 expansion modules

- With 6, 8 or 16 I/Os
- DC, UC and AC versions are available
- A temperature module is available
- Up to 11 modules per base device
- Unlimited combination options
- Connection via plug connector
- Connection via screw or Push-in terminals



easyE4 communication connections

- Modbus TCP client and server functionality integrated at base device
- Modbus RTU master and slave function as add-in module
- SmartWire-DT coordinator as add-in module



easySoft programming software

- 4 programming languages
- Interrupt function blocks
- Web server function
- User modules for "subprograms"



easyE Remote Touch Display (RTD)

- Remote visualization device for the easyE4 range
- Display size 4.3" with resistive touch
- Standard version: Mirrors the screen of the base device - no programming necessary
- Advanced version: Creation of user-defined visualization with easySoft



XV-102...1E4 touch display for the easyE4 range

- Remote visualization device for the easyE4 range
- Display size 3.5" and 5.7"
- Resistive touch
- Visualization via the GALILEO software



24 V DC power supplies

- 1- or 3-phase devices up to 40 A

XControl modular PLCs

- Flexible application thanks expandable I/O level (XN300)
- Modbus TCP server/client functionality
- Programming with XSOFT-CODESYS 3
- Integrated web server for visualization (HTML5)
- OPC-UA server on board
- High cyber security standard



XC-104 modular PLC

- With 100 Mbit/s Ethernet interface
- Can be expanded locally up to 6 x I/O modules



XC-204 modular PLC

- 4 device variants
- With 100 Mbit/s Ethernet interfaces with their own network adapter
- Serial interfaces (CAN, RS485)
- Can be expanded locally with up to 16 x I/O slices



XC-303 modular PLC

- 3 device variants
- With 1 Gbit/100 Mbit/s Ethernet interfaces with their own network adapter
- Isolated serial interfaces (CAN, RS485)
- Can be expanded locally with up to 32 x I/O slices



CODESYS

Programming software XSOFT-CODESYS

- PLC

**XN300 modular I/O system**

- Universal I/O system, can be used as a local I/O level directly on the controller, or as a remote I/O system via a gateway
- Versatile functions ensure maximum flexibility
- Push-in and plug technology for simple, tool-free and efficient handling
- Compact and space-saving with up to 20 channels per slice

**XN300 Gateways**

- Gateways for EtherCAT and CANopen
- For networking in standard networks

**XV-303****HMI and HMI/PLC**

- Display sizes 7", 10.1", 15.6"
- Devices for front mounting, plastic
- Capacitive multi-touch

XV-313

- Display sizes 7", 10.1"
- Devices for rear mounting, plastic
- Capacitive multi-touch

**XV-363****HMI and HMI/PLC**

- Display sizes 5.7", 10", 12"
- Devices for front mounting, metal
- Infrared touch

**XV-102****HMI and HMI/PLC**

- Display sizes 3.5", 5.7", 7"
- Devices for front mounting, plastic
- Resistive touch

XV-152

- Display sizes 5.7", 8.4", 10.4"
- Devices for front mounting, metal
- Resistive touch

**XP-504****industrial PC**

- Panel-PC and terminals in display sizes 10.1", 15.6", 21.5"
- Capacitive multi-touch
- Extender module for increasing the distance of up to 100 m

**XC-152 compact PLC**

- 'Blind node' substitute for XV150
- SmartWire-DT interface (depends on the device type)
- PLC (XSOFT-CODESYS 2/3) and Eaton visualization (GALILEO) in one device

**GALILEO and XSOFT-CODESYS programming and visualization software**

- HMI
- HMI/PLC
- PLC
- Industrial PC



easyE4 control relay



[Download the easyE4 brochure](#)

The easyE4 generation of control relays is ideal for users looking to implement control tasks with as little effort as possible. Thanks to its ease of use, the easyE4 can be used to implement both simple control tasks and more complex configurations with high process efficiency. The devices are available with different voltages, which makes them suitable for use in many different applications.

The base devices come with powerful hardware, flexible expansions and extensive communication and visualization options, while the Ethernet interface gives users access to the Internet of Things (IoT).

In conjunction with the intuitive programming software easySoft version 8, which, among others, supports four different programming languages, the easyE4 offers a smart package for quick and easy programming.



Get more information



State-of-the art communication

Via the integrated Ethernet interface, the easyE4 can be easily integrated into modern automation structures. Bidirectional communication with devices in the field is also possible via the integrated Modbus TCP communication and the SmartWire-DT module. Client and server operation can be selected for Modbus TCP communication. Via the Modbus RTU serial interface, devices can be connected or data sent from/to higher-level control systems as master or slave operation using an additional module.



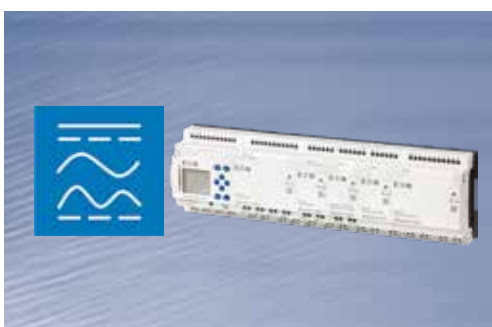
Flexible visualization and remote access

With the integrated web server, the contents of the easyE4 can be easily accessed on all mobile devices, such as smartphones or tablets. The WebEditor included in easySoft can be used to create user-defined websites which can then be downloaded to the easyE4 web server. In addition, the integrated web server enables automated notification by e-mail in the event of a malfunction and it can also be used to control your system. Furthermore, it is also possible to exchange data via JSON API. The easyE4 also has an integrated cloud connection to Amazon Web Services (AWS). This offers maximum security thanks to certificates and hardware-based encryption.



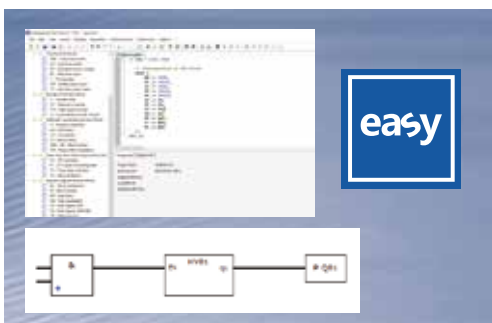
Flexible visualization - on site and remotely

Visualizing information and accessing the easyE4 is now even easier. With the easyE Remote Touch Display (RTD) standard, you can either mirror the content of the easyE4 display as a classic door display and operate it using the on-screen keyboard or use the RTD Advanced to create a visualization using easySoft - in the style of the predecessor MFD Titan. Alternatively, the web server can provide a user-defined website, which can be accessed from the browser of a PC or web panel. This provides a flexible and easy way to display data and operate the easyE4.



Flexible expansions and installation

Available as DC, UC and AC versions, the easyE4 base devices and expansion modules are ideal for use in various industrial and building applications. The base devices can be expanded by up to 11 modules and communication modules. The different voltage types can be combined without any limitations. Thanks to the intelligent plug connector, connecting or replacing individual expansion modules is easy. In addition, the extension modules can be marked as optional during project planning in easySoft in order to support even more flexible projects.



easySoft version 8

easySoft version 8 offers four programming languages – LD, EDP, FBD and ST – alongside helpful new function blocks such as interrupts or alarm modules, which together ensure the smooth operation of any application. The programming software contains many new functions that have been designed with users' needs in mind in order to save valuable time during the programming process.

Tailored to your requirements



The devices are multi-functional, which simplifies planning

The easyE4 combines multiple functions, such as logic and counting functions, in one device. This significantly reduces the time required for planning new projects. In addition, the control relay closes the gap between the various relay types and a small controller. The compact easyE4 range also simplifies ordering, warehousing and maintenance.



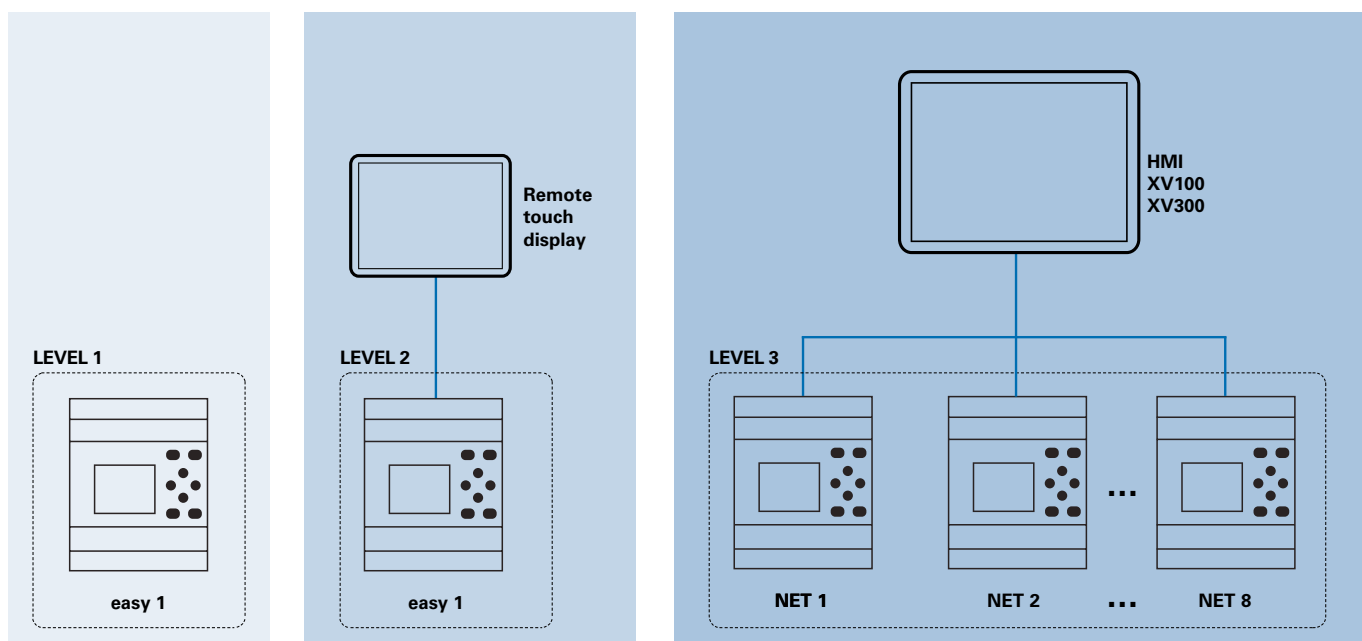
Programming and commissioning made easy

The easyE4 offers flexible programming options, either directly on the device or via the easySoft software from any PC. Users have a choice of four different programming languages. A micro SD card can be used to transfer the programming to new devices, which simplifies the commissioning of standardized machinery, for example.



Quick and easy implementation during operation

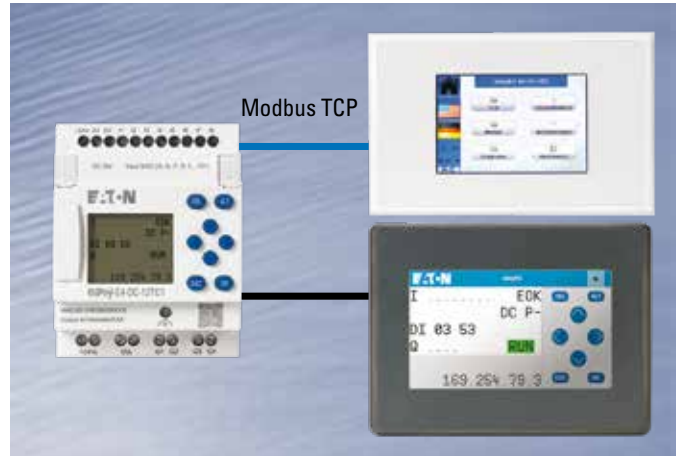
Many advantages of this powerful control relay become apparent during operation: Thanks to the interrupt functions, the easyE4 achieves fast response times of less than 2 milliseconds. The DCF77 synchronization ensures high accuracy in time-sensitive applications. Using the device display for visualization allows for rapid detection of the operating states of both the base devices and the expansion modules. The operating parameters can be directly adjusted via the keys on the base device.



Visualization via HMI and web server

The easyE4 also offers multiple visualization options. Via the integrated web server, content can be retrieved from any internet-enabled device, such as a smartphone or tablet. Thanks to the Ethernet interface, projects can also be displayed, via Modbus TCP, on any HMI, for example on the XV100. Access rights can be individually assigned.

The easyE Remote Touch Display (RTD) offers a further visualization option as a plug & play solution. The contents of the easy base device are mirrored in color on the RTD Standard. Controlling your application remotely is just as easy - and all this without programming of the RTD!



easyE4 solutions

Level 1: Use of the easyE4 as a stand-alone device without a network connection for independent control and regulation tasks.

Level 2: As 1, but with use of the easyE Remote Touch Display for operation on the door of the housing - either for mirroring the display or with user-defined visualization à la MFD-Titan.

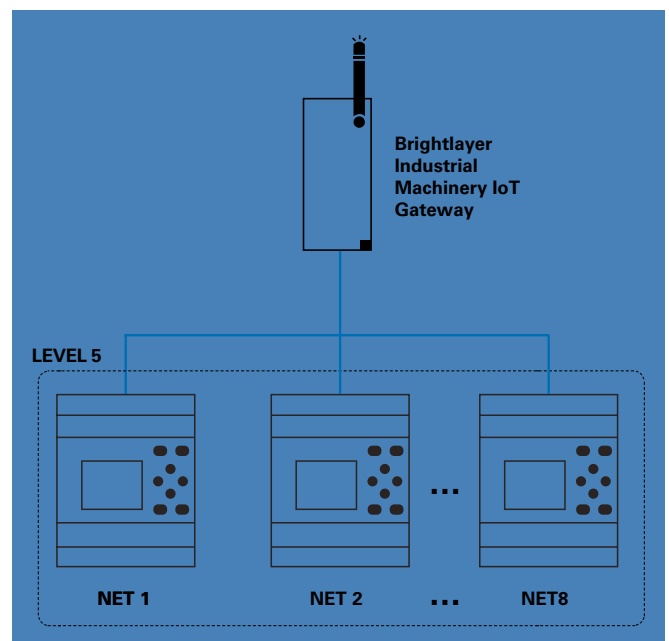
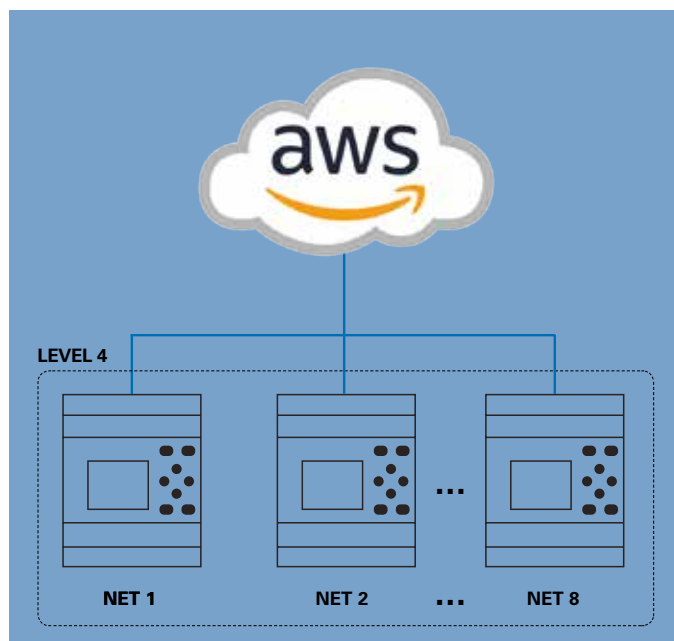
Level 3: As 2, but with up to 8 easyE4 base units in the easyNET network for communication with each other. Optional: Visualization via XV100/XV300 HMIs with Galileo visualization.

Level 4: As 3, but with native connection of the easyE4 to Amazon Web Services (AWS) with certificate-based, hardware-based encryption for maximum cyber security.

Level 5: As 3, but with an external IoT gateway for Eaton's own cloud connection - Brightlayer Industrial Machinery. With VPN function and setup wizard, this solution is particularly beginner-friendly!

Smart control relays offer an alternative to PLCs

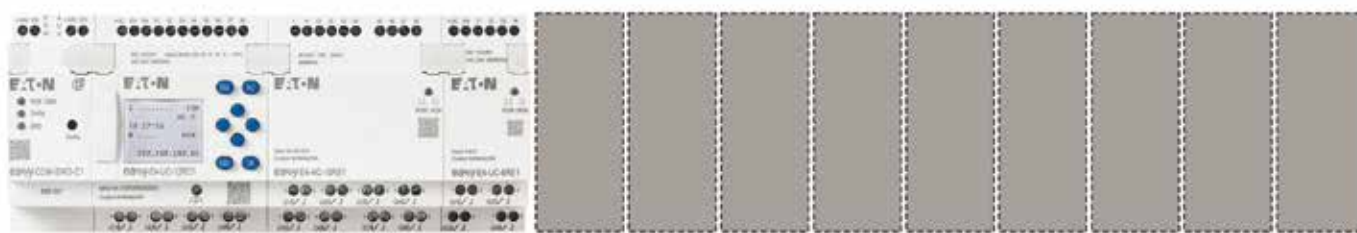
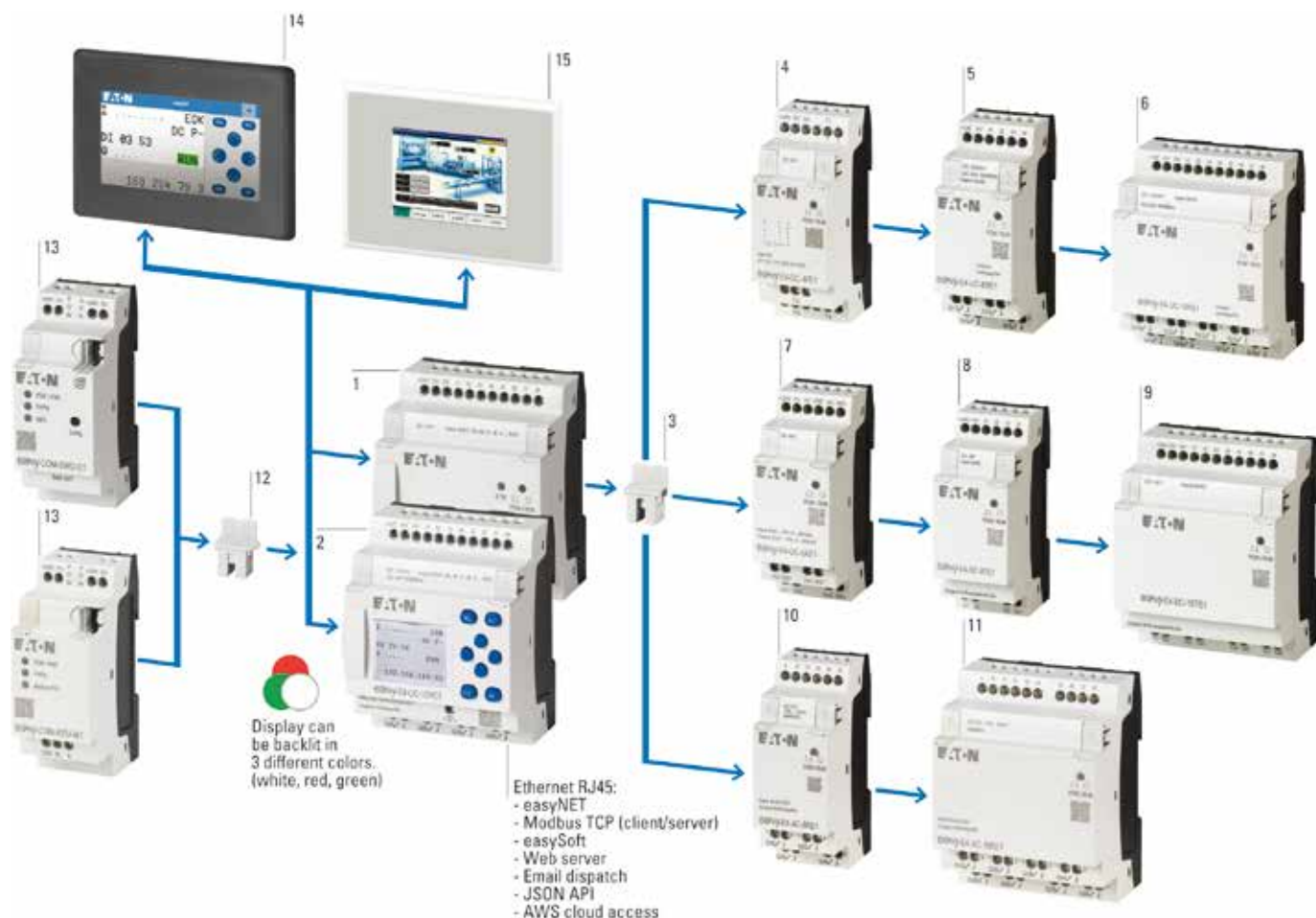
Our white paper examines the question whether the latest generation of smart control relays can provide a future-proof and cost-effective alternative to PLCs when it comes to controlling machines of low to medium complexity.



Control relays









System overview

Moeller series



Max. 1 communication module + 1 base device + 11 expansion modules = max. 13 devices

- | | | | |
|---|--|----|---|
| 1 | easyE4 control relay without display | 9 | DC expansion module, 16 inputs/outputs |
| 2 | easyE4 control relay with display | 10 | AC expansion module, 8 inputs/outputs |
| 3 | Plug connector for expansion modules | 11 | AC expansion module, 16 inputs/outputs |
| 4 | Expansion module, 4 inputs for temperature sensors | 12 | Plug connector for communication module |
| 5 | UC expansion module, 8 inputs/outputs | 13 | Communication module for easyE4 range (SmartWire-DT, Modbus RTU) |
| 6 | UC expansion module, 16 inputs/outputs | 14 | easyE Remote Touch Display, resistive touch, 4.3" |
| 7 | DC expansion module, 6 analog inputs/outputs | 15 | XV-102 touch display for easyE4 devices, resistive touch, 3.5" and 5.7" |
| 8 | DC expansion module, 8 inputs/outputs | | |

Inputs		Outputs		Other features				Supply voltage	Screw terminal	Push-in terminal	
Digital	Available as analog inputs	Relay	Transistor	Analog	Display + keypad	Real-time clock	Ethernet		Part no. Article no.	Part no. Article no.	
easyE4											
Base devices with 8 A outputs, transistor 0.5A											
	8	4	4	-	-	✓	✓	✓	12/ 24 V DC 24 V AC	EASY-E4-UC-12RC1 197211	EASY-E4-UC-12RC1P 197504
	8	4	4	-	-	-	✓	✓	12/ 24 V DC 24 V AC	EASY-E4-UC-12RCX1 197212	EASY-E4-UC-12RCX1P 197505
	4	4	-	4	-	✓	✓	✓	24 V DC	EASY-E4-DC-12TC1 197213	EASY-E4-DC-12TC1P 197506
	8	4	-	4	-	-	✓	✓	24 V DC	EASY-E4-DC-12TCX1 197214	EASY-E4-DC-12TCX1P 197507
	8	-	4	-	-	✓	✓	✓	100 - 240 V AC/DC	EASY-E4-AC-12RC1 197215	EASY-E4-AC-12RC1P 197508
	8	-	4	-	-	-	✓	✓	100 - 240 V AC/DC	EASY-E4-AC-12RCX1 197216	EASY-E4-AC-12RCX1P 197509
Expansion devices with 5 A outputs, transistor 0.5A											
	4	-	4	-	-				12/ 24 V DC 24 V AC	EASY-E4-UC-8RE1 197217	EASY-E4-UC-8RE1P 197510
	8	-	8	-	-				12/ 24 V DC 24 V AC	EASY-E4-UC-16RE1 197218	EASY-E4-UC-16RE1P 197511
	4	-	-	4	-				24 V DC	EASY-E4-DC-8TE1 197219	EASY-E4-DC-8TE1P 197512
	8	-	-	8	-				24 V DC	EASY-E4-DC-16TE1 197220	EASY-E4-DC-16TE1P 197513
	4	-	4	-	-				100 - 240 V AC/DC	EASY-E4-AC-8RE1 197221	EASY-E4-AC-8RE1P 197514
	8	-	8	-	-				100 - 240 V AC/DC	EASY-E4-AC-16RE1 197222	EASY-E4-AC-16RE1P 197515
	-	4	-	-	2				24 V DC	EASY-E4-DC-6AE1 197223	EASY-E4-DC-6AE1P 197516
	-	4	-	-	-				24 V DC	EASY-E4-DC-4PE1 197224	EASY-E4-DC-4PE1P 197517
Description									Part no.	Article no.	
Communication modules											
	Communication module for connecting the easy control relay as an SWD coordinator in the SmartWire-DT network, screw terminal									EASY-COM-SWD-C1	199452
	Communication module for connecting the easy control relay via Modbus RTU as master or slave, screw terminal									EASY-COM-RTU-M1	199453
Software											
	easySoft programming software									EASYSOFT-SWLIC	197226
Optional accessories											
	Micro SD memory card, 2 GB									MEMORY-SDU-A1	191087
	Hinged inspection window for 4HP									EASY-E4-BOX-SKF-4TE	EP-401058
	Hinged inspection window for 6HP									EASY-E4-BOX-SKF-6TE	EP-401059
	easyConnect spare parts package, consisting of 3 plug connectors and cover caps for I/O expansion modules									EASY-E4-CONNECT1	197225
	easyConnect spare parts package, consisting of 3 plug connectors and cover caps for communication modules									EASY-E4-CONNECT-COM1	199513
	easyE4 starter sets										
	UC base device, patch cable, easySoft license code, easyE4 flyer									EASY-BOX-E4-UC1	197227
	DC base device, patch cable, easySoft license code, easyE4 flyer									EASY-BOX-E4-DC1	197228
	AC base device, patch cable, easySoft license code, easyE4 flyer									EASY-BOX-E4-AC1	197229



Visualization for the easyE4 made easy

The easyE4 also offers a wide range of options for visualization, to optimally adapt the solution to your individual requirements and circumstances. With the integrated display, texts and values can be displayed and changed directly at the base device. Due to the integrated web server, content can also be called up on all mobile devices such as smartphones or tablets.

For visualization and display outside of the control cabinet, the 'easyE' Remote Touch Display as well as the touch display XV-102 ideally complement the easyE4 product range.

The easyE Remote Touch Display (RTD), which is available in 4.3", offers a cost-effective way to operate your application remotely. The contents of the integrated display of the easyE4 base device are mirrored in color on the Remote Touch Display. Alternatively, it is possible to create an individual visualization using easySoft. A distinction is made here between RTD Standard and RTD Advanced.

With the XV-102 'easy' touch display, projects created for the control relay series can be visualized conveniently and clearly. The compact touch display offers you all the design options you need from diagrams to icons and images to create an individual user interface. The visualization on the 3.5" and 5.7" display is implemented using Eaton's own GALILEO software.

Further information on our starter sets at:
Eaton.com/easy



Get more information





With the easyE4 control relay, simple control tasks, such as temperature control in the food industry, can be solved quickly and easily – without any in-depth programming knowledge. Screw and Push-in terminals are available for quick and easy commissioning.

Visualization outside the control cabinet is handled by the 'easyE' Remote Touch Display or the XV-102 touch display depending on requirements. The functions of the XV-102 as an HMI solution can be adapted specifically to the needs of the easyE4 user. In combination with the GALILEO visualization software, a cost-effective automation solution is created that can be expanded to include additional devices as required.



Moeller series

easyE4 visualization




	Display size	PLC license	Built-in interfaces					Part no.	Article no.
	Inches			1 x RS232 / 485	1 x USB host 2.0	1 x Modbus TCP/IP	Mirror function	Individual visualization	
easyE Remote Touch Display for easyE4 control relay									
Resistive touch Approvals: cUL (UL508) RTD-Standard: Mirror function of the connected easyE4 RTD-Advanced: Individual visualization with easySoft									
	4.3	Without PLC functionality	-	✓	-	✓	-	EASY-RTD-DC-43-03B1-00	199740
			-	✓	-	✓	✓	EASY-RTD-DC-43-03B2-00	EP-401057
XV-102 without PLC for use with easyE4 control relays									
Resistive touch approvals: cUL (UL508) SD card slots: 1 Individual visualization with Galileo									
	3.5	Without PLC functionality	-	✓	✓	-	✓	XV-102-A0-35TQRB-1E4	198513
	5.7		-	✓	✓	-	✓	XV-102-A3-57TVRB-1E4	199734
Description								Part no.	Article no.
easyE4 XV100 starter sets									
		DC base device with display, 3.5" touch panel, Ethernet switch, patch cable, easySoft license code, easyE4 flyer						XV100-BOX-E4-DC1	198514
		UC base device with display, 3.5" touch panel, Ethernet switch, patch cable, easySoft license code, easyE4 flyer						XV100-BOX-E4-UC1	198515
easyE4 Remote Touch Display starter sets								RTD-BOX-E4-DC1	199786
		DC base device with display, 4.3" Remote Touch Display, patch cable, easySoft license code, easyE4 flyer							
		UC base device with display, 4.3" Remote Touch Display, patch cable, easySoft license code, easyE4 flyer						RTD-BOX-E4-UC1	199785

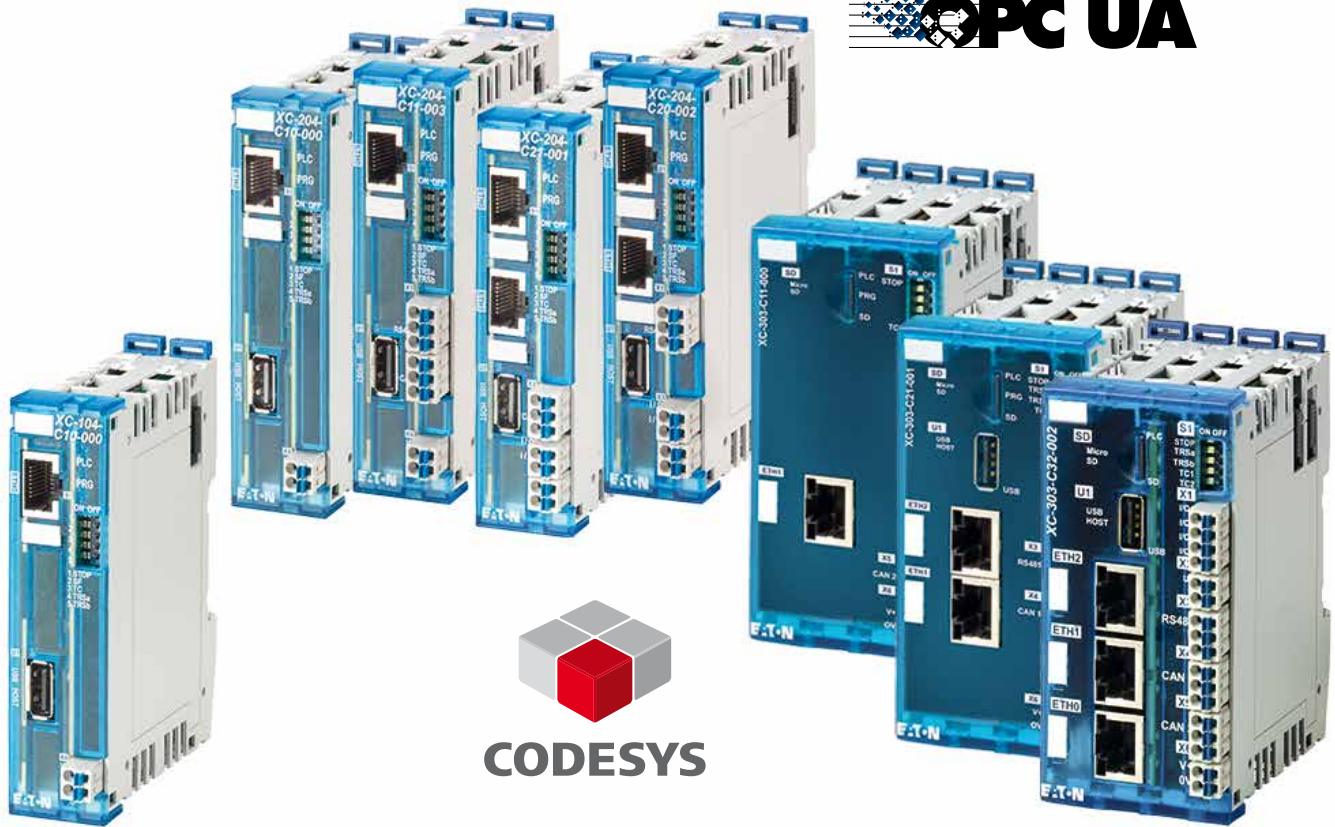


PSL and PSG power supplies

Whether they're used as part of a machine or system, inside the control panel or in the distribution board – the PSL and PSG 24 V DC power supplies offer the right solution and design for every type of requirement. The DIN rail power supplies ensure efficient 1-phase and 3-phase operation. In addition to the wide-range inputs and approvals for global use, the devices stand out for their efficiency and wide temperature range. The devices come with short-circuit and overload protection, which ensures reliable power supply. The compact enclosures save space and costs. The adjustable output voltage range of the PSL and PSG power supplies offers maximum flexibility. With output power from 10 W to 960 W, the power supply units cover machines and systems with both low and high power requirements.

Moeller series

	Input voltage range	Rated output voltage	Rated output power	Rated output current	Part no. Article no.
			W	A	
Single-phase power supplies					
Setting range of the output voltage: 24 V DC (10W), 24 - 28 V DC (30W, 60W), 22-24 V DC (91.2W)					
	90 - 264 V AC	24 V DC (± 2%)	10	0.42	PSL10E24RP EP-401402
			30	1.25	PSL30E24RP EP-401403
			60	2.5	PSL60E24RP EP-401404
	90 - 264 V AC (125 - 375 V DC)	91.2	3.8	PSL100E24RP EP-401405	
Setting range of the 21.6 - 26 V DC (75W), 21.6 - 26.4 V DC (120W, 240W), 24 - 28 VDC (480W)					
	85 - 264 V AC	24 V DC (± 2%)	75	3.125	PSG75E24SPB EP-401392
	90 - 264 V AC	24 V DC (± 1%)	120	5	PSG120E24SMB EP-401394
			240	10	PSG240E24SMB EP-401395
			480	20	PSG480E24SMB EP-401396
3-phase power supplies					
Setting range of the output voltage: 24 - 28 V DC					
	3 x 320 - 575 V AC or 3 x 340 - 575V AC (450 - 800 V DC)	24 V DC (± 2%)	120	5	PSG120F24SMB EP-401398
			240	10	PSG240F24SMB EP-401399
			480	20	PSG480F24SMB EP-401400
			960	40	PSG960F24SMB EP-401401



XControl™ - modular PLCs

The control system for series machine building



The I/O level of the XControl PLCs can be set up and perfectly adapted to the application using the slice-based modules of the XN300 system.

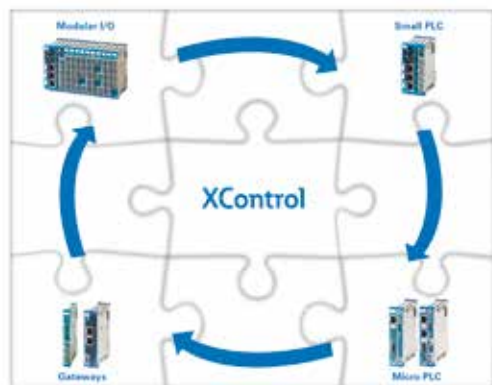
The XControl system comprises compact, high-performance controllers whose local I/O level can be flexibly adapted to the needs of the application using XN300. The standard interfaces of the controllers also enable the integration of XN300 remote stations and 3rd party devices. Modern, innovative automation concepts can be implemented in combination with the XV and XH series touch panels.

The XC-104, XC-204 and XC-303 PLCs and gateways can be expanded simple and flexible with the I/O slice modules of the XN300 system to form a control configuration tailored to your solution.

Ethernet interfaces with individual network adapters for connection in networks paired with the standard CAN and RS485 interfaces expand the features of the devices to a universal control and communication point of the networked plant.

XControl

Eaton's XControl system includes the powerful, XSOFT-CODESYS programmable modular controllers of the XC100, XC200 and XC300 series, the slice-modular I/O system and gateways, with which modern automation concepts can be easily implemented.



XC100 - The rapid control solution

The XC100 is the new "entry-level solution" in the XControl family. It can be used to efficiently implement small control and regulation functions with Ethernet-based networking. The modular controller can be expanded with up to six snap-on I/O modules from the XN300 system and is available as the XC-104 with an Ethernet interface on board.

XC200 - Flexible solutions to standards

More complex automation solutions can be realized with the XC200, which can be supplemented with up to 16 XN300 I/O modules. Two configurable digital inputs/outputs additionally enable the implementation of special, time-critical applications. The compact modular controller, known as the XC-204, is available in different versions, which differ in terms of the integrated communication interfaces: This gives users the choice of whether they require one or two Ethernet interfaces or whether they want to integrate the controller into a network via Ethernet IP, Modbus TCP, EtherCAT, CANopen, Modbus RTU or RS485.

XC300 - Powerful in communication



Thanks to the large number of interfaces, the XC300 controller is suitable as a universal and flexible data node for a wide range of applications. The integrated OPC server allows standardized data transmission in M2M (machine-to-machine) communication and the web server supports visualization in HTML 5 format. Up to three Ethernet interfaces with individual IP addresses enable network segmentation, whereby access by unauthorized persons is protected by current cyber security standards.



Designation	XN300 ext.	Retain Data	RTC	USB	SD SLOT	ETH 1GB/100MB	WEB-Visu	OPC UA	Ethernet/IP	Modbus TCP	EtherCAT	CAN	CANOPEN	RS485	Modbus RTU
XC100 modular PLC															
XC-104-C10-000	6 modules	4kB	•	•	-	-/1x	HTML5	Server	Scanner (MS)	Server/Client	-	-	-	-	-
XC200 modular PLC															
XC-204-C10-000	16 modules	32kB	•	•	-	-/1x	HTML5	Server	Scanner (MS)	Server/Client	-	-	-	-	-
XC-204-C11-003	16 modules	32kB	•	•	-	-/1x	HTML5	Server	Scanner (MS)	Server/Client	-	1x	MS/SL	•	MS/SL
XC-204-C20-002	16 modules	32kB	•	•	-	-/2x	HTML5	Server	Scanner (MS)	Server/Client	MS	-	-	•	MS/SL
XC-204-C21-001	16 modules	32kB	•	•	-	-/2x	HTML5	Server	Scanner (MS)	Server/Client	MS	1x	MS/SL	-	-
XC300 modular PLC															
XC-303-C11-000	32 modules	128kB	•	•	•	-/1x	HTML5	Server	Scanner (MS)	Server/Client	MS	1x	MS/SL	-	-
XC-303-C21-001	32 modules	128kB	•	•	•	-/2x	HTML5	Server	Scanner (MS)	Server/Client	MS	1x	MS/SL	•	MS/SL
XC-303-C32-002	32 modules	128kB	•	•	•	1x/2x	HTML5	Server	Scanner (MS)	Server/Client	MS	2x	MS/SL	•	MS/SL

The right control solution for your application

Global competition, progressive digitalization and specific customer requirements continually creating new challenges for series machine and system manufacturers in the design of their machine concepts. Automation solutions must deliver the modularity required in the hardware and software solution in order to satisfy customer specifications. In addition to component costs, the development, design and product maintenance work also needs to remain manageable throughout the life cycle.



CODESYS

Seamless integration

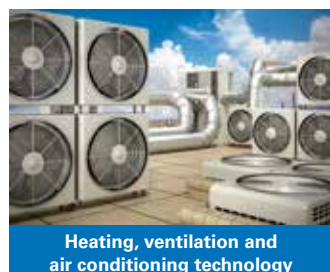
The PLC can be programmed and visualized with XSOFT-CODESYS 3 via any Ethernet interface. Existing programs and libraries can be used across all XC devices.



Production machinery

Digital transformation, networked production, Industry 4.0

In modern production, people, machinery and processes are intelligently networked with each other through information and communication technology. Eaton is there to assist you by supplying components and offering support in the development of communicating series machines.



Heating, ventilation and air conditioning technology

Energy-efficient climate control

From the PLC and sensor systems through to the electrical drives: Eaton components are ideal for use in efficient climate control to create specified room conditions.



Pumps and compressors

Operate systems reliably and efficiently

OPC UA represents a milestone in machine communication, playing a key role in significantly accelerating the digitalization process. Intelligent communication interfaces facilitate the flow of information and simplify the exchange of system components.

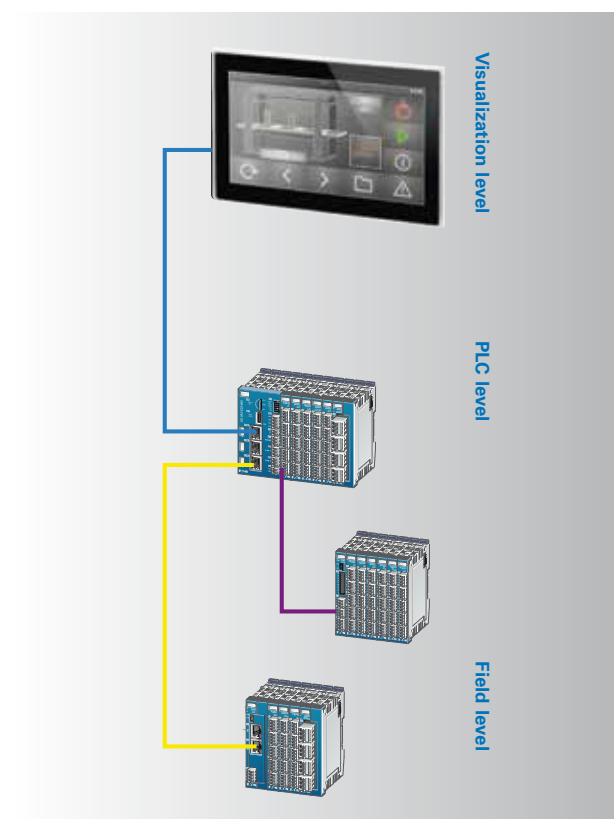
Cybersecurity

In order to protect machines and systems against unauthorized access, Eaton complies with the latest standards in communications technology.











Standardized data exchange

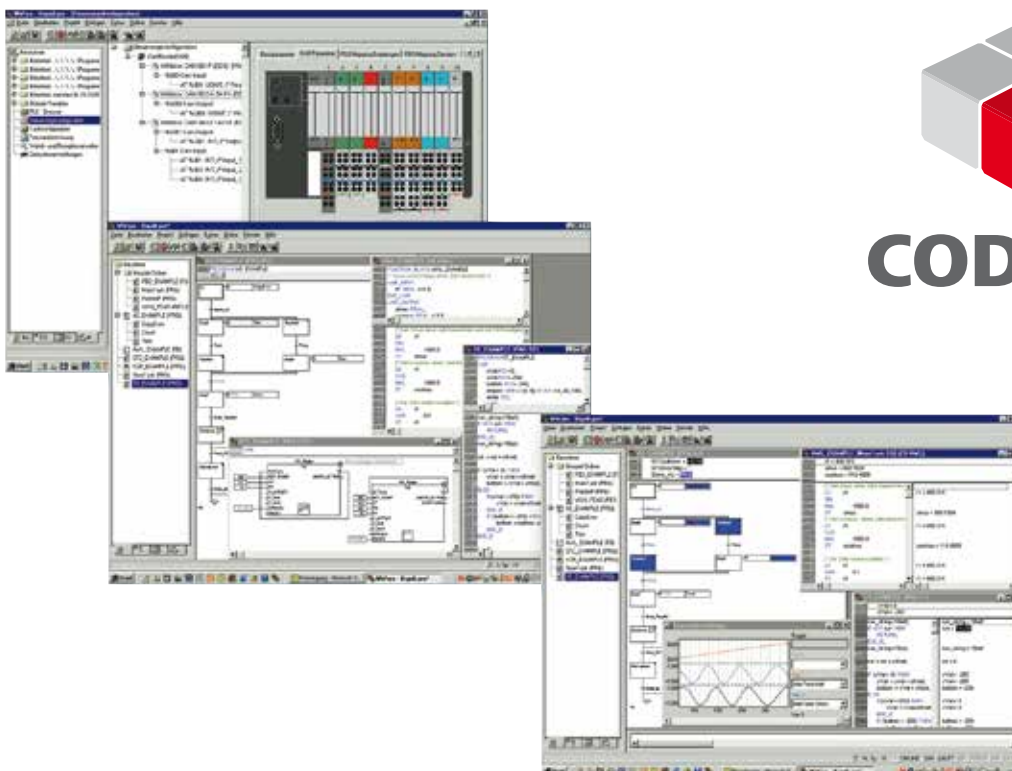
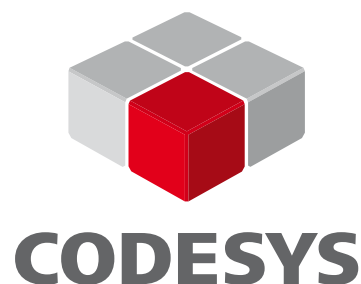
The use of data exchange standards ensure that the devices are suitable for universal use. The OPC UA server guarantees interoperability in M2M communications.



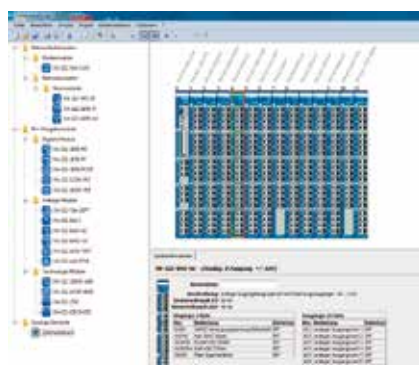
HTML5-based visualization

The integrated web server offers remote visualization on mobile devices such as PCs, tablets and smartphones. The status of the system is transparent, and functions are easy to control - from (virtually) anywhere.

		Built-in interfaces	Part no.	Article no.
Modular PLC 24 V DC power supply Can be locally and remotely expanded via the XN300 I/O system LINUX operating system RUN/STOP switch OPC server Web server XSOFTE-CODESYS V3 programming Approvals: CE, cULus		ARM CORTEX A7 Dual Core @960MHz ARM CORTEX A7 (solo) @800MHz ARM CORTEX A7 (dual) @1000MHz 1 x Ethernet (ETH 2) 10/100/1000 Mbit/s 1 x Ethernet (ETH 1) 10/100 Mbit/s 1 x Ethernet (ETH 0) 10/100 Mbit/s 1 x RS485 1 x USB host 2.0 1 x CANopen (M/S) (iso) 1 x CANopen (M/S)		
XC-104 modular PLC  		Can be locally expanded by up to 6 XN300 I/O modules Internal memory: 256 MB RAM / 4 GB FLASH / 4k NV-RAM External memory: USB storage	- ✓ - - - ✓ - ✓ - -	XC-104-C10-000 199971
XC-204 modular PLC  		Can be locally expanded by up to 16 XN300 I/O modules Internal memory: 512 MB RAM / 8 GB FLASH / 32k NV-RAM External memory: USB storage	- - ✓ - - - ✓ ✓ - - - - ✓ - - - - ✓ - ✓ - ✓ - - - ✓ ✓ ✓ - ✓ - ✓ - - - ✓ - ✓ - -	XC-204-C20-002 199977 XC-204-C21-001 199975 XC-204-C11-003 199974 XC-204-C10-000 199973
XC-303 modular PLC  		Can be locally expanded by up to 32 XN300 I/O modules Internal memory: 512 MB RAM / 128 MB FLASH / 128 kB NV-RAM External memory: Micro SD card, USB storage	✓ - - ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ - - ✓ ✓ - ✓ ✓ ✓ - ✓ - - - ✓ - - - - ✓	XC-303-C32-002 191080 XC-303-C21-001 191081 XC-303-C11-000 191082
Starter sets 		XC-104-C10-000 PLC, XN-322-8DIO-PD05 I/O module, patch cable, XSOFTE-CODESYS V3 software license, XControl flyer		XC104 Starter Set 199983
		XC-204-C21-001 PLC, XN-322-8DIO-PD05 I/O module, patch cable, XSOFTE-CODESYS V3 software license, XControl flyer		XC204 Starter Set 199985
		XC-303-C32-002 PLC, XN-322-8DIO-PD05 I/O module, patch cable, XSOFTE-CODESYS V3 software license, XControl flyer		XC303 Starter Set 197871
Memory card 		MicroSD memory card with adapter, min. 2 GB		MEMORY-SDU-A1 191087



XSOFT-CODESYS – PLC programming to international standards



Our software tools simplify both the engineering and the commissioning process:

- XN300 Assist
- I/O-Assist
- SWD-Assist

Free download at
Eaton.com/software

XSOFT-CODESYS is an IEC 61131-3 engineering software for configuring and programming control systems based on the manufacturer-independent XSOFT-CODESYS standard. Sophisticated technical features, ease of use and the widespread use of this software as a programming system for automation components from various manufacturers guarantee its success.

In applications where a powerful PLC or HMI-PLC with various fieldbus connections is required, the software is the optimum programming environment. The integrated fieldbus configurators CAN and Modbus-RTU as well as Modbus TCP, EthernetIP and EtherCAT enable the devices to be connected to the preferred fieldbus quickly, intuitively and flexibly. XSOFT-CODESYS is the ideal programming environment for all machine and process-related applications in machine and system engineering.



1) for devices with SmartWire-DT interface

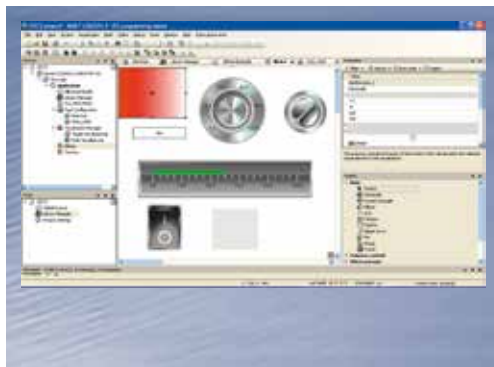
XSOFT-CODESYS is the programming tool for all Eaton XV/XC controllers. It enables programming according to IEC-61131-3, based on the following programming languages: structured text (ST), instruction list (IL), ladder diagram (LD), function block diagram (FBD), sequential function chart (SFC), and continuous function chart (CFC).

Multitasking

Web visualization

Application libraries

- Closed-loop control toolbox
- Motion-control toolbox
- FTP server
- FTP client
- UDP and TCP/IP
- Modbus RTU/TCP master/slave
- OS functions
- File handling

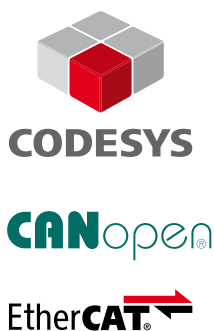


- A programming tool that can be expanded by means of plug-ins to handle custom applications
- Expanded language options (object-oriented programming)
- Know-how protection for targets and the programming tool
- Multiple PLC programs in the same project
- New and improved TargetVisu functions
- Improved IT safety functions
- HTML5-based websites
- Fieldbus configurators: Modbus-TCP/RTU, EthernetIP, EtherCAT
- SAE J1939 protocol

EATON CA08103003Z-EN

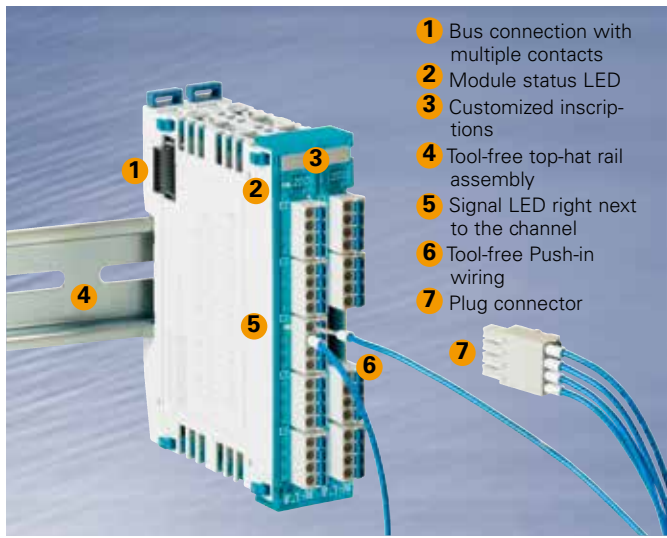


XN300 – Eaton's slice card modular I/O system for the machine building industry



The ultra-compact, modular slice-card-based XN300 I/O system with high-density plug-in connections can be combined with Eaton's HMI/PLC products to create modern system solutions. Application-oriented functions reduce the equipment cost and enable tailor-made system solutions while keeping the footprint to a minimum.

The modern, easy-to-install design simplifies handling and enables the I/O station and the connected components to be pre-assembled. The plug-in connections and the clear signal assignment simplify commissioning and extend the functionality of the system, enabling it to meet the specific requirements of the machine building sector.

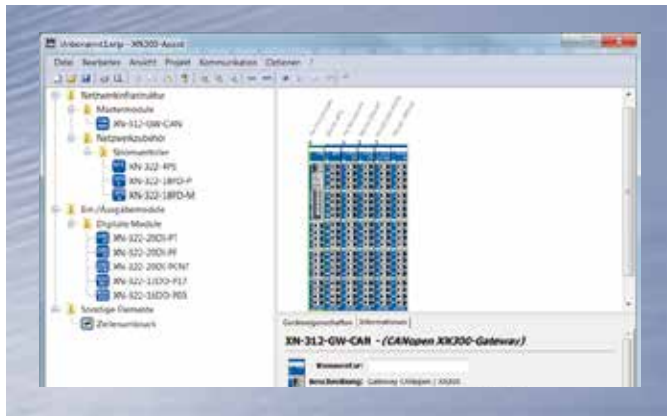


Simple, quick and intuitive

Thanks to the push-in connectors, the XN300 system offers unrivaled time savings during wiring.

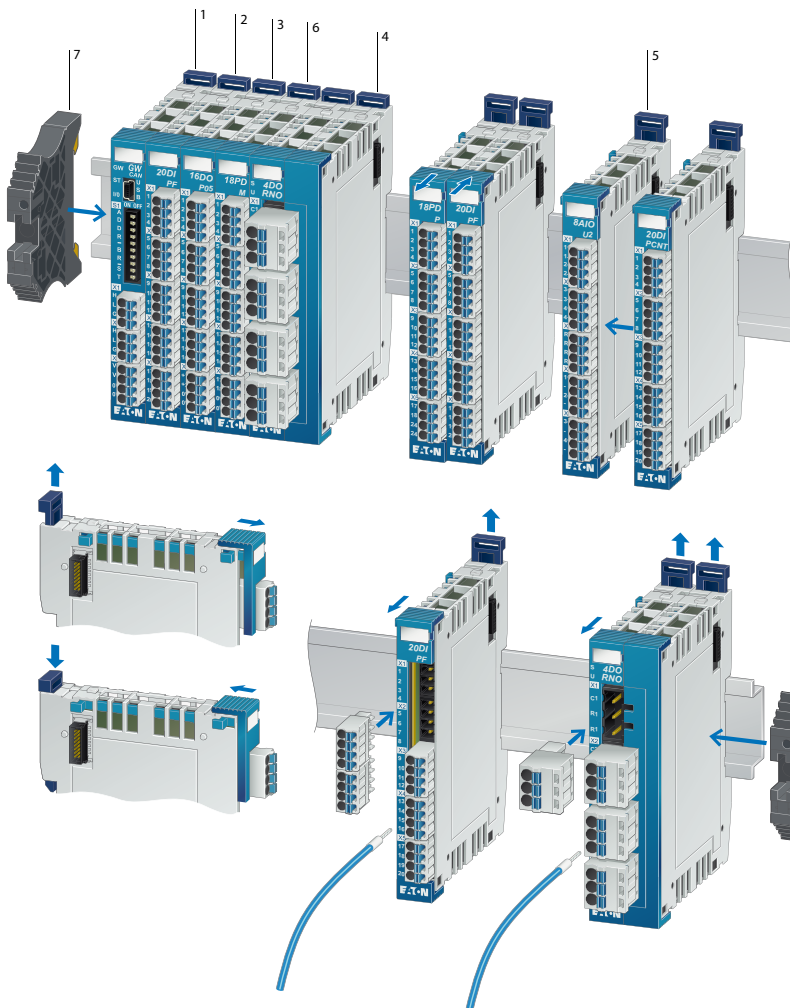
The installation can be split into individual steps, enabling efficient pre-assembly - without any tools!

The clear functional layout of the modules also ensures that you to have everything under control, even in the event of high channel density. LEDs are used to indicate the signal states directly at the connection point.



Optimally supported: XN300-Assist

The XN300-Assist ensures the smooth planning of your system. To avoid configuration errors, the XN300-Assist carries out a plausibility check already during the configuration of the system. In addition, you can set the slice module parameters directly in the XN300-Assist and then export them into XSOFT-CODESYS 2 and XSOFT-CODESYS 3 for SDO configuration. Configuration made easy. The online function of the XN300-Assist will support you during commissioning. Various functions - such as the configuration check, the setting of parameters and the reading and setting of signal states - allow you to check the system, including any connected components, even without a connection to the controller.












- 1 Gateway
- 2 Digital input modules
- 3 Digital output modules
- 4 Relay modules
- 5 Analog input/output modules
- 6 Field-potential distributor
- 7 End bracket

Other module types








- Digital input/output modules
- Analog input modules
- Analog output modules
- Technology modules
- Power supply modules
- Digital relay output modules
- Serial interface modules
- Multi input/output modules





Description	Part no. Article no.
XN300 gateways Maximum expansion: 32 x XN-322... slice modules Power supply: 24 V DC Terminals: plug connector in Push-in technology	
 Gateway to link XN300 I/O slice modules to an EtherCAT® network Data transmission rate: 100 MBit/s (RJ45, IN and OUT) Approvals: CE, cULus	XN-312-GW-EC 178785
 Gateway to link XN300 I/O slice modules to a CANopen® network Settings via DIP switch: - CAN network address: 1-32 - Save configuration: SET switch - Data transmission rate: 10, 20, 50, 125, 250, 500, 800, 1000 Kbit/s, auto detect Approvals: CE, cULus,*	XN-312-GW-CAN 178782
XN300 power supply modules Push-in spring-cage terminal Approvals: CE, cULus Field-potential distributor module	
 Power distribution with XN-322 slice module in the XN300 I/O system, 18 channels, GND. *	XN-322-18PD-M 178769
 Power distribution with XN-322 slice module in the XN300 I/O system, 18 channels, VCC. *	XN-322-18PD-P 178770
Power supply module  The power supply module distributes power to the XN300 system components. The module features nine short-circuit proof outputs (24 VDC/GND), arranged into four power supply groups, each with a max. load of 2 A. *	XN-322-4PS-20 178796
XN300 technology modules Push-in spring-cage terminal Approvals: CE, cULus	
Counter module  Counter module with RS422/TTL inputs up to 500 kHz, 4 digital inputs and 4 digital outputs with 2 A each. This module is particularly useful for reading counter values in positioning applications. *	XN-322-1CNT-8DIO 178795
Interface module  Interface module for evaluating the data of two absolute encoders via the RS422 interface, specially designed for SSI encoders (e.g. absolute linear encoders). Supports natural binary and gray-code encoders (gray code is internally converted to natural binary). 32 bit / 125 kHz, 250 kHz, 500 kHz, 1 MHz. *	XN-322-2SSI 178773
Weigh module  Weigh slice module for connecting two Wheatstone bridges (strain gauge load cells). At 24-bit resolution, measurements with an accuracy of ±0.035 % are possible.*	XN-322-2DMS-WM 178793
Serial interface module  Serial interface module, RS232, RS485.	XN-322-2SI-RS 183170

*additional approvals: DNV



Description		Part no.	Article no.
Pulse width module			
	Control of PWM (pulse width modulation)-controlled drives, control of inductive loads (solenoid valve, proportional valve, etc.) 2 outputs, 24 VDC, 1A, kf, 20 kHz	XN-322-2PWM	EP-401003
Motor driver module			
	Current regulator module for operating a DC motor (brushed motor) with a supply voltage of 12-30 V and a max. motor current of 3.5 A. In addition, this module includes two LED drivers with maximum currents of 20 mA/350 mA.	XN-322-1DCD-B35	178794
Digital input modules			
Push-in spring-cage terminal Approvals: CE, cULus			
	8 digital inputs with 24 V DC each, positive-switching, 5.0 ms, *	XN-322-8DI-PD	183172
	16 digital inputs with 24 V DC each, positive-switching, 5.0 ms	XN-322-16DI-PD	183173
	20 digital inputs with 24 V DC each, positive-switching, 5.0 ms, *	XN-322-20DI-PD	178786
	20 digital inputs with 24 V DC each, positive-switching, 0.5 ms, *	XN-322-20DI-PF	178768
	20 digital inputs with 24 V DC each, positive-switching, 2/4 CNT, 25 kHz, *	XN-322-20DI-PCNT	178767
	20 digital inputs with 24 V DC each, negative-switching, 5.0 ms, *	XN-322-20DI-ND	183174
Digital output modules			
Push-in spring-cage terminal Approvals: CE, cULus			
	8 digital outputs, short-circuit proof, with 24 V DC/0.5 A each, positive-switching, *	XN-322-8DO-P05	183175
	16 digital outputs, short-circuit proof, with 24 V DC/0.5 A each, positive-switching, *	XN-322-16DO-P05	178787
	12 digital outputs, short-circuit proof, with 24 V DC/1.7 A each, positive-switching, *	XN-322-12DO-P17	178788
Digital input/output modules			
Push-in spring-cage terminal Approvals: CE, cULus			
	4 digital inputs and 4 digital outputs with 24 V DC each, positive-switching, *	XN-322-8DIO-PD05	183178
	8 digital inputs and 8 digital outputs with 24 V DC each, positive-switching, *	XN-322-16DIO-PD05	183179
	8 digital inputs and 8 digital outputs with 24 V DC each, positive-switching, *	XN-322-16DIO-PC05	183180
	6 digital inputs and 8 digital outputs with 24V DC each, positive-switching, 1 analog input, +/-10V and 1 analog input, 0/4 - 20 mA	XN-322-16MIO-DIOAI	EP-401004
Relay modules			
Push-in spring-cage terminal Approvals: CE, cULus			
	4 digital relay outputs, normally open, with 230V AC/6 A or 24V DC/6A each, *	XN-322-4DO-RN0	178779
	5 digital relay outputs, changeover, with 115V AC/6 A or 24V DC/6A each	XN-322-5DO-RC0	EP-400999
Analog input modules			
Push-in spring-cage terminal Approvals: CE, cULus			
	4 analog resistance inputs, Pt/Ni/KTY/R, with 2-wire or 3-wire connection*	XN-322-4AI-PTNI	178772
	6 analog inputs, +/-10V, 1 PT/KTY, Uref*	XN-322-7AI-U2PT	178789
	8 analog current inputs, 0/4 - 20 mA*	XN-322-8AI-I	179288
	8 analog inputs, temperature measurement, PT1000/KTY, 2-wire connection	XN-322-8AI-PTKT	EP-401002
	8 analog thermocouple inputs and two KTY inputs*	XN-322-10AI-TEKT	178792
*additional approvals: DNV			



Description		Part no.	Article no.
Analog output modules			
Push-in spring-cage terminal Approvals: CE, cULus			
	4 analog outputs, +/-10 V, 0 - 20 mA	XN-322-4AO-UI	EP-401001
	8 analog outputs, +/-10 V *	XN-322-8AO-U2	178790
Analog input/output modules			
Push-in spring-cage terminal Approvals: CE, cULus			
	2 analog inputs and 2 analog outputs, +/-10 V, Uref, *	XN-322-4AI0-U2	183181
	4 analog inputs and 4 analog outputs, +/-10 V, Uref, *	XN-322-8AI0-U2	178791
	2 analog inputs and 2 analog outputs, 0/4 - 20 mA, *	XN-322-4AI0-I	183182
	4 analog inputs and 4 analog outputs, 0/4 - 20 mA, *	XN-322-8AI0-I	178771
* additional approvals: DNV			

Emergency-stop/emergency switching-off buttons

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ESR5 safety relay

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easySafety control relay for safety circuits

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Safety contactors

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Safety position switches

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RS-Titan safety switches

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LS-Titan position switches

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Operating heads

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Roller levers



Adjustable roller levers



Actuating rods



Electronic position switches



Photoelectric sensors Comet series

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E58 Harsh Duty

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Intelligent and compact: E65-SM series

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E67 Long Range series

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E71 NanoView series

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E76 IntelliView series

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Inductive metal detection

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E 57 miniature series

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E57G General Purpose series

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E52 and E56 series

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E57P(S) performance series



[!\[\]\(bfc95ce0577bd98d944beb22b3242983_img.jpg\) Get more information](#)

Intelligent sensor adaption

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iProx series

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ProxView software

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Verification of capacitive fill levels

E 53 series

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Signal towers

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SL4/7 signal towers

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SLC Signal towers compact

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Detection of times, fill levels and currents

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ETR 2 electronic timing relay

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ETR 4 electronic timing relay

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EMR electronic measuring and monitoring relay

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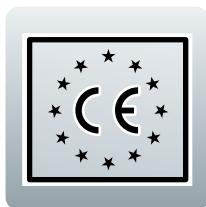




Functional safety to protect people, machines and the environment



Safety Technology
Control the unexpected



Throughout their entire life cycle, machines pose risks to people, other machinery and the environment. For this reason, it is vital to identify any hazards during the design phase of the machine and to reduce them by taking appropriate measures.

The Machinery Directive 2006/42/EC stipulates that machines should not pose any danger. However, as there is no such thing as 100 % safety in engineering, the objective is to minimize dangers and to achieve tolerable levels of residual risk. The overall safety of a machine defines the state in which it either poses no unacceptable risks to people or can be considered hazard-free. Functional safety refers to that part of the overall safety of a system which depends on the correct functioning of the safety-related systems and the external risk-reduction devices.



Get more information

Risk reduction through the use of safety-related parts in control systems

In international standards, the safety components of machine controls are referred to as "safety-related parts of control systems" (SRP/CS). Safety-related control components cover the entire functional chain of a safety function. In each case, they consist of the input level (sensor), the integrated logic (safe signal processing) and the output level (actuator).

The general objective is to design these components in such a way that the control functions reduce the level or risk in line with the results of the risk analysis, even in the event that the control system malfunctions. The higher the level of risk reduction that the safety-related parts of a control system need to achieve, the higher the required safety level/technical safety performance level.



Safety Manual for machines and systems in accordance with EN ISO 13849-1 and IEC 62061

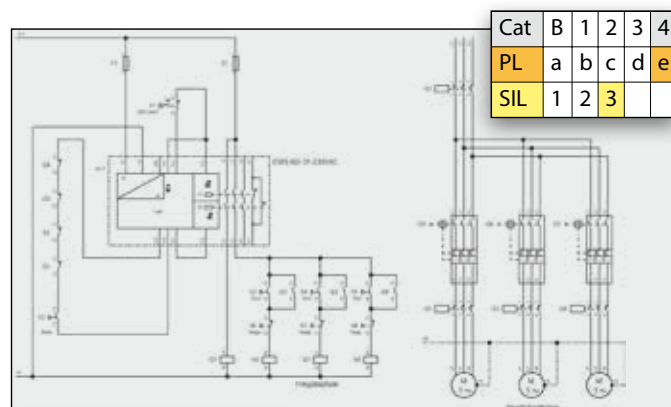
Information about machine safety can be found in Eaton's "Safety Manual", which is aimed at machine builders and system integrators, as well as at teachers and students and anyone else who is interested in the topic.

This manual provides an introduction to the comprehensive literature on safety technology. The Eaton Safety Manual provides an overview of the interplay between the relevant directives, standards and regulations that must be taken into account when designing safety equipment for machines. The safety-related contents of this manual have been certified by TÜV Rheinland Industrie Service GmbH.

Based on example circuits, the manual shows how functional safety can be implemented in safety applications by means of electrical, electronic and programmable components and systems.



Signaling and monitoring



Condition	EN ISO 13849
Structure	Cat. 4
MTTF _d	100 years
B10 _d	S6: 100000, Q1-Q3: 1300000
n _{op}	S6, Q1: 1800, Q2-Q3: 18000

Condition	EN IEC 62061
Structure	SS D, asymmetrical
PFH _d	2.28 x 10 ⁻⁸
B10	S6: 20000, Q1-Q3: 975000

In addition, the Safety Manual also describes the functioning of each example circuit and contains a clear overview of the possible evaluations.

The calculated variables are based on standard assumptions about the safety applications and the safety-related switchgear being used.

Register now at Eaton.com/shb to download our Safety Manual free of charge.

The safety-relevant variables for our products are available at Eaton.com/fusi



Safe monitoring and processing



Safety Technology
Control the unexpected

Machines and systems rely on potentially dangerous motion sequences whose safety needs to be ensured by technical means. Safety devices such as emergency-stop buttons, protective doors, light curtains and operating elements for safe commissioning must be checked, monitored and, if necessary, set to a safe state. For this purpose Eaton offers you the ESR5 electronic safety relay series.

The ESR5 safety relays provide reliable monitoring of safety device signals and switch off quickly and reliably in an emergency. The internal logic of the safety relays monitors the safety circuits and activates the enabling paths if no fault is present.

Eaton's safety products are approved by TÜV Rheinland and ensure the necessary level of personal and process protection, in both simple and complex machines:

- Performance Level PL e to EN ISO 13849-1
- Safety Integrity Level SILCL 3 according to IEC 62061



Get more information



Cost-effective monitoring with the ESR5 safety relay

- Multiple safety switching contacts with up to 5 enabling and 2 signal current paths
- Immediate (stop category 0) or delayed (stop category 1) stop
- Can be duplicated by means of contact expansion modules
- Maximum space savings thanks to the sleek 22.5 mm wide design
- Plug-in screw terminals for fast and fault-free replacement
- Multi-voltage versions with 24-230 V AC/DC for flexible applications
- Suitable for global use with UL, cUL and TÜV Rheinland certifications

	Emergency stop	Protective door	OSSD input	Contact expansion module	Feedback circuit	Reset button monitoring	Single-channel	Two-channel	Non-delayed enable current paths	Delayed enable current paths	Non-delayed signal current path	PL/category according to EN ISO 13849	SILCL according to EN62061	Part no. Article no.
ESR5														
Width: 22.5 mm or 45 mm														
	✓	✓	-	-	✓	-	✓	✓	2	-	1	PL e / Cat. 4	SILCL 3	ESR5-NO-21-24VDC EP-401061
	✓	✓	-	-	✓	-	✓	✓	2	-	1	PL e / Cat. 4	SILCL 3	ESR5-NO-31-24VDC EP-401062
	✓	✓	-	-	✓	✓	✓	✓	3	-	1	PL e / Cat. 4	SILCL 3	ESR5-NO-31-230VAC 119380
	✓	✓	✓	-	✓	✓	✓	✓	3	-	1	PL e / Cat. 4	SILCL 3	ESR5-NO-31-UC 191796
	✓	✓	-	-	✓	-	✓	-	4	-	1	PL c / Cat. 1	SILCL 1	ESR5-NO-41-24VDC EP-401060
	✓	✓	-	-	✓	-	✓	-	3	-	1	PL c / Cat. 1	SILCL 1	ESR5-NO-31-230VAC 153152
	✓	✓	✓	-	✓	✓	✓	✓	2	2	-	PL e / Cat. 4	SILCL 3	ESR5-NV3-30 118705
	✓	✓	✓	-	-	-	✓	✓	3	2	1	PL e / Cat. 4	SILCL 3	ESR5-NV3-300 171858
	-	✓	-	-	✓	-	-	✓	2	-	1	PL e / Cat. 4	SILCL 3	ESR5-NZ-21-24VAC-DC 118703
	-	-	-	✓	-	-	✓	-	5	-	1	PL e / Cat. 4	SILCL 3	ESR5-NE-51-24VDC EP-401063
	-	-	-	✓	-	-	✓	-	-	4	2	PL d / Cat. 3	SILCL 3	ESR5-VE3-42 118706
with light curtain functionality														
	✓	✓	-	-	✓	✓	-	-	3	-	1	PL e / Cat. 4	SILCL 3	ESR5-BWS-31-24VDC EP-401064









All in one – Safety and control relay combined in a single device



The safety-oriented control relay easySafety integrates not only safety, but also standard functions in just a single device. The safety control relay easySafety certified by TÜV-Rheinland features a standard circuit diagram in addition to a safety circuit diagram, which incorporates the safety configuration. This circuit diagram can be used for standard tasks such as the processing of diagnostics messages or general control tasks of a machine. The simplicity of the easy circuit diagram philosophy has been continued, so that every one of today's easy users will immediately be at home. Users are thus provided with a wide range of application options in a single device thanks to the large number of safety function blocks available. In this way, users stay flexible and are able to respond immediately to current and future changes in application requirements.



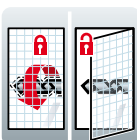
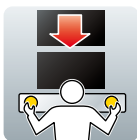
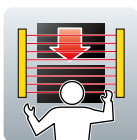
Get more information

	Transistor outputs	Relay outputs	Display + keypad	Part no. Article no.
ES4P				
<ul style="list-style-type: none">– Stopping in the event of an emergency– Protective door– ESPE with muting function– Two-hand control– Highest speed monitoring– Zero speed monitoring– Safety timing relay– Mode selection– Enabling switch– Feedback circuit– Width: 107.5 mm– 14 (safety) inputs 24 V DC– Rated operational voltage: 24 V DC– zSafety parameters– Performance Level according to EN ISO 13849-1 PL e / Cat. 4– Safety integrity level claim limit (according to EN62061): SILCL 3				
	4	1 (redundant)	✓	ES4P-221-DMXD1 111017
	-	4	✓	ES4P-221-DRXD1 111019
	4	1 (redundant)	-	ES4P-221-DMXX1 111016
	-	4	-	ES4P-221-DRXX1 111018
Description				Part no. Article no.
ES4P add-on functions				
Programming software				
	easySoft-Safety Selection menu in German, English, French, and Italian Operating systems: Windows XP SP3, Windows 7 (32 bit + 64 bit), Windows 8 (32 bit + 64 bit)			ESP-SOFT 111460
Memory card				
	256 kB module			ES4A-MEM-CARD1 111461
Function				Part no. Article no.
Description				Length m
Programming cables				
	For downloading the user program from a PC to the device For use with easy800, MFD-...-CP8, MFD-...-CP10, ES4P	SUB-D, 9-pole, serial	2	EASY800-PC-CAB 256277
	For downloading the user program from a PC to the device For use with easy800, MFD-...-CP8, MFD-...-CP10, EC4P, ES4P	USB	2	EASY800-USB-CAB 106408



suva

Safe, proven and stands out: DILMS safety contactor



The DILMS safety contactors have been specially developed by Eaton to ensure reliable switching in safety-related applications. The combination of our proven technology with the latest safety standards means that the DILMS safety contactor is the right choice for any machine or system.

All versions of the DILMS safety contactor (in the current range from 7 A to 150 A) are equipped with a top-mounted auxiliary contact that is non-detachable. The DILAS safety relay, available in three different coil voltages, rounds out Eaton's product range in this area.



The contactor's yellow cover allows for quick and easy identification of the safety circuits. A built-in inspection window situated directly above the switch-position indicator clearly indicates the current status of the machine or system. This reliably prevents the contactor from being activated manually.

The safety contactors have been approved and certified for global use (including CE, UL, CSA, CCC, and SUVA).



Get more information

Moeller series

				AC operation 110 V 50 Hz, 120 V 60 Hz Part no. Article no.	AC operation 230 V 50 Hz, 240 V 60 Hz Part no. Article no.	DC operation 24 V DC Part no. Article no.
Current AC-15 [A] 230 V 400 V Auxiliary contacts N/O = normally open N/C = normally closed						
Complete devices						
DILAS safety relay						
	4	4	4 N/O, 4 N/C	DILAS-44(110V50HZ,120V60HZ) 191700	DILAS-44(230V50HZ,240V60HZ) 191739	DILAS-44(24VDC) 191760
	4	4	3 N/O, 3 N/C + 1NO1NC ¹⁾	DILAS-R44(110V50HZ,120V60HZ) 191732	DILAS-R44(230V50HZ,240V60HZ) 191753	DILAS-R44(24VDC) 191720
				AC operation 110 V 50 Hz, 120 V 60 Hz Part no. Article no.	AC operation 230 V 50 Hz, 240 V 60 Hz Part no. Article no.	DC operation 24 V DC Part no. Article no.
Current Output A kW Auxiliary contacts N/O = normally open N/C = normally closed						
DILMS safety contactor						
	7	3	2 N/O, 3 N/C	DILMS7-23(110V50HZ,120V60HZ) 191701	DILMS7-23(230V50HZ,240V60HZ) 191740	DILMS7-23(24VDC) 191761
	9	4	2 N/O, 3 N/C	DILMS9-23(110V50HZ,120V60HZ) 191702	DILMS9-23(230V50HZ,240V60HZ) 191741	DILMS9-23(24VDC) 191762
	12	5.5	2 N/O, 3 N/C	DILMS12-23(110V50HZ,120V60HZ) 191703	DILMS12-23(230V50HZ,240V60HZ) 191742	DILMS12-23(24VDC) 191709
	7	3	1 N/O, 2 N/C + 1NO1NC ¹⁾	DILMS7-R23(110V50HZ,120V60HZ) 191733	DILMS7-R23(230V50HZ,240V60HZ) 191754	DILMS7-R23(24VDC) 191721
	9	4	1 N/O, 2 N/C + 1NO1NC ¹⁾	DILMS9-R23(110V50HZ,120V60HZ) 191734	DILMS9-R23(230V50HZ,240V60HZ) 191755	DILMS9-R23(24VDC) 191722
	12	5.5	1 N/O, 2 N/C + 1NO1NC ¹⁾	DILMS12-R23(110V50HZ,120V60HZ) 191735	DILMS12-R23(230V50HZ,240V60HZ) 191756	DILMS12-R23(24VDC) 191723
	18	7.5	2 N/O, 3 N/C	DILMS17-23(110V50HZ,120V60HZ) 191704	DILMS17-23(230V50HZ,240V60HZ) 191743	DILMS17-23(RDC24) 191710
	25	11	2 N/O, 3 N/C	DILMS25-23(110V50HZ,120V60HZ) 191705	DILMS25-23(230V50HZ,240V60HZ) 191744	DILMS25-23(RDC24) 191711
	32	15	2 N/O, 3 N/C	DILMS32-23(110V50HZ,120V60HZ) 191706	DILMS32-23(230V50HZ,240V60HZ) 191745	DILMS32-23(RDC24) 191712
	18	7.5	1 N/O, 2 N/C + 1NO1NC ¹⁾	DILMS17-R23(110V50HZ,120V60HZ) 191736	DILMS17-R23(230V50HZ,240V60HZ) 191757	DILMS17-R23(RDC24) 191724
	25	11	1 N/O, 2 N/C + 1NO1NC ¹⁾	DILMS25-R23(110V50HZ,120V60HZ) 191737	DILMS25-R23(230V50HZ,240V60HZ) 191758	DILMS25-R23(RDC24) 191725
	32	15	1 N/O, 2 N/C + 1NO1NC ¹⁾	DILMS32-R23(110V50HZ,120V60HZ) 191738	DILMS32-R23(230V50HZ,240V60HZ) 191759	DILMS32-R23(RDC24) 191726
	40	18.5	2 N/O, 2 N/C	DILMS40-22(110V50HZ,120V60HZ) 191707	DILMS40-22(230V50HZ,240V60HZ) 191746	DILMS40-22(RDC24) 191713
	50	22	2 N/O, 2 N/C	DILMS50-22(110V50HZ,120V60HZ) 191708	DILMS50-22(230V50HZ,240V60HZ) 191747	DILMS50-22(RDC24) 191714
	65	30	2 N/O, 2 N/C	DILMS65-22(110V50HZ,120V60HZ) 191727	DILMS65-22(230V50HZ,240V60HZ) 191748	DILMS65-22(RDC24) 191715
	80	37	2 N/O, 2 N/C	DILMS80-22(110V50HZ,120V60HZ) 191728	DILMS80-22(230V50HZ,240V60HZ) 191749	DILMS80-22(RDC24) 191716
	95	45	2 N/O, 2 N/C	DILMS95-22(110V50HZ,120V60HZ) 191729	DILMS95-22(230V50HZ,240V60HZ) 191750	DILMS95-22(RDC24) 191717
	115	55	2 N/O, 2 N/C	DILMS115-22(RAC120) 191730	DILMS115-22(RAC240) 191751	DILMS115-22(RDC24) 191718
	150	75	2 N/O, 2 N/C	DILMS150-22(RAC120) 191731	DILMS150-22(RAC240) 191752	DILMS150-22(RDC24) 191719

Notes

¹⁾ 1NO1NC is suitable for electronic signals



Safe and accurate position detection: mechanical, optical, capacitive and inductive



Download the catalog:
Eaton.com/catalog

Eaton safety/position switches with positive opening contacts can be used wherever positions need to be accurately detected. They are equipped with Cage Clamps or screw terminals and are available in either metal or plastic housings. Their large cable connection area ensures that they can be wired quickly. In addition, the operating heads are both easy to install and versatile. Safety-door switches and safety position switches are used to protect people and processes. They can be used to implement safe shutdowns and to ensure that protective doors are safely locked.

Inductive, capacitive and optical object detection are available, as required. The sensors are available in both AC and DC versions, and in various rectangular and tubular designs, so that they can be easily adapted to any type of location. The iProx sensors, which can be easily adapted to the application at hand, are one of the main highlights of this series. In fact, the E59 iProx can be used to replace a wide range of standard sensors, for example during maintenance.

 Get more information



More than a mechanical switch: LSE-Titan

- Variable and adjustable operating point
- Precisely defined and reproducible
- The two high-speed and bounce-free PNP switching outputs support high switching frequencies.
- Certified by TÜV Rheinland



Reliable machine protection with non-contact safety switches

The RS Titan non-contact safety switches have been specifically developed for monitoring protective covers.

- Non-contact: durable, easy to install, can also handle doors or flaps that don't close precisely, low maintenance
- High degree of protection (IP67, IP69): easy to clean, rugged and reliable
- Symmetrical enclosures: easy mounting, low inventory levels
- 2 or 3 switching contacts: suitable for many different applications
- Potential-free contacts: easy connection
- SILCL3, PLe: safe and reliable
- M12 plug or cable: quick and easy connection



Eaton sensors: versatile and reliable

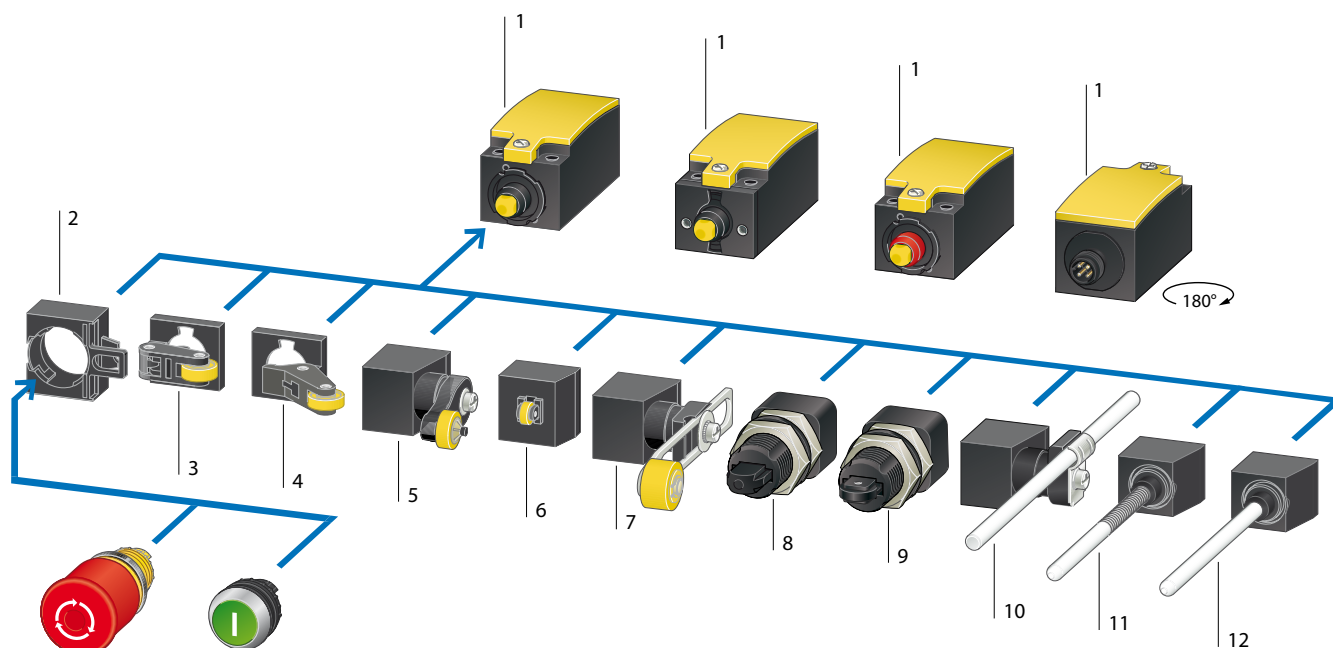
Eaton's inductive and optical sensors are available in many designs and versions and offer maximum reliability.

- Rugged construction
- Nine different series of inductive sensors are available
- E59 AccuProx with analog output
- E56 Pancake with a nominal range of 100 mm
- Opposed, retro-reflective and diffused photoelectric sensors, and more
- Perfect Prox technology for unparalleled background suppression
- The large signal reserve prevents failures and downtime and prolongs maintenance intervals

Position switches


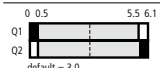
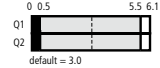

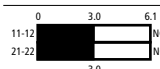
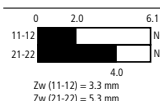
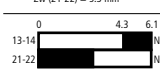
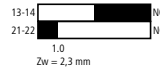
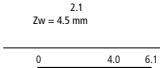
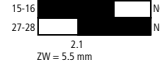
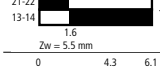
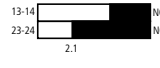
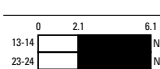

LS-Titan safety position switches

Moeller series



- 1 LS, LSM base device
- 2 Mounting clamp
- 3 Roller lever
- 4 Angled roller lever
- 5 Rotary lever
- 6 Roller plunger

- 7 Adjustable roller lever
- 8 Rounded plunger, center fixing
- 9 Roller plunger, center fixing
- 10 Actuating rod
- 11 Spring-rod actuator
- 12 Actuating rod

	Contact configuration ☉ Safety function implemented with positive opening as per IEC/EN 60947-5-1 N/O = normally open N/C = normally closed	Contact travel ■ = contact closed □ = contact open Contact diagram	Enclosure	Cage Clamp ¹⁾ Part no. Article no.	Screw terminal Part no. Article no.	
Base device, expandable						
Operating heads → Page 4/17						
With electronically adjustable operating point, IP66, IP67						
Optical status indicator, comparable with positive opening function, conditionally short-circuit-proof, restart after reset						
	1 N/O	1 N/C		Insulated material	LSE-11 266121	
	-	2 N/C		Insulated material	LSE-02 266122	
Rounded plunger, IP66, IP67						
	-	2 N/C ☉		Insulated material	LS-02 266107	LS-S02 106729
	-	2 N/C ☉		Metal	LSM-02 266142	
-	2 N/C ☉		Insulated material	LS-02A 116702	LS-S02A 116703	
	1 N/O	1 N/C ☉		Insulated material	LS-11 266109	LS-S11 106783
	1 N/O	1 N/C ☉		Metal	LSM-11 266144	
	1 N/O	1 N/C ☉		Insulated material	LS-11A 116704	LS-S11A 116705
	1 N/O	1 N/C ☉		Insulated material	LS-11D 266114	LS-S11D 106791
	1 N/O	1 N/C ☉		Metal	LSM-11D 266149	
	1 N/O	1 N/C ☉		Insulated material	LS-11DA 292361	LS-S11DA 106795
	1 N/O	1 N/C ☉		Metal	LSM-11DA 292363	
	1 N/O	1 N/C ☉		Insulated material	LS-11S 266105	LS-S11S 106798
	1 N/O	1 N/C ☉		Metal	LSM-11S 266140	
	2 N/O	-		Insulated material	LS-20 266120	LS-S20 106808
	2 N/O	-		Metal	LSM-20 266155	
	2 N/O	-		Insulated material	LS-20A 292362	LS-S20A 106810
	2 N/O	-		Metal	LSM-20A 100051	
	2 N/O	-		Insulated material	LS-20B 116706	







Notes

¹⁾ Cage Clamp is a registered trademark of Wago Kontakttechnik GmbH, 32432 Minden, Germany
Accessories for the Cage Clamp terminals from Wago:
comb-style jumper bar, gray, Wago article no. 264-402

Position switches


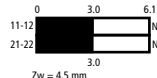
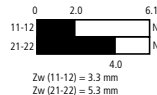
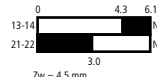
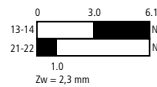
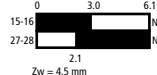
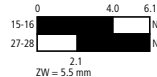
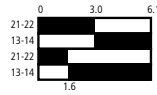

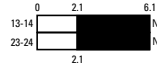
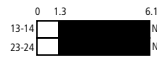

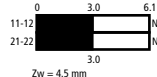
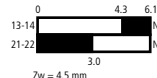

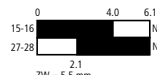
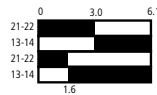
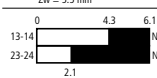
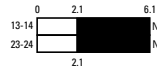
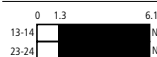
LS-Titan safety position switches

Moeller series

Contacts			Enclosure	Snap-action contact	Connection ^{type 1)}		Screw terminal	
☉ Safety function implemented with positive opening as per IEC/EN 60947-5-1 N/O = normally open N/C = normally closed					Part no.	Article no.	Part no.	Article no.
Complete devices								
Roller plunger, IP66, IP67								
	1 N/O	1 N/C ☉	Insulated material	-	LS-11/P	266112	LS-S11/P	106788
	1 N/O	1 N/C ☉	Metal	-	LSM-11/P	266147		
	1 N/O	1 N/C ☉	Insulated material	yes	LS-11S/P	266118	LS-S11S/P	106801
	1 N/O	1 N/C ☉	Metal	yes	LSM-11S/P	266153		
Spring-rod actuator IP66, IP67								
Not to be used as a safety position switch								
	1 N/O	1 N/C	Insulated material	yes	LS-11S/S	266104	LS-S11S/S	106805
	1 N/O	1 N/C	Metal	yes	LSM-11S/S	266139		
Roller lever IP66, IP67								
long								
	-	2 N/C ☉	Insulated material	-	LS-02/L	266108	LS-S02/L	106781
	-	2 N/C ☉	Metal	-	LSM-02/L	266143		
	1 N/O	1 N/C ☉	Insulated material	-	LS-11/L	266110	LS-S11/L	106785
	1 N/O	1 N/C ☉	Metal	-	LSM-11/L	266145		
	1 N/O	1 N/C ☉	Insulated material	yes	LS-11S/L	266116	LS-S11S/L	106800
	1 N/O	1 N/C ☉	Metal	yes	LSM-11S/L	266151		
short								
	1 N/O	1 N/C ☉	Insulated material	-	LS-11/LS	290173	LS-S11/LS	106787
	1 N/O	1 N/C ☉	Insulated material	-	LS-11D/LS	290174	LS-S11D/LS	106794
large								
	1 N/O	1 N/C ☉	Insulated material	-	LS-11/LB	290175	LS-S11/LB	106786
Rotary lever IP66, IP67								
	1 N/O	1 N/C ☉	Insulated material	-	LS-11/RL	266111	LS-S11/RL	106789
	1 N/O	1 N/C ☉	Metal	-	LSM-11/RL	266146		
	1 N/O	1 N/C ☉	Insulated material	yes	LS-11S/RL	266117	LS-S11S/RL	106802
	1 N/O	1 N/C ☉	Metal	yes	LSM-11S/RL	266152		
Adjustable roller lever IP66, IP67								
	1 N/O	1 N/C ☉	Insulated material	-	LS-11/RLA	266113	LS-S11/RLA	106790
	1 N/O	1 N/C ☉	Metal	-	LSM-11/RLA	266148		
	1 N/O	1 N/C ☉	Insulated material	yes	LS-11S/RLA	266119	LS-S11S/RLA	106803
	1 N/O	1 N/C ☉	Metal	yes	LSM-11S/RLA	266154		
Actuating rod IP66, IP67								
	1 N/O	1 N/C ☉	Insulated material	yes	LS-11S/RR	266106	LS-S11S/RR	106804
	1 N/O	1 N/C ☉	Metal	yes	LSM-11S/RR	266141		

Notes

¹⁾ Cage Clamp is a registered trademark of Wago Kontakttechnik, 32432 Minden, Germany.
Accessories for the Cage Clamp terminals from Wago: comb-style jumper bar, gray, Wago article no. 264-402

		Contacts		Snap-action contact	Contact travel		Cage Clamp ¹⁾		Screw terminal		
		☉ = Safety function implemented with positive opening as per IEC/EN 60947-5-1 N/O = normally open N/C = normally closed			■ = contact closed □ = contact open	Contact diagram	Part no.	Article no.	Part no.	Article no.	
Base device, expandable											
-40 - +70° C, IP65, insulated material											
	Rounded plunger	-	2 N/C ☉	-		LS-02-CC	176880	LS-S02-CC	176890		
	-	-	2 N/C ☉	-		LS-02A-CC	176886	LS-S02A-CC	176895		
	1 N/O	-	1 N/C ☉	-		LS-11-CC	176879	LS-S11-CC	176889		
	1 N/O	-	1 N/C ☉	-		LS-11A-CC	176887	LS-S11A-CC	176896		
	1 N/O	-	1 N/C ☉	-		LS-11D-CC	176882	LS-S11D-CC	176891		
	1 N/O	-	1 N/C ☉	-		LS-11DA-CC	176884	LS-S11DA-CC	176893		
	1 N/O	-	1 N/C ☉	-		LS-11S-CC	176881	LS-S11S-CC	144118		
	2 N/O	-	-	-		LS-20-CC	176883	LS-S20-CC	176892		
	2 N/O	-	-	-		LS-20A-CC	176885	LS-S20A-CC	176894		
	2 N/O	-	-	-		LS-20B-CC	176888	LS-S20B-CC	176897		
	Base device, expandable										
	With integrated M12 plug, IP66										
	Rounded plunger	-	2 N/C ☉	-		LS-02-M12A	178128				
	1 N/O	-	1 N/C ☉	-		LS-11-M12A	178129				
	1 N/O	-	1 N/C ☉	-		LS-11D-M12A	178130				
	1 N/O	-	1 N/C ☉	-		LS-11DA-M12A	178131				
	1 N/O	-	1 N/C ☉	-		LS-11S-M12A	178132				
	2 N/O	-	-	-		LS-20-M12A	178133				
	2 N/O	-	-	-		LS-20A-M12A	178134				
	2 N/O	-	-	-		LS-20B-M12A	178135				

Notes

¹⁾ Cage Clamp is a registered trademark of Wago Kontakttechnik, 32432 Minden, Germany.
Accessories for the Cage Clamp terminals from Wago: comb-style jumper bar, gray, Wago article no. 264-402

	Contact configuration ⊖ = Safety function implemented with positive opening as per IEC/EN 60947-5-1 N/O = normally open N/C = normally closed		Snap-action contact	Contact travel ■ = contact closed □ = contact open Contact diagram	Cage Clamp ¹⁾ Part no.	Article no.
Complete device						
With integrated M12 plug, IP66						
Roller plunger	1 N/O	1 N/C ⊖	-		LS-11/P-M12A	178137
	1 N/O	1 N/C ⊖	yes		LS-11S/P-M12A	178141
Spring-rod actuator Not to be used as a safety position switch	1 N/O	1 N/C	yes		LS-11S/S-M12A	178145
Roller lever	1 N/O	1 N/C ⊖	-		LS-11/L-M12A	178136
	1 N/O	1 N/C ⊖	yes		LS-11S/L-M12A	178140
Rotary lever	1 N/O	1 N/C ⊖	-		LS-11/RL-M12A	178138
	1 N/O	1 N/C ⊖	yes		LS-11S/RL-M12A	178142
Adjustable roller lever	1 N/O	1 N/C ⊖	-		LS-11/RLA-M12A	178139
	1 N/O	1 N/C ⊖	yes		LS-11S/RLA-M12A	178143
Actuating rod	1 N/O	1 N/C ⊖	yes		LS-11S/RR-M12A	178144

Notes

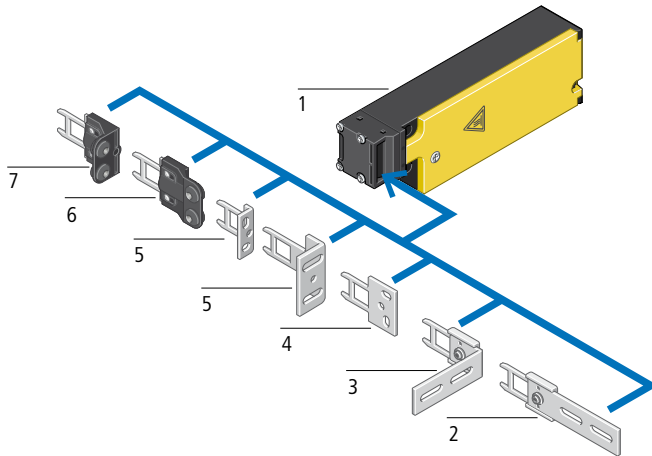
¹⁾ Cage Clamp is a registered trademark of Wago Kontakttechnik, 32432 Minden, Germany.
Accessories for the Cage Clamp terminals from Wago: comb-style jumper bar, gray, Wago article no. 264-402

		Insulated material Part no. Article no.	Metal Part no. Article no.	Notes
Rounded plunger, center fixing				
	For mounting in enclosure wall or mounting plate, with drill hole M18 x 1	LS-XZS 114024		The operating head can be rotated at 90° intervals to adapt to the specified approach direction.
Roller plunger, center fixing				
	For mounting in enclosure wall or mounting plate, with drill hole M18 x 1	LS-XZRS 114025		
Roller plunger				
	-	LS-XP 266125	LSM-XP 266158	
Roller lever				
	large	LS-XLB 290178		
	short	LS-XLS 290177		
	long	LS-XL 266123	LSM-XL 266156	
Angled roller lever				
	-	LS-XLA 266124	LSM-XLA 266157	
Rotary lever				
	-	LS-XRL 266126	LSM-XRL 266159	
Adjustable roller lever				
	Ø 18 mm	LS-XRLA 266127	LSM-XRLA 266160	
	Ø 30 mm	LS-XRLA30 266128		
	Ø 40 mm roller: rubber	LS-XRLA40R 266130		
	Ø 40 mm	LS-XRLA40 266129		
Actuating rod				
	Rod: insulated material	LS-XRR 266131	LSM-XRR 266161	
	Rod: metal	LS-XRRM 266132	LSM-XRRM 266162	
Spring-rod actuator				
	Not to be used as a safety position switch Only permissible with snap-action contact	LS-XS 266133	LSM-XS 266163	
Actuating rod				
	-	LS-XOR 290190		

Position switches





LS-...-ZBZ safety position switches



Moeller series













- 1 Base device
- 2 Flat flexible actuator
- 3 Angled flexible actuator
- 4 Flat actuator
- 5 Angled actuator
- 6 Flat compensating actuator
- 7 Angled compensating actuator

Actuators must be ordered separately → online catalog






Contacts		Rated control voltage for magnetic system U _s	Part no. Article no.	Notes
⊖ = Safety function implemented with positive opening according to IEC/EN 60947-5-1				
N/O = normally open	N/C = normally closed	V		
Base devices with spring-powered interlock (closed-circuit principle) IP65				
	1 N/O	1 N/C ⊖	24 V DC	<p>The switch must never be used as a mechanical stop! The operating head can be manually rotated in 90° intervals to adapt to the specified actuation level. If the actuator inserted, the N/O contact is open and the N/C contact is closed. For IP65 degree of protection, use the V-M20 (206910) cable glands with an entry thread length of max. 9 mm. In the event of a power failure (e.g., during commissioning), the device can be opened with a screwdriver. The auxiliary release mechanism must be sealed! → installation leaflet IL 05208005Z</p>
	-	2 N/C ⊖	24 V DC	
	1 N/O	1 N/C ⊖	120 V 50/60 Hz	
	-	2 N/C ⊖	120 V 50/60 Hz	
	1 N/O	1 N/C ⊖	230 V 50/60 Hz	
	-	2 N/C ⊖	230 V 50/60 Hz	
Base devices with magnet-powered interlock (open-circuit principle) IP65				
	1 N/O	1 N/C ⊖	24 V DC	<p>The switch must never be used as a mechanical stop! The operating head can be manually rotated in 90° intervals to adapt to the specified actuation level. If the actuator inserted, the N/O contact is open and the N/C contact is closed. For IP65 degree of protection, use the V-M20 (206910) cable glands with an entry thread length of max. 9 mm.</p>
	-	2 N/C ⊖	24 V DC	
	1 N/O	1 N/C ⊖	120 V 50/60 Hz	
	-	2 N/C ⊖	120 V 50/60 Hz	
	1 N/O	1 N/C ⊖	230 V 50/60 Hz	
	-	2 N/C ⊖	230 V 50/60 Hz	










Contacts		Approval mark	Connection type	Part no. Article no.	Notes	
☹ Safety function implemented with positive opening according to IEC/EN 60947-5-1						
N/O = normally open						
N/C = normally closed						
Safety position switches LS-...-ZB, IP65						
	-	2 N/C ☹		Cage Clamp	LS-02-ZB 106817	The switch must never be used as a mechanical stop! Actuator can be re-positioned for horizontal or vertical mounting. The operating heads can be rotated in 90° intervals to adapt to the specified actuation level. If the actuator inserted, the N/O contact is open and the N/C contact is closed. For IP65 degree of protection, use the V-M20 (206910) cable glands with an entry thread length of max. 9 mm.
	-	2 N/C ☹		Screw terminal	LS-S02-ZB 106874	
	1 N/O	1 N/C ☹		Cage Clamp	LS-11-ZB 106819	
	1 N/O	1 N/C ☹		Screw terminal	LS-S11-ZB 106876	
	1 N/O	1 N/C ☹		Cage Clamp	LS-11S-ZB 106870	
	1 N/O	1 N/C ☹		Screw terminal	LS-S11S-ZB 106877	

Contacts			Part no.	Article no.	Part no.	Article no
N/O = normally open N/C = normally closed						
Non-contact safety switch						
IP67, IP69 Reed contacts						
	-	2 N/C	3 m connection cable		Plug connector M12 x 1	
	1 N/O	1 N/C	RS2-02-C3	177286	RS2-02-Q4	177289
	1 N/O	2 N/C	RS2-11-C3	177287	RS2-11-Q4	177290
			RS2-12-C3	177288	RS2-12-Q6	177291
	-	2 N/C	RS2R-02-C3	177292	RS2R-02-Q4	177295
	1 N/O	1 N/C	RS2R-11-C3	177293	RS2R-11-Q4	177296
	1 N/O	2 N/C	RS2R-12-C3	177294	RS2R-12-Q6	177297
			10 m connection cable			
	-	2 N/C	RS2-02-C10	177300		
	1 N/O	1 N/C	RS2-11-C10	177301		
	1 N/O	2 N/C	RS2-12-C10	177302		
	-	2 N/C	RS2R-02-C10	177303		
	1 N/O	1 N/C	RS2R-11-C10	177304		
	1 N/O	2 N/C	RS2R-12-C10	177305		
	-	2 N/C	RS4-02-Q4	177298		
	1 N/O	2 N/C	RS4-12-Q6	177299		

	Design (outer dimensions) mm	Rated switching distance S _n mm	Installation type	Contacts N/C = normally closed N/O = normally open	Degree of protection	Part no.	Article no.	
E52 Cube series 2 LEDs for current and output status Housing adapter, 4-wire, plug connector M12 x 1, Rated operating voltage U _o 10 - 48 V DC Switching type: NPN, PNP Zinc/Insulated material								
	40 x 40 x 40	15	flush	1 N/C	1 N/O	IP67	E52Q-DL15SAD01	135804
		15	not flush				E52Q-DL15UAD01	135805
		20	flush				E52Q-DL20SAD01	135806
		20	not flush				E52Q-DL20UAD01	135807
		25					E52Q-DL25UAD01	135808
		30					E52Q-DL30UAD01	135809
		35					E52Q-DL35UAD01	135810
		40					E52Q-DL40UAD01	135811
E56 Pancake series 2 LEDs for current and output status 3-wire, plug connector M12 x 1, Rated operating voltage U _o 10 - 48 V DC Switching type: NPN, PNP Insulated material								
	79 x 79 x 39	40	flush	1 N/C	1 N/O	IP67	E56ADL40SAD01	136234
	79 x 79 x 39	40	not flush				E56ADL40UAD01	136235
	109 x 110 x 41	70	not flush				E56BDL70UAD01	136236
	171.5 x 171.5 x 67.4	100	not flush				E56CDL100UAD01	136237
E57G General Purpose series LED for output status 3-wire, plug connector M12 x 1, Rated operating voltage U _o 10 - 30 V DC Switching type: PNP stainless steel								
	M8 x 1	1	flush	-	1 N/O	IP67	E57-08GS01-GDB	135862
		3	flush				E57-08GE03-GDB	135854
		2	not flush				E57-08GU02-GDB	135866
		6	not flush				E57-08GE06-GDB	135858
	M12 x 1	2	flush	-			E57G-12SPN2-Q	197688
		4	flush				E57G-12SPN4-Q	197690
		4	not flush				E57G-12UPN4-Q	197704
		8	not flush				E57G-12UPN8-Q	197706
	M18 x 1	5	flush	-			E57G-18SPN5-Q	197720
		8	flush				E57G-18SPN8-Q	197722
		8	not flush				E57G-18UPN8-Q	197738
		12	not flush				E57G-18UPN12-Q	197736
	M30 x 1.5	10	flush	-			E57G-30SPN10-Q	197752
		15	flush				E57G-30SPN15-Q	197754
		15	not flush				E57G-30UPN15-Q	197768
		22	not flush				E57G-30UPN22-Q	197770

	Design (outer dimensions) mm	Rated switching distance S_n mm	Type of mounting	Contacts N/C = normally closed N/O = normally open	Degree of protection	Part no.	Article no.
E57 miniature series (inductive)							
3-wire, 2 m connection cable, Rated operating voltage U_o 10 - 30 V DC Switching type: PNP Stainless steel							
	M5 x 1	0.8	flush	-	1 N/O	IP67	E57EAL5T111SP 136241
	Ø 4	0.8	flush	-			E57EAL4T111SP 136239
	Ø 6.5	1	flush	-			E57EAL6T111SP 136245
	Ø 6.5	2	not flush	-			E57EAL6T111EP 136244
iProx series (inductive)							
3-wire, plug connector M12 x 1, Rated operating voltage U_o 6 - 48 V DC Switching type: NPN, PNP Stainless steel							
	M12 x 1	4	flush	-	1 N/O	IP67, IP69	E59-M12A105D01-D1 136207
	M18 x 1	8	flush	-			E59-M18A108D01-D1 136215
	M18 x 1	18	not flush	-			E59-M18C116D01-D1 136219
	M30 x 1.5	15	flush	-			E59-M30A115D01-D1 136223
Programming cable							
for use with iProx							
	-	-	-	-	-	-	E59RP1 136229
Programming software							
for use with iProx							
	-	-	-	-	-	-	E59SW1 136230
E53 series (capacitive)							
4-wire Plug connector M12 x 1 Rated operational voltage: U_o 10 - 48 V DC Switching type: NPN, PNP Zinc/insulated material							
	M18 x 1	8	flush	1 N/C	-	IP65	E53KBL18T111SD 134802
		8	flush	-	1 N/O		E53KAL18T111SD 134768
		15	not flush	1 N/C	-		E53KBL18T111ED 134801
		15	not flush	-	1 N/O		E53KAL18T111ED 134767
	M30 x 1.5	20	flush	1 N/C	-		E53KBL30T111SD 134814
		20	flush	-	1 N/O		E53KAL30T111SD 134780
		25	not flush	1 N/C	-		E53KBL30T111ED 134813
		25	not flush	-	1 N/O		E53KAL30T111ED 134779
	Ø 34	25	flush	1 N/C	-		E53KBL34T111SD 134824
		25	flush	-	1 N/O		E53KAL34T111SD 134790
		35	not flush	1 N/C	-		E53KBL34T111ED 134823
		35	not flush	-	1 N/O		E53KAL34T111ED 134789

Function	Description	Rated switching distance S_n mm	Type of light	Switching principle	Part no.	Article no.	
Comet series							
4-wire, Rated operating voltage U_o 10 - 30 V DC Switching type: NPN, PNP [®] Insulated material plug connector M12 x 1 Degree of protection: IP67							
	Retro-reflective sensor	Beam: straight With background suppression (Perfect Prox)	50	Visible red	Adjustable bright/dark switching	13104AQD07	135605
		Beam: straight Can be expanded with fiber optic cable →Accessories	200	Infrared		13106AQD07	135621
		Beam: straight With background suppression (Perfect Prox)	225			13103AQD07	135597
		Beam: straight Can be expanded with fiber optic cable →Accessories	610			13100AQD07	13100AQD07
	Reflexphotoelectric sensor	For combination with reflector Non-polarized Beam: straight	7600	Visible red	14102AQD07	14102AQD07	
	Thru-beam photoelectric sensor	Detector (for combination with source) Beam: straight	24000		12102AQD07	135577	
		Source (for combination with detector) Beam: straight	24000		-	11102AQD07	135565
E58 Harsh Duty series							
4-wire, Rated operating voltage U_o 10 - 30 V DC Switching type: NPN, PNP [®] Stainless steel Plug connector M12 x 1 Degree of protection: IP69							
	Diffused sensor	With background suppression (Perfect Prox)	50	Visible red	Light switching	E58-18DP50-HLP	135673
			50		Dark switching	E58-18DP50-HDP	135671
			100		Light switching	E58-18DP100-HLP	135667
			100		Dark switching	E58-18DP100-HDP	135665
			280		Dark switching	E58-30DPS280-HDP	135681
			280		Light switching	E58-30DPS280-HLP	135683
	Reflex photoelectric sensor	For combination with reflector	18000		Dark switching	E58-30RS18-HDP	135689
	Reflex photoelectric sensor		18000		Light switching	E58-30RS18-HLP	135691
	Thru-beam photoelectric sensor	Source (for combination with detector)	250000	Visible red	-	E58-30TS250-HAP	135697
		Detector (for combination with source)	250000	-	Dark switching	E58-30TD250-HDP	135693
			250000	-	Light switching	E58-30TD250-HLP	135695
E67 Long Range series							
4-wire, Rated operating voltage U_o 18 - 30 V DC Switching type: NPN, PNP [®] Plug connector M12 x 1 Degree of protection: IP67							
	Diffused sensor	With background suppression (Perfect Prox)	1000	Infrared	Light switching	E67-LRDP100-HLD	100548
		With background suppression (Perfect Prox)	1000		Dark switching	E67-LRDP100-HDD	100547

Function	Description	Rated switching distance S_n mm	Type of light	Switching mechanism	Part no.	Article no.	
E65 SM series							
4-wire, Rated operating voltage U_o 10 - 30 V DC Switching type: NPN, PNP Insulated material Plug connector M12 x 1 Degree of protection: IP65 and IP66							
	Diffused sensor	With background suppression (Perfect Prox)	100	-	Light switching	E65-SMPP100-HLD135713	
		With background suppression (Perfect Prox)	100	-	Dark switching	E65-SMPP100-HDD135711	
	Thru-beam photoelectric sensor	Source (for combination with detector)	15000	-	Light switching	E65-SMTD15-HLD135733	
		Detector (for combination with source)	15000	-	Dark switching	E65-SMTD15-HDD135731	
		Source (for combination with detector)	15000	-	-	E65-SMTS15-HAD135735	
E71 NanoView series							
4-wire, Rated operating voltage U_o 10 - 30 V DC Switching type: PNP Insulated material Rectangular (20 x 12 x 32) Degree of protection: IP66/IP67							
	Diffused sensor	Beam: focused, straight	100	Visible red	Adjustable light/dark switching	E71-FFDP-M8100518	
	Reflex photoelectric sensor	For combination with reflector Detection of transparent objects	800			Visible red	E71-COP-M8100428
2 m connection cable 	Thru-beam photoelectric sensor	Detector (for combination with source)	1500	Infrared		E71-NTBS-CA100521	
	Reflex photoelectric sensor	Polarized light	2500	Visible red		E71-PRP-M8100526	
E75/E76 IntelliView series							
8-wire, Rated operating voltage U_o 10 - 30 V DC Switching type: PNP Plug connector M12 x 1 Degree of protection: IP67							
	Diffused sensor	Color sensing 3 NO PNP outputs	450	Infrared	-	E76-CLRMKP-M12166927	
Type output side	Type input side	Length mm	For use with		Part no.	Article no.	
Connecting cables							
	Cable end, open	Coupling, straight	2000 5000 10000	DC sensors, 4-pole, 2-, 3- or 4-wire connector, M12	CSDS4A4CY2202	136292	
		Coupling, angled	2000 5000 10000		CSDS4A4CY2205	136294	
					CSDS4A4CY2210	136296	
	Plug, straight	Coupling, straight	1500 3000 5000		CSDR4A4CY2202	136279	
					CSDR4A4CY2205	136282	
					CSDR4A4CY2210	136284	
	Plug, angled	Coupling, straight	1500 3000 5000		CSDS4A4CY2201.5-D	136316	
					CSDS4A4CY2203-D	136293	
					CSDS4A4CY2205-D	136295	
	Plug, angled	Coupling, straight	1500 3000 5000		CSDR4A4CY2201.5-D	136313	
					CSDR4A4CY2203-D	136315	
					CSDR4A4CY2205-D	136283	



Increase the availability of your machines and systems with efficient signaling



Download the catalog:
Eaton.com/catalog

Signal towers are not only indispensable for the safe operation of machines and systems – they also ensure that processes run smoothly at airports and even in supermarkets. The tasks they perform are as varied as the locations where they are used. This is why Eaton equips its signal towers with extremely versatile light and acoustic modules. And their high degree of protection (IP66) ensures that they can be used virtually anywhere.

Alongside light and signal strength, the efficiency of the system is also determined by the ease with which the complete tower can be installed or dismantled, for example during transport.

This efficiency can be further increased by effectively integrating signal towers into automation solutions. The SmartWire-DT and AS-Interface connections not only make wiring significantly easier, but also enhance the connectivity of the system. Intelligent switchgear can trigger alerts via the system – for example, if an overload is imminent – before a standstill occurs. Based on these alerts, the signal towers will then output their own clearly recognizable signals, thereby ensuring higher machine and system availability.



Get more information



Two signal tower designs are available: SL4 and SL7

Both compact and standard versions are available, with diameters of 40 mm and 70 mm, respectively. Eaton thus provides the ideal solution for your signaling tasks, even in places where space is scarce.



Significantly brighter and louder signals

All six lamp modules are available with filament lamps, continuous light LEDs, flashing LEDs, strobe LEDs, or high-performance LEDs. This makes it possible to adapt the brightness and color of the modules to specific customer needs and different market requirements. The same applies to the acoustic modules – eight selectable signals and an adjustable volume of up to 100 dB enable optimum adaptation to any environmental condition.



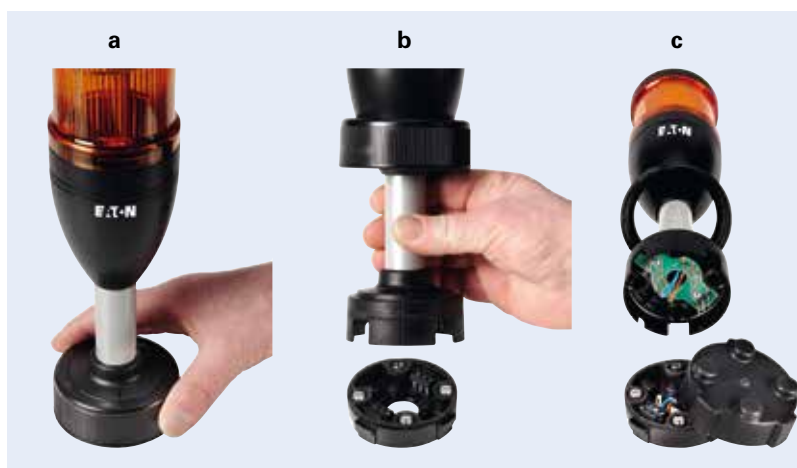
An integrated design

Eaton's signal towers can be integrated into both SmartWire-DT and AS-Interface networks. These network communication options make it possible to combine the unique advantages of our fast mounting system with improved cost-effectiveness.



Extremely flexible mounting options

Our new signal towers can be installed in 12 different ways. The cup-shaped base can either be mounted on the side of your equipment or directly on it, in a variety of configurations. If there is not enough clearance to the ceiling, for example, the modules can be installed horizontally. Tube lengths of 100, 250, 400 and 800 mm make the system even more flexible. Eaton.com/config/signaltower

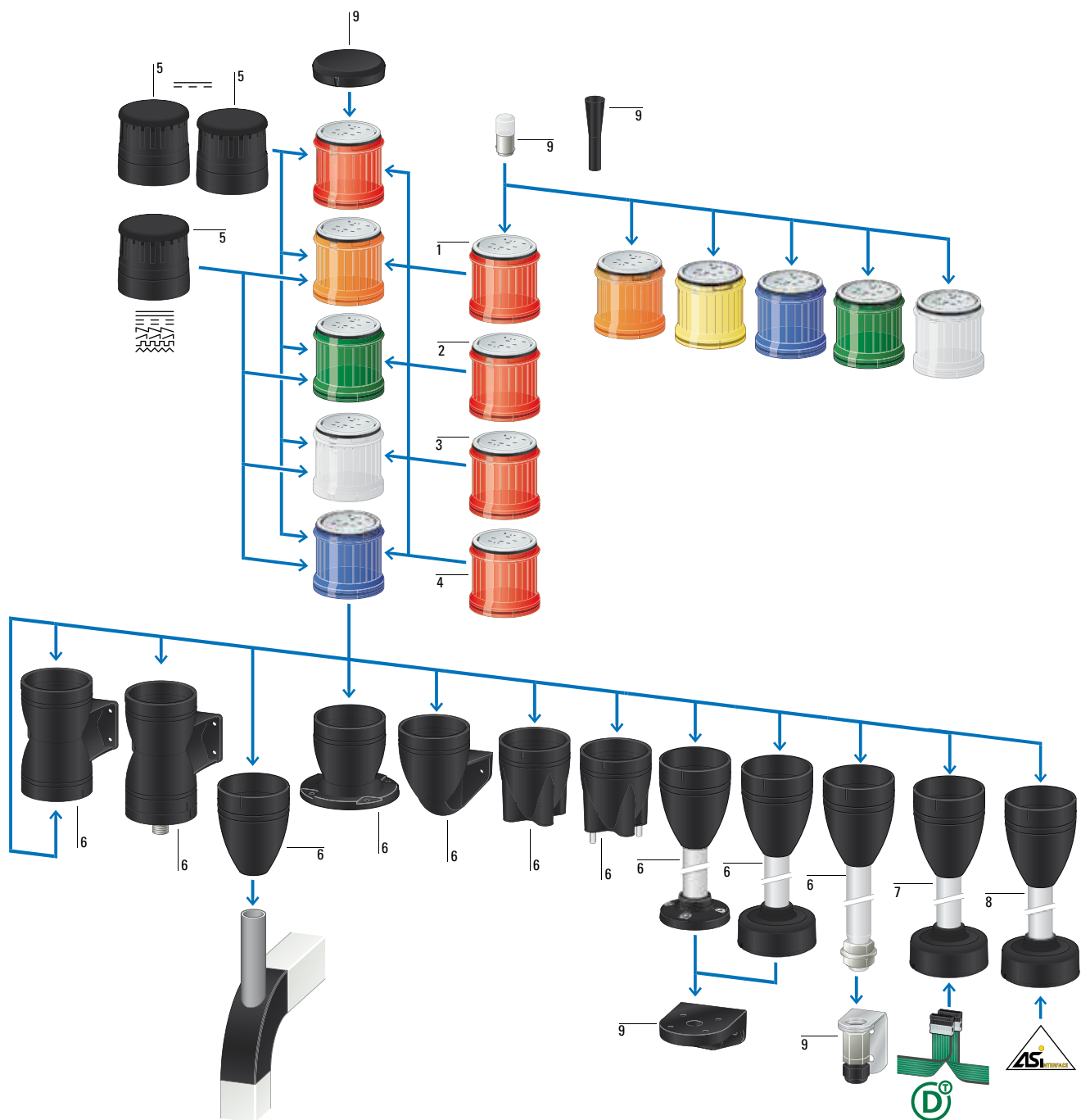


Rapid assembly and dismantling

The signal towers can be dismantled during transport. With Eaton's fast mounting system, this is possible in a matter of seconds:





- simply loosen the mounting ring,
- remove the signal tower,
- put the protective cover in place – and you're done!














The electrical and mechanical re-assembly and installation of the signal towers is just as simple.



- 1 Module for filament lamp, continuous light
- 2 LED/high-performance LED module, continuous light
- 3 LED module, flashing light
- 4 LED/high-performance LED module, strobe light





















- 5 Acoustic module
- 6 Base modules
- 7 Base module with SWD connection
- 8 Base module with AS-Interface
- 9 Accessories








	Rated operational voltage U_e V	Number of modules	Color	Module diameter 70 mm Part no. Article no.	Module diameter 40 mm Part no. Article no.
Complete devices (IP66)					
	Continuous light, LED, IP66, base module with foot and 100 mm tube 24 V AC/DC	2		SL7-100-L-RG-24LED 171424	SL4-100-L-RG-24LED 171295
		3		SL7-100-L-RYG-24LED 171425	SL4-100-L-RYG-24LED 171296
		3		SL7-100-L-RAG-24LED 173982	SL4-100-L-RAG-24LED 173981
	Customized complete devices				
Can be ordered on request					
	-	-	-	SL7-COMBINATION 2011955	SL4-COMBINATION 2011956



			Continuous light	Flashing light 2 Hz	Strobe light 1.4 Hz
	Rated operational voltage ¹⁾ U _e V	Color	Part no. Article no.	Part no. Article no.	Part no. Article no.
Module with LED, IP66					
	24 V AC/DC		SL7-L24-B 171461	SL7-BL24-B 171439	SL7-FL24-B 171402
			SL7-L24-G 171462	SL7-BL24-G 171440	SL7-FL24-G 171403
			SL7-L24-R 171463	SL7-BL24-R 171441	SL7-FL24-R 171404
			SL7-L24-W 171464	SL7-BL24-W 171442	SL7-FL24-W 171405
			SL7-L24-Y 171465	SL7-BL24-Y 171388	SL7-FL24-Y 171406
			SL7-L24-A 171466	SL7-BL24-A 171389	SL7-FL24-A 171407
	230/240 V AC		SL7-L230-B 171473	SL7-BL230-B 171396	SL7-FL230-B 171414
			SL7-L230-G 171474	SL7-BL230-G 171397	SL7-FL230-G 171415
			SL7-L230-R 171475	SL7-BL230-R 171398	SL7-FL230-R 171416
			SL7-L230-W 171476	SL7-BL230-W 171399	SL7-FL230-W 171417
			SL7-L230-Y 171477	SL7-BL230-Y 171400	SL7-FL230-Y 171418
			SL7-L230-A 171426	SL7-BL230-A 171401	SL7-FL230-A 171419



Notes

¹⁾ 110/120 V AC → online catalog

			Continuous light	Flashing light 2 Hz	Strobe light 1.4 Hz	Multistrobe light 1 - 2.6 Hz
	Rated operational voltage ¹⁾ U _e V	Color	Part no. Article no.	Part no. Article no.	Part no. Article no.	Part no. Article no.
High-performance LED module, IP66						
	24 V AC/DC		SL7-L24-B-HP 171427	-	SL7-FL24-B-HP 171420	SL7-FL24-B-HPM 171275
			SL7-L24-G-HP 171428	-	SL7-FL24-G-HP 171421	SL7-FL24-G-HPM 171276
			SL7-L24-R-HP 171429	-	SL7-FL24-R-HP 171422	SL7-FL24-R-HPM 171277
			SL7-L24-W-HP 171430	-	SL7-FL24-W-HP 171423	SL7-FL24-W-HPM 171278
			SL7-L24-Y-HP 171431	-	SL7-FL24-Y-HP 171273	SL7-FL24-Y-HPM 171279
			SL7-L24-A-HP 171432	-	SL7-FL24-A-HP 171274	SL7-FL24-A-HPM 171280
Module with LED, IP66						
	24 V AC/DC		SL4-L24-B 171313	SL4-BL24-B 171337	SL4-FL24-B 171355	SL4-FL24-B-M 171373
			SL4-L24-G 171314	SL4-BL24-G 171338	SL4-FL24-G 171356	SL4-FL24-G-M 171374
			SL4-L24-R 171315	SL4-BL24-R 171339	SL4-FL24-R 171357	SL4-FL24-R-M 171375
			SL4-L24-W 171316	SL4-BL24-W 171340	SL4-FL24-W 171358	SL4-FL24-W-M 171376
			SL4-L24-Y 171317	SL4-BL24-Y 171341	SL4-FL24-Y 171359	SL4-FL24-Y-M 171377
			SL4-L24-A 171318	SL4-BL24-A 171342	SL4-FL24-A 171360	SL4-FL24-A-M 171378
	230/240 V AC		SL4-L230-B 171325	SL4-BL230-B 171349	SL4-FL230-B 171367	-
			SL4-L230-G 171326	SL4-BL230-G 171350	SL4-FL230-G 171368	-
			SL4-L230-R 171327	SL4-BL230-R 171351	SL4-FL230-R 171369	-
			SL4-L230-W 171328	SL4-BL230-W 171352	SL4-FL230-W 171370	-
			SL4-L230-Y 171329	SL4-BL230-Y 171353	SL4-FL230-Y 171371	-
			SL4-L230-A 171330	SL4-BL230-A 171354	SL4-FL230-A 171372	-
Notes ¹⁾ 110/120 V AC → online catalog						

	Rated operational voltage U _e V	Color	Continuous light Filament lamp max. 7 W	Continuous light Filament lamp max. 4 W
			Part no. Article no.	Part no. Article no.
Module for filament lamp, IP66				
Without lamp, filament lamps→ Accessories				
	< 250 V AC/DC		SL7-L-B 171433	SL4-L-B 171331
			SL7-L-G 171434	SL4-L-G 171332
			SL7-L-R 171435	SL4-L-R 171333
			SL7-L-W 171436	SL4-L-W 171334
			SL7-L-Y 171437	SL4-L-Y 171335
			SL7-L-A 171438	SL4-L-A 171336

Description	Rated operating voltage ¹⁾ U _e V	Rated operational current I _e mA	Color	Type of tone	Part no. Article no.	
Acoustic modules, IP66						
Place only at the highest position of a tower.						
	Continuous tone or pulsed tone, adjustable with internal dip switch.	24 V AC/DC	max. 92			SL7-AP24 171281
	Sound pressure: 100 db, adjustable via an internal potentiometer f = 2800 Hz	230/240 V AC	max. 43			SL7-AP230 171283
	Continuous tone or pulsed tone, external actuation. Assigned two inputs (2 modules). Sound pressure: 100 db, adjustable via an internal potentiometer f = 2800 Hz	24 V AC/DC	max. 92			SL7-AP24-E 171284
		230/240 V AC	max. 43			SL7-AP230-E 171286
	Multi-tone; 8 tones, adjustable via an internal dip switch. Sound pressure: 100 db, adjustable via an internal potentiometer f = 500 - 2700 Hz	24 V AC/DC	max. 115			SL7-AP24-M 171287
		230/240 V AC	max. 43			SL7-AP230-M 171289
	Continuous tone or pulsed tone, adjustable via an internal dip switch. Sound pressure: 80 dB. f = 4000 Hz	24 V AC/DC	max. 39			SL4-AP24 171379
		230/240 V AC	max. 21			SL4-AP230 171381
Notes	¹⁾ 110/120 V AC → online catalog					

Description		Tube length	For use with	Part no. article no.	For use with	Part no. Article no.
Base modules						
For horizontal mounting Includes cover max. 5 modules						
	Base with aluminum tube and plastic foot	100 mm	SL7-L-... SL7-BL-... SL7-FL-... SL7-AP-...	Spring-loaded terminals SL7-CB-100 171443	SL4-L-... SL4-BL-... SL4-FL-... SL4-AP-...	Push-in terminals SL4-PIB-100 171297
		250 mm		SL7-CB-250 171444		SL4-PIB-250 171298
		400 mm		SL7-CB-400 171445		SL4-PIB-400 171299
		800 mm		SL7-CB-800 177312		SL4-PIB-800 177313
	Base with aluminum tube and banjo screw	100 mm	SL7-CB-T-100 171452	SL4-PIB-T-100 171305		
		250 mm	SL7-CB-T-250 171453	SL4-PIB-T-250 171306		
		400 mm	SL7-CB-T-400 171454	SL4-PIB-T-400 171307		
		800 mm	SL7-CB-T-800 178460	SL4-PIB-T-800 178461		

Description	Tube length	For use with	Part no. article no.	For use with	Part no. Article no.
Base modules					
For horizontal mounting Includes cover max. 5 modules			Spring-loaded terminals		Push-in terminals
 Base with internal fixing holes	-	SL7-L-... SL7-BL-... SL7-FL-... SL7-AP-...	SL7-CB-IMH 171447	SL4-L-... SL4-BL-... SL4-FL-... SL4-AP-...	SL4-PIB-IMH 171300
 Base with built-in (pre-assembled) fixing screws	-		SL7-CB-IMS 171448		SL4-PIB-IMS 171301
 Base with external fixing holes	-		SL7-CB-EMH 171449		SL4-PIB-EMH 171302
 Base: can hold tubes with a diameter of 25 mm (±0.5)	-		SL7-CB-TM 179987		SL4-PIB-TM 179986
Base with fast mounting system			Screw terminals		Screw terminals
	max. 5 modules	100 mm	SL7-FMS-100 171456		SL4-FMS-100 171308
		250 mm	SL7-FMS-250 171457		SL4-FMS-250 171309
		400 mm	SL7-FMS-400 171458		SL4-FMS-400 171310
		800 mm	SL7-FMS-800 178462		SL4-FMS-800 178463
			Blade terminal SWD4-8MF2		Blade terminal SWD4-8MF2
max. 5 modules max. 0.3 A per module An external power supply can be connected (24 V DC) Configurable with the SWD-Assist planning and ordering tool	100 mm		SL7-SWD 171459		SL4-SWD 171311
Identical to SL7-FMS... and SL7-SWD					
max. 4 modules AS-Interface version 2.0 Power supply via AS-i (max. 190 mA)	100 mm	SL7-L(24)-... SL7-BL24-... SL7-FL24-... SL7-AP24-...	SL7-FMS-ASI-V20 197318		
max. 4 modules AS-Interface version 2.0 Power supply via external source (24 V DC)			SL7-FMS-ASI-V20E 197319		
max. 3 modules AS-Interface version 2.1 Power supply via AS-i (max. 190 mA)			SL7-FMS-ASI-V21 197320		
max. 3 modules AS-Interface version 2.1 Power supply via external voltage source (24 V DC)			SL7-FMS-ASI-V21E 197321		
max. 4 modules AS-Interface version 3.0 Power supply via AS-i (max. 190 mA)			SL7-FMS-ASI-V30 197322		
max. 4 modules AS-Interface version 3.0 Power supply via external voltage source (24 V DC)			SL7-FMS-ASI-V30E 197323		

Moeller series

Description		Tube length	For use with	Part no. Article no.	For use with	Part no. Article no.
For vertical mounting Includes cover				Spring-loaded terminals		Push-in terminals
	One-sided base with bracket max. 5 modules		SL7-L-... SL7-BL-... SL7-FL-... SL7-AP-...	SL7-CB-FW 171450	SL4-L-... SL4-BL-... SL4-FL-... SL4-AP-...	SL4-PIB-FW 171303
For vertical mounting on both sides Includes cover				Spring-loaded terminals		Push-in terminals
	Base with external fixing holes Max. 2 x 5 modules		SL7-L-... SL7-BL-... SL7-FL-... SL7-AP-...	SL7-CB-D 171451	SL4-L-... SL4-BL-... SL4-FL-... SL4-AP-...	SL4-PIB-D 171304
For vertical mounting on one side Includes cover				M12A plug, 4-pole		
	Base with external fixing holes max. 3 modules		SL7-L-... SL7-BL-... SL7-FL-... SL7-AP-...	SL7-CB-D-M12A4 177351		
Lifespan		Rated operational voltage	Power	For use with	Part no. Article no.	
h		U _e V				
Magnetic base, includes M20 cable gland						
For vertical mounting, metal and plastic						
	-	-	-	SL4-PIB-100(250)(400) SL7-CB-100(250)(400)	SL7/4-MMS 172954	
Mounting bracket						
For vertical mounting, plastic						
	-	-	-	SL4-PIB-100(250)(400) SL4-FMS... SL7-CB-100(250)(400) SL7-FMS...	SL7/4-FW 171446	
Mounting bracket, includes M20 cable gland						
For vertical mounting, metal						
	-	-	-	SL4-PIB-T... SL7-CB-T...	SL7/4-FW-T 171455	
Replacement cover for signal towers						
for signal towers						
	-	-	-	SL7-... SL4-...	SL7-COV 192368 SL4-COV 192369	
Tool for replacing the filament lamp						
	-	-	-	-	SL7/4-BET 171294	
Filament lamps						
socket: Ba15d						
	> 3000	12 V	5 W	SL7-L-...	SL7-L12 171290	
		24 V	6.5 W		SL7-L24 171291	
		120 V	7 W		SL7-L120 171292	
		230 V	6.5 W		SL7-L230 171293	
	> 3000	12 V	4 W	SL4-L-...	SL4-L12 171382	
		24 V			SL4-L24 171383	
		120 V			SL4-L120 171384	
		230 V			SL4-L230 171385	



Compact, essential, simple

Eaton's stack light compact offers all the essential functionality you would expect from a stack light but in one compact design.


















The 61 mm diameter stack light compact comes with three colours (red, yellow and green) and an optional integrated it comes with a acoustic module acoustic module. Available in three different voltages: 24 V DC, 24 V DC/AC and 120V AC, 230 V AC, they can be connected to the application via push-in terminals or with a M22 base/ M12 plugs. Three base modules can be chosen to fit your needs: Standard 100 mm mounting, wall mounting and 22 mm hole mounting.

Eaton's stack light compact are the perfect addition to your application.



Get more information

Moeller series

	Rated operational voltage	Module without acoustic	Module with acoustic pulse tone — — —
		Part no. Article no.	Part no. Article no.
Complete devices with standard base			
	24 VDC	SLC-100-RYG-24 EP-400208 	SLC-100-RYG-AP-24 EP-400211 
	24 VUC*	SLC-100-RYG-24UC EP-400194 	SLC-100-RYG-AP-24UC EP-400197 
	120 VAC	SLC-100-RYG-120 EP-400200 	SLC-100-RYG-AP-120 EP-400202 
	230 VAC	SLC-100-RYG-230 EP-400214 	SLC-100-RYG-AP-230 EP-400216 
Complete devices with M22 hole mounting and M12 plug			
	24 VDC	SLC-M22-RYG-24 EP-400210 	SLC-M22-RYG-AP-24 EP-400213 
	24 VUC*	SLC-M22-RYG-24UC EP-400196 	SLC-M22-RYG-AP-24UC EP-400199 
Complete devices with wall base			
	24 VDC	SLC-FW-RYG-24 EP-400209 	SLC-FW-RYG-AP-24 EP-400212 
	24 VUC*	SLC-FW-RYG-24UC EP-400195 	SLC-FW-RYG-AP-24 EP-400198 
	120 VAC	SLC-FW-RYG-120 EP-400201 	SLC-FW-RYG-AP-120 EP-400203 
	230 VAC	SLC-FW-RYG-230 EP-400215 	SLC-FW-RYG-AP-230 EP-400217 

* UC = Universal current (AC/DC)



Safe and reliable: Timing relays, measuring relays and monitoring relays



Our range of electronic timing relays includes two different designs, which can be easily adapted to a wide range of applications. All timing relays are mounted on DIN top-hat rails.

The EMR range of measuring and monitoring relays is approved for global use. Most of the relays feature multi-voltage coils. They cover a wide range of applications:

- Current monitoring relays for universal use,
- Phase monitoring relays to protect system components against damage,
- Phase sequence relays for monitoring the rotating field,
- Imbalance relays to safely detect phase failure,
- Multi-functional three-phase monitoring relays for compact monitoring of rotating fields,
- Level monitoring relays for fill-level monitoring,
- Insulation monitoring relays to increase operational safety.



Get more information

ETR timing relays – precise and economic switching



- Large selection of setting ranges
- Timing functions for every requirement
- Remote time setting via the integrated potentiometer
- Flexible connection thanks to wide-range power supply
- Additional signal input even for different control voltages



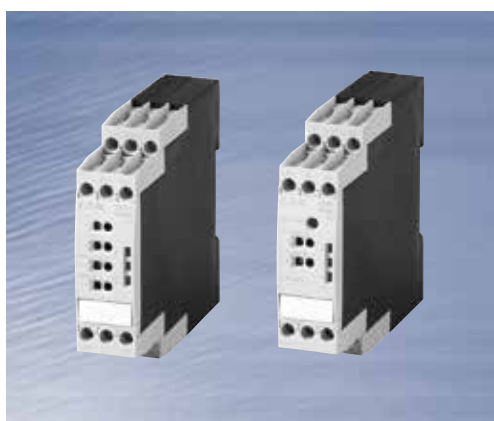
EMR Multi-functional three-phase monitoring relay – compact monitoring of rotating fields



- Protect motors by monitoring phase sequence, phase loss and phase imbalance, as well as overvoltage and undervoltage
- With optional monitoring of the neutral conductor
- The overvoltage and undervoltage threshold can be adjusted or set to fixed
- 2 changeover contacts for greater flexibility



EMR insulation monitoring and level monitoring relay – the right solution for every application



- Improved safety with insulation monitoring relays for earth-fault monitoring
- Rapid troubleshooting to keep downtime to a minimum
- Test button for easy function testing
- Simple level monitoring and/or dry run protection
- Enhanced safety thanks to the open-circuit principle










EMR single-phase current monitoring relay – for universal use



- Precise current monitoring in AC and DC networks
- Adjustable on-delay for bridging transitory current peaks
- Status display via colored LEDs
- The measurement range can be expanded via external current transformers











Function													24 - 240 V AC, 50/60 Hz 24 - 240 V DC	400 V AC, 50/60 Hz											
													Part no. Article no.	Part no. Article no.											
													Time range	Number of changeover contacts	Width mm										
													On-delayed	Multi-functional	Off-delayed	Fleeting contact on energization	Fleeting contact on de- energization	Flashing, pulse-initiating	On- and off-delayed	Pulse-forming	Pulse-generating	Star-delta switching	Flashing, pause-initiating		
ETR4 timing relay																									
	Changeover contact with a changeover time of 50 ms	-	-	-	-	-	-	-	-	-	✓	-	3 - 60 s	1	22.5	ETR4-51-A 031884	ETR4-51-W 031885								
	Fixed timing function	✓	-	-	-	-	-	-	-	-	-	-	0.05 s - 100 h			ETR4-11-A 031882	ETR4-11-W 031883								
	Adjustable timing functions	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-				ETR4-69-A 031891	ETR4-69-W 031887								
	With potentiometer connection Changeover contact can be converted to 2 timed contacts or 1 non-delayed contact and 1 timed contact	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	2		ETR4-70-A 031888	-								
ETR2 timing relay																									
	Fixed timing function	✓	-	-	-	-	-	-	-	-	-	-	0.05 s - 100 h	1	17.5	-	ETR2-11 262684								
		✓	-	-	-	-	-	-	-	-	-	-		2		-	ETR2-11-D 119426								
		-	-	✓	-	-	-	-	-	-	-	-		1		-	ETR2-12 262686								
		-	-	✓	-	-	-	-	-	-	-	-	2	-		ETR2-12-D 119427									
		-	-	-	✓	-	-	-	-	-	-	-	1	-		ETR2-21 262687									
		-	-	-	-	-	✓	-	-	-	-	-		-		ETR2-42 262688									
		-	-	-	-	-	-	✓	-	-	-	-		-		ETR2-44 262730									
	Pulse and pause times can be adjusted independently of one another	-	-	-	-	-	✓	-	-	-	-	✓				-									
	Adjustable timing functions	✓	✓	✓	✓	✓	✓	-	✓	-	-	-	✓	2		-	ETR2-69 262689								
		✓	✓	✓	✓	✓	✓	-	✓	-	-	-	✓												

		For monitoring	Monitoring voltage per phase	Adjustable threshold values	Threshold value	Supply voltage	Part no. Article no.
		Phase sequence Phase failure Imbalance Overvoltage Undervoltage Neutral cable break	U_N V AC	Imbalance Overvoltage Undervoltage			
Phase sequence relay							
	For monitoring of three-phase networks Phase failure detection at $< 0.6 \times U_N$ Power supply via the measuring circuit	✓ ✓ - - - -	200 - 500 V AC, 50/60 Hz	- - -	-	200 - 500 V AC, 50/60 Hz	EMR6-F500-G-1 184789
Phase imbalance monitoring relay							
	Power supply via the measuring circuit On-delay: none = 0 or adjustable from 0.1 to 30 s Imbalance threshold values can be set to between 2 % and 25 % of the mean value of the phase voltages	✓ ✓ ✓ - - -	160 - 300 V AC, 50/60 Hz	✓ - -	-	160 - 300 V AC, 50/60 Hz	EMR6-A300-C-1 184761
		✓ ✓ ✓ - - -	300 - 500 V AC, 50/60 Hz	✓ - -	-	300 - 500 V AC, 50/60 Hz	EMR6-A500-D-1 184762
Phase monitoring relay							
Multi-functional Power supply via the measuring circuit On-delay/off-delay: none = 0 or adjustable from 0.1 - 30 s Imbalance threshold values can be set to between 2 % and 25 % of the mean value of the phase voltages							
		✓ ✓ ✓ ✓ ✓ ✓	90 - 170 V AC, 50/60 Hz	✓ ✓ ✓	U_{max} 120 - 170 V AC U_{min} 90 - 130 V AC	90 - 170 V AC, 50/60 Hz	EMR6-AWN170-E-1 184768
		✓ ✓ ✓ ✓ ✓ -	160 - 300 V AC, 50/60 Hz	✓ ✓ ✓	U_{max} 220 - 300 V AC U_{min} 160 - 230 V AC	160 - 300 V AC, 50/60 Hz	EMR6-AW300-C-1 184763
		✓ ✓ ✓ ✓ ✓ ✓	180 - 280 V AC, 50/60 Hz	✓ ✓ ✓	U_{max} 240 - 280 V AC U_{min} 180 - 220 V AC	180 - 280 V AC, 50/60 Hz	EMR6-AWN280-D-1 184770
22.5 mm	Automatic phase sequence correction	✓ ✓ ✓ ✓ ✓ ✓	180 - 280 V AC, 50/60/400 Hz	✓ ✓ ✓	U_{max} 240 - 280 V AC U_{min} 180 - 220 V AC	180 - 280 V AC, 50/60/400 Hz	EMR6-AWN280-K-1 184769
		✓ ✓ ✓ ✓ ✓ -	300 - 500 V AC, 50/60 Hz	✓ ✓ ✓	U_{max} 420 - 500 V AC U_{min} 300 - 380 V AC	300 - 500 V AC, 50/60 Hz	EMR6-AW500-D-1 184764
		✓ ✓ ✓ ✓ ✓ ✓	300 - 500 V AC, 50/60/400 Hz	✓ ✓ ✓	U_{max} 420 - 500 V AC U_{min} 300 - 380 V AC	300 - 500 V AC, 50/60/400 Hz	EMR6-AWN500-D-1 184771
	Automatic phase sequence correction	✓ ✓ ✓ ✓ ✓ -	350 - 580 V AC, 50/60 Hz	✓ ✓ ✓	U_{max} 480 - 580 V AC U_{min} 350 - 460 V AC	350 - 580 V AC, 50/60 Hz	EMR6-AWM580-H-1 184765
		✓ ✓ ✓ ✓ ✓ -	450 - 720 V AC, 50/60 Hz	✓ ✓ ✓	U_{max} 600 - 720 V AC U_{min} 450 - 570 V AC	450 - 720 V AC, 50/60 Hz	EMR6-AWM720-I-1 184766
45 mm		✓ ✓ ✓ ✓ ✓ -	530 - 820 V AC, 50/60 Hz	✓ ✓ ✓	U_{max} 690 - 820 V AC U_{min} 530 - 660 V AC	530 - 820 V AC, 50/60 Hz	EMR6-AWM820-J-1 184767
Voltage monitoring relay for three-phase networks							
	Power supply via the measuring circuit On-delay/off-delay: none = 0 or adjustable from 0.1 - 30 s	✓ ✓ - ✓ ✓ -	160 - 300 V AC, 50/60 Hz	- ✓ ✓	U_{max} 220 - 300 V AC U_{min} 160 - 230 V AC	160 - 300 V AC, 50/60 Hz	EMR6-W300-C-1 184776
		✓ ✓ - ✓ ✓ -	300 - 500 V AC, 50/60 Hz	- ✓ ✓	U_{max} 420 - 500 V AC U_{min} 300 - 380 V AC	300 - 500 V AC, 50/60 Hz	EMR6-W500-D-1 184779
		✓ ✓ - ✓ ✓ -	380 V AC, 50/60 Hz	- - -	U_{max} 418 V AC, fixed U_{min} 342 V AC, fixed	380 V AC, 50/60 Hz	EMR6-W380-L-1 184777
		✓ ✓ - ✓ ✓ -	400 V AC, 50/60 Hz	- - -	U_{max} 440 V AC, fixed U_{min} 360 V AC, fixed	400 V AC, 50/60 Hz	EMR6-W400-M-1 184778

Electronic relays

EMR6 measuring and monitoring relay

		For monitoring	Measuring range	Adjustable threshold values	Supply voltage	Part no. Article no.
		Phase sequence Phase failure Imbalance Overvoltage Undervoltage Neutral cable break		Imbalance Overvoltage Undervoltage		
Voltage monitoring relay						
	Monitoring of single-phase DC and AC networks On-delay: none = 0 or adjustable from 0.1 to 30 s Can be configured for over- or undervoltage monitoring Can be configured as open- or closed-circuit principle	- - - ✓ ✓ -	3 ... 30 V 6 ... 60 V 30 ... 300 V 60 ... 600 V	✓ ✓ ✓	24 ... 240 V AC 50/60 Hz 24 ... 240 V DC	EMR6-VM600-A-1 184784
	Monitoring of single-phase DC and AC networks On-delay: none = 0 or adjustable from 0.1 to 30 s Can be configured for over- or undervoltage monitoring Threshold values can be configured for >U and <U Can be configured as open- or closed-circuit principle	- - - ✓ ✓ -	3 ... 30 V 6 ... 60 V 30 ... 300 V 60 ... 600 V	✓ ✓ ✓	24 ... 240 V AC 50/60 Hz 24 ... 240 V DC	EMR6-VF600-A-1 184785
		For monitoring	Adjustable sensitivity range	Supply voltage	Width mm	Part no. Article no.
Level monitoring relay						
	Can be switched between dry run protection and overflow protection	Fill level of conductive liquids	0.1 - 1000 kΩ	110 - 130 V AC 50/60 Hz 220 - 240 V AC 50/60 Hz	22.5	EMR6-N1000-N-1 184756
	On-delay or off-delay: adjustable between 0.1 - 10 s	Fill levels of conductive liquids Mixture ratio of conductive liquids	0.1 - 1000 kΩ	24 - 240 V AC, 50/60 Hz 24 - 240 V DC	22.5	EMR6-N1000-A-1 184757
	-		5 - 100 kΩ	110 - 130 V AC 50/60 Hz 220 - 240 V AC 50/60 Hz	22.5	EMR6-N100-N-1 184758
Insulation-monitoring relays						
	Status indication via LEDs Open-circuit principle Test or reset function either via a button on the device or via the control input Configurable fault memory/memory function Configurable non-volatile fault memory	Insulation resistance in non-earthed AC supply systems (2-, 3- or 4-phase systems) Insulation resistance in non-earthed DC supply systems (2- or 3-phase systems)	1 - 100 kΩ 0 - 250 V AC 0 - 300 V DC	24 - 240 V AC, 24 - 240 V DC	22.5	EMR6-R250-A-1 184772
	Status indication via LED Open-circuit principle Test or reset function either via a button on the device or via the control input Configurable fault memory/memory function Configurable non-volatile fault memory	Insulation resistance in non-earthed AC supply systems (2-, 3- or 4-phase systems)	1 - 100 kΩ 0 - 400 V AC	24 - 240 V AC, 24 - 240 V DC	22.5	EMR6-R400-A-1 184773

	For monitoring	Adjustable sensitivity range	Supply voltage	Width mm	Part no. Article no.	
Insulation-monitoring relays						
	Status indication via LED Open-circuit principle Test or reset function either via a button on the device or via the control input Configurable fault memory/memory function Configurable non-volatile fault memory Wire-break detection	Insulation resistance in non-earthed AC supply systems (3- or 4-phase systems) Insulation resistance in non-earthed DC supply systems (3-phase systems)	1 - 100 kΩ 2 - 200 kΩ Activated via DIP switch 0 - 400 V AC 0 - 600 V DC	24 - 240 V AC, 13.5 - 400 Hz 24 - 240 V DC	45	EMR6-R400-A-2 184774
	Coupling module For expanding the rated voltage range of the EMR5-400-2-A to 690 V AC or 1000 V DC No supply voltage necessary	-	-	-	45	EMR6-RC690 184775
Current monitoring relay						
	Monitoring of single-phase DC and AC networks Switching hysteresis adjustable from 3 - 30 % On-delay: none = 0 or adjustable from 0.1 to 30 s The measurement range can be expanded by means of current transformers	3 - 30 mA 10 - 100 mA 0.1 - 1 A	24 - 240 V AC, 50/60 Hz 24 - 240 V DC	22.5	EMR6-I1-A-1 184790	
		0.3 - 1.5 A 1 - 5 A 3 - 15 A			EMR6-I15-A-1 184754	
		0.3 - 1.5 A 1 - 5 A 3 - 15 A	220 - 240 V AC, 50/60 Hz		EMR6-I15-B-1 184755	
	Monitoring of single-phase DC and AC networks On-delay: none = 0 or adjustable from 0.1 to 30 s Can be configured for over- or undervoltage monitoring Can be configured as open- or closed-circuit principle Multi-functional	3 - 30 mA 10 - 100 mA 0.1 - 1 A	24 - 240 V AC, 50/60 Hz 24 - 240 V DC		EMR6-IM1-A-1 184780	
		0.3 - 1.5 A 1 - 5 A 3 - 15 A			EMR6-IM15-A-1 184781	
		Monitoring of single-phase DC and AC networks On-delay: none = 0 or adjustable from 0.1 to 30 s Can be configured for over- or undervoltage monitoring Threshold values can be configured for >I and <I Can be configured as open- or closed-circuit principle	3 - 30 mA 10 - 100 mA 0.1 - 1 A			EMR6-IF1-A-1 184782
	0.3 - 1.5 A 1 - 5 A 3 - 15 A				EMR6-IF15-A-1 184783	
Temperature monitoring relay						
	Status display via LED Monitoring of overtemperature, undertemperature or of temperatures between two threshold values Sensor type: PT100 sensor	-50...+50°C	24 - 240 V AC 50/60 Hz 24 - 240 V DC	EMR6-T50-A-1 184786		
		0...+100°C		EMR6-T100-A-1 184787		
		0...+200°C		EMR6-T200-A-1 184788		



DILM contactors and Z overload relays

Operational switching of motors

- Overload protection
- Auxiliary contact trip indication

Page 1/4 ff., 5/4 ff.



MSC-D motor starters

Operational switching of motors

- Overload protection
- Short-circuit protection
- Disconnectors

Page 1/4 ff., 5/32 ff., 5/50 ff.



MSC-DE motor starters

Operational switching of motors

- Electronic wide-range overload protection
- Short-circuit protection
- Disconnectors
- Adjustable current range due to exchangeable terminal blocks

Page 1/4 ff., 5/32 ff., 5/50 ff.



EMS2 electronic motor starter with Push-in terminals

- Integrated power supply
- Control of clockwise/counterclockwise rotation
- Indication of the direction of rotation
- Tool-free Push-in terminal technology

Page 1/4 ff., 5/52 ff.



NZM circuit breakers and DILM contactors

- Overload protection
- Short-circuit protection

Page 6/4 ff.



DILM contactor with Push-in terminals

- Operational switching of motors

Page 1/4 ff., 5/4 ff.



Motor-protective circuit breakers with Push-in terminals

- Overload and short-circuit protection

Page 1/4 ff., 5/32 ff., 5/44 ff.



MSC-DEA motor starters with Push-in terminals

- Remote contactor control
- Read-back with SmartWire-DT
 - contactor and PKE switching status
 - Motor current
 - Settings
 - Thermal motor image
 - Trip indication in the event of overload/short circuit/phase failure

Page 1/4 ff., 5/32 ff., 5/50 ff.



EMS2 electronic motor starter

- DOL and reversing starts
- Integrated emergency-stop contactor for Ple/SIL3 applications
- Wide-range overload protection
- Tool-free Push-in terminal technology

Page 1/4 ff., 5/46 ff.



HLR solid state relays

- Single-phase and three-phase devices for AC and DC control
- Wear free: no moving or mechanical parts
- High switching frequencies, fast switching
- Resistant to environmental factors
- Very low energy consumption

Page 5/64 ff.



DS7 and S811+ soft starters

- Can be combined with PKZ and PKE motor-protective circuit breakers
- Part of the xStart system
- Side-by-side mounting
- SmartWire-DT (optional)

Page 5/66 ff.



PowerXL DE1 variable speed starter up to 7.5 kW

- Out-of-box commissioning without any prior configuration
- No specialist knowledge of drive technology required
- Can be configured with a screwdriver via the optional DXE-EXT-SET module
- Trip-free design for maximum machine availability
- Modbus RTU integrated
- CANopen (DE11 version)
- PROFINET, EtherNet/IP & SmartWire-DT optional

Page 5/73 ff.



PowerXL DC1 variable frequency drives up to 22 kW

- V/f & SLV control with voltage boost
- Speed control of three-phase and AC motors
- Degree of protection: IP20, IP66
- Modbus RTU and CANopen integrated
- PROFINET, EtherNet/IP & SmartWire-DT optional

Page 5/74 ff.



PowerXL DA1 variable frequency drives up to 250 kW

- V/f control, SLV, CLV
- 200 % torque at 0 rpm
- Integrated EMC filter and braking transistor
- Master/slave functionality
- Degree of protection: IP20, IP55 und IP66
- Modbus RTU and CANopen integrated
- Optional fieldbus modules
- SmartWire-DT (optional)

Page 5/75 ff.



PowerXL DM1 and DM1Pro variable frequency drives up to 22 kW

- Safe (DM1Pro) (SIL2, PLd, Cat.2)
- Integrated web server and Bluetooth
- Multi-pump applications
- Integrated energy measurement and energy cost calculator
- Short-circuit protection up to 100 kA without any upstream devices

Page 5/76 ff.



PowerXL DG1 variable frequency drive up to 630 kW

- Safe (STO) and reliable down to -30°C
- Easy commissioning
- Communication on board: Modbus RTU & TCP, BACnet MSTP, EtherNet/IP
- Multi-pump applications
- Integrated energy measurement and energy cost calculator
- Brake control, bypass, synchronization, 2 PID
- V/f, SLV, torque
- RTC and timer
- Two expansion slots

Page 5/76 ff.



PowerXL DB1 variable frequency drives up to 4 kW

- V/f & SLV control with voltage boost
- Speed control of three-phase and AC motors
- IP20 degree of protection
- Modbus RTU and CANopen integrated

Page 5/77 ff.



PowerXL Rapid Link 5

- RAMO5 DOL and reversing starter up to 3 kW
- RASP5 variable frequency drives up to 4 kW
- Plug-in connections only
- Integrated manual and automatic mode
- AS-Interface, PROFINET, Ethernet/IP
- Degree of protection: IP65

Page 5/82 ff.

Future-proof switching, protection and operation of motors

With Eaton, you are ideally prepared for meeting the requirements of the new ErP Directive. In addition to revising our existing product range for the safe switching, protection and operation of motors, we have also added a number of clever new solutions.

Flexible solutions for greater energy efficiency

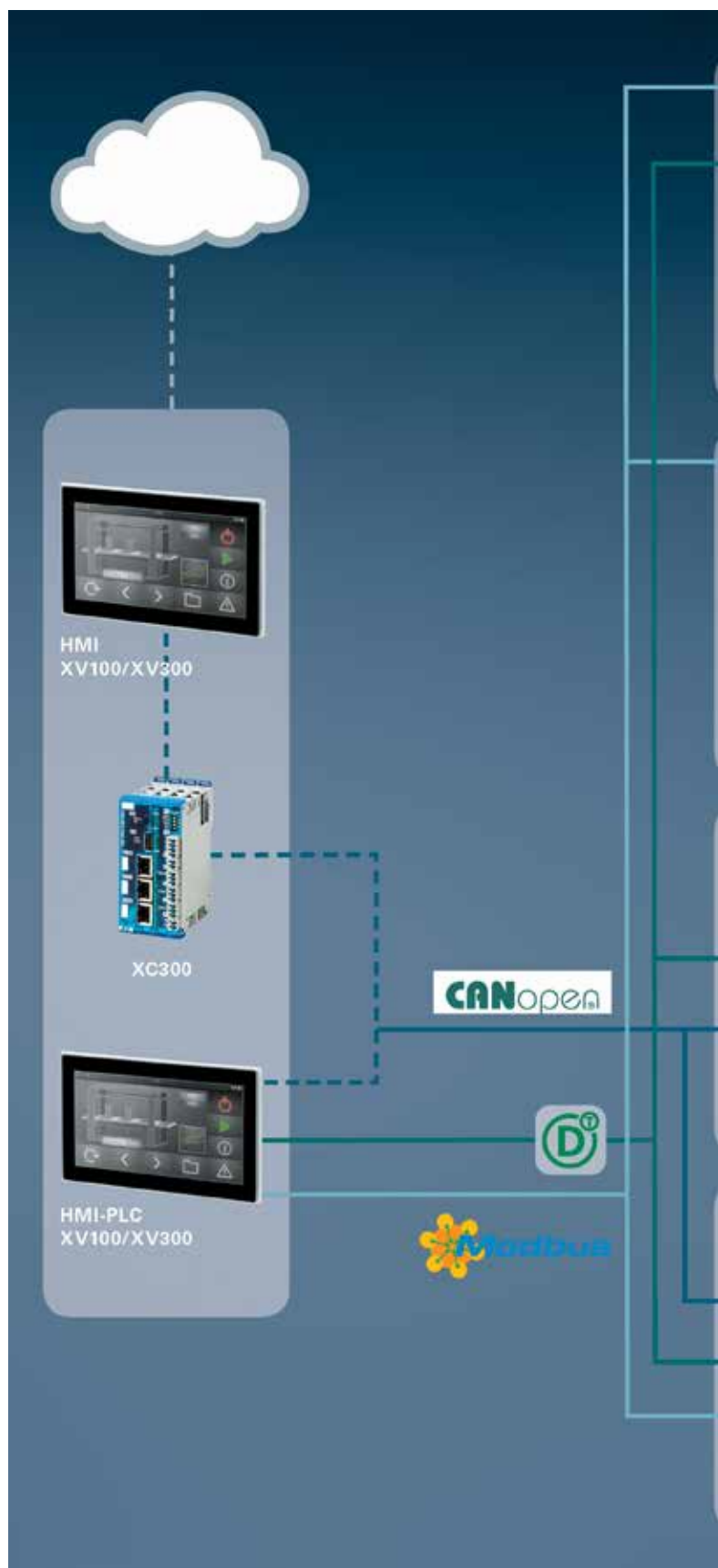
We offer flexible solutions for all types of machine-building applications, from fans, pumps and conveyor belts to hydraulic pumps and more. Whether your application requires constant speed, soft starting or simple or complex speed control – we offer a wide range of products for combination with standard motors and highly energy-efficient drives.

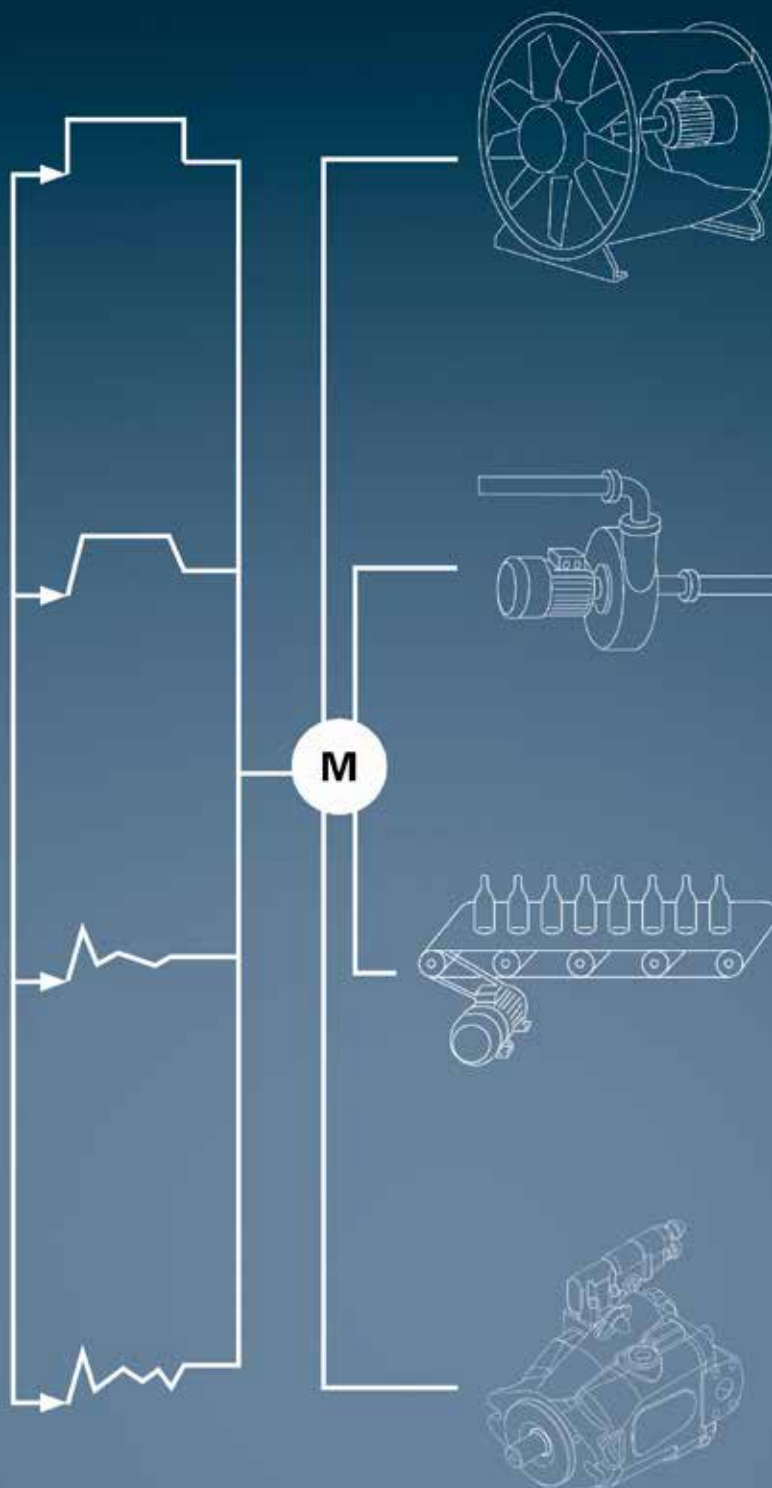
Versatile communication and data acquisition options

Our intelligent connection system reduces wiring costs by up to 85 %. At the same time, it reduces installation errors and simplifies both planning and commissioning. The connected devices deliver both analog and digital data, for example on machine states, motor currents or energy consumption. This helps to increase the availability of machines and systems while optimizing their energy consumption. Moreover, we also offer additional communication systems. With CANopen or Modbus RTU, you can choose the system that best matches the needs of your plant.

System control and data storage and visualization

The trend towards greater data transparency, particularly with regard to optimizing energy consumption in motor applications, not only requires data to be collected, but also to be analyzed more effectively. The data storage options offered by the machine itself are not sufficient for this purpose. Therefore, the data needs to be collected and forwarded to a server for processing via the control system. We also offer the right solution for this task, irrespective of whether the data is locally processed or uploaded to the cloud.

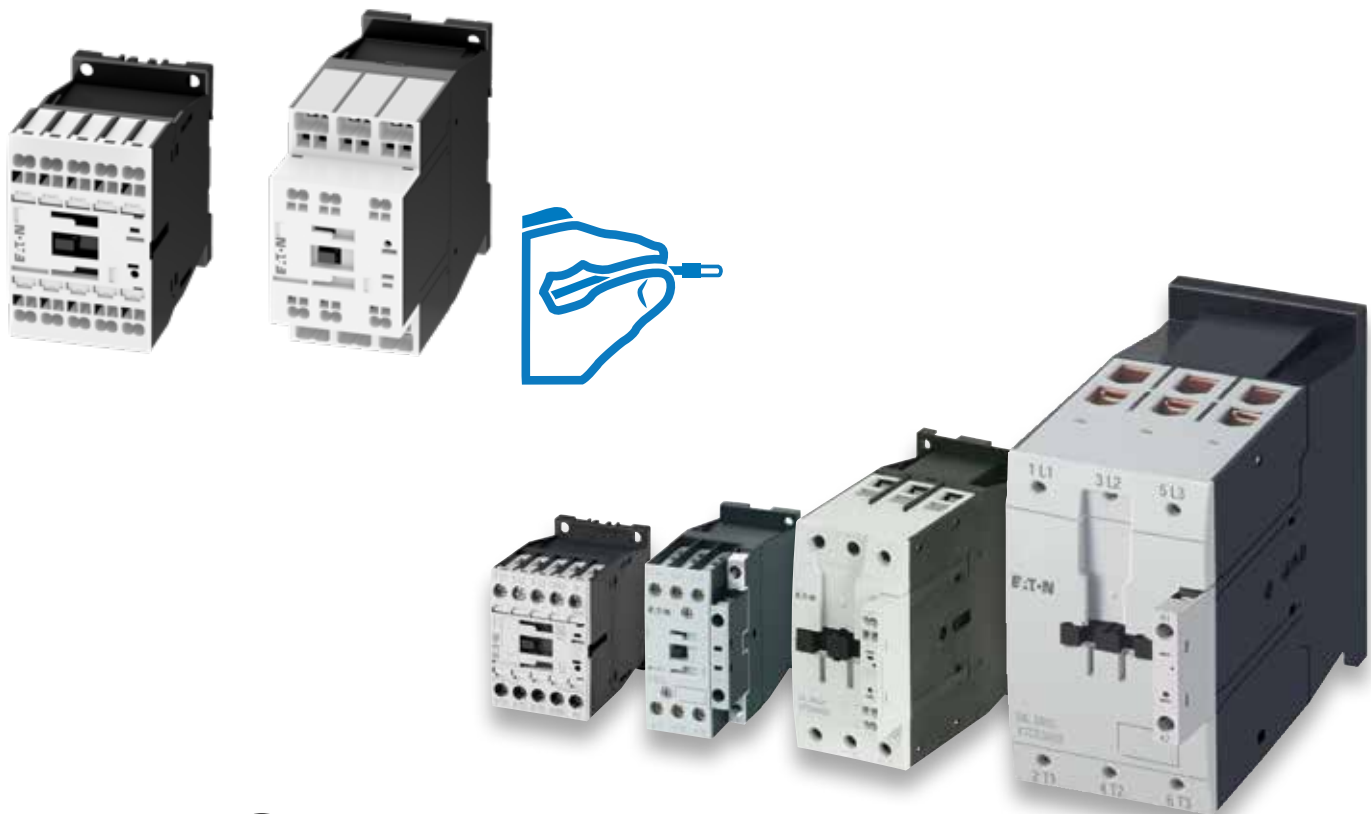




Energy savings of 15 % for the pumping station of a waterworks

When the pump system of a waterworks had to be replaced, Aquatech, an Eaton Solution Partner, developed a new drive system in cooperation with the operator. This enabled the operator to reduce its operating and maintenance costs and achieve a rapid return on investment for the system upgrade. The combination of DG1 drives with IE4 motors allows for speed-controlled operation: During start-up, the pumping capacity increases only gradually,

thereby avoiding the voltage peaks and pressure surges that often plagued the old system. In fact, this has enabled the waterworks to entirely eliminate gate valves during start-up. With the new system, sudden pressure changes in the water mains are also a thing of the past – thanks to the variable frequency drives, which gradually reduce the power output of the pumps. As a result, the non-return valves now close in a much more gentle manner, which translates into less wear on the equipment.



DIL contactors up to 2600 A

Powerful, efficient and easy to combine



You will find our safety contactors in Chapter 4, page 4/8 ff.

This contactor series covers the entire power range from mini contactor relays from 7 A through to vacuum contactors up to 2600 A.

By combining them with electronic motor protection relays or bimetal relays, you can create motor starters for a wide variety of applications. All devices are suitable for global use and come with UL/CSA, CCC and marine approvals. What makes the contactors even more efficient are the Eco versions for 15.5, 38, 72 and 170 A, as well as our many new innovations for motor starters, such as SmartWire-DT. A special highlight is our range of contactors and auxiliary contactors up to 38 A with Push-in technology. This enables the devices to be wired without any tools and thus delivers major time savings, as well as making the contactors more resistant to shocks and vibrations.



Get more information



Even faster wiring with Push-in terminals

Push-in technology enables the tool-free wiring of the main and auxiliary circuits of our contactors and auxiliary contactors up to 38 A:

- Faster and tool-free wiring of rigid and flexible cables with ferrules
- Maximum reliability even in the face of strong vibrations



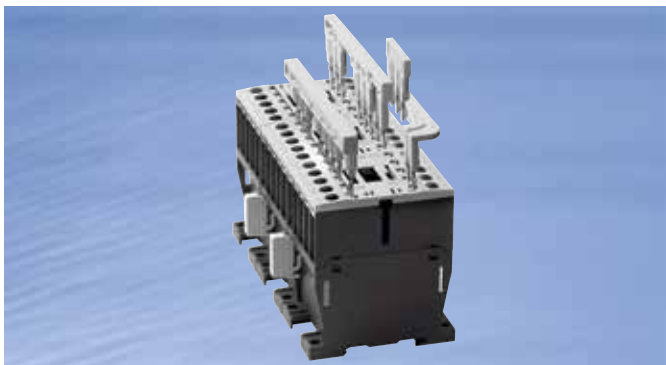
DILM contactors up to 170 A

Our contactors up to 170 A are characterized by their compact size. The AC-operated and DC-operated devices thus all have the same dimensions:

- Identical accessories for AC and DC devices simplify project planning

All DC contactors from DILM17 upwards come with an electronically controlled drive:

- Significantly less waste heat due to reduced holding power
- Small control transformers due to low pull-in power
- Direct control via a PLC without coupling contactors up to 38 A.



Utilization category AC-3e

Switchgear that is used together with IE3 and IE4 motors must be able to safely handle both the higher starting and inrush currents. Also, care should be taken with motor starters and soft starters, to make sure that they are approved for operation with energy-efficient motors. Motor starters from Eaton fulfill the current IEC/EN standards of the 60947-x series and are largely according to the utilization category AC-3e for switching energy-efficient motors (IE3 and IE4). Contactors with AC-3e characteristic values reliably switch the increased inrush currents of energy-efficient motors.



ZEB electronic overload relay

The electronic overload relays can be mounted directly on the DILM contactors. They cover the power range up to 175 A.

- Adjustable protection class setting in the case of heavy starting duties
- Selectable manual or auto reset for universal use
- The GF devices provide extended protection in the event of ground faults.

Easy, fast and reliable wiring

- The combination plug-in technology uses our universally applicable standard components. For contactors up to 15.5 A, the DILM12-XSL or DILM12-XRL main jumpers can be quickly plugged into the sockets of the combination plug-in system to save space.
- Coil connections at the front enable fast and reliable wiring.
- The double box terminals on all DILM contactors up to 170 A ensure reliable wiring even if different conductor cross-sections are used.

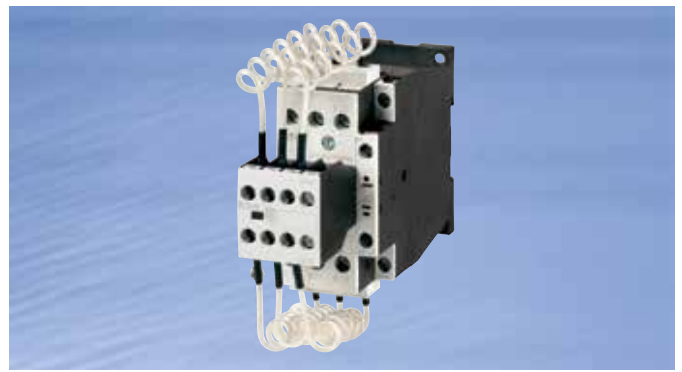


4-pole contactors

The Eaton 4-pole contactors are optimized for switching AC-1 loads.

The contactors are the perfect match for applications that are characterized by frequent mains switch-off or switch-over, as well as for heating systems and 4-pole loads:

- Four compact frame sizes up to 200 A
- Identical accessories for 3- and 4-pole contactors ensure efficient project planning.



Contactors for reactive current compensation systems

The design of the DILK capacitor contactors is based on that of the DILM contactors. The installation, connection and handling conditions are thus identical with those of the standard contactors. In addition to a special, weld-proof contact material, these contactors also contain series resistors. The main contacts will only close and carry a continuous current after the capacitors have been precharged by means of a special auxiliary contactor and the series resistors.



DILA contactor relays

The DILA contactor relays are the perfect companion to the DILM contactors.

- Special auxiliary contacts for the contactor relays ensure safe marking.



Safety technology

Safety technology is becoming increasingly important.

In this context, contactors are used to ensure safe shutdown:

- Reliable feedback on the switching state of the contactor via mirror contacts
- Our new electronics-compatible auxiliary switch reliably switches long release chains with even the smallest of signals. The integrated microswitches reliably switch even the smallest signals.

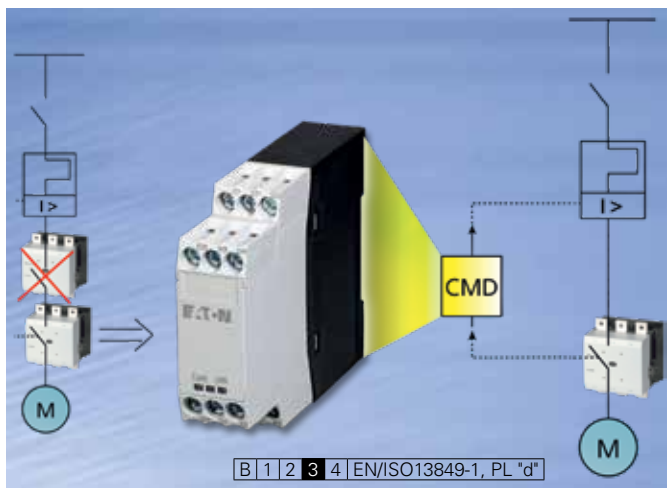


EMT6 thermistor overload relay

A broad range of functions despite the very small footprint. The EMT6 thermistor relay protects equipment against over-temperature caused by heavy starting duties, braking operations, undervoltage, overvoltage and high switching frequencies. The temperature is monitored by means of a thermistor directly on the motor winding.

The EMT6 is also suitable for monitoring the temperatures of motor bearings, gearboxes, oils and coolants. Three types are available, with tiered functions:

EMT6, EMT6-DB and EMT6-DBK. The EMT6-DBK is very versatile, featuring automatic and manual reset, short-circuit detection in the sensor circuit and zero-voltage safety.



CMD contactor monitoring device

The CMD (contactor monitoring device) monitors the main contacts of a contactor for welding. It compares the contactor control voltage with the state of the main contact, which is reliably indicated by means of a mirror contact (IEC EN 60947-4-1 A. F). If the contactor coil is de-energized but the contactor fails to drop out, the CMD will trip the upstream circuit breaker, motor-protective circuit breaker or load-break switch via an undervoltage release.



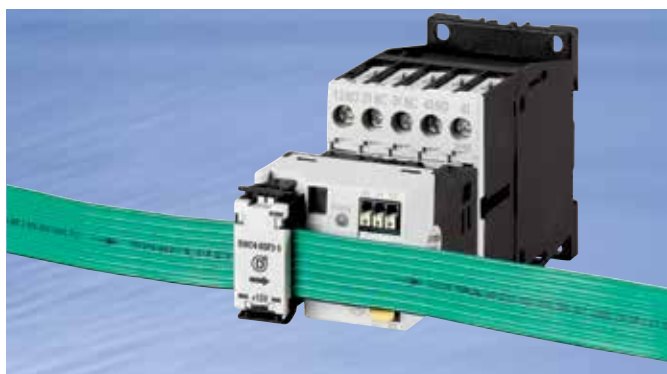
Large contactors up to 2600 A

All DILM and DILH contactors in the range from 185 A to 2600 A come with electronically controlled coils. This offers the following application advantages:

- Flexible control
- Significantly less heating of the control cabinet due to the reduced holding power
- Significantly greater control voltage tolerance than required by the standard, for greater reliability in the event of voltage fluctuations
- Integrated suppressor circuit
- Equipped with 2 N/O and 2 N/C contacts
- The four wide-range devices of the comfort version cover the entire control voltage range.

The DILM contactors from 580 A and the DILH contactors from 1400 A are vacuum contactors, which offer significant advantages over air contactors:

- Their electrical service life is significantly longer than that of air contactors
- As there are no open arcs and thus no blowout, installations with higher packing density and less cluttered electrical rooms are possible.



Intelligent networking

The conventional wiring of the control circuits of motor starters and contactors is highly complex, as each device needs to be individually wired to the controller's input/output modules. This requires a lot of time and entails many potential sources of error during wiring and operation. In combination with SmartWire-DT, the contactors of our xStart series eliminate the control wiring and the input/output modules of the control system that were previously required. This in turn reduces the time required for wiring and commissioning to a minimum.



DILE mini contactor relay

We have expanded our portfolio of mini contactor relays to three power ranges. The new DILEM12 can be used to reliably control motors up to 5.5 kW:

- Compact size for installations where space is at a premium
- Expansion of our mini contactor relay range up to 5.5 kW

Overview of motor protection up to 1000 A

Electronic and electric overload relays and thermistor protection relays

Moeller series

Contactors



AC 3 at 400 V
AC-1 at 40° C

Type	DIL	EEM	EM	EM12*	M7	M9	M12	M15*	M17	M25	M32	M38*	M40	M50	M65	M72*
Rated operational power AC-3	kW	3	4	5.5	3	4	5.5	7.5	7.5	11	15	18.5	18.5	22	30	37
Rated operational current AC-3	A	6.6	9	12	7	9	12	15.5	18	25	32	38	40	50	65	72
Rated operational current AC-1	A	22	22	22	22	22	22	22	40	45	45	45	60	80	98	98

*For motors up to IE2

Bimetal relay



Type	ZE	ZB12	ZB32	ZB65
Setting range of overload release	0.1 - 12 A	0.1 - 16 A	0.1 - 38 A	6 - 75 A

Electronic overload relay








Type	ZEB12	ZEB32	ZEB65
Setting range of overload release	0.33 - 20 A	0.33 - 45 A	9 - 100 A

Thermistor overload relays









Type	EMT6, EMT6-K, EMT6-DB, ...
------	----------------------------

M80	M95	M115	M150	M170*	M185A	M225A	M250	M300A	M400	M500	M580	M650	M750	M820	M1000
37	45	55	75	90	90	110	132	160	200	250	315	355	400	450	560
80	95	115	150	170	185	225	250	300	400	500	580	650	750	820	1000
110	130	160	190	225	337	356	400	430	612	857	980	1041	1102	1225	1225

*For motors up to IE2

			
ZB150	Z5-../FF225A	Z5-../FF250	ZW7
35 - 175 A	50 - 250 A	50 - 300 A	42 - 630 A

	
ZEB150	ZEB225A
20 - 175 A	35 - 175 A

Switching and
operating motors












... EMT6-KDB, EMT6-DBK

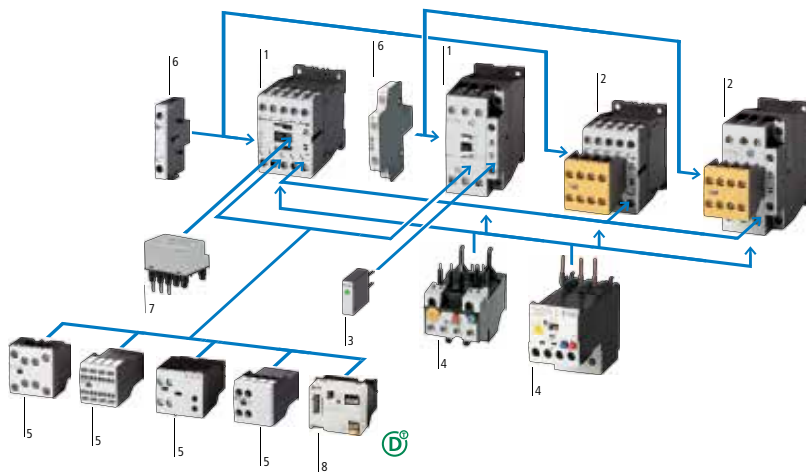
Mini contactors, contactor monitoring relays

Contactors, mini contactors, contactor monitoring relays

Moeller series

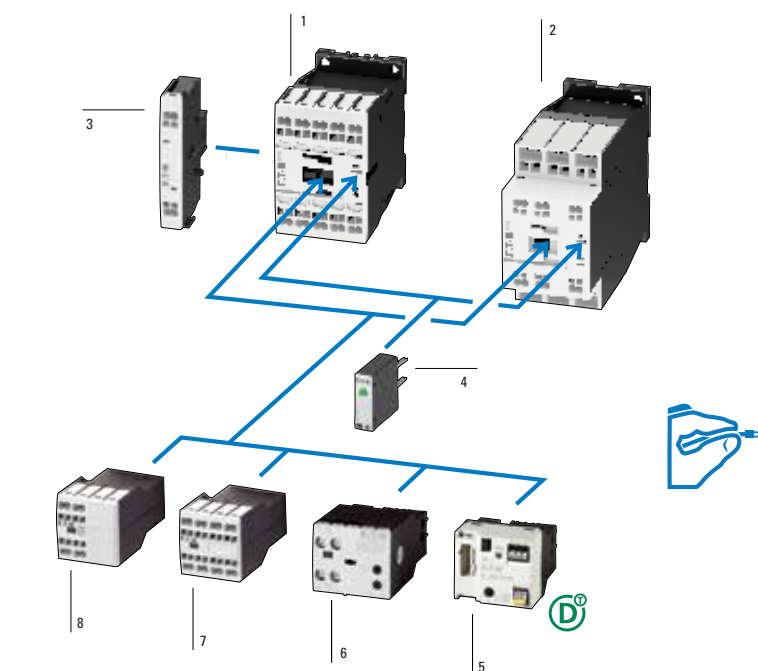
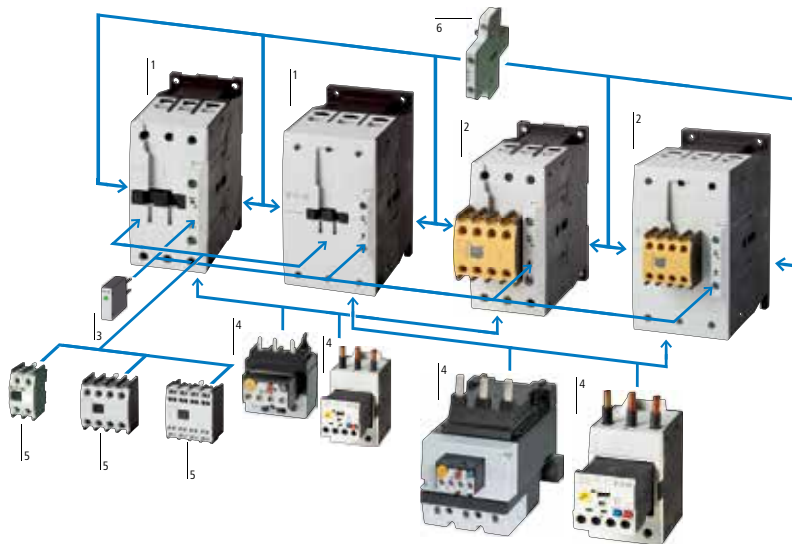
	Max. rated operational power of three-phase motors: 50 - 60 Hz		Rated operational current	Contact configuration	AC operation	AC operation	DC operation
	AC-3		AC-1	N/O = normally open N/C = normally closed	230 V 50 Hz, 240 V 60 Hz	110 V 50 Hz, 120 V 60 Hz	24 V DC
	380 V 400 V	660 V 690 V	Conventional thermal current, 3-pole, 50 - 60 Hz		Part no. Article no.	Part no. Article no.	Part no. Article no.
	P kW	P kW	Open at 40 °C $I_{th} = I_e$ A				
DILEM contactors							
Screw terminals							
	3	3	22	1 N/O -	DILEEM-10(230V50HZ,240V60HZ) 051608	DILEEM-10(110V50HZ,120V60HZ) 051611	DILEEM-10-G(24VDC) 051643
	3	3	22	- 1 N/C	DILEEM-01(230V50HZ,240V60HZ) 051633	DILEEM-01(110V50HZ,120V60HZ) 051636	DILEEM-01-G(24VDC) 051650
	4	4	22	1 N/O -	DILEEM-10(230V50HZ,240V60HZ) 051786	DILEEM-10(110V50HZ,120V60HZ) 051783	DILEEM-10-G(24VDC) 010213
	4	4	22	- 1 N/C	DILEEM-01(230V50HZ,240V60HZ) 051795	DILEEM-01(110V50HZ,120V60HZ) 051792	DILEEM-01-G(24VDC) 010343
	5.5	4	22	1 N/O -	DILEM12-10(230V50HZ,240V60HZ) 127075	DILEM12-10(110V50HZ,120V60HZ) 127072	DILEM12-10-G(24VDC) 127132
	5.5	4	22	- 1 N/C	DILEM12-01(230V50HZ,240V60HZ) 127091	DILEM12-01(110V50HZ,120V60HZ) 127088	DILEM12-01-G(24VDC) 127137
DILER mini contactor relays							
Screw terminals							
	-	-	10	4 N/O -	DILER-40(230V50HZ,240V60HZ) 051759	DILER-40(110V50HZ,120V60HZ) 051756	DILER-40-G(24VDC) 010223
	-	-	10	3 N/O 1 N/C	DILER-31(230V50HZ,240V60HZ) 051768	DILER-31(110V50HZ,120V60HZ) 051765	DILER-31-G(24VDC) 010157
	-	-	10	2 N/O 2 N/C	DILER-22(230V50HZ,240V60HZ) 051777	DILER-22(110V50HZ,120V60HZ) 051774	DILER-22-G(24VDC) 010042
DILA contactor relays							
Screw terminals							
	-	-	16	4 N/O -	DILA-40(230V50HZ,240V60HZ) 276329	DILA-40(110V50HZ,120V60HZ) 276326	DILA-40(24VDC) 276344
	-	-	16	3 N/O 1 N/C	DILA-31(230V50HZ,240V60HZ) 276364	DILA-31(110V50HZ,120V60HZ) 276361	DILA-31(24VDC) 276379
	-	-	16	2 N/O 2 N/C	DILA-22(230V50HZ,240V60HZ) 276399	DILA-22(110V50HZ,120V60HZ) 276396	DILA-22(24VDC) 276414
Push-in terminals							
	-	-	16	4 N/O -	DILA-40(230V50HZ,240V60HZ)-PI 199204	DILA-40(110V50HZ,120V60HZ)-PI 199205	DILA-40(24VDC)-PI 199208
	-	-	16	3 N/O 1 N/C	DILA-31(230V50HZ,240V60HZ)-PI 199209	DILA-31(110V50HZ,120V60HZ)-PI 199210	DILA-31(24VDC)-PI 199213
	-	-	16	2 N/O 2 N/C	DILA-22(230V50HZ,240V60HZ)-PI 199214	DILA-22(110V50HZ,120V60HZ)-PI 199215	DILA-22(24VDC)-PI 199218

For use with		Contacts				Part no.	Article no.
		N/O = normally open	N/O _E = N/O early-make	N/C = normally closed	N/C _L = N/C late-break ☹		
Auxiliary contact modules							
Screw terminals							
	DILEM-10(-G)(...)	-	-	2 N/C	-	02DILEM	010064
	DILEM-4(-G)(...)	1 N/O	-	1 N/C	-	11DILEM	010080
	DILEEM-10(-G)(...)	2 N/O	-	2 N/C	-	22DILEM	010112
	DILEM12-10(-G)(...)	-	-	2 N/C	-	02DILE	010240
	DILEM-01(-G)(...)	1 N/O	-	1 N/C	-	11DILE	010224
	DILEM-4(-G)(...)	2 N/O	-	-	-	20DILE	010208
	DILER40(-G)	-	1 N/O _E	-	1 N/C _L	11DDILE	049824
	DILER22	-	-	4 N/C	-	04DILE	010256
	DILEEM-10(-G)(...)	1 N/O	-	3 N/C	-	13DILE	002397
	DILEEM-01(-G)(...)	2 N/O	-	2 N/C	-	22DILE	010288
	DILEM12-10(-G)(...)	3 N/O	-	1 N/C	-	31DILE	048912
	DILEM12-01(-G)(...)	4 N/O	-	-	-	40DILE	010304
		1 N/O	1 N/O _E	1 N/C	1 N/C _L	22DDILE	049823
Suppressor circuit							
Varistor suppressor							
	DILE...	-	-	-	-	VGDILE250	010336
RC suppressor							
	DILE...	-	-	-	-	RCDILE250	046320
Mechanical interlock							
For contactors with the same or a different magnet system. 0 mm distance between relays. mechanical service life: 2.5 x 10 ⁶ operations. Additional auxiliary contact modules possible.		-	-	-	-	MVDILE	010113
							
Paralleling link							
Consisting of 2 parallel links, 4-pole		-	-	-	-	P1DILEM	019095
	DILEEM DILEM12 DILEM						











- 1 Contactors
- 2 Safety contactors
- 3 Suppressor circuits
- 4 Motor-protection relays
- 5 Auxiliary contact modules
- 6 Side-mounting auxiliary contact modules
- 7 Motor suppressor module
- 8 SmartWire-DT contactor module

The safety contactors can be found in Chapter 4, page 4/8 ff.



- 1 DILA contactor relay/DILM contactors up to 7.5 kW – Push-in terminal
- 2 DILM contactor up to 18.5 kW – Push-in terminal
- 3 Side-mounting auxiliary contact – Push-in terminal
- 4 Suppressor circuits
- 5 SmartWire-DT networking module
- 6 Electronic timer module – screw terminal
- 7 Front-mounting auxiliary contact, 4-pole – Push-in terminal
- 8 Front-mounting auxiliary contact, 2-pole – Push-in terminal

	Max. rated operational power of three-phase motors: 50 - 60 Hz		Rated operational current	AC operation 230 V 50 Hz, 240 V 60 Hz Part no. Article no.	AC operation 110 V 50 Hz, 120 V 60 Hz Part no. Article no.	DC operation 24 V DC Part no. Article no.
	AC-3 380 V 400 V	660 V 690 V				
	P kW	P kW	conventional thermal current, 3-pole, 50-60 Hz Open at 40 °C $I_{th} = I_e$ A			
Base device						
Screw terminals						
	3	3.5	22	DILM7-10(230V50HZ,240V60HZ) 276550	DILM7-10(110V50HZ,120V60HZ) 276547	DILM7-10(24VDC) 276565
	3	3.5	22	DILM7-01(230V50HZ,240V60HZ) 276585	DILM7-01(110V50HZ,120V60HZ) 276582	DILM7-01(24VDC) 276600
	4	4.5	22	DILM9-10(230V50HZ,240V60HZ) 276690	DILM9-10(110V50HZ,120V60HZ) 276687	DILM9-10(24VDC) 276705
	4	4.5	22	DILM9-01(230V50HZ,240V60HZ) 276725	DILM9-01(110V50HZ,120V60HZ) 276722	DILM9-01(24VDC) 276740
	5.5	6.5	22	DILM12-10(230V50HZ,240V60HZ) 276830	DILM12-10(110V50HZ,120V60HZ) 276827	DILM12-10(24VDC) 276845
	5.5	6.5	22	DILM12-01(230V50HZ,240V60HZ) 276865	DILM12-01(110V50HZ,120V60HZ) 276862	DILM12-01(24VDC) 276880
	7.5	7	22	DILM15-10(230V50HZ,240V60HZ) 290058	DILM15-10(110V50HZ,120V60HZ) 290055	DILM15-10(24VDC) 290073
	7.5	7	22	DILM15-01(230V50HZ,240V60HZ) 290093	DILM15-01(110V50HZ,120V60HZ) 290090	DILM15-01(24VDC) 290108
	7.5	11	40	DILM17-10(230V50HZ,240V60HZ) 277004	DILM17-10(110V50HZ,120V60HZ) 277001	DILM17-10(RDC24) 277018
	7.5	11	40	DILM17-01(230V50HZ,240V60HZ) 277036	DILM17-01(110V50HZ,120V60HZ) 277033	DILM17-01(RDC24) 277050
	11	14	45	DILM25-10(230V50HZ,240V60HZ) 277132	DILM25-10(110V50HZ,120V60HZ) 277129	DILM25-10(RDC24) 277146
	11	14	45	DILM25-01(230V50HZ,240V60HZ) 277164	DILM25-01(110V50HZ,120V60HZ) 277161	DILM25-01(RDC24) 277178
	15	17	45	DILM32-10(230V50HZ,240V60HZ) 277260	DILM32-10(110V50HZ,120V60HZ) 277257	DILM32-10(RDC24) 277274
	15	17	45	DILM32-01(230V50HZ,240V60HZ) 277292	DILM32-01(110V50HZ,120V60HZ) 277289	DILM32-01(RDC24) 277306
	18.5	21	45	DILM38-10(230V50HZ,240V60HZ) 112428	DILM38-10(110V50HZ,120V60HZ) 112425	DILM38-10(RDC24) 112442
	18.5	21	45	DILM38-01(230V50HZ,240V60HZ) 112456	DILM38-01(110V50HZ,120V60HZ) 112453	DILM38-01(RDC24) 112470
	18.5	23	60	DILM40(230V50HZ,240V60HZ) 277766	DILM40(110V50HZ,120V60HZ) 277763	DILM40(RDC24) 277780
	22	30	80	DILM50(230V50HZ,240V60HZ) 277830	DILM50(110V50HZ,120V60HZ) 277827	DILM50(RDC24) 277844
	30	35	98	DILM65(230V50HZ,240V60HZ) 277894	DILM65(110V50HZ,120V60HZ) 277891	DILM65(RDC24) 277908
	37	35	98	DILM72(230V50HZ,240V60HZ) 107670	DILM72(110V50HZ,120V60HZ) 109191	DILM72(RDC24) 107671
	37	63	110	DILM80(230V50HZ,240V60HZ) 239402	DILM80(110V50HZ,120V60HZ) 239399	DILM80(RDC24) 239416
	45	75	130	DILM95(230V50HZ,240V60HZ) 239480	DILM95(110V50HZ,120V60HZ) 239477	DILM95(RDC24) 239510
	55	90	160	DILM115(RAC240) 239548	DILM115(RAC120) 239547	DILM115(RDC24) 239555
	75	96	190	DILM150(RAC240) 239588	DILM150(RAC120) 239587	DILM150(RDC24) 239591
	90	96	225	DILM170(RAC240) 107013	DILM170(RAC120) 107012	DILM170(RDC24) 107016

			AC operation 230 V 50 Hz, 240 V 60 Hz Part no. Article no.	AC operation 110 V 50 Hz, 120 V 60 Hz Part no. Article no.	DC operation 24 V DC Part no. Article no.	
Max. rated operational power of three-phase motors: 50 - 60 Hz						
AC-3		Rated operational current				
380 V 400 V	660 V 690 V	Conventional thermal current, 3-pole, 50-60 Hz Open at 40 °C $I_{th}=I_e$ A				
P kW	P kW					
Base device						
Push-in terminals						
	3	3.5	22	DILM7-10(230V50HZ,240V60HZ)-PI 199219	DILM7-10(110V50HZ,120V60HZ)-PI 199220	DILM7-10(24VDC)-PI 199223
	3	3.5	22	DILM7-01(230V50HZ,240V60HZ)-PI 199224	DILM7-01(110V50HZ,120V60HZ)-PI 199225	DILM7-01(24VDC)-PI 199228
	4	4.5	22	DILM9-10(230V50HZ,240V60HZ)-PI 199229	DILM9-10(110V50HZ,120V60HZ)-PI 199230	DILM9-10(24VDC)-PI 199233
	4	4.5	22	DILM9-01(230V50HZ,240V60HZ)-PI 199234	DILM9-01(110V50HZ,120V60HZ)-PI 199235	DILM9-01(24VDC)-PI 199238
	5.5	6.5	22	DILM12-10(230V50HZ,240V60HZ)-PI 199239	DILM12-10(110V50HZ,120V60HZ)-PI 199240	DILM12-10(24VDC)-PI 199243
	5.5	6.5	22	DILM12-01(230V50HZ,240V60HZ)-PI 199244	DILM12-01(110V50HZ,120V60HZ)-PI 199245	DILM12-01(24VDC)-PI 199248
	7.5	7	22	DILM15-10(230V50HZ,240V60HZ)-PI 199249	DILM15-10(110V50HZ,120V60HZ)-PI 199250	DILM15-10(24VDC)-PI 199253
	7.5	7	22	DILM15-01(230V50HZ,240V60HZ)-PI 199254	DILM15-01(110V50HZ,120V60HZ)-PI 199255	DILM15-01(24VDC)-PI 199258
Push-in terminals						
	3	3.5	40	DILM8-11(230V50HZ,240V60HZ)-PI 199264	DILM8-11(110V50HZ,120V60HZ)-PI 199265	DILM8-11(RDC24)-PI 199268
	4	4.5	40	DILM11-11(230V50HZ,240V60HZ)-PI 199269	DILM11-11(110V50HZ,120V60HZ)-PI 199270	DILM11-11(RDC24)-PI 199273
	5.5	6.5	40	DILM14-11(230V50HZ,240V60HZ)-PI 199274	DILM14-11(110V50HZ,120V60HZ)-PI 199275	DILM14-11(RDC24)-PI 199278
	7.5	5	40	DILM17-11(230V50HZ,240V60HZ)-PI 199279	DILM17-11(110V50HZ,120V60HZ)-PI 199280	DILM17-11(RDC24)-PI 199283
	11	14	45	DILM25-11(230V50HZ,240V60HZ)-PI 199284	DILM25-11(110V50HZ,120V60HZ)-PI 199285	DILM25-11(RDC24)-PI 199288
	15	17	45	DILM32-11(230V50HZ,240V60HZ)-PI 199289	DILM32-11(110V50HZ,120V60HZ)-PI 199290	DILM32-11(RDC24)-PI 199293
	18.5	21	45	DILM38-11(230V50HZ,240V60HZ)-PI 199294	DILM38-11(110V50HZ,120V60HZ)-PI 199295	DILM38-11(RDC24)-PI 199298
	Spring-loaded terminals on auxiliary and control circuit terminals					
	18.5	23	60	DILMC40(230V50HZ,240V60HZ) 277965	DILMC40(110V50HZ,120V60HZ) 277962	DILMC40(RDC24) 277979
	22	30	80	DILMC50(230V50HZ,240V60HZ) 277995	DILMC50(110V50HZ,120V60HZ) 277992	DILMC50(RDC24) 278009
	30	35	98	DILMC65(230V50HZ,240V60HZ) 278025	DILMC65(110V50HZ,120V60HZ) 278022	DILMC65(RDC24) 278039
	37	63	110	DILMC80(230V50HZ,240V60HZ) 239618	-	DILMC80(RDC24) 239652
	45	75	130	DILMC95(230V50HZ,240V60HZ) 239685	-	DILMC95(RDC24) 239715
	55	90	160	DILMC115(RAC240) 239736	-	DILMC115(RDC24) 239741
	75	96	190	DILMC150(RAC240) 239751	-	DILMC150(RDC24) 239765

Switching and operating motors

Contactors and auxiliary contactors

Base devices with screw terminals

Moeller series

AC3 380 V 400 V P kW	AC3 660 V 690 V P kW	AC1 $I_{th}=I_e$ A ^{*1}	AC operation 230 V 50/60 Hz	AC operation 110 V 50/60 Hz	AC operation 42 V 50 Hz, 48 V 60 Hz	AC operation 24 V 50/60 Hz
			Part no. Article no.	Part no. Article no.	Part no. Article no.	Part no. Article no.
		10	DILER-40(230V50/60HZ) 052725	DILER-40(110V50/60HZ) 021961	DILER-40(42V50HZ,48V60HZ) 051755	DILER-40(24V50/60HZ) 021924
-	-	10	DILER-31(230V50/60HZ) 052509	DILER-31(110V50/60HZ) 021624	DILER-31(42V50HZ,48V60HZ) 051764	DILER-31(24V50/60HZ) 021594
-	-	10	DILER-22(230V50/60HZ) 052508	DILER-22(110V50/60HZ) 021871	DILER-22(42V50HZ,48V60HZ) 051773	DILER-22(24V50/60HZ) 021704
-	-	16	DILA-40(230V50/60HZ) 276337	DILA-40(110V50/60HZ) 276335	DILA-40(42V50HZ,48V60HZ) 276325	DILA-40(24V50/60HZ) 276333
-	-	16	DILA-31(230V50/60HZ) 276372	DILA-31(110V50/60HZ) 276370	DILA-31(42V50HZ,48V60HZ) 276360	DILA-31(24V50/60HZ) 276368
-	-	16	DILA-22(230V50/60HZ) 276407	DILA-22(110V50/60HZ) 276405	DILA-22(42V50HZ,48V60HZ) 276395	DILA-22(24V50/60HZ) 276403
3	3	22	DILEEM-10(230V50/60HZ) 056674	DILEEM-10(110V50/60HZ) 051592	DILEEM-10(42V50HZ,48V60HZ) 051612	DILEEM-10(24V50/60HZ) 051596
3	3	22	DILEEM-01(230V50/60HZ) 058771	DILEEM-01(110V50/60HZ) 051618	DILEEM-01(42V50HZ,48V60HZ) 051637	DILEEM-01(24V50/60HZ) 051621
4	4	22	DILEM-10(230V50/60HZ) 052302	DILEM-10(110V50/60HZ) 021455	DILEM-10(42V50HZ,48V60HZ) 051782	DILEM-10(24V50/60HZ) 021417
4	4	22	DILEM-01(230V50/60HZ) 051114	DILEM-01(110V50/60HZ) 020436	DILEM-01(42V50HZ,48V60HZ) 051791	DILEM-01(24V50/60HZ) 020402
3	3.5	22	DILM7-10(230V50/60HZ) 276558	DILM7-10(110V50/60HZ) 276556	DILM7-10(42V50HZ,48V60HZ) 276546	DILM7-10(24V50/60HZ) 276554
3	3.5	22	DILM7-01(230V50/60HZ) 276593	DILM7-01(110V50/60HZ) 276591	DILM7-01(42V50HZ,48V60HZ) 276581	DILM7-01(24V50/60HZ) 276589
4	4.5	22	DILM9-10(230V50/60HZ) 276698	DILM9-10(110V50/60HZ) 276696	DILM9-10(42V50HZ,48V60HZ) 276686	DILM9-10(24V50/60HZ) 276694
4	4.5	22	DILM9-01(230V50/60HZ) 276733	DILM9-01(110V50/60HZ) 276731	DILM9-01(42V50HZ,48V60HZ) 276721	DILM9-01(24V50/60HZ) 276729
5.5	6.5	22	DILM12-10(230V50/60HZ) 276838	DILM12-10(110V50/60HZ) 276836	DILM12-10(42V50HZ,48V60HZ) 276826	DILM12-10(24V50/60HZ) 276834
5.5	6.5	22	DILM12-01(230V50/60HZ) 276873	DILM12-01(110V50/60HZ) 276871	DILM12-01(42V50HZ,48V60HZ) 276861	DILM12-01(24V50/60HZ) 276869
7.5	11	40	DILM17-10(230V50/60HZ) 277012	DILM17-10(110V50/60HZ) 277010	DILM17-10(42V50HZ,48V60HZ) 277000	DILM17-10(24V50/60HZ) 277008
7.5	11	40	DILM17-01(230V50/60HZ) 277044	DILM17-01(110V50/60HZ) 277042	DILM17-01(42V50HZ,48V60HZ) 277032	DILM17-01(24V50/60HZ) 277040
11	14	45	DILM25-10(230V50/60HZ) 277140	DILM25-10(110V50/60HZ) 277138	DILM25-10(42V50HZ,48V60HZ) 277128	DILM25-10(24V50/60HZ) 277136
11	14	45	DILM25-01(230V50/60HZ) 277172	DILM25-01(110V50/60HZ) 277170	DILM25-01(42V50HZ,48V60HZ) 277160	DILM25-01(24V50/60HZ) 277168
15	17	45	DILM32-10(230V50/60HZ) 277268	DILM32-10(110V50/60HZ) 277266	DILM32-10(42V50HZ,48V60HZ) 277256	DILM32-10(24V50/60HZ) 277264
15	17	45	DILM32-01(230V50/60HZ) 277300	DILM32-01(110V50/60HZ) 277298	DILM32-01(42V50HZ,48V60HZ) 277288	DILM32-01(24V50/60HZ) 277296
18.5	23	60	DILM40(230V50/60HZ) 277806	DILM40(110V50/60HZ) 277772	DILM40(42V50HZ,48V60HZ) 277762	DILM40(24V50/60HZ) 277770
22	30	80	DILM50(230V50/60HZ) 277870	DILM50(110V50/60HZ) 277836	DILM50(42V50HZ,48V60HZ) 277826	DILM50(24V50/60HZ) 277834
30	35	98	DILM65(230V50/60HZ) 277902	DILM65(110V50/60HZ) 277900	DILM65(42V50HZ,48V60HZ) 277890	DILM65(24V50/60HZ) 277898
37	63	110	DILM80(230V50/60HZ) 239410	DILM80(110V50/60HZ) 239408	DILM80(42V50HZ,48V60HZ) 239394	DILM80(24V50/60HZ) 239406
45	75	130	DILM95(230V50/60HZ) 239488	DILM95(110V50/60HZ) 239486	DILM95(42V50HZ,48V60HZ) 239476	DILM95(24V50/60HZ) 239484
55	90	160	DILM115(RAC240) 239548	DILM115(RAC120) 239547	DILM115(RAC48) 239546	DILM115(RAC24) 239545
75	96	190	DILM150(RAC240) 239588	DILM150(RAC120) 239587	DILM150(RAC48) 239586	DILM150(RAC24) 239585

^{*1} conventional thermal current, 3-pole, 50-60 Hz, open at 40 °C
 RAC240±190-240V 50/60Hz; RAC±100-120V 50/60Hz; RAC±42-48V 50/60Hz; RAC24±24V 50/60Hz



AC3 380 V 400 V P kW	AC3 660 V 690 V P kW	AC1 $I_{th}=I_e$ A ⁻¹	AC operation 230 V 50/60 Hz	AC operation 42 V 50 Hz, 48 V 60 Hz	AC operation 24 V 50/60 Hz
			Part no. Article no.	Part no. Article no.	Part no. Article no.

Base device





Contactors from 3 kW to 7.5 kW - frame size 1, Push-in terminals









-	-	16	DILA-40(230V50/60HZ)-PI 199636	DILA-40(42V50HZ,48V60HZ)-PI 199207	DILA-40(24V50/60HZ)-PI 199206
-	-	16	DILA-31(230V50/60HZ)-PI 199638	DILA-31(42V50HZ,48V60HZ)-PI 199212	DILA-31(24V50/60HZ)-PI 199211
-	-	16	DILA-22(230V50/60HZ)-PI 199640	DILA-22(42V50HZ,48V60HZ)-PI 199217	DILA-22(24V50/60HZ)-PI 199216
3	3.5	22	DILM7-10(230V50/60HZ)-PI 199642	DILM7-10(42V50HZ,48V60HZ)-PI 199222	DILM7-10(24V50/60HZ)-PI 199221
3	3.5	22	DILM7-01(230V50/60HZ)-PI 199644	DILM7-01(42V50HZ,48V60HZ)-PI 199227	DILM7-01(24V50/60HZ)-PI 199226
4	4.5	22	DILM9-10(230V50/60HZ)-PI 199646	DILM9-10(42V50HZ,48V60HZ)-PI 199232	DILM9-10(24V50/60HZ)-PI 199231
4	4.5	22	DILM9-01(230V50/60HZ)-PI 199648	DILM9-01(42V50HZ,48V60HZ)-PI 199237	DILM9-01(24V50/60HZ)-PI 199236
5.5	6.5	22	DILM12-10(230V50/60HZ)-PI 199650	DILM12-10(42V50HZ,48V60HZ)-PI 199242	DILM12-10(24V50/60HZ)-PI 199241
5.5	6.5	22	DILM12-01(230V50/60HZ)-PI 199652	DILM12-01(42V50HZ,48V60HZ)-PI 199247	DILM12-01(24V50/60HZ)-PI 199246
7.5	11	40	DILM15-10(230V50/60HZ)-PI 199654	DILM15-10(42V50HZ,48V60HZ)-PI 199252	DILM15-10(24V50/60HZ)-PI 199251
7.5	11	40	DILM15-01(230V50/60HZ)-PI 199656	DILM15-01(42V50HZ,48V60HZ)-PI 199257	DILM15-01(24V50/60HZ)-PI 199256
3	3.5	22	DILM8-11(230V50/60HZ)-PI 199660	DILM8-11(42V50HZ,48V60HZ)-PI 199267	DILM8-11(24V50/60HZ)-PI 199266
4	4.5	22	DILM11-11(230V50/60HZ)-PI 199662	DILM11-11(42V50HZ,48V60HZ)-PI 199272	DILM11-11(24V50/60HZ)-PI 199271
5.5	6.5	22	DILM14-11(230V50/60HZ)-PI 199664	DILM14-11(42V50HZ,48V60HZ)-PI 199277	DILM14-11(24V50/60HZ)-PI 199276
7.5	11	40	DILM17-11(230V50/60HZ)-PI 199666	DILM17-11(42V50HZ,48V60HZ)-PI 199282	DILM17-11(24V50/60HZ)-PI 199281
11	14	45	DILM25-11(230V50/60HZ)-PI 199668	DILM25-11(42V50HZ,48V60HZ)-PI 199287	DILM25-11(24V50/60HZ)-PI 199286
15	17	45	DILM32-11(230V50/60HZ)-PI 199670	DILM32-11(42V50HZ,48V60HZ)-PI 199292	DILM32-11(24V50/60HZ)-PI 199291
18.5	23	60	DILM38-11(230V50/60HZ)-PI 199672	DILM38-11(42V50HZ,48V60HZ)-PI 199297	DILM38-11(24V50/60HZ)-PI 199296

Spring-loaded terminals on auxiliary and control circuit terminals

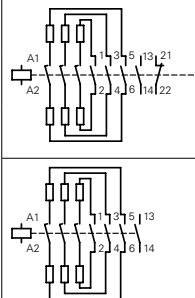
18.5	23	60	DILMC40(230V50/60HZ) 277973	-	DILMC40(24V50/60HZ) 277969
22	30	80	DILMC50(230V50/60HZ) 278003	-	-
30	35	98	DILMC65(230V50/60HZ) 278033	-	-


*1 conventional thermal current, 3-pole, 50-60 Hz, open at 40 °C

				AC operation 230 V 50 Hz, 240 V 60 Hz Part no. Article no.	AC operation 110 V 50 Hz, 120 V 60 Hz Part no. Article no.	DC operation 24 V DC Part no. Article no.
Max. rated operational power of three-phase motors: 50 - 60 Hz		Rated operational current				
AC-3		AC-1				
380 V 400 V	660 V 690 V	Conventional thermal current, 3-pole, 50-60 Hz Open at 40 °C $I_{th} = I_e$				
P kW	P kW	A				
DILM comfort devices						
Screw connection						
	90	140	337	DILM185A/22(RAC240) 139537	DILM185A/22(RAC120) 139536	DILM185A/22(RDC24) 139540
	110	150	386	DILM225A/22(RAC240) 139547	DILM225A/22(RAC120) 139546	DILM225A/22(RDC24) 139550
	132	240	430	DILM250/22(RA250) 208201	DILM250/22(RA110) 208200	DILM250/22(RDC48) 208199
	160	240	490	DILM300A/22(RA250) 139556	DILM300A/22(RA110) 139555	DILM300A/22(RDC48) 139554
	200	344	612	DILM400/22(RA250) 208209	DILM400/22(RA110) 208208	DILM400/22(RDC48) 208207
	250	344	800	DILM500/22(RA250) 208213	DILM500/22(RA110) 208212	DILM500/22(RDC48) 208211
	315	560	980	DILM580/22(RA250) 208216	DILM580/22(RA110) 208215	-
	355	630	1041	DILM650/22(RA250) 208219	DILM650/22(RA110) 208218	-
	400	720	1102	DILM750/22(RA250) 208222	DILM750/22(RA110) 208221	-
	450	750	1225	DILM820/22(RA250) 208225	DILM820/22(RA110) 208224	-
	560	1000	1225	DILM1000/22(RA250) 267214	-	-
Screw connection						
	132	240	430	DILM250-S/22(220-240V50/60HZ) 274190	DILM250-S/22(110-120V50/60HZ) 274189	-
	160	240	490	DILM300A-S/22(220-240V50/60HZ) 139559	DILM300A-S/22(110-120V50/60HZ) 139558	-
	200	344	612	DILM400-S/22(220-240V50/60HZ) 274196	DILM400-S/22(110-120V50/60HZ) 274195	-
	250	344	800	DILM500-S/22(220-240V50/60HZ) 274199	DILM500-S/22(110-120V50/60HZ) 274198	-

	Rated operational current AC-1 Conventional thermal current, 3-pole, 50-60 Hz Open		AC operation 230 V 50 Hz, 240 V 60 Hz Part no. Article no.	AC operation 110 V 50 Hz, 120 V 60 Hz Part no. Article no.	DC operation 24 V DC Part no. Article no.
	at 40 °C $I_{th} = I_e$ A	at 60 °C $I_{th} = I_e$ A			
DILMP base devices					
Screw terminals					
	22	20	DILMP20(230V50HZ,240V60HZ) 276970	DILMP20(110V50HZ,120V60HZ) 276967	DILMP20(24VDC) 276985
	32	28	DILMP32-01(230V50HZ,240V60HZ) 118911	DILMP32-01(110V50HZ,120V60HZ) 118912	DILMP32-01(RDC24) 118913
	32	28	DILMP32-10(230V50HZ,240V60HZ) 109797	DILMP32-10(110V50HZ,120V60HZ) 109790	DILMP32-10(RDC24) 109811
	45	39	DILMP45-01(230V50HZ,240V60HZ) 118914	DILMP45-01(110V50HZ,120V60HZ) 118915	DILMP45-01(RDC24) 118916
	45	39	DILMP45-10(230V50HZ,240V60HZ) 109826	DILMP45-10(110V50HZ,120V60HZ) 109819	DILMP45-10(RDC24) 109840
	63	54	DILMP63(230V50HZ,240V60HZ) 109855	DILMP63(110V50HZ,120V60HZ) 109848	DILMP63(RDC24) 109869
	63	54	DILMP63(RAC240) 167512	-	-
	80	69	DILMP80(230V50HZ,240V60HZ) 109884	DILMP80(110V50HZ,120V60HZ) 109877	DILMP80(RDC24) 109898
	80	69	DILMP80(RAC240) 167513	-	-
	125	108	DILMP125(RAC240) 109905	DILMP125(RAC120) 109903	DILMP125(RDC24) 109910
	160	138	DILMP160(RAC240) 109915	DILMP160(RAC120) 109913	DILMP160(RDC24) 109920
	200	172	DILMP200(RAC240) 109925	DILMP200(RAC120) 109923	DILMP200(RDC24) 109930
Push-in terminals					
 	22	20	DILMP20(230V50HZ,240V60HZ)-PI 199259	DILMP20(110V50HZ,120V60HZ)-PI 199260	DILMP20(24VDC)-PI 199263
 	32	28	DILMP32-11(230V50HZ,240V60HZ)-PI 199299	DILMP32-11(110V50HZ,120V60HZ)-PI 199300	DILMP32-11(RDC24)-PI 199303
	45	39	DILMP45-1(230V50HZ,240V60HZ)-PI 199304	DILMP45-11(110V50HZ,120V60HZ)-PI 199305	DILMP45-11(RDC24)-PI 199308

	Rated operational power of three-phase capacitors 50-60 Hz				Contact diagram	Part no. Article no.
	Open					
	230 V	400 V	525 V	690 V		
	kvar	kvar	kvar	kvar		

DILK capacitor contactors						
with series resistors Base devices	7.5	12.5	16.7	20		DILK12-11(230V50HZ,240V60HZ) 293988
	11	20	25	33.3		DILK20-11(230V50HZ,240V60HZ) 294010
	15	25	33.3	40		DILK25-11(230V50HZ,240V60HZ) 294032
	20	33.3	40	55		DILK33-10(230V50HZ,240V60HZ) 294054
	25	50	65	85		DILK50-10(230V50HZ,240V60HZ) 294076


	Rated operational current				Conventional thermal current, 3-pole, 50 - 60 Hz AC-1 at 60 °C	Part no. Article no.
	AC-5a		AC-5b		Open $I_{th} = I_e$ A	
	220 V 230 V	380 V 400 V	220 V 230 V	380 V 400 V		
	I_e A	I_e A	I_e A	I_e A		
DILL lighting contactors						
	12	12	14	14	24	DILL12(230V50HZ,240V60HZ) 104402
	18	18	21	21	35	DILL18(230V50HZ,240V60HZ) 104405
	20	20	27	27	40	DILL20(230V50HZ,240V60HZ) 104408

Switchgear for lighting systems

	DIL	L12	L18	L20	M7	M9	M12	M17	M25	M32	M40	M50
Permissible compensation capacitance	C_{max} [mF]	470	470	470	47	80	100	220	330	470	470	500
Filament lamps	I_e [A]	14	21	27	6	7.5	10	14	21	27	33	42
Mercury blended lamps	I_e [A]	12	16	23	5	6.5	8.5	12	16	23	30	38
Conventional fluorescent lamps – reactor – starter – circuit	I_e [A]	20	26	35	9	10	15	20	26	35	41	45
Duo fluorescent lamps – circuit (series compensated)	I_e [A]	20	26	35	5.5	8	13	15	22.5	29	36	47
Electronic upstream devices	I_e [A]	12	18	20	5	6.5	8.5	12	17.5	22.5	28	35
High-pressure mercury-arc lamps	I_e [A]	12	18	20	3.5	6	10	12	17.5	20	25	30
Metal halide lamps	I_e [A]	12	18	20	3.5	6	10	12	17.5	20	25	30
High-pressure sodium lamps	I_e [A]	12	18	20	3.5	6	10	12	17.5	20	25	30
Low-pressure sodium lamps	I_e [A]	7.5	10	12	3	4	6	7.5	10	12	15	22


































	DIL	M65	M80	M95	M115	M150	M185A	M225A	M250	M300A	M400	M500
Permissible compensation capacitance	C_{max} [mF]	500	550	620	830	970	2055	2300	2600	3000	3250	3500
Filament lamps	I_e [A]	55	67	79	95	125	153	187	208	249	332	415
Mercury blended lamps	I_e [A]	45	65	67	80	110	123	150	167	200	266	332
Conventional fluorescent lamps – reactor – starter – circuit	I_e [A]	55	95	100	125	145	207	237	263	300	375	525
Duo fluorescent lamps – circuit (series compensated)	I_e [A]	59	71	95	100	138	186	213	236	270	338	473
Electronic upstream devices	I_e [A]	45.5	56	66.5	80.5	105	130	158	175	210	280	350
High-pressure mercury-arc lamps	I_e [A]	36	55	60	80	95	138	158	175	200	250	350
Metal halide lamps	I_e [A]	36	55	60	80	95	138	158	175	200	250	350
High-pressure sodium lamps	I_e [A]	36	55	60	80	95	138	158	175	200	250	350
Low-pressure sodium lamps	I_e [A]	25	35	40	50	70	100	111	123	140	175	245

In the case of compensated lamps, the sum of the capacitances must not exceed the max. permissible capacitor load (C_{max}) of the contactors!
The values given in the table apply to each contact in the contactors.




	Rated operational current AC-3	Max. rated operational power of three-phase motors: 50 - 60 Hz AC-3				Max. Changeover time s	Part no. Article no.
	380 V 400 V	220 V 230 V	380 V 400 V	500 V	660 V 690 V		
	I _e A	P kW	P kW	P kW	P kW		
SDAINL star-delta combinations							
Operating frequency: max. 30 starts per hour							
	12	3	5.5	5.5	5.5	< 20	SDAINLM12(230V50HZ,240V60HZ) 278286
	16	4	7.5	7.5	7.5	< 20	SDAINLM16(230V50HZ,240V60HZ) 278311
	22	5.5	11	11	11	< 20	SDAINLM22(230V50HZ,240V60HZ) 278336
	30	7.5	15	18.5	18.5	< 20	SDAINLM30(230V50HZ,240V60HZ) 278361
	45	11	22	30	22	< 20	SDAINLM45(230V50HZ,240V60HZ) 278386
	55	15	30	37	30	< 20	SDAINLM55(230V50HZ,240V60HZ) 278411
	70	18.5	37	45	37	< 20	SDAINLM70(230V50HZ,240V60HZ) 239895
	90	22	45	55	45	< 20	SDAINLM90(230V50HZ,240V60HZ) 239937
	115	30	55	75	55	< 20	SDAINLM115(230V50HZ,240V60HZ) 239963
	140	37	75	90	90	< 20	SDAINLM140(230V50HZ,240V60HZ) 240009
	165	45	90	110	132	< 20	SDAINLM165(230V50HZ,240V60HZ) 240035
	200	55	110	132	160	< 20	SDAINLM200(230V50HZ,240V60HZ) 101010
	260	75	132	160	160	< 20	SDAINLM260(230V50HZ,240V60HZ) 101031





































































































































































Components for self-assembly of star-delta combinations





 Max. rated operational power of
 three-phase motors: 50 - 60 Hz





AC-3					Changeover time ¹⁾			Coil according to EN 50005, contacts according to EN 50005 and EN 50012						
230 V	400 V	500 V	690 V	1000 V				Mains contactor Q11	Delta contactor Q15	Star contactor Q13	Timing relay K1	Q11	Q15	Q13
kW	kW	kW	kW	kW	up to 12 s	up to 20 s	up to 30 s	Part no. DIL	Part no. DIL	Part no. DIL	Part no.			
90	160	200	250	132	●	●	●	M185A/22	M185A/22	M115/22	ETR4-51			
110	200	250	315	160	●	●	—	M225A/22	M225A/22	M150/22	ETR4-51			
132	250	315	400	200	●	●	●	M250/22	M250/22	M185A/22	ETR4-51			
160	300	355	450	200	●	●	●	M300A/22	M300A/22	M185A/22	ETR4-51			
200	355	450	560	220	●	●	—	M400/22	M400/22	M250/22	ETR4-51			
250	450	560	600	220	●	●	●	M500/22	M500/22	M300A/22	ETR4-51			
300	560	710	900	355	●	●	●	M580/22	M580/22	M400/22	ETR4-51			
350	630	750	950	355	●	●	●	M650/22	M650/22	M400/22	ETR4-51			
400	710	900	1200	1400	●	●	●	M750/22	M750/22	M580/22	ETR4-51			
450	800	950	1300	1400	●	●	●	M820/22	M820/22	M580/22	ETR4-51			
560	1000	1200	1700	1700	●	●	—	M1000/22	M1000/22	M650/22	ETR4-51			

Note
¹⁾ Longer changeover times available on request











	Rated operational current	Max. rated operational power of three-phase motors: 50 - 60 Hz						Part no. Article no.
	AC-3	AC-3			AC-4			
	380 V 400 V I _e A	220 V 230 V P kW	380 V 400 V P kW	660 V 690 V P kW	220 V 230 V P kW	380 V 400 V P kW	660 V 690 V P kW	
DIUL reversing combinations								
	9	2.2	4	4	1.5	3	3	DIULEM/21(MV(230V50HZ,240V60HZ)) 051849
	9	2.2	4	4	1.5	3	3	DIULEM/21(MV-G(24VDC)) 214655
	7	2.2	3	3.5	1	2.2	2.9	DIULM7/21(230V50HZ,240V60HZ) 278061
	7	2.2	3	3.5	1	2.2	2.9	DIULM7/21(24VDC) 107021
	9	2.5	4	4.5	1.5	2.5	3.6	DIULM9/21(230V50HZ,240V60HZ) 278086
	9	2.5	4	4.5	1.5	2.5	3.6	DIULM9/21(24VDC) 107022
	12	3.5	5.5	6.5	2	3	4.4	DIULM12/21(230V50HZ,240V60HZ) 278111
	12	3.5	5.5	6.5	2	3	4.4	DIULM12/21(24VDC) 107023
	18	5	7.5	11	2.5	4.5	6.5	DIULM17/21(230V50HZ,240V60HZ) 278136
	18	5	7.5	11	2.5	4.5	6.5	DIULM17/21(RDC24) 107024
	25	7.5	11	14	3.5	6	8.5	DIULM25/21(230V50HZ,240V60HZ) 278161
	25	7.5	11	14	3.5	6	8.5	DIULM25/21(RDC24) 107025
	32	10	15	17	4	7	10	DIULM32/21(230V50HZ,240V60HZ) 278186
	32	10	15	17	4	7	10	DIULM32/21(RDC24) 107026
	40	12.5	18.5	23	5	9	12	DIULM40/11(230V50HZ,240V60HZ) 278211
	50	15.5	22	30	6	10	14	DIULM50/11(230V50HZ,240V60HZ) 278236
	65	20	30	35	7	12	17	DIULM65/11(230V50HZ,240V60HZ) 278261



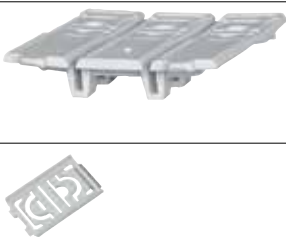


Contacts			For use with	Part no.	Article no.	
N/O = normally open N/O _E = N/O early-make N/C = normally closed N/C _L = N/C late-break						
SmartWire-DT contactor modules						
For connecting contactors to SmartWire-DT One module is needed for each contactor.						
 	Messages Switch state of the contactor, status of the digital inputs 1 and 2 Contactor control commands		DILM7..(-PI) - DILM38..(-PI) DILA..(-PI) DILMP..(-PI) MSC-D(R)..(24VDC)-PI	DIL-SWD-32-001	118560	
	Messages Switch state of the contactor, status of digital inputs 1 and 2, switch state of the 1-0-A switch Contactor control commands			DIL-SWD-32-002	118561	
Auxiliary contact modules						
with positive-opening contacts, except for ...XHI(C)V						
Top-mounting auxiliary contacts						
	Screw terminals	1 N/O	1 N/C	DILM7-10...	DILM32-XHI11	277376
		-	2 N/C	DILM9-10...	DILM32-XHI02	277375
		2 N/O	2 N/C	DILM12-10...		
		3 N/O	1 N/C	DILM15-10...		
 	Push-in terminals	1 N/O	1 N/C	DILM17-10...		
			-	2 N/C	DILM25-10...	
 	Push-in terminals	2 N/O	2 N/C	DILM32-10...		
		3 N/O	1 N/C	DILM38-10...	DILM32-XHI22	277377
 	Push-in terminals	1 N/O	1 N/C	DILMP20	DILM32-XHI31	106112
			-	2 N/C	DILMP32-10...	
 	Push-in terminals	2 N/O	2 N/C	DILMP45-10...		
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C	DILM7-10.. (-PI)	DILM12-XHI11-PI	199456
			-	2 N/C	DILM9-10.. (-PI)	
 	Push-in terminals	2 N/O	2 N/C	DILM12-10.. (-PI)	DILM12-XHI02-PI	199457
		3 N/O	1 N/C	DILM15-10.. (-PI)	DILM12-XHI22-PI	199458
 	Push-in terminals	1 N/O	1 N/C	DILMP20.. (-PI)	DILM12-XHI31-PI	199459
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C	DILM7-10.. (-PI)	DILM32-XHI11-PI	199309
		3 N/O	1 N/C	DILM9-10.. (-PI)	DILM32-XHI02-PI	199310
 	Push-in terminals	1 N/O	1 N/C	DILM12-10.. (-PI)	DILM32-XHI22-PI	199311
			-	2 N/C	DILM15-10.. (-PI)	DILM32-XHI31-PI
 	Push-in terminals	2 N/O	2 N/C	DILMP20.. (-PI)		
		3 N/O	1 N/C	DILM17-11.. (-PI)		
 	Push-in terminals	1 N/O	1 N/C	DILM25-11.. (-PI)		
			-	2 N/C	DILM32-11.. (-PI)	
 	Push-in terminals	2 N/O	2 N/C	DILM38-11.. (-PI)		
		3 N/O	1 N/C	DILMP32.. (-PI)		
 	Push-in terminals	1 N/O	1 N/C	DILMP45.. (-PI)		
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			
 	Push-in terminals	1 N/O	1 N/C			
			-	2 N/C		
 	Push-in terminals	2 N/O	2 N/C			
		3 N/O	1 N/C			

		Contacts	For use with	Part no.	Article no.
		N/O = normally open N/O _E = N/O early-make N/C = normally closed N/C _L = N/C late-break			
Auxiliary contact modules					
with positive-opening contacts, except for ...XHIV					
Lateral auxiliary contacts					
Screw terminals 	1 N/O	-	DILM7... DILM9... DILM12... DILM15... DILMP20 ... DILA ...	DILA-XHI10-S	115948
	-	1 N/C		DILA-XHI01-S	115949
	1 N/O	1 N/C	DILM17... DILM25... DILM32... DILM38 ...	DILM32-XHI11-S	101371
	1 N/O	1 N/C	DILM250 - DILH2600	DILM820-XHI11-SI	208281
	1 N/O	1 N/C		DILM820-XHI11-SA	208282
	1 N/O _E	1 N/C _L		DILM820-XHI11V-SI	208283
	1 N/O	1 N/C	DILM40 - DILM225A DILMP63 - DILMP200	DILM1000-XHI11-SI	278425
	1 N/O _E	1 N/C _L		DILM1000-XHIV11-SI	278426
	1 N/O	1 N/C		DILM1000-XHI11-SA	278427
Push-in terminals 	1 N/O	-	DILM7..(-PI) up to DILM15..(-PI) DILA..(-PI)	DILA-XHI10-S-PI	199323
	-	1 N/C		DILA-XHI01-S-PI	199324

For use with		AC operation 230 V 50 Hz, 240 V 60 Hz Part no. Article no.	AC operation 110 V 50 Hz, 120 V 60 Hz Part no. Article no.	DC operation 24 V DC Part no. Article no.
Suppressor circuits				
RC suppressors				
	DILM7 ..(-PI) - DILM15 ..(-PI) DILMP20 ..(-PI) DILA ..(-PI)	DILM12-XSPR240 281200	DILM12-XSPR240 281200	-
	DILM8..-PI - DILM14..-PI DILM17 ..(-PI) - DILM32 ..(-PI) DILMP32 ..(-PI) - DILMP45 ..(-PI)	DILM32-XSPR240 281203	DILM32-XSPR240 281203	-
	DILM40 - DILM95 DILMP63 - DILMP200	DILM95-XSPR240 281206	DILM95-XSPR240 281206	-
Varistor suppressors				
	DILM7 ..(-PI) - DILM15 ..(-PI) DILMP20 ..(-PI) DILA ..(-PI)	DILM12-XSPV240 281210	DILM12-XSPV130 281209	-
	DILM8..-PI - DILM14..-PI DILM17 ..(-PI) - DILM32 ..(-PI) DILMP32 ..(-PI) - DILMP45 ..(-PI)	DILM32-XSPV240 281214	DILM32-XSPV130 281213	-
	DILM40 - DILM95 DILMP63 - DILMP200	DILM95-XSPV240 281218	DILM95-XSPV130 281217	-
Varistor suppressors with integrated LED				
	DILM7 ..(-PI) - DILM12 ..(-PI) DILMP20 ..(-PI) DILA ..(-PI)	DILM12-XSPVL240 281221	DILM12-XSPVL240 281221	-
	DILM8..-PI - DILM14..-PI DILM17 ..(-PI) - DILM32 ..(-PI) DILMP32 ..(-PI) - DILMP45 ..(-PI)	DILM32-XSPVL240 281223	DILM32-XSPVL240 281223	-
	DILM40 - DILM95 DILMP63 - DILMP200	DILM95-XSPVL240 281225	DILM95-XSPVL240 281225	-
Diode suppressor				
	DILM7 ..(-PI) - DILM15 ..(-PI) DILMP20 ..(-PI) DILA ..(-PI)	-	-	DILM12-XSPD 101672

Moeller series

	For use with	Part no. Article no.
Mechanical interlock		
	DILM7..(-PI) - DILM15..(-PI) DILMP20..(-PI) DILA..(-PI)	DILM12-XMV 281196
	DILM17.. - DILM38.. DILMP32.. - DILMP45..	DILM32-XMV 281197
	DILM17..-PI - DILM38..-PI DILM32..-PI - DILMP45..-PI	DILM32-XMV-PI EP-400166
	DILM40 - DILM72 DILMP63 - DILMP80	DILM65-XMV 281198
	DILM80 - DILM170 DILMP125 - DILMP200	DILM150-XMV 240081
	DILM185A, DILM225A, DILM250, DILM300A, DILM400, DILM500	DILM500-XMV 208289
	DILM580, DILM650 DILM750, DILM820 DILM1000	DILM820-XMV 208288
Paralleling link for main contacts		
consisting of two paralleling links		
	DILM7 - DILM15	DILM12-XP1 281193
	DILM17 - DILM32	DILM32-XP1 281194
	DILM40 - DILM72	DILM65-XP1 281195
	DILM80 - DILM170	DILM150-XP1 284769
	DILM185A	DILM185-XP1 208292
Star-point bridges		
	DILM7 - DILM15	DILM12-XS1 281190
	DILM17 - DILM32	DILM32-XS1 281191
	DILM40 - DILM72	DILM65-XS1 281192
	DILM80 - DILM170	DILM150-XS1 284768
	DILM185A - DILM400	DILM400-XS1 208291
	DILM500	DILM500-XS1 208290

	For use with	Part no. Article no.
Star-delta wiring kits, including star-point bridge		
Main power wiring for star-delta combination		
	Mains contactor DILM7/9/12/15-10..(-PI) Delta contactor DILM7/9/12/15-01..(-PI) Star contactor DILM7/9/12/15-01..(-PI)	DILM12-XSL 283130
	Mains contactor DILM17/25/32 Delta contactor DILM17/25/32 Star contactor DILM17/25/32	DILM32-XSL 283131
	Mains contactor DILM17/25/32-11..-PI Delta contactor DILM17/25/32-11..-PI Star contactor DILM17/25/32-11..-PI	DILM32-XSL-PI 199461
	Mains contactor DILM40/50/65 Delta contactor DILM40/50/65 Star contactor DILM40/50/65	DILM65-XSL 101058
Reversing wiring kits		
Main power wiring for reversing combination		
	DILM7...01(-PI) DILM9...01(-PI) DILM12...01(-PI)	DILM12-XRL 283108
	DILM17 DILM25 DILM32	DILM32-XRL 283109
	DILM17-11...-PI DILM25-11...-PI DILM32-11...-PI	DILM32-XRL-PI 199460
	DILM40 DILM50 DILM50	DILM65-XRL 101057
IP2X cover		
	DILM17 DILM25 DILM32 DILM38 DILMP32 DILMP45	DILM32-XIP2X 118855
	DILM40 DILM50 DILM65 DILM72 DILMP63 DILMP80	DILM65-XIP2X 106491
	DILM80 DILM95 DILM115 DILM150 DILM170 DILMP125 DILMP160 DILMP200 ZB150	DILM150-XIP2X 106492
Covers		
	DILM185A DILM225A Z5... FF225A	DILM225A-XHB 139560
	DILM250 DILM300A DILM400	DILM400-XHB 208287
	DILM500 DILM570	DILM500-XHB 208286
	DILM580 DILM650	DILM650-XHB 208285
	DILM750 DILM820, DILM1000	DILM820-XHB 208284
Cable terminal block		
With control circuit terminal consisting of 3 box terminals Connection options: round conductors, flexible and stranded, strip conductors.		
	DILM185A DILM225A	DILM225A-XKU-S 139561
	DILM250 DILM300A DILM400	DILM400-XKU-S 208293



Setting range
Overload release
 I_r
A



For use with

DILEM

Part no.

Article no.

DILM7 - DILM15

Part no.

Article no.

DILM17 - DILM38

Part no.

Article no.

DILM40 - DILM72

Part no.

Article no.

DILM80 - DILM170

Part no.

Article no.







ZE, ZB bimetal relays

0.1 - 0.16	ZE-0,16	014263	ZB12-0,16	278431	ZB32-0,16	278442	-	-	-	-
0.16 - 0.24	ZE-0,24	014285	ZB12-0,24	278432	ZB32-0,24	278443	-	-	-	-
0.24 - 0.4	ZE-0,4	014300	ZB12-0,4	278433	ZB32-0,4	278444	-	-	-	-
0.4 - 0.6	ZE-0,6	014333	ZB12-0,6	278434	ZB32-0,6	278445	-	-	-	-
0.6 - 1	ZE-1,0	014376	ZB12-1	278435	ZB32-1	278446	-	-	-	-
1 - 1.6	ZE-1,6	014432	ZB12-1,6	278436	ZB32-1,6	278447	-	-	-	-
1.6 - 2.4	ZE-2,4	014479	ZB12-2,4	278437	ZB32-2,4	278448	-	-	-	-
2.4 - 4	ZE-4	014518	ZB12-4	278438	ZB32-4	278449	-	-	-	-
4 - 6	ZE-6	014565	ZB12-6	278439	ZB32-6	278450	-	-	-	-
6 - 9	ZE-9	014708	-	-	-	-	-	-	-	-
6 - 10	-	-	ZB12-10	278440	ZB32-10	278451	ZB65-10	278455	-	-
9 - 12	ZE-12	014752	ZB12-12	278441	-	-	-	-	-	-
10 - 16	-	-	-	-	-	-	ZB65-16	278456	-	-
12 - 16	-	-	ZB12-16	290168	-	-	-	-	-	-
16 - 24	-	-	-	-	ZB32-24	278453	ZB65-24	278457	-	-
24 - 32	-	-	-	-	ZB32-32	278454	-	-	-	-
24 to 40	-	-	-	-	-	-	ZB65-40	278458	-	-
32 - 38	-	-	-	-	ZB32-38	112474	-	-	-	-
35 - 50	-	-	-	-	-	-	-	-	ZB150-50	278462
40 to 57	-	-	-	-	-	-	ZB65-57	278459	-	-
50 - 65	-	-	-	-	-	-	ZB65-65	278460	-	-
50 to 70	-	-	-	-	-	-	-	-	ZB150-70	278463
65 - 75	-	-	-	-	-	-	ZB65-75	108792	-	-
70 - 100	-	-	-	-	-	-	-	-	ZB150-100	278464
95 - 125	-	-	-	-	-	-	-	-	ZB150-125	278465
120 - 150	-	-	-	-	-	-	-	-	ZB150-150	278466
145 - 175	-	-	-	-	-	-	-	-	ZB150-175	107316

Motor-protection relays

Bimetal relays, thermistor motor protection relay

Moeller series

Setting range of overload release I_r A 		For use with	Part no.	Article no.
Z5 bimetal relays				
	50 - 70	DILM185A DILM225A	Z5-70/FF225A	139572
	70 - 100		Z5-100/FF225A	139573
	95 - 125		Z5-125/FF225A	139574
	120 - 160		Z5-160/FF225A	139575
	160 - 220		Z5-220/FF225A	139576
	200 - 250		Z5-250/FF225A	139577
	50 - 70	DILM250	Z5-70/FF250	210070
	70 - 100		Z5-100/FF250	210071
	95 - 125		Z5-125/FF250	210072
	120 - 160		Z5-160/FF250	210073
	160 - 220	DILM250 DILM300A	Z5-220/FF250	210074
	200 - 250		Z5-250/FF250	210075
	200 - 300	DILM300A	Z5-300/FF250	139578
ZW7 Current transformer-operated overload relays				
	42 - 63		ZW7-63	000245
	60 - 90		ZW7-90	002618
	85 - 125		ZW7-125	004991
	110 - 160		ZW7-160	007364
	160 - 240		ZW7-240	009737
	190 - 290		ZW7-290	052448
	270 - 400		ZW7-400	045329
	360 - 540		ZW7-540	047702
	420 - 630		ZW7-630	050075
	Function		Part no.	Article no.
EMT6 thermistor motor-protection relays				
	Without manual reset Mains and fault LED indicator		EMT6	066166
	Without manual reset Mains and fault LED indicator With 2 sensor circuits		EMT6(230V)	066400
	Without manual reset Mains and fault LED indicator Trips in the event of a short circuit in the sensor cable		EMT62	171889
	Switchable with/without manual reset For manual or remote reset Test button Mains and fault LED indicator		EMT6-DB	066167
	Switchable with/without manual reset For manual or remote reset Test button Mains and fault LED indicator With 2 sensor circuits		EMT6-DB(230V)	066401
	Switchable with/without manual reset For manual or remote reset Test button Mains and fault LED indicator Trips in the event of a short circuit in the sensor cable		EMT62-DB	171890
	Switchable with/without manual reset For manual or remote reset Test button Mains and fault LED indicator Trips in the event of a short circuit in the sensor cable		EMT6-KDB	269471
	Multifunctional device Switchable with/without manual reset Trips in the event of a short circuit in the sensor cable Fail-safe For manual or remote reset Test button Short-circuit detection and fail-safe operation can be switched off Mains and fault LED indicator		EMT6-DBK	066168



		For use with				
		DILM7 - DILM15	DILM17 - DILM38	DILM40 - DILM72	DILM80 - DILM150	DILM185A - DILM225A
Earth fault monitoring	Setting range	Part no. Article no.	Part no. Article no.	Part no. Article no.	Part no. Article no.	Part no. Article no.
	Overload release					
	I_r					
	A					
ZEB electronic overload relays						
Direct mounting						
None	0.33 - 1.65	ZEB12-1,65 136480	ZEB32-1,65 136486	-	-	-
	1 - 5	ZEB12-5 136481	ZEB32-5 136487	-	-	-
	4 - 20	ZEB12-20 136482	ZEB32-20 136488	-	-	-
	9 - 45	-	ZEB32-45 136489	ZEB65-45 136502	-	-
	20 - 100	-	-	ZEB65-100 136504	ZEB150-100 136506	-
	35 - 175	-	-	-	ZEB150-175 164303	ZEB225-175 164307
With	0.33 - 1.65	ZEB12-1,65-GF 136483	ZEB32-1,65-GF 136490	-	-	-
	1 - 5	ZEB12-5-GF 136484	ZEB32-5-GF 136491	-	-	-
	4 - 20	ZEB12-20-GF 136485	ZEB32-20-GF 136492	-	-	-
	9 - 45	-	ZEB32-45-GF 136493	ZEB65-45-GF 136503	-	-
	20 - 100	-	-	ZEB65-100-GF 136505	ZEB150-100-GF 136507	-
	35 - 175	-	-	-	ZEB150-175-GF 164304	ZEB225-175-GF 164308
Stand-alone installation						
None	0.33 - 1.65	-	ZEB32-1,65/KK 136494	-	-	-
	1 - 5	-	ZEB32-5/KK 136495	-	-	-
	4 - 20	-	ZEB32-20/KK 136496	-	-	-
	9 - 45	-	ZEB32-45/KK 136497	-	-	-
	20 - 100	-	-	-	ZEB150-100/KK 136508	-
	35 - 175	-	-	-	ZEB150-175/KK 164305	-
With	0.33 - 1.65	-	ZEB32-1,65-GF/KK 136498	-	-	-
	1 - 5	-	ZEB32-5-GF/KK 136499	-	-	-
	4 - 20	-	ZEB32-20-GF/KK 136500	-	-	-
	9 - 45	-	ZEB32-45-GF/KK 136501	-	-	-
	20 - 100	-	-	-	ZEB150-100-GF/KK 136509	-
	35 - 175	-	-	-	ZEB150-175-GF/KK 164306	-



PKZ and PKE motor-protective circuit breakers - flexible plug-in solutions: simple, intelligent, versatile



Eaton.com/win-win



Get more information

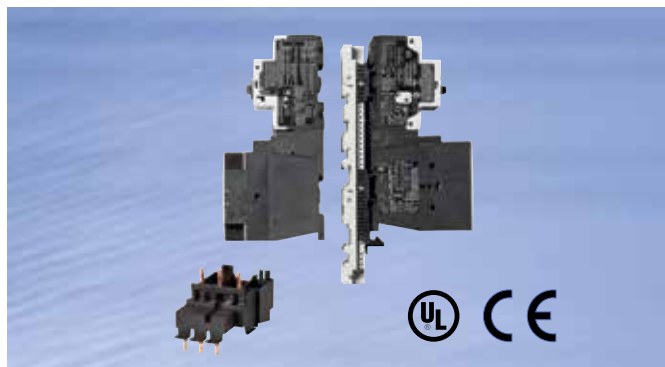
Machine and system downtimes should be kept as short as possible. Our fuseless PKZ motor-protective circuit breakers combine short-circuit and overload protection in a single device, thereby enabling fast reclosing. The PKZM0, PKZM01, PKZM4 and PKE devices share the same accessories, and they can be easily combined with the DILM contactors and the DS7 soft starters. Switching technology can be so simple.

Thanks to Push-in technology, the installation of our motor-protective circuit breakers is even easier, more reliable and, above all, tool-free. This results in easier handling with additional protection of the contacts against mechanical shocks and vibrations.



Push-in connection technology speeds up wiring based on proven power feed design

With our new motor-protective circuit breakers with Push-in technology, we offer a universal product range for tool-free wiring of main and auxiliary circuits up to 32 A that also reduces installation times to a minimum. Our Push-in range boasts a winning combination that integrates both screw and Push-in connections in a single device. This means that the new devices can also be easily incorporated into existing control cabinet designs.



PKZM0-XDM32ME connection module for motor starters up to a motor rating of 15 kW

The connection module enables the assembly of motor starter combinations: The PKZM0, PKE12 or PKE32 motor-protective circuit breakers in combination with the DILM17...38 contactors or the DS7 soft starters with a rated current of 16 A to 32 A. Thanks to the new connection module, the motor starter is faster to assemble, more compact and safer than the previous solution.



Uniform accessories – tool-free installation

The two versions of the motor-protective circuit breakers come in 20 different types that cover the entire voltage range from 0.1 A to 63 A. The motor-protective circuit breakers are fully compatible with the DIL contactors and are thus ideally suited for use in motor starter combinations.



Modular design. Maximum flexibility. Powerful performance.

Thanks to their special features, the PKE motor- and system-protective circuit breakers with electronic overload protection offer a convincing alternative to bimetal solutions and make for an intelligent addition to the PKZ device family. The compact and modular design of the PKE devices with plug-in trip blocks for currents up to 65 A offers maximum flexibility.



Ideal for push and impact actuation (pressing or hitting)

The PKZM01 motor-protective circuit breaker for motors up to 25 A is ideal for small machines and other applications where push or impact actuation is the preferred means of operation. In addition to the auxiliary contacts from our PKZM0 range, we also offer special housings with IP65 and IP40 degree of protection, also in combination with an emergency-stop button. The devices have a short-circuit breaking capacity of 50 kA.



The PKE communication module enables transparent and open communication in any application. Thanks to the use of the established serial fieldbus Modbus RTU, the communication module acts as an open and standardized communication interface that can be easily integrated into existing systems.

Like our variable frequency drives, programmable logic controllers and circuit breakers, our motor starters can now also be controlled and configured via Modbus RTU. The PKE communication module is thus the perfect addition to our comprehensive product portfolio.

FutureFit- All information at a glance

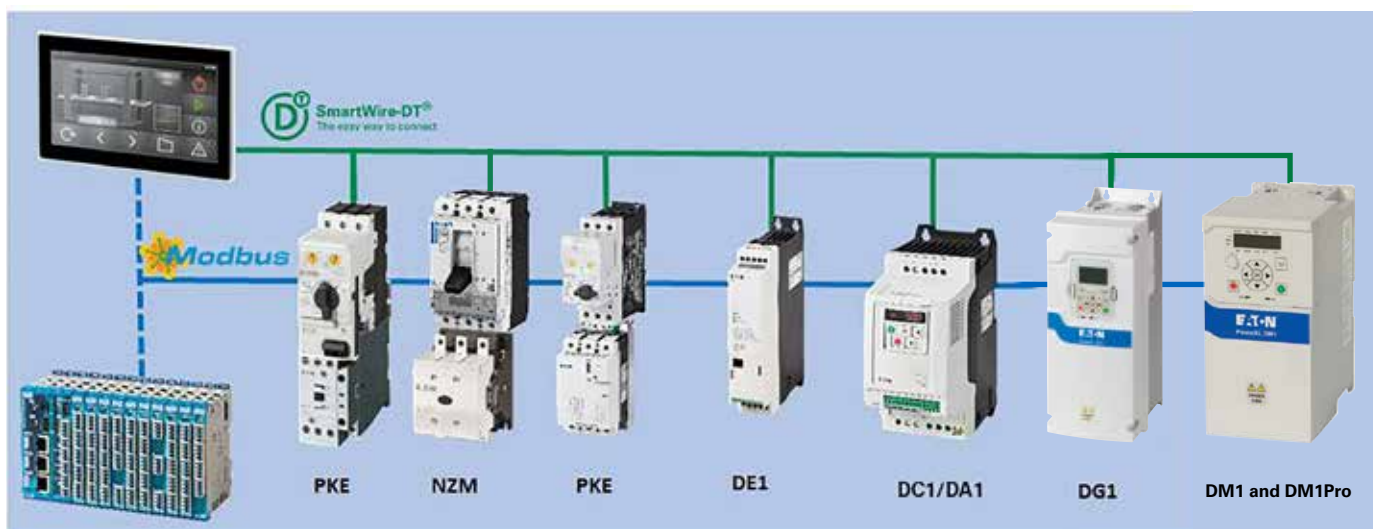
Data transparency

- Capturing the condition of the entire machine
 - On or off
 - Trip reason (e.g. overload, short circuit, unbalance, phase failure, etc.)
 - Number of power-up operations
 - Current detection
 - Thermal motor image
- Continuous and transparent condition monitoring supports the optimal planning of preventative maintenance

Flexible

- All-in-one: switching, protecting and measuring with just one device
- A single device for all applications from motor to system protection
- Simple, cost-effective and fast integration into existing systems
- Open and standardized communication via Modbus RTU
- Network range up to 1000 m with 63 addressable nodes
- No special software or proprietary peripherals required
- Simple addressing via dip switches

Continuous communication at the motor feeders



Future fit - all details at a glance

Status

- PKE contactor state
- Nominal current setting
- Time lag setting



Power/utilization

- Relative motor current
- Thermal motor load



Diagnostics

- Overcurrent (short circuit), overload, phase failure, test
- Thermal motor load



Additional functions

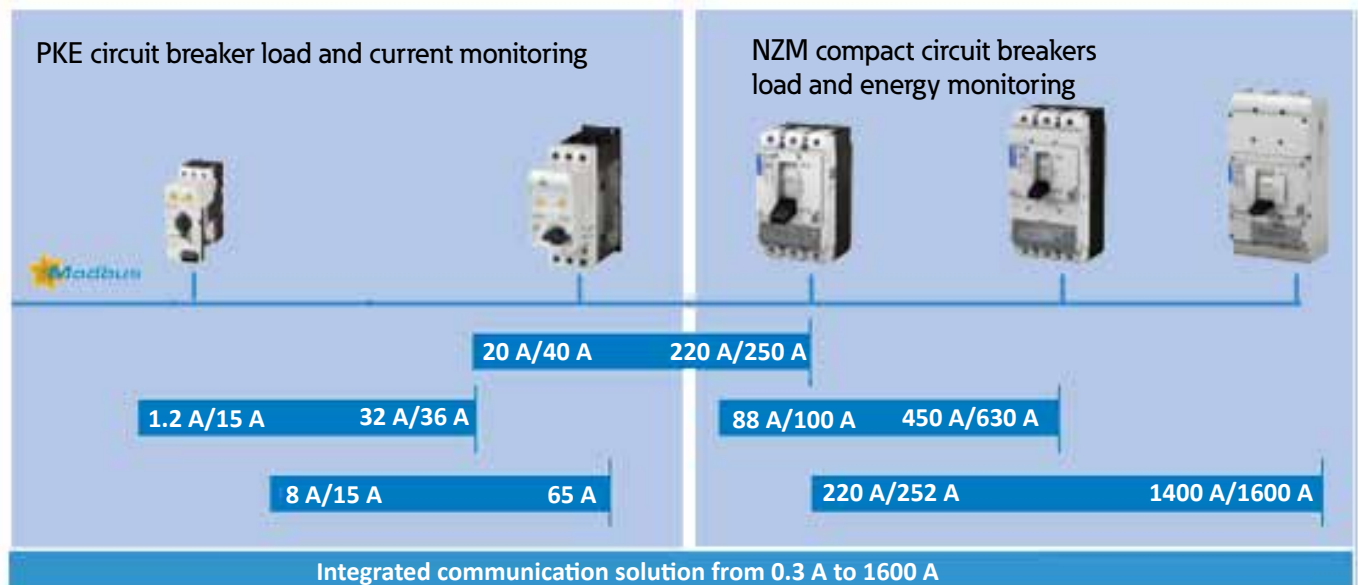
- Overcurrent (short circuit), overload, phase failure, test trip, unbalance
- Records the trip type and frequency and the number of power-up operations
- Remote control
- Readings transmitted as plain text (e.g. current in A)



All the information at your fingertips thanks to SmartWire-DT

The PKZ and PKE motor starter combinations can be integrated into any automation environment via SmartWire-DT. In the case of the PKE, modular COM connections are used for various signaling functions, including real-time current detection. Data can be transferred directly to the controls and made available across the entire system.

Continuous communication at the motor feeders



3 base devices + 8 trip blocks = current range up to 65 A

12 A (45 mm)
PKE 12



Motor protection
0.3 A → 12 A
0.09 - 5.5 kW (400 V)

System protection

32 A (45 mm)
PKE 32



1 A → 32 A
0.37 - 15 kW (400 V)

15 A → 36 A

65 A (55 mm)
PKE 65



8 A → 65 A
4 - 30 kW (400 V)

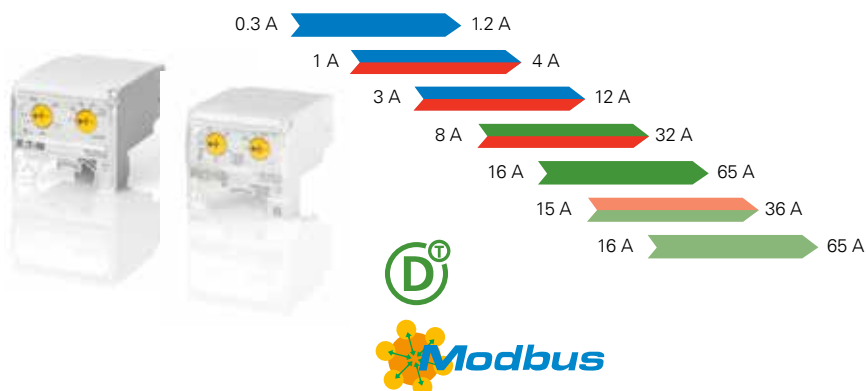
15 A → 65 A

Modular design with wide setting range

The functional safety and service life of a motor crucially depend on how it is protected. Thanks to their special features, the PKE motor-protective circuit breakers with electronic overload protection offer a convincing alternative to bimetal solutions and make for an intelligent addition to the PKZ device family. The compact and modular design of the PKE devices with plug-in trip blocks up to 65 A offers maximum flexibility.

The wide current setting ranges significantly reduce the number of available versions, thereby minimizing the costs and effort involved in project planning.

8 plug-in trip blocks up to 65 A in 2 versions.

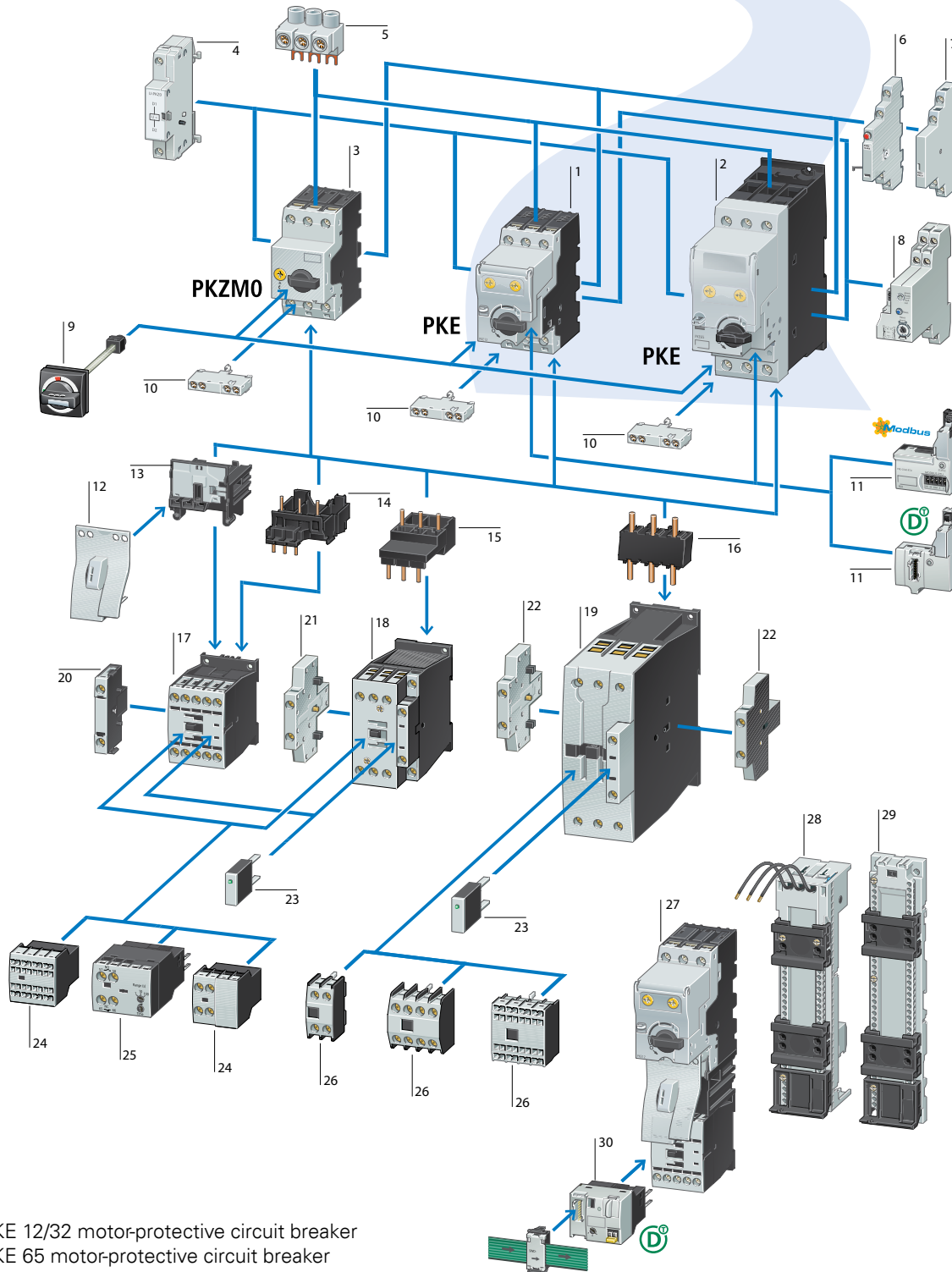


The PKE's electronic trip blocks not only enable wide setting ranges, low power dissipation and precise and highly stable tripping characteristics over long periods of time, but also provide a wealth of data on the machine status.

These data can be easily made available for system control and monitoring by means of the new PKE communication module and the thermal motor image. Regardless of which trip block is currently plugged in, it can be easily supplemented with the new PKE Modbus RTU communication module, without any need for special tools or cables.

PKZ and PKE within the xStart system

The PKZ and PKE motor-protective circuit breakers can be equipped with a wide range of approved accessories from the xStart range for safe and efficient control system design. Most applications require auxiliary contacts with different contact configurations for interlocking or signaling. Motor starter assemblies with two separate contact systems, including a visible isolating distance, enable the PKZ/PKE protective devices and the DIL switching devices to be clearly assigned. In addition, the switchgear can also be replaced individually. Universal accessories from the xStart system simplify procurement and minimize the effort involved in project planning.



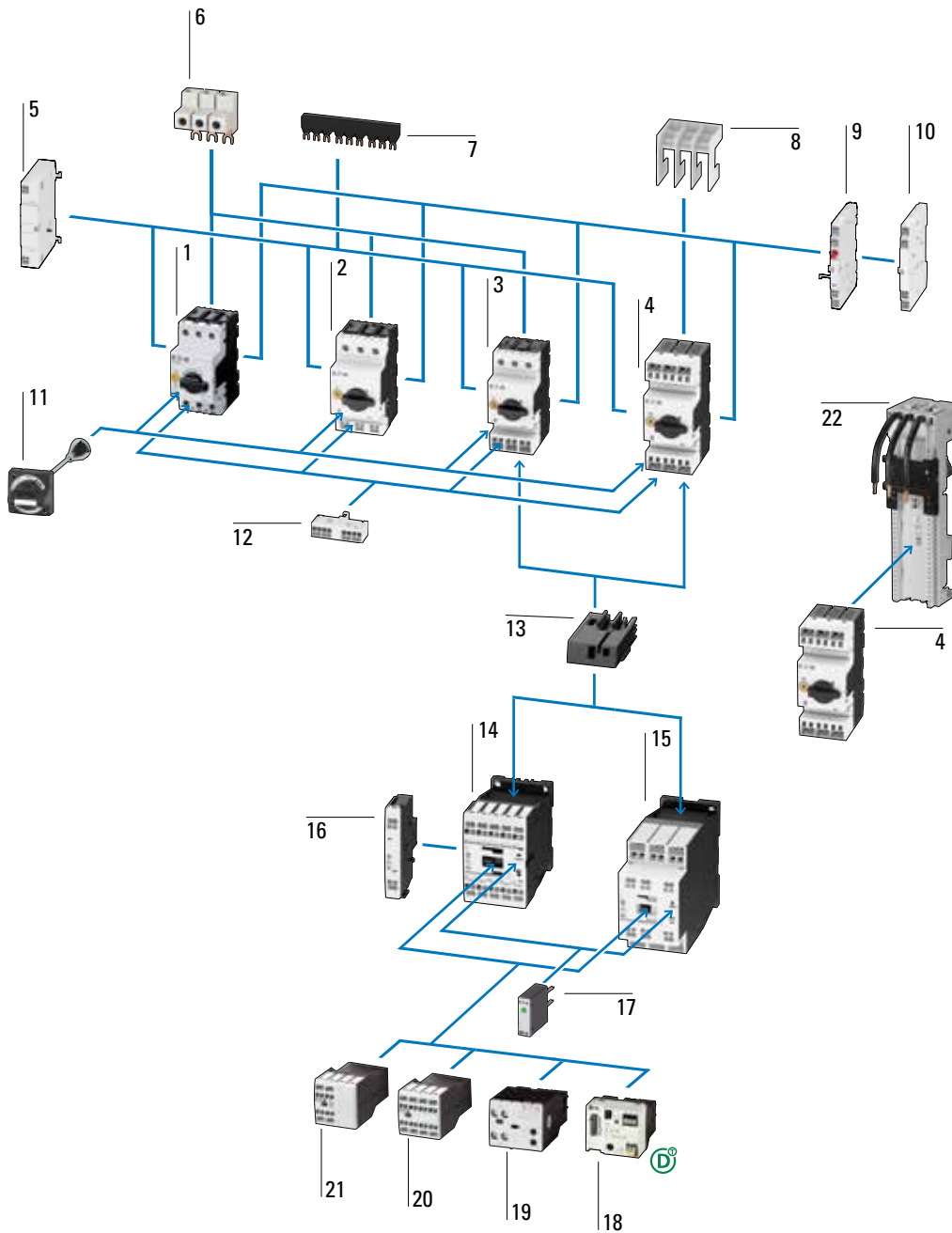
- 1 PKE 12/32 motor-protective circuit breaker
- 2 PKE 65 motor-protective circuit breaker
- 3 PKZM01 motor-protective circuit breaker
- 4 Undervoltage release/shunt release
- 5 Incoming power feed terminal
- 6 Trip indicator
- 7 Side-mounting auxiliary contact
- 8 PKE overload relay module
- 9 Door-coupling rotary handle and shaft extension
- 10 Front-mounting auxiliary contact
- 11 SmartWire-DT/Modbus communication interface for PKE
- 12 Combination plug-in connector
- 13 Mechanical connector
- 14 Motor starter module
- 15 Electrical connector
- 16 Electrical connector
- 17 Contactor up to 15 A

- 18 Contactor up to 38 A
- 19 Contactor up to 65 A
- 20 Side-mounting auxiliary contact
- 21 Side-mounting auxiliary contact
- 22 Side-mounting auxiliary contact
- 23 Suppressor circuit
- 24 Surface-mounting auxiliary contact
- 25 Electronic timer
- 26 Surface-mounting auxiliary contact
- 27 MSC-DEA DOL starter up to 5.5 kW with PKE
- 28 Busbar adapter
- 29 DIN-rail adapter
- 30 SmartWire-DT PKE module





Motor-protective circuit breakers

System overview

Moeller series






- | | | | |
|----|--|----|--|
| 1 | PKZM0 motor-protective circuit breaker up to 32 A – screw terminal | 11 | Door-coupling rotary handle |
| 2 | PKZM0 motor-protective circuit breaker up to 16 A – screw/Push-in terminal | 12 | Front-mounting auxiliary contact – Push-in terminal |
| 3 | PKZM0 motor-protective circuit breaker up to 32 A – screw/Push-in terminal | 13 | Mechanical connection module for motor starters |
| 4 | PKZM0 motor-protective circuit breaker up to 32 A – Push-in terminal | 14 | DILA contactor relay/DILM contactors up to 7.5 kW – Push-in terminal |
| 5 | Undervoltage/shunt release – Push-in terminal | 15 | DILM contactor up to 18.5 kW – Push-in terminal |
| 6 | IEC/UL power supply terminal for three-phase busbar link – screw terminal | 16 | Side-mounting auxiliary contact – Push-in terminal |
| 7 | Three-phase busbar link – screw terminal | 17 | Coil protection circuits |
| 8 | PKZM0...-PI phase isolator for UL Type E and Type F applications | 18 | SmartWire-DT networking module |
| 9 | Trip indicator for overload and short circuit – Push-in terminal | 19 | Electronic timer module – screw terminal |
| 10 | Side-mounting auxiliary contact – Push-in terminal | 20 | Front-mounting auxiliary contact, 4-pole – Push-in terminal |
| | | 21 | Front-mounting auxiliary contact, 2-pole – Push-in terminal |
| | | 22 | Adapter for motor-protective circuit breakers / motor starters |





	Max. rated operational power AC-3		Setting range			
	380 V 400V 415V		660 V 690 V		Overload release	Short circuit release
	P kW		P kW		I _r A	I _{rm} A
Screw terminals						
Part no.						
Article no.						
PKZM01 motor-protective circuit breakers, type 1 and 2 coordination						
	-	-	-	-	0.1 - 0.16	2.5
	0.06	-	-	-	0.16 - 0.25	3.9
	0.09	-	-	-	0.25 - 0.4	6.2
	0.12	-	-	-	0.4 - 0.63	9.8
	0.25	-	-	-	0.63 - 1	15.5
	0.55	-	-	-	1 - 1.6	24.8
	0.75	-	-	-	1.6 - 2.5	38.8
	1.5	-	-	-	2.5 - 4	62
	2.2	-	-	-	4 - 6.3	97.7
	4	-	-	-	6.3 - 10	155
	5.5	-	-	-	8 - 12	186
	7.5	-	-	-	10 - 16	248
	9	-	-	-	16 - 20	310
	12.5	-	-	-	20 - 25	388
PKZM0 motor-protective circuit breakers, type 1 and 2 coordination						
	-	0.06	-	-	0.1 - 0.16	2.5
	0.06	0.12	-	-	0.16 - 0.25	3.9
	0.09	0.18	-	-	0.25 - 0.4	6.2
	0.12	0.25	-	-	0.4 - 0.63	9.8
	0.25	0.37	-	-	0.63 - 1	15.5
	0.55	0.75	-	-	1 - 1.6	24.8
	0.75	1.1	-	-	1.6 - 2.5	38.8
	1.5	2.2	-	-	2.5 - 4	62
	2.2	3	-	-	4 - 6.3	97.7
	4	4	-	-	6.3 - 10	155
	5.5	5.5	-	-	8 - 12	186
	7.5	9	-	-	10 - 16	248
	9	12.5	-	-	16 - 20	310
	12.5	15	-	-	20 - 25	388
	15	22	-	-	25 - 32	496
PKZM4 motor-protective circuit breakers, type 1 and 2 coordination						
	7.5	12.5	-	-	10 - 16	248
	12.5	22	-	-	16 - 25	388
	15	22	-	-	24 - 32	496
	20	30	-	-	32 - 40	620
	25	45	-	-	40 - 50	775
	30	55	-	-	50 - 58	899
	34	55	-	-	55 - 65	1008
UL circuit breakers to NFPA79						
	-	-	-	-	10 - 16	248
	-	-	-	-	16 - 25	388
	-	-	-	-	24 - 32	496
PKZM4-16-CB						
PKZM4-25-CB						
PKZM4-32-CB						






PKZ motor-protective circuit breaker

Base devices with Push-in terminals, PKZM0 transformer-protective circuit breakers

Moeller series






Setting range Overload release		I_r  A		Push-in terminal Part no. Article no.		Screw terminal/ Push-in terminal Part no. Article no.		Screw terminal/ Push-in terminal Part no. Article no.	
PKZM0 motor-protective circuit breakers, type 1 and 2 coordination				Push-in terminals					
 	0.1 - 0.16			PKZM0-0,16-PI	199148	PKZM0-0,16-SPI32	199189	PKZM0-0,16-SPI16	199177
	0.16 - 0.25			PKZM0-0,25-PI	199149	PKZM0-0,25-SPI32	199190	PKZM0-0,25-SPI16	199178
	0.25 - 0.4			PKZM0-0,4-PI	199150	PKZM0-0,4-SPI32	199191	PKZM0-0,4-SPI16	199179
	0.4 - 0.63			PKZM0-0,63-PI	199151	PKZM0-0,63-SPI32	199192	PKZM0-0,63-SPI16	199180
	0.63 - 1			PKZM0-1-PI	199152	PKZM0-1-SPI32	199193	PKZM0-1-SPI16	199181
	1 - 1.6			PKZM0-1,6-PI	199153	PKZM0-1,6-SPI32	199194	PKZM0-1,6-SPI16	199182
	1.6 - 2.5			PKZM0-2,5-PI	199154	PKZM0-2,5-SPI32	199195	PKZM0-2,5-SPI16	199183
	2.5 - 4			PKZM0-4-PI	199155	PKZM0-4-SPI32	199196	PKZM0-4-SPI16	199184
	4 - 6.3			PKZM0-6,3-PI	199156	PKZM0-6,3-SPI32	199197	PKZM0-6,3-SPI16	199185
	6.3 - 10			PKZM0-10-PI	199157	PKZM0-10-SPI32	199198	PKZM0-10-SPI16	199186
	8 - 12			PKZM0-12-PI	199158	PKZM0-12-SPI32	199199	PKZM0-12-SPI16	199187
	10 - 16			PKZM0-16-PI	199159	PKZM0-16-SPI32	199200	PKZM0-16-SPI16	199188
	16 - 20			PKZM0-20-PI	199160	PKZM0-20-SPI32	199201	-	-
	20 - 25			PKZM0-25-PI	199161	PKZM0-25-SPI32	199202	-	-
	25 - 32			PKZM0-32-PI	199162	PKZM0-32-SPI32	199203	-	-

<div>Setting range</div> <div>Overload release</div>	<div>I_r</div> <div></div> <div>A</div>	<div>Screw terminals</div>	<div>Push-in terminal/ Push-in terminal</div> <div></div>		
		<div>Part no.</div>	<div>Article no.</div>	<div>Part no.</div>	<div>Article no.</div>
<div>Transformer-protective circuit breaker</div>					
<div> </div>	<div>0.1 - 0.16</div>	<div>PKZM0-0,16-T</div>	<div>088907</div>	<div>PKZM0-0,16-T-PI</div>	<div>199163</div>
	<div>0.16 - 0.25</div>	<div>PKZM0-0,25-T</div>	<div>088908</div>	<div>PKZM0-0,25-T-PI</div>	<div>199164</div>
	<div>0.25 - 0.4</div>	<div>PKZM0-0,4-T</div>	<div>088909</div>	<div>PKZM0-0,4-T-PI</div>	<div>199165</div>
	<div>0.4 - 0.63</div>	<div>PKZM0-0,63-T</div>	<div>088910</div>	<div>PKZM0-0,63-T-PI</div>	<div>199166</div>
	<div>0.63 - 1</div>	<div>PKZM0-1-T</div>	<div>088911</div>	<div>PKZM0-1-T-PI</div>	<div>199167</div>
	<div>1 - 1.6</div>	<div>PKZM0-1,6-T</div>	<div>088912</div>	<div>PKZM0-1,6-T-PI</div>	<div>199168</div>
	<div>1.6 - 2.5</div>	<div>PKZM0-2,5-T</div>	<div>088913</div>	<div>PKZM0-2,5-T-PI</div>	<div>199169</div>
	<div>2.5 - 4</div>	<div>PKZM0-4-T</div>	<div>088914</div>	<div>PKZM0-4-T-PI</div>	<div>199170</div>
	<div>4 - 6.3</div>	<div>PKZM0-6,3-T</div>	<div>088915</div>	<div>PKZM0-6,3-T-PI</div>	<div>199171</div>
	<div>6.3 - 10</div>	<div>PKZM0-10-T</div>	<div>088916</div>	<div>PKZM0-10-T-PI</div>	<div>199172</div>
	<div>8 - 12</div>	<div>PKZM0-12-T</div>	<div>278492</div>	<div>PKZM0-12-T-PI</div>	<div>199173</div>
	<div>10 - 16</div>	<div>PKZM0-16-T</div>	<div>088917</div>	<div>PKZM0-16-T-PI</div>	<div>199174</div>
	<div>16 - 20</div>	<div>PKZM0-20-T</div>	<div>088918</div>	<div>PKZM0-20-T-PI</div>	<div>199175</div>
	<div>20 - 25</div>	<div>PKZM0-25-T</div>	<div>278493</div>	<div>PKZM0-25-T-PI</div>	<div>199176</div>

								
	Base device with standard handle		Motor protection trip block Standard		Motor protection trip block Expanded by Connection to SmartWire-DT and Modbus RTU		Complete device with standard handle	
	Part no.	Article no.	Part no.	Article no.	Part no.	Article no.	Part no.	Article no.
PKE motor-protective circuit breakers, type 1 and 2 coordination								
0.3 - 1.2	PKE12	121721	PKE-XTU-1,2	121723	PKE-XTUA-1,2	121727	PKE12/XTU-1,2	121731
1 - 4	PKE12	121721	PKE-XTU-4	121724	PKE-XTUA-4	121728	PKE12/XTU-4	121732
3 - 12	PKE12	121721	PKE-XTU-12	121725	PKE-XTUA-12	121729	PKE12/XTU-12	121733
8 - 32	PKE32	121722	PKE-XTU-32	121726	PKE-XTUA-32	121730	PKE32/XTU-32	121734

PKE system-protective circuit breaker, short-circuit release 5 - 8 x I_n

15 - 36	PKE32	121722	PKE-XTUCP-36	153164	PKE-XTUACP-36	168795	PKE32/XTUCP-36	168972
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	Base device with standard handle		Motor protection trip block Standard		Motor protection trip block Expanded by Connection to SmartWire-DT and Modbus RTU		Complete device with standard handle	
	Part no.	Article no.	Part no.	Article no.	Part no.	Article no.	Part no.	Article no.
PKE motor-protective circuit breakers, type 1 and 2 coordination								
8 - 32	PKE65	138258	PKE-XTUW-32	138261	PKE-XTUWA-32	138262	PKE65/XTUW-32	138517
16 - 65	PKE65	138258	PKE-XTU-65	138259	PKE-XTUA-65	138260	PKE65/XTU-65	138516












PKE system-protective circuit breakers, short-circuit release 5 - 8 x I_n

15 - 36	PKE65	138258	PKE-XTUWCP-36	168796	PKE-XTUWACP-36	168797	PKE65/XTUWCP-36	168973
30 - 65	PKE65	138258	PKE-XTUCP-65	168798	PKE-XTUACP-65	168799	PKE65/XTUCP-65	168974






Motor-protective circuit breakers

Communication modules, busbar adapters






Moeller series










			Part no.	Article no.
PKE communication module				
 	For connecting motor-protective circuit breakers with PKE-XTU(W)A-... trip blocks (motor protection) to SmartWire-DT		PKE-SWD-SP	150614
	<p>Messages</p> <ul style="list-style-type: none"> PKE contactor state, motor current in % Thermal motor image in % Trip indication (overload, short circuit, etc.) Set value of the overload release Set time lag (CLASS) Part no. of trip block <p>Commands</p> <ul style="list-style-type: none"> Remote disconnect 			
For connecting PKE circuit breakers with PKE-XTU(W)ACP-... trip blocks (motor protection) to SmartWire-DT				
 	For connecting PKE circuit breakers with PKE-XTU(W)ACP-... trip blocks (system protection) to SmartWire-DT		PKE-SWD-CP	172735
	For connecting motor-protective circuit breakers with PKE-XTU(W)A-... trip blocks (motor protection) and circuit breakers with trip blocks PKE-XTU(W)ACP-... (system protection) to Modbus-RTU		PKE-COM-RTU	199344
				
			Part no.	Article no.
	Rated operational current I_e A	For use with		
Busbar adapter for PKZ and PKE				
	25	PKZM0 + DILM7 (9) (12) (15) PKE + DILM7 (9) (12) (15) MSC-D-0,25-M7... - MSC-D-16-M15...	BBA0-25	101451
		PKZM0...-PI + DILM7 (9) (12) (15) -PI MSC-D-0,25-M7... -PI - MSC-D-16-M15... -PI	BBA0-25-PI	199467
	25	PKZM0 + 2 x DILM7-01 (9) (12) PKE + 2 x DILM7-01 (9) (12) MSC-R-0,25-M7... - MSC-R-12-M12...	BBA0R-25	101453
		PKZM0...-PI + 2 x DILM7-01 (9) (12)-PI MSC-R-0,25-M7... -PI - MSC-R-16-M15... -PI	BBA0R-25-PI	199468
	32	PKZM0 + DILM17 (25) (32) PKE + DILM17 (25) (32)	BBA0-32	101452
		PKZM0...-PI + DILM8 (11) (14) (17) (25) (32) -PI	BBA0-32-PI	199469
	32	PKZM0...-PI	BBA0K-32-PI	199635
		PKZM0 + 2 x DILM17-01 (25) (32) PKE + 2 x DILM17-01 (25) (32)	BBA0R-32	101454
	63	PKZM0...-PI + 2 x DILM8 (11) (14) (17) (25) (32) -PI	BBA0R-32-PI	199470
		PKZM4, PKE65 + DILM(C)40 PKZM4, PKE65 + DILM(C)50 PKZM4, PKE65 + DILM(C)65	BBA4L-63	101459



Contacts			For use with	Part no.	Article no.
N/O = normally open	N/C = normally closed				
Standard auxiliary contacts					
	1 N/O	1 N/C	PKZM01 PKZM0-..(-PI)(-SPI32) PKZM0-..-T(-PI) PKZM4	NHI11-PKZ0-PI	199328
	1 N/O	1 N/C		NHI-E2-11-PKZ0-PI	EP-401015
	1 N/O	1 N/C		NHI-B2-11-PKZ0-PI	EP-401016
	1 N/O	-		NHI-E2-10-PKZ0-PI	EP-401017
Trip indicators					
	2 x 1 N/O	-	PKZM01 PKZM0-..(-PI)(-SPI32) PKZM0-..-T(-PI) PKZM0-..-T(-PI) PKZM4 PKM0	AGM2-10-PKZ0-PI	199329
	-	2 x 1 N/C		AGM2-01-PKZ0-PI	199330
Shunt releases					
	-	-	PKZM01 PKZM0-..(-PI)(-SPI32) PKZM0-..-T(-PI) PKZM0-..-T(-PI) PKZM4 PKM0	A-PKZ0(230V50HZ)-PI	199339
	-	-		A-PKZ0(24VDC)-PI	199336
Undervoltage release					
	-	-	PKZM01 PKZM0-..(-PI)(-SPI32) PKZM0-..-T(-PI) PKZM0-..-T(-PI) PKZM4 PKM0	U-PKZ0(230V50HZ)-PI	199334
	-	-		U-PKZ0(24VDC)-PI	199331
























For use with		Part no.	Article no.
<div>PKZM0 Type E phase isolator</div> <div></div>	PKZM0...-PI	LSA-PKZ0-E-PI	199341
<div>Wiring set</div> <div>For DOL starters</div> <div></div>	PKZM0...-PI + DILM7...-PI PKZM0...-PI + DILM9 ...-PI PKZM0...-PI + DILM12 ...-PI PKZM0...-PI + DILM15 ...-PI	PKZM0-XDM12-PI	199463
<div></div>	PKZM0...-PI + DILM8...-PI PKZM0...-PI + DILM11...-PI PKZM0...-PI + DILM14 ...-PI PKZM0...-PI + DILM17...-PI PKZM0...-PI + DILM25...-PI PKZM0...-PI + DILM32...-PI	PKZM0-XDM32-PI	199465
	PKZM0..-PI(-SPI32) + DILM7..-PI - DILM38..-PI	PKZM0-XDM32M-PI	199462
<div>For reversing starters</div> <div></div>	PKZM0...-PI + DILM7-01...-PI PKZM0...-PI + DILM9-01...-PI PKZM0...-PI + DILM12-01...-PI PKZM0...-PI + DILM15-01...-PI	PKZM0-XRM12-PI	199464
<div></div>	PKZM0...-PI + DILM8-11...-PI PKZM0...-PI + DILM11-11...-PI PKZM0...-PI + DILM14-11...-PI PKZM0...-PI + DILM17-11...-PI PKZM0...-PI + DILM25-11...-PI PKZM0...-PI + DILM32-11...-PI	PKZM0-XRM32-PI	199466





	Contacts N/O = normally open N/C = normally closed		For use with	Part no.	Article no.
Standard auxiliary contacts					
	1 N/O	1 N/C	PKZM01 PKZM0..(-PI)(-SPI32) PKZM0-...-T(-PI) PKM0 PKZM4	NHI11-PKZ0	072896
	1 N/O	2 N/C		NHI12-PKZ0	072895
	2 N/O	1 N/C		NHI21-PKZ0	072894
	1 N/O	1 N/C	PKZM0(1) PKM0 PKZM4 PKE	NHI-E-11-PKZ0	082882
	1 N/O	-		NHI-E-10-PKZ0	082884
Trip indicators					
	2 x 1 N/O	-	PKZM01 PKZM0..(-PI)(-SPI32) PKZM0-...-T(-PI) PKM0 PKZM4	AGM2-10-PKZ0	072898
	-	2 x 1 N/C		AGM2-01-PKZ0	072899
	2 x 1 N/O	-			
Early-make auxiliary contacts					
	2 N/O	-	PKZM0 PKZM0-T PKM0 PKZM4	VHI20-PKZ0	203595
	2 N/O	-	PKZM01	VHI20-PKZ01	278495
Shunt releases					
	-	-	PKZM01 PKZM0..(-PI)(-SPI32) PKZM0-...-T(-PI) PKM0 PKZM4	A-PKZ0(230V50HZ)	073187
				A-PKZ0(24VDC)	073200
	-	-			
Undervoltage releases					
	-	-	PKZM01 PKZM0..(-PI)(-SPI32) PKZM0-...-T(-PI) PKM0 PKZM4	U-PKZ0(230V50HZ)	073135
				U-PKZ0(24VDC)	157862
	-	-			
Overload relay function module					
	1 N/O	1 N/C	PKE12 PKE32 PKE65 with XTUA trip block from release 04 and up	PKE-XZMR(24VDC)	173425
	1 N/O	1 N/C		PKE-XZMR(230V50HZ)	173416
Lockable rotary handle					
	for locking the PKZM0, PKZM4 and PKE motor-protective circuit breakers when used as main switches as per EN 60204 Lockable in the "0" position by means of a padlock Shackle thickness 3 - 6.35 mm			AK-PKZ0	030851

Motor-protective circuit breakers

Screw terminal accessories

Moeller series

	For use with	Part no.	Article no.
Three-phase busbar link, power supply via terminals 1, 3, 5			
For PKZM0-..(-SPI16), (-SPI32) or PKE12/32 without lateral auxiliary contacts or voltage releases			
	-	B3.0/2-PKZ0	063961
	-	B3.0/3-PKZ0	232289
	-	B3.0/4-PKZ0	063960
	-	B3.0/5-PKZ0	232290
For PKZM0-..(-SPI16), (-SPI32) or PKE12/32 with one lateral auxiliary contact or one trip indicator mounted on the right			
	-	B3.1/2-PKZ0	044945
	-	B3.1/3-PKZ0	044946
	-	B3.1/4-PKZ0	044947
	-	B3.1/5-PKZ0	044948
For PKZM0-..(-SPI16), (-SPI32) or PKE12/32 with one lateral auxiliary contact mounted on the side or one trip-indicating auxiliary contact mounted on the right or one voltage release mounted on the left			
	-	B3.2/2-PKZ0	063963
	-	B3.2/4-PKZ0	063959
Incoming terminal			
	PKZM0-.., PKZM0-..-SPI16, PKZM0-..-SPI32	BK25/3-PKZ0	032720
		BK25/3-PKZ0-E	262518
Shroud for unused terminals			
	Touch safe To cover unused terminals on the B3...-PKZ0 three-phase busbar link	H-B3-PKZ0	032721
PKZM0 Type E phase isolator			
	PKZM0-...	LSA-PKZ0-E	197479
Wiring set			
For DOL starters			
Plug-in version			
	PKZM0, PKE + DILM7 PKZM0, PKE + DILM9 PKZM0, PKE + DILM12 PKZM0, PKE + DILM15	PKZM0-XDM12	283149
	PKZM0, PKE + DILM7 PKZM0, PKE + DILM9 PKZM0, PKE + DILM12 PKZM0, PKE + DILM15	PKZM0-XDM15ME	179646
	PKZM0, PKE + DILM17 PKZM0, PKE + DILM25 PKZM0, PKE + DILM32 PKZM0, PKE + DS7	PKZM0-XDM32ME	190312
	PKZM0, PKE + DILM7 PKZM0, PKE + DILM9 PKZM0, PKE + DILM12 PKZM0, PKE + DILM15	PKZM4-XDM65	101053
For reversing starters			
	PKZM0, PKE + DILM7-01 PKZM0, PKE + DILM9-01 PKZM0, PKE + DILM12-01	PKZM0-XRM12	283185
	PKZM0, PKE + DILM17 PKZM0, PKE + DILM25 PKZM0, PKE + DILM32	PKZM0-XRM32	283189
Electrical contact module			
	PKZM0, PKE + DILM17 PKZM0, PKE + DILM25 PKZM0, PKE + DILM32 DS7-34...SX016... DS7-34...SX024... DS7-34...SX032...	PKZM0-XM32DE	239349
	PKZM4, PKE65 + DILM40 PKZM4, PKE65 + DILM50 PKZM4, PKE65 + DILM65	PKZM4-XM65DE	101056

Description	For use with	Part no.	Article no.
Door coupling handles			
 For use as a main switch according to EN 60204	PKZM0 PKZM4	PKZ0-XH	106132
 For use as a main switch according to EN 60204 in MCC distribution boards with the PKZM0 rotated by 90°.	PKZM0 PKZM4	PKZ0-XH-MCC	106136
 For use as a main switch according to EN 60204	PKE	PKE-XH	142416
 For use as a main switch according to EN 60204 in MCC distribution boards with the PKE rotated by 90°.	PKE	PKE-XH-MCC	142418
For use as a main switch with emergency-stop according to EN 60204	PKZM0 PKZM4	PKZ0-XRH	106133
For use as a main switch with emergency-stop function according to EN 60204 in MCC distribution boards with the PKZM0 rotated by 90°.	PKZM0 PKZM4	PKZ0-XRH-MCC	106137
For use as a main switch with emergency-stop according to EN 60204	PKE	PKE-XRH	142417
For use as a main switch with emergency-stop function according to EN 60204 in MCC distribution boards with the PKE rotated by 90°.	PKE	PKE-XRH-MCC	142419

Manual self-protected combination controller, UL 60947-4-1, Type E

PKZM0(4) motor-protective circuit breakers, for use as "Manual self-protected motor starters" – UL 508 Type E										
Maximum motor output (three-phase current) HP = hp				Setting range		Interrupting capacity = short-circuit current rating (SCCR)			Components	Incoming terminal ³⁾
200 V	230 V	460 V	575 V	Overload release	Short-circuit release	240 V	480Y/277 V ²⁾	600Y/347 V ²⁾	Motor-protective circuit breaker	
208 V	240 V	480 V	600 V							
[HP]	[HP]	[HP]	[HP]	[A]	[A]	[kA]	[kA]	[kA]	Part no.	Part no.
1)				0.1 - 0.16	2.5	65	65	50	PKZM0 - 0,16 -(S)PI	BK25/3-PKZ0-E /
				0.16 - 0.25	3.9	65	65	50	PKZM0 - 0,25 -(S)PI	
				0.25 - 0.4	6.2	65	65	50	PKZM0 - 0,4 -(S)PI	
				0.4 - 0.63	9.8	65	65	50	PKZM0 - 0,63 -(S)PI	
				0.63 - 1	16	65	65	50	PKZM0 - 1 -(S)PI	
				1 - 1.6	25	65	65	50	PKZM0 - 1,6 -(S)PI	
1/2	1/2	1	1 1/2	1.6 - 2.5	39	65	65	50	PKZM0 - 2,5 -(S)PI	
3/4	3/4	2	3	2.5 - 4	62	65	65	50	PKZM0 - 4 -(S)PI	
1/2	1 1/2	3	5	4 - 6.3	98	65	65	50	PKZM0 - 6,3 -(S)PI	
2	3	5	7 1/2	6.3 - 10	155	65	65	50	PKZM0 - 10 -(S)PI	
3	3	7 1/2	10	8 - 12	186	65	65	–	PKZM0 - 12 -(S)PI	BK50/3-PKZ4-E
3	5	10	10	10 - 16	248	65	65	25	PKZM4-16	
5	7 1/2	15	20	16 - 25	388	65	65	25	PKZM4-25	
7 1/2	10	20	30	25 - 32	496	65	65	25	PKZM4-32	
10	–	30	30	32 - 40	620	65	65	25	PKZM4-40	
–	15	30	40	40 - 50	775	65	65	–	PKZM4-50	
–	–	40	50	50 - 58	899	65	65	–	PKZM4-58	
–	–	40	50	55 - 65	977	65	65	–	PKZM4-63	

Notes

¹⁾ In this range, calculate the motor power according to the rated current. Specified values according to NEC Table 430-150

²⁾ Suitable for star-point grounded networks

³⁾ For PKZM0-... Feed-in terminal BK25/3-PKZ0-E or LSA-PKZ-E, for PKZM0-...-SPI BK25/3-PKZ0-E, for PKZM0-...-PI LSA-PKZ0-E-PI

Motor-protective circuit breakers

PKZM0 switching capacity

Moeller series






Switching capacity of circuit breakers from serial no. 04 and up

Rated uninterrupted current I_u

Rated conditional short-circuit current I_q IEC/EN 60947-4-1

Rated ultimate short-circuit breaking capacity I_{cu} IEC/EN 60947-2

Rated operational short-circuit breaking capacity I_{cs} IEC/EN 60947-2

I_u A	230 V					400 V					440 V					500 V					690 V				
I_q kA	I_{cu} kA	I_{cs} kA	A ¹⁾	I_q kA	I_{cu} kA	I_{cs} kA	A ¹⁾	I_q kA	I_{cu} kA	I_{cs} kA	A ¹⁾	I_q kA	I_{cu} kA	I_{cs} kA	A ¹⁾	I_q kA	I_{cu} kA	I_{cs} kA	A ¹⁾	I_q kA	I_{cu} kA	I_{cs} kA	A ¹⁾		
PKZM0, PKZM0...-T, PKM0 with type 1 and 2 coordination																									
0.16 - 1	150	150	150	N	150	150	150	N	150	150	150	N	150	150	150	N	150	150	150	N	150	150	150	N	
1.6	150	150	150	N	150	150	150	N	150	150	150	N	150	150	150	N	150	150	150	N	150	150	150	N	
2.5	150	150	150	N	150	150	150	N	150	150	150	N	150	150	150	N	5	5	5	50	5	5	5	50	
4	150	150	150	N	150	150	150	N	150	150	150	N	150	150	150	N	3	3	3	50	3	3	3	50	
6.3	150	150	150	N	150	150	150	N	150	150	150	N	150	150	150	N	42	42	42	N	3	3	3	50	
10	150	150	150	N	150	150	150	N	150	150	150	N	50	50	50	50	42	42	11	50	3	3	2	50	
12	50	50	38	50	50	50	38	50	50	15	12	50	15	15	4	50	3	3	2	50	3	3	2	50	
16	50	50	38	50	50	50	38	50	50	15	12	50	15	15	4	50	3	3	2	50	3	3	2	50	
20	50	50	38	50	50	50	38	50	50	10	3	50	10	3	3	50	3	3	1	50	3	3	1	50	
25	50	50	38	50	50	50	38	50	50	10	3	50	10	3	3	50	3	3	1	50	3	3	1	50	
32	50	40	10	50	50	40	10	50	50	10	3	50	10	3	3	50	3	3	1	50	3	3	1	50	


PKZM0 (PKZM0...-T, PKM0) + CL-PKZ0

0.16 - 1		N		N		N			N			20	N		
1.6		N		N		N			N			20	N		
2.5		N		N		N			N			20	20	20	N
4		N		N		N			N			20	20	20	N
6.3		N		N		N				50	N	20	20	20	N
10		N		N		N				20	N	20	20	20	N
12		N		N		N				20	N	5	5	2.5	N
16		N		N		N				20	N	5	5	2.5	N
20		N		N		N	10	10	10	N		5	5	2.5	N
25		N		N		N	10	10	10	N		5	5	2.5	N
32		N		N		N	10	10	10	N		5	5	2.5	N

PKZM0 (PKZM0...-T, PKM0) + 2 CL-PKZ0

0.16 - 1		N		N			N				N						20	N		
1.6		N		N			N				N						20	N		
2.5		N		N			N				N						40	40	20	N
4		N		N			N				N						40	40	20	N
6.3		N		N			N					50	N				20	20	20	N
10		N		N			N					40	N				20	20	20	N
12		N		N			N					40	N				10	10	2.5	N
16		N		N			N					40	N				10	10	2.5	N
20		N		N			N				20	20	20	N			10	10	2.5	N
25		N		N			N				20	20	20	N			10	10	2.5	N
32		N		N			N				20	20	20	N			10	10	2.5	N

Notes

 No upstream protection necessary, as the device is intrinsically safe (100/150 kA range)

N Not required

¹⁾ Required back-up fuse if the short-circuit current exceeds the conditional rated short-circuit current of the devices ($I_{cc} \cdot I_q$).

Switching capacity of circuit breaker

Rated uninterrupted current I_u

Rated conditional short-circuit current I_q IEC/EN 60947-4-1

Rated ultimate short-circuit breaking capacity I_{cu} IEC/EN 60947-2

Rated operational short-circuit breaking capacity I_{cs} IEC/EN 60947-2

	230 V				400 V				440 V				500 V ²⁾				690 V			
I_u	I_q	I_{cu}	I_{cs}	A ¹⁾	I_q	I_{cu}	I_{cs}	A ¹⁾	I_q	I_{cu}	I_{cs}	A ¹⁾	I_q	I_{cu}	I_{cs}	A ¹⁾	I_q	I_{cu}	I_{cs}	A ¹⁾
A	kA	kA	kA		kA	kA	kA		kA	kA	kA		kA	kA	kA		kA	kA	kA	
PKZM01 with type 1 and 2 coordination																				
0.16 - 1	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50				
1.6	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50				
2.5	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50				
4	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50				
6.3	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50				
10	50	50	50	50	50	50	50	50	50	50	50	50	42	42	10	50				
12	50	50	10	50	50	50	10	50	15	15	10	50	15	15	10	50				
16	50	50	10	50	50	50	10	50	15	15	10	50	15	15	10	50				
20, 25	50	50	10	50	50	50	10	50	10	10	3	50								
PKZM4 with type 1 and 2 coordination																				
16	150		25	N	150		25	N	45	45	12	100	15	15	4	100	8	8	2.5	100
25	150		25	N	150		25	N	45	45	12	100	15	15	4	100	8	8	2.5	100
32	50	50	25	100	50	50	25	100	45	45	12	100	15	15	4	100	5	5	2.5	100
40	50	50	25	100	50	50	25	100	45	45	12	100	15	15	4	100	5	5	2.5	100
50	50	50	25	100	50	50	25	100	45	45	12	100	15	15	4	100	5	5	2.5	100
58	50	50	25	160	50	50	25	160	45	45	12	160	15	15	4	160	5	5	2.5	160
63	50	50	25	160	50	50	25	160	45	45	12	160	15	15	4	160	5	5	2.5	160

Notes

No upstream protection necessary, as the device is intrinsically safe (100/150 kA range)

¹⁾ Fuse (A gG/gL) for increasing the breaking capacity of the motor-protective circuit breaker to 100 kA

N Not required

	230/400V			415 V			440 V			500 V			525 V			690 V		
I_u	I_q	I_{cu}	I_{cs}	I_q	I_{cu}	I_{cs}	I_q	I_{cu}	I_{cs}	I_q	I_{cu}	I_{cs}	I_q	I_{cu}	I_{cs}	I_q	I_{cu}	I_{cs}
A	kA	kA	kA	kA	kA	kA	kA	kA	kA	kA	kA	kA	kA	kA	kA	kA	kA	kA
PKE12/XTU(A)-... with type 1 and 2 coordination																		
1.2	100	N	N	50	N	N	15	N	N	10	N	N	10	N	N	3	N	N
4	100	N	N	50	N	N	50	N	N	10	N	N	10	N	N	3	N	N
12	100	N	N	50	N	N	20	N	N	20	N	N	10	N	N	3	N	N
PKE32/XTU(A)-... with type 1 and 2 coordination																		
32	100			50	N	N	25	N	N	6	N	N	3	N	N	3	N	N
PKE32/XTUCP(A)-... with type 1 and 2 coordination																		
36	N	50	12.5	N	-	-	N	-	-	N	-	-	N	-	-	N	-	-
PKE65/XTU(W)(A) with type 1 and 2 coordination																		
32 - 65	80	N	N	80	N	N	45	N	N	15	N	N	10	N	N	5	N	N
Motor starter combinations MSC-DE(A)-...-M7(12)... with type 1 coordination																		
1.2	100	N	N	50	N	N	15	N	N	10	N	N	-	N	N	-	N	N
4	100	N	N	50	N	N	50	N	N	50	N	N	-	N	N	-	N	N
12	100	N	N	50	N	N	50	N	N	20	N	N	-	N	N	-	N	N
Motor starter combinations MSC-DE(A)-...-M17(32)... with type 1 coordination																		
12	100	N	N	65	N	N	65	N	N	50	N	N	50	N	N	3	N	N
32	100	N	N	100	N	N	50	N	N	50	N	N	5	N	N	5	N	N
Motor starter combinations MSC-DE(A)-...-M17(32)... with type 2 coordination																		
1.2	100	N	N	65	N	N	65	N	N	10	N	N	3	N	N	-	N	N
4	100	N	N	65	N	N	65	N	N	50	N	N	3	N	N	-	N	N
12	100	N	N	65	N	N	65	N	N	50	N	N	50	N	N	-	N	N
32	100	N	N	100	N	N	65	N	N	50	N	N	20	N	N	5	N	N
PKE12/XTU-...+DILM17+CL-PKZ0 with type 2 coordination																		
1.2 - 12	100	N	N	100	N	N	100	N	N	100	N	N	50	N	N	-	N	N
PKE32/XTU-32+DILM32+CL-PKZ0 with type 2 coordination																		
32	100	N	N	100	N	N	100	N	N	100	N	N	50	N	N	25	N	N
PKE65/XTU(A)-65+DILM(40, 50)65 with type 2 coordination																		
65	80	N	N	50	N	N	50	N	N	50	N	N	-	N	N	10	N	N



xStart motor starter system - quick and flexible installation and connection



Download the catalog:
Eaton.com/catalog

Our xStart system offers a comprehensive range of products for starting motors: from contactors to soft starters and from bimetal relays to motor-protective circuit breakers with electronic wide-range overload protection. All standard components can be combined with simple mechanical and electronic connectors. Three-phase busbar links act as convenient aids for motor current wiring. SmartWire-DT also replaces the control current wiring and integrates comprehensive communication options into the system.

Our pre-assembled motor starter combinations cover the most common motor ratings and control voltages. The device combinations can be installed directly. For maximum time savings during installation, the motor starter combinations with Push-in technology can also be wired without any tools.

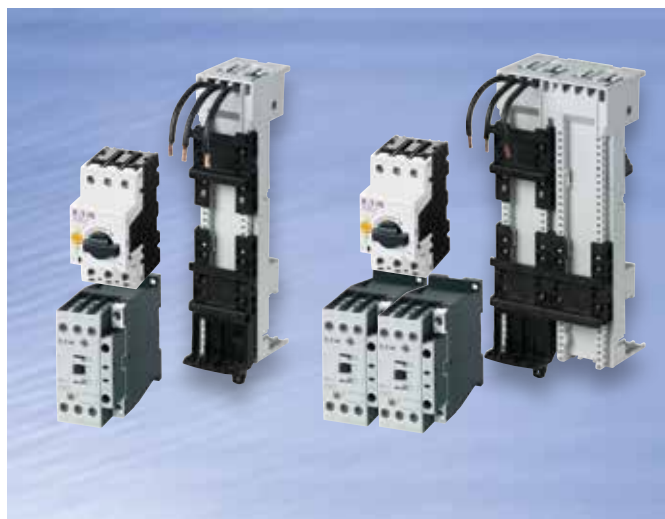




Assemble motor starter combinations in only one quick step

In the case of xStart switchgear up to 15.5 A, we have replaced the conventional main and control current wiring with plug-in connectors. The individual PKZM0/PKE standard components and the wiring sets can be used to assemble DOL, reversing or soft starters with screw terminals within seconds.

The wiring sets include the complete main current wiring between the motor-protective circuit breaker and the DIL contactor up to 15.5 A or the DS7 soft starter. In addition to the main electrical connection, the PKZM0-XRM12 reversing starter set includes an electrical interlock and a reversing bridge.



Flexible power distribution

Whether it's motor starters, soft starters or motor-protective circuit breakers, assembling a flexible power supply/distribution system is quick, safe and easy thanks to our dedicated BBA busbar adapters. Apart from matching adapters for motor-protective circuit breakers, such as the PKZM0, PKE and PKZM4 with rated currents from 0.1 to 63 A, we also offer additional universal adapters up to 80 A. Thanks to their standardized dimensions, they are compatible with all 60 mm rail systems from leading manufacturers. And their UL/CSA approvals mean that they are certified for both the European and North American markets. Our new busbar adapters can accommodate motor starter combinations that have been assembled from our product range using the combination plug-in technology. They are available as individual units or as complete assemblies including motor starters.

→ Complete solutions save both time and money



Simple, compact and fast thanks to Push-in terminals

In addition to the motor starter combinations with screw connections, we also offer pre-assembled combinations based on our portfolio of motor starter components with Push-in technology. This results in compact device combinations that can be installed and wired without any tools, for maximum time savings.



Important for exports to North America: The U.S. National Electrical Code has been updated (NEC 2011).

In the U.S., the frequently used UL 508 Type E devices (manual self-protected combination motor controllers) must now be equipped with a lockable handle, as has been the case in Canada for some time. The handles on Eaton's motor-protective circuit breakers can thus be exchanged for lockable ones.



PKE motor starter combinations, all information retrievable

Via SmartWire-DT, the PKE motor-protective circuit breaker with electronic wide-range overload protection can be integrated into the communication structure of the automation system in just a few steps. This provides deeper insights into the motor feeder load and opens up additional options for optimizing system availability. The associated SmartWire-DT modules can be used to establish the communication connection for compact PKE motor starter combinations with a rated motor current of up to 32 A. They also facilitate direct connection to PKE motor-protective circuit breakers with a rated motor current of up to 65 A.



Connection technology inside the control panel

For manufacturers of machinery and systems, the challenge is to strike a balance between maximizing functionality and optimizing costs. Our SmartWire-DT communication system for industrial switchgear has been designed with expansion in mind, both inside and outside the control cabinet, from control to protection, switching, actuation, operation and monitoring.

EMS2 – five functions in a single device

The EMS2 electronic motor starter can handle DOL and reversing starts, while offering wide-range overload protection and an emergency-stop function (SiI3). Additional functions can be implemented via SmartWire-DT.



Electronic motor protection

With its two current ranges, the electronic motor starter can be used to protect motors from 0.06 kW to 3 kW (400 V / 50 Hz).



Motor starters with a long service life

The integrated hybrid switching technology not only ensures minimal wear during start-up, but also increases the contact life by a factor of 10, to approximately 30 million operations.



Integrated reversing starter

The electronic motor starter enables both clockwise and counterclockwise rotation.



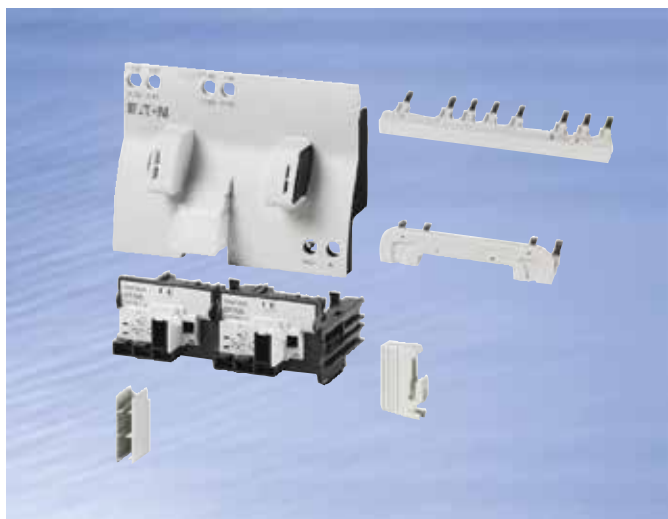
Safe stop

Thanks to its dual-channel design, the electronic motor starter ensures safe stops up to SIL3/PLe.



Intelligent networking

The SmartWire-DT interface replaces the conventional control wiring and also supplies additional information.



Multifunctional interface

Thanks to the integrated interface of the combination plug-in technology, using the DILM(C) contactors up to 15.5 A to assemble applications such as reversing starters or star-delta combinations offers unbeatable time savings. The accessories and wiring sets of the combination plug-in technology also offer the option of motor interference suppression, customized contactor control by means of printed-board contacts, or connection of the external motor cable to the contactor via a PE connection.



Lean solutions

DOL/reversing starters based on standard components

We offer DOL starters assembled from standard components in four compact frame sizes. The contactor and the circuit breaker always have the same compact width, so that no space is wasted inside the control cabinet. Our convenient MSC starters with combination plug-in technology for DOL and reversing starters are available for applications up to 15 A. The mechanical connector ensures a secure connection, while the electrical connector provides maximum safety. Additionally, our reversing starters from 16 to 32 A and DOL starters from 0.16 to 32 A can be connected by means of ready-made mounting connectors, which minimizes errors and reduces the time required for wiring.

- Up to 170 A, the contactor and the circuit breaker always have the same compact width, which makes for a particularly space-saving installation of the motor starter inside the control cabinet.
- The PKE motor-protective circuit breaker with electronic wide-range overload protection can be used to assemble compact motor starters up to 65 A.

Tested motor starter combinations: quick selection – easy ordering

Enter the motor data



Select the motor starter



Select the contactor



The Eaton configurator for motor starter combinations helps you to put together your direct or reversing starters with just a few clicks! Regardless of whether you prefer a fused or fuseless installation, electromechanical motor starters or electronic motor starters. Based on your selection of motor data and your application, you will be guided through the other options for suitable switchgear and combinations. A pictorial representation of the circuit diagram and the devices themselves, as well as the links to the corresponding data sheets, will support your compilation.

The configurator also offers the option of saving the parts list of the configured motor starter combinations as an order list including wiring sets. Send this by email to your sales partner- it couldn't be easier.

As an EPLAN user, you can also find the motor starter configurator in the EPLAN Data Portal. There you can also download the macros required for project planning.







Eaton.com/config/motorstarter





Motor starter combinations

Standard

Moeller series

		Motor data			Motor-pro- tective circuit breaker	Contactor Type 1 coordination	Contactor Type 1 coordination
		AC-3 380 V 400 V 415 V P	Rated opera- tional current 400 V I _e	Rated short- circuit current 380-415 V I _q kA			
		kW	A				
PKZM0 ...+DILM7 to DILM15		0.06	0.21	150/50*	PKZM0-0,25	DILM7-...	DILM7-...
		0.09	0.31	150/50*	PKZM0-0,4	DILM7-...	DILM7-...
		0.12	0.41	150/50*	PKZM0-0,63	DILM7-...	DILM7-...
		0.18	0.6	150/50*	PKZM0-0,63	DILM7-...	DILM7-...
		0.25	0.8	150/50*	PKZM0-1	DILM7-...	DILM7-...
		0.37	1.1	150/50*	PKZM0-1,6	DILM7-...	DILM7-...
		0.55	1.5	150/50*	PKZM0-1,6	DILM7-...	DILM7-...
PKZM0 ...+DILM17 to DILM32		0.75	1.9	150/50*	PKZM0-2,5	DILM7-...	DILM7-...
		1.1	2.6	150/50*	PKZM0-4	DILM7-...	DILM7-...
		1.5	3.6	150/50*	PKZM0-4	DILM7-...	DILM7-...
		2.2	5	150/50*	PKZM0-6,3	DILM7-...	DILM7-...
		3	6.6	150/50*	PKZM0-10	DILM7-...	DILM17-...
		4	8.5	150	PKZM0-10	DILM9-...	DILM17-...
		5.5	11.3	50	PKZM0-12	DILM12-...	DILM17-...
PKZM4 ...+DILM38 to DILM65		7.5	15.2	50	PKZM0-16	DILM17-...	DILM17-...
		11	21.7	50	PKZM0-25	DILM25	DILM25
		15	29.3	50	PKZM0-32	DILM32-...	DILM32-...
		18.5	36	50	PKZM4-40	DILM40	DILM40
		22	41	50	PKZM4-50	DILM50	DILM50
		30	55	50	PKZM4-58	DILM65	DILM65
		34	63	50	PKZM4-63	DILM65	DILM65
NZM...+DILM72 to DILM500		37	68	50	NZMN1-M80	DILM80	DILM80
		45	81	50	NZMN1-M100	DILM95	DILM95
		55	99	50	NZMN1-M100	DILM115	DILM115
		75	134	50	NZMN2-M160	DILM150	DILM150
		90	161	50	NZMN2-M200	DILM185A	DILM185A
		110	196	50	NZMN2-M200	DILM225A	DILM225A
		132	231	50	NZMN3-MX350	DILM250	DILM250
		160	279	50	NZMN3-MX350	DILM300A	DILM300A
		200	349	50	NZMN3-MX350	DILM400	DILM400
		250	437	50	NZMN3-ME450	DILM500	DILM500

*Type 2 coordination

		Motor data			Motor-pro- tective circuit breaker	Contactor Type 1 coordination	Contactor Type 1 coordination
		AC-3 380 V 400 V 415 V P	Rated opera- tional current 400 V I_e	Rated short-circuit current 380-415 V I_q			
		kW	A	kA			
PKE ...+DILM7 to DILM12		0.06	0.21	100	PKE12/XTU-1,2	DILM7-...	DILM17-...
		0.09	0.31	100	PKE12/XTU-1,2	DILM7-...	DILM17-...
		0.12	0.41	100	PKE12/XTU-1,2	DILM7-...	DILM17-...
		0.18	0.6	100	PKE12/XTU-1,2	DILM7-...	DILM17-...
		0.25	0.8	100	PKE12/XTU-1,2	DILM7-...	DILM17-...
		0.37	1.1	100	PKE12/XTU-1,2	DILM7-...	DILM17-...
PKE ...+DILM17 to DILM32		0.55	1.5	100	PKE12/XTU-4	DILM7-...	DILM17-...
		0.75	1.9	100	PKE12/XTU-4	DILM7-...	DILM17-...
		1.1	2.6	100	PKE12/XTU-4	DILM7-...	DILM17-...
		1.5	3.6	100	PKE12/XTU-4	DILM7-...	DILM17-...
		2.2	5	100	PKE12/XTU-12	DILM7-...	DILM17-...
		3	6.6	100	PKE12/XTU-12	DILM7-...	DILM17-...
		4	8.5	100	PKE12/XTU-12	DILM9-...	DILM17-...
PKE 65 ...+DILM40 to DILM65		5.5	11.3	100	PKE12/XTU-12	DILM12-...	DILM17-...
		7.5	15.2	100	PKE32/XTU-32	DILM17-...	DILM17-...
		11	21.7	100	PKE32/XTU-32	DILM25	DILM25
		15	29.3	100	PKE32/XTU-32	DILM32-...	DILM32-...
		18.5	36	80	PKE65/XTUW-65	DILM40	DILM40
		22	41	80	PKE65/XTUW-65	DILM50	DILM50
		30	55	80	PKE65/XTUW-65	DILM65	DILM65
		34	63	80	PKE65/XTUW-65	DILM65	DILM65
NZM ...ME...+DILM80 to DILM500		37	68	100	NZMH2-ME90	DILM80	DILM80
		45	81	100	NZMH2-ME90	DILM95	DILM95
		55	99	100	NZMH2-ME140	DILM115	DILM115
		75	134	100	NZMH2-ME140	DILM150	DILM150
		90	161	100	NZMH2-ME220	DILM185A	DILM185A
		110	196	100	NZMH2-ME220	DILM225A	DILM225A
		132	231	100	NZMH3-ME350	DILM250	DILM250
		160	279	100	NZMH3-ME350	DILM300A	DILM300A
		200	349	100	NZMH3-ME350	DILM400	DILM400
		250	437	100	NZMH3-ME450	DILM500	DILM500

Motor starter combinations

DOL and reversing starters (Push-in terminals)



Moeller series

Max. load rating	Rated uninterrupted current	Setting range	Motor starter	Motor starter
		Overload release	230 V 50 Hz, 240 V 60 Hz	24 V DC
AC-3 [kW]	I_u	I_r	Part no.	Part no.
380 V/400 V/415 V	A	A	Article no.	Article no.

DOL starter – MSC-D-PI complete devices

	0.06	0.21	0.16 - 0.25	MSC-D-0,25-M7(230V50HZ)-PI 199561	MSC-D-0,25-M7(24VDC)-PI 199572
	0.09	0.31	0.25 - 0.4	MSC-D-0,4-M7(230V50HZ)-PI 199562	MSC-D-0,4-M7(24VDC)-PI 199573
	0.12	0.41	0.4 - 0.63	MSC-D-0,63-M7(230V50HZ)-PI 199563	MSC-D-0,63-M7(24VDC)-PI 199574
	0.25	0.8	0.63 - 1	MSC-D-1-M7(230V50HZ)-PI 199564	MSC-D-1-M7(24VDC)-PI 199575
	0.55	1.1	1 - 1.6	MSC-D-1,6-M7(230V50HZ)-PI 199565	MSC-D-1,6-M7(24VDC)-PI 199576
	0.75	1.9	1.6 - 2.4	MSC-D-2,45-M7(230V50HZ)-PI 199566	MSC-D-2,45-M7(24VDC)-PI 199577
	1.5	2.6	2.5 - 4	MSC-D-4-M7(230V50HZ)-PI 199567	MSC-D-4-M7(24VDC)-PI 199578
	2.2	5	4 - 6.3	MSC-D-6,3-M7(230V50HZ)-PI 199568	MSC-D-6,3-M7(24VDC)-PI 199579
	3	6.6	6.3 - 10	MSC-D-10-M9(230V50HZ)-PI 199569	MSC-D-10-M9(24VDC)-PI 199580
	4	8.5			
	5.5	11.3	8 - 12	MSC-D-12-M12(230V50HZ)-PI 199570	MSC-D-12-M12(24VDC)-PI 199581
	7.5	15.2	10 - 16	MSC-D-16-M15(230V50HZ)-PI 199571	MSC-D-16-M15(24VDC)-PI 199582
	3	11.3	6.3 - 10	MSC-D-10-M11(230V50HZ)-PI 199605	MSC-D-10-M11(24VDC)-PI 199610
	4				
	5.5	15.2	8 - 12	MSC-D-12-M14(230V50HZ)-PI 199606	MSC-D-12-M14(24VDC)-PI 199611
	7.5	15.2	10 - 16	MSC-D-16-M17(230V50HZ)-PI 199607	MSC-D-16-M17(24VDC)-PI 199612
	11	21.7	20 - 25	MSC-D-25-M25(230V50HZ)-PI 199608	MSC-D-25-M25(24VDC)-PI 199613
	15	29.3	25 - 32	MSC-D-32-M32(230V50HZ)-PI 199609	MSC-D-32-M32(24VDC)-PI 199614

Notes: The DOL starters (complete devices) consist of a PKZM0...-PI motor-protective circuit breaker and a DILM ...-PI contactor.

Reversing starters – MSC-R-PI complete devices

	0.06	0.21	0.16 - 0.25	MSC-R-0,25-M7(230V50HZ)-PI 199583	MSC-R-0,25-M7(24VDC)-PI 199594
	0.09	0.31	0.25 - 0.4	MSC-R-0,4-M7(230V50HZ)-PI 199584	MSC-R-0,4-M7(24VDC)-PI 199595
	0.12	0.41	0.4 - 0.63	MSC-R-0,63-M7(230V50HZ)-PI 199585	MSC-R-0,63-M7(24VDC)-PI 199596
	0.18	0.6			
	0.25	0.8	0.63 - 1	MSC-R-1-M7(230V50HZ)-PI 199586	MSC-R-1-M7(24VDC)-PI 199597
	0.37	1.1	1 - 1.6	MSC-R-1,6-M7(230V50HZ)-PI 199587	MSC-R-1,6-M7(24VDC)-PI 199598
	0.55	1.5			
	0.75	1.9	1.6 - 2.5	MSC-R-2,5-M7(230V50HZ)-PI 199588	MSC-R-2,5-M7(24VDC)-PI 199599
	1.1	2.6	2.5 - 4	MSC-R-4-M7(230V50HZ)-PI 199589	MSC-R-4-M7(24VDC)-PI 199600
	1.5	3.6			
	2.2	5	4 - 6.3	MSC-R-6,3-M7(230V50HZ)-PI 199590	MSC-R-6,3-M7(24VDC)-PI 199601
	4	8.5	6.3 - 10	MSC-R-10-M9(230V50HZ)-PI 199591	MSC-R-10-M9(24VDC)-PI 199602
	5.5	11.3	8 - 12	MSC-R-12-M12(230V50HZ)-PI 199592	MSC-R-12-M12(24VDC)-PI 199603
	7.5	15.2	10 - 16	MSC-R-16-M15(230V50HZ)-PI 199593	MSC-R-16-M15(24VDC)-PI 199604

Notes: The DOL starters (complete devices) consist of a PKZM0 ...-PI motor-protective circuit breaker and a DILM ...-PI contactor.



Breaking capacity of the PKZM0-...(S)PI(16/32), PKZM0-...-T-PI with type 1 and 2 coordination

Rated uninterrupted current I_U

Rated conditional short-circuit current I_q IEC/EN 60947-4-1

Rated ultimate short-circuit breaking capacity I_{CU} IEC/EN 60947-2

Rated operational short-circuit breaking capacity I_{CS} IEC/EN 60947-2






	230 V				400 V				440 V				500 V				690 V			
I_U A	I_q kA	I_{CU} kA	I_{CS} kA	A*)	I_q kA	I_{CU} kA	I_{CS} kA	A*)	I_q kA	I_{CU} kA	I_{CS} kA	A*)	I_q kA	I_{CU} kA	I_{CS} kA	A*)	I_q kA	I_{CU} kA	I_{CS} kA	A*)
0.16 - 1	150	150	150	N	150	150	150	N	150	150	150	N	150	150	150	N	150	150	150	N
1.6	150	150	150	N	150	150	150	N	150	150	150	N	150	150	150	N	150	150	150	N
2.5	150	150	150	N	150	150	150	N	150	150	150	N	150	150	150	N	5	5	5	50
4	150	150	150	N	150	150	150	N	150	150	150	N	150	150	150	N	3	3	3	50
6.3	150	150	150	N	150	150	150	N	150	150	150	N	42	42	42	50	3	3	2	50
10	150	150	150	N	150	150	150	N	50	50	50	50	42	42	11	50	3	3	2	50
12	50	50	38	50	50	50	38	50	50	15	12	50	15	15	4	50	3	3	2	50
16	50	50	38	50	50	50	38	50	50	15	15	50	15	15	4	50	3	3	2	50
20	50	50	38	50	50	50	38	50	50	10	3	50	10	3	3	50	3	3	1	50
25	50	50	38	50	50	50	38	50	50	10	3	50	10	3	3	50	3	3	1	50
32	50	40	10	50	50	40	10	50	50	10	3	50	10	3	3	50	3	3	1	50



*) Required back-up fuse, if the short-circuit current exceeds the conditional rated short-circuit current of the devices (I_{CS} is greater than I_q)

Motor starter combinations



DOL starters, reversing starters

Moeller series

Motor data				AC operation		DC operation	
Rated short-circuit current: 380 - 400 V				230 V, 50 Hz		24 V DC	
Type 1 coordination	Type 2 coordination		Setting range of overload release	Part no.	Article no.	Part no.	Article no.
I_q kA	I_q kA		I_r A 				
MSC-D complete devices							
	150	50	0.16 - 0.25	MSC-D-0,25-M7(230V50HZ)	281925	MSC-D-0,25-M7(24VDC)	283154
	150	50	0.25 - 0.4	MSC-D-0,4-M7(230V50HZ)	281926	MSC-D-0,4-M7(24VDC)	283155
	150	50	0.4 - 0.63	MSC-D-0,63-M7(230V50HZ)	281927	MSC-D-0,63-M7(24VDC)	283156
	150	50	0.63 - 1	MSC-D-1-M7(230V50HZ)	281929	MSC-D-1-M7(24VDC)	283158
	150	50	1 - 1.6	MSC-D-1,6-M7(230V50HZ)	283140	MSC-D-1,6-M7(24VDC)	283159
	150	50	1.6 - 2.5	MSC-D-2,5-M7(230V50HZ)	283142	MSC-D-2,5-M7(24VDC)	283161
	150	50	2.5 - 4	MSC-D-4-M7(230V50HZ)	283143	MSC-D-4-M7(24VDC)	283162
	150	50	4 - 6.3	MSC-D-6,3-M7(230V50HZ)	283145	MSC-D-6,3-M7(24VDC)	283164
	150	-	6.3 - 10	MSC-D-10-M7(230V50HZ)	283146	MSC-D-10-M7(24VDC)	283165
	150	-	6.3 - 10	MSC-D-10-M9(230V50HZ)	283147	MSC-D-10-M9(24VDC)	283166
	50	-	8 - 12	MSC-D-12-M12(230V50HZ)	283148	MSC-D-12-M12(24VDC)	283167
	50	-	10 - 16	MSC-D-16-M15(230V50HZ)	100414	MSC-D-16-M15(24VDC)	100415
	50	50	6.3 - 10	MSC-D-10-M17(230V50HZ)	101045	MSC-D-10-M17(24VDC)	101047
	50	50	8 - 12	MSC-D-12-M17(230V50HZ)	101046	MSC-D-12-M17(24VDC)	101048
	50	50	10 - 16	MSC-D-16-M17(230V50HZ)	283150	MSC-D-16-M17(24VDC)	283168
	50	50	20 - 25	MSC-D-25-M25(230V50HZ)	283151	MSC-D-25-M25(24VDC)	283169
	50	50	25 - 32	MSC-D-32-M32(230V50HZ)	283152	MSC-D-32-M32(24VDC)	283170
MSC-R complete devices							
	150	50	0.16 - 0.25	MSC-R-0,25-M7(230V50HZ)	283171	MSC-R-0,25-M7(24VDC)	283190
	150	50	0.25 - 0.4	MSC-R-0,4-M7(230V50HZ)	283172	MSC-R-0,4-M7(24VDC)	283191
	150	50	0.4 - 0.63	MSC-R-0,63-M7(230V50HZ)	283173	MSC-R-0,63-M7(24VDC)	283192
	150	50	0.63 - 1	MSC-R-1-M7(230V50HZ)	283175	MSC-R-1-M7(24VDC)	283194
	150	50	1 - 1.6	MSC-R-1,6-M7(230V50HZ)	283176	MSC-R-1,6-M7(24VDC)	283195
	150	50	1.6 - 2.5	MSC-R-2,5-M7(230V50HZ)	283178	MSC-R-2,5-M7(24VDC)	283197
	150	50	2.5 - 4	MSC-R-4-M7(230V50HZ)	283179	MSC-R-4-M7(24VDC)	283198
	150	50	4 - 6.3	MSC-R-6,3-M7(230V50HZ)	283181	MSC-R-6,3-M7(24VDC)	283200
	150	-	6.3 - 10	MSC-R-10-M7(230V50HZ)	283182	MSC-R-10-M7(24VDC)	283201
	150	-	6.3 - 10	MSC-R-10-M9(230V50HZ)	283183	MSC-R-10-M9(24VDC)	283202
	50	-	8 - 12	MSC-R-12-M12(230V50HZ)	283184	MSC-R-12-M12(24VDC)	283203
	50	50	6.3 - 10	MSC-R-10-M17(230V50HZ)	101049	MSC-R-10-M17(24VDC)	101051
	50	50	8 - 12	MSC-R-12-M17(230V50HZ)	101050	MSC-R-12-M17(24VDC)	101052
	50	50	10 - 16	MSC-R-16-M17(230V50HZ)	283186	MSC-R-16-M17(24VDC)	283204
		50	50	20 - 25	MSC-R-25-M25(230V50HZ)	283187	MSC-R-25-M25(24VDC)
50		50	25 - 32	MSC-R-32-M32(230V50HZ)	283188	MSC-R-32-M32(24VDC)	283206

	Motor data		Setting range of overload release 	AC operation 230 V, 50 Hz		DC operation 24 V DC		
	Rated short-circuit current: 380 - 400 V			Part no.	Article no.	Part no.	Article no.	
	Type 1 coordination	Type 2 coordination						
	I _q kA	I _q kA	I _r A					
MSC-DE complete devices with PKE								
	100	-	0.3 - 1.2	MSC-DE-1,2-M7(230V50HZ)	121735	MSC-DE-1,2-M7(24VDC)	121736	
	100	-	1 - 4	MSC-DE-4-M7(230V50HZ)	121737	MSC-DE-4-M7(24VDC)	121738	
	100	-	3 - 12	MSC-DE-12-M7(230V50HZ)	121739	MSC-DE-12-M7(24VDC)	121740	
	100	-	3 - 12	MSC-DE-12-M9(230V50HZ)	121741	MSC-DE-12-M9(24VDC)	121742	
	100	-	3 - 12	MSC-DE-12-M12(230V50HZ)	121743	MSC-DE-12-M12(24VDC)	121744	
	100	100	3 - 12	MSC-DE-12-M17(230V50HZ)	121745	MSC-DE-12-M17(24VDC)	121746	
	100	100	8 - 32	MSC-DE-32-M17(230V50HZ)	121747	MSC-DE-32-M17(24VDC)	121748	
	100	100	8 - 32	MSC-DE-32-M25(230V50HZ)	121749	MSC-DE-32-M25(24VDC)	121750	
	100	100	8 - 32	MSC-DE-32-M32(230V50HZ)	121751	MSC-DE-32-M32(24VDC)	121752	

Combination motor starter, UL 60947-4-1, Type F / Type E³

Maximum motor output		Setting range		Rated short-circuit breaking capacity I_{cn}			Incoming terminal ²⁾	Motor-protective circuit breaker	Contactor
Three-phase current HP = PS		Overload release	Short-circuit release	240 V	480 V	600 V	Part no.	Part no.	Part no.
200 V	230 V	460 V	575 V						
208 V	240 V	480 V	600 V		277 V	347 V			
HP	HP	HP	HP	I_r A 	I_{rm} A 	kA	kA	kA	

PKZM0, DIL, BK modules

1)				0.1 - 0.16	2.2	50	50	50	BK25/3-PKZ0	PKZM0-0,16	DILEM...(...)
				0.1 - 0.16	2.2	50	50	18	BK25/3-PKZ0	PKZM0-0,16	DILM7-...(...)
				0.16 - 0.25	3.4	50	50	50	BK25/3-PKZ0	PKZM0-0,25	DILEM...(...)
				0.16 - 0.25	3.4	50	50	18	BK25/3-PKZ0	PKZM0-0,25	DILM7-...(...)
				0.25 - 0.4	5.6	50	50	50	BK25/3-PKZ0	PKZM0-0,4	DILEM...(...)
				0.25 - 0.4	5.6	50	50	18	BK25/3-PKZ0	PKZM0-0,4	DILM7-...(...)
				0.4 - 0.63	8.8	50	50	50	BK25/3-PKZ0	PKZM0-0,63	DILEM...(...)
				0.4 - 0.63	8.8	50	50	18	BK25/3-PKZ0	PKZM0-0,63	DILM7-...(...)
				1/2	1/2	0.63 - 1	14	50	BK25/3-PKZ0	PKZM0-1	DILEM...(...)
				1/2	1/2	0.63 - 1	14	50	BK25/3-PKZ0	PKZM0-1	DILM7-...(...)
1/2	1/2	1	1 1/2	1 - 1.6	22	50	50	50	BK25/3-PKZ0	PKZM0-1,6	DILEM...(...)
		1	1 1/2	1 - 1.6	22	50	50	18	BK25/3-PKZ0	PKZM0-1,6	DILM7-...(...)
		1	1 1/2	1.6 - 2.5	35	50	50	50	BK25/3-PKZ0	PKZM0-2,5	DILEM...(...)
		1	1 1/2	1.6 - 2.5	35	50	50	18	BK25/3-PKZ0	PKZM0-2,5	DILM7-...(...)
		2	3	2.5 - 4	56	50	50	50	BK25/3-PKZ0	PKZM0-4	DILEM...(...)
		2	3	2.5 - 4	56	50	50	18	BK25/3-PKZ0	PKZM0-4	DILM7-...(...)
		3	5	4 - 6.3	88	50	50	50	BK25/3-PKZ0	PKZM0-6,3	DILEM...(...)
		3	5	4 - 6.3	88	65	65	18	BK25/3-PKZ0	PKZM0-6,3	DILM7-...(...)
		7 1/2	10	6.3 - 11	140	65	65	18	BK25/3-PKZ0	PKZM0-10	DILM9-...(...)
		7 1/2	-	9 - 12	168	65	65	-	BK25/3-PKZ0	PKZM0-12	DILM12-...(...)
3	3	10	-	10 - 16	224	65	65	-	BK25/3-PKZ0	PKZM0-16	DILM17-...(...)
5	5	10	-	16 - 20	280	18	18	-	BK25/3-PKZ0	PKZM0-20	DILM25-...(...)
5	7 1/2	15	-	20 - 25	350	18	18	-	BK25/3-PKZ0	PKZM0-25	DILM25-...(...)

PKZM4, DILM, BK modules

3	5	10	15	10 - 16	224	65	65	30	BK50/3-PKZ4-E	PKZM4-16	DILM17-...(...)
5	7 1/2	15	20	16 - 27	350	65	65	30	BK50/3-PKZ4-E	PKZM4-25	DILM25-...(...)
7 1/2	10	25	30	24 - 34	448	65	65	50	BK50/3-PKZ4-E	PKZM4-32	DILM32-...(...)
10	15	30	30	32 - 40	560	65	65	50	BK50/3-PKZ4-E	PKZM4-40	DILM40(...)
10	15	30	-	40 to 52	700	65	65	-	BK50/3-PKZ4-E	PKZM4-50	DILM50(...)
15	15	40	-	50 - 56	812	65	65	-	BK50/3-PKZ4-E	PKZM4-58	DILM65(...)
15	15	40	-	52 - 58	882	65	65	-	BK50/3-PKZ4-E	PKZM4-63	DILM65(...)

Notes

¹⁾ The motor output must be calculated on the basis of the rated current. Specified values according to NEC Table 430-150.



²⁾ For PKZM0-... Feed-in terminal BK25/3-PKZ0-E or LSA-PKZ-E, for PKZM0-...-SPI BK25/3-PPKZ0-E, for PKZM0-...-PI LSA-PKZ0-E-PI



³⁾ Type E for combinations PKZM0-16 ... PKZM0-25 with contactors DILM17 ... DILM25






Motor starter combinations

DOL starters, connection to SmartWire-DT

Moeller series

Motor data			Setting range of overload release	AC operation		DC operation	
Rated short-circuit current: 380 - 400 V				230 V, 50 Hz		24 V DC	
Type 1 coordination	Type 2 coordination			Part no.	Article no.	Part no.	Article no.
I_q kA	I_q kA	I_r A					
MSC-DEA complete devices with PKE, ready for SmartWire-DT connection							
	100	-	0.3 - 1.2	-	-	MSC-DEA-1,2-M7(24VDC)	121753
	100	-	1 - 4	-	-	MSC-DEA-4-M7(24VDC)	121754
	100	-	3 - 12	-	-	MSC-DEA-12-M7(24VDC)	121755
	100	-	3 - 12	-	-	MSC-DEA-12-M9(24VDC)	121756
	100	-	3 - 12	-	-	MSC-DEA-12-M12(24VDC)	121757
	100	100	3 - 12	-	-	MSC-DEA-12-M17(24VDC)	121758
	100	100	8 - 32	-	-	MSC-DEA-32-M17(24VDC)	121759
	100	100	8 - 32	-	-	MSC-DEA-32-M25(24VDC)	121760
	100	100	8 - 32	-	-	MSC-DEA-32-M32(24VDC)	121761

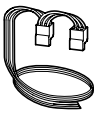
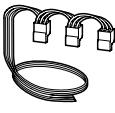
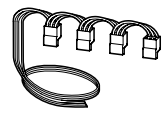
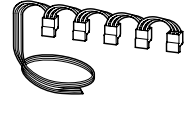





		Part no.	Article no.
SmartWire-DT PKE module (motor starter combination)			
For connecting MSC-DEA... PKE motor-starter combinations with PKE-XTUA-... trip blocks and a rated motor power of up to 15 kW/400 V to SmartWire-DT			
		<p>For mounting on a DILM contactor with 24 V DC control voltage. One module is needed for each contactor. An additional SWD contactor module is required to control reversing starters. 1 electrical interlock for surface mounting of reversing starters. 1-0-A switch for manual or automatic operation. Selectable overload relay function (ZMR) for switching off the contactor in the event of overload. The DILM 12-XRL and PKZM0-XRM12 wiring sets may not be used. If the contactor coils have a current consumption > 3 A (UL: 2 A), an additional power feed module must be used. A2 connections must not be bridged</p> <p>Messages Switch position of contactor/PKE/1-0-A switch Motor current in % Thermal motor image in % Trip indications (overload, short circuit, etc.) Set value of the overload release Set time lag (CLASS) Part no. of trip block</p> <p>Commands Contactor actuation Activation of the overload relay function (ZMR)</p>	
		PKE-SWD-32	126895

	Motor data		Setting range of overload release 	AC operation 230 V, 50 Hz		DC operation 24 V DC	
	Type 1 coordination	Type 2 coordination		Part no.	Article no.	Part no.	Article no.
	I _n kA	I _n kA					
PKZ and DILM complete devices on BBA for DOL starters							
	100	50	0.16 - 0.25	MSC-D-0,25-M7(230V50HZ)/BBA	102737	MSC-D-0,25-M7(24VDC)/BBA	102964
	100	50	0.25 - 0.4	MSC-D-0,4-M7(230V50HZ)/BBA	102738	MSC-D-0,4-M7(24VDC)/BBA	102965
	100	50	0.4 - 0.63	MSC-D-0,63-M7(230V50HZ)/BBA	102739	MSC-D-0,63-M7(24VDC)/BBA	102966
	100	50	0.63 - 1	MSC-D-1-M7(230V50HZ)/BBA	102950	MSC-D-1-M7(24VDC)/BBA	102967
	100	50	1 - 1.6	MSC-D-1,6-M7(230V50HZ)/BBA	102951	MSC-D-1,6-M7(24VDC)/BBA	102968
	100	50	1.6 - 2.5	MSC-D-2,5-M7(230V50HZ)/BBA	102952	MSC-D-2,5-M7(24VDC)/BBA	102969
	100	50	2.5 - 4	MSC-D-4-M7(230V50HZ)/BBA	102953	MSC-D-4-M7(24VDC)/BBA	102970
	100	50	4 - 6.3	MSC-D-6,3-M7(230V50HZ)/BBA	102954	MSC-D-6,3-M7(24VDC)/BBA	102971
	100	-	6.3 - 10	MSC-D-10-M7(230V50HZ)/BBA	102955	MSC-D-10-M7(24VDC)/BBA	102972
	100	-	6.3 - 10	MSC-D-10-M9(230V50HZ)/BBA	102956	MSC-D-10-M9(24VDC)/BBA	102973
	100	-	8 - 12	MSC-D-12-M12(230V50HZ)/BBA	102957	MSC-D-12-M12(24VDC)/BBA	102974
	50	-	10 - 16	MSC-D-16-M15(230V50HZ)/BBA	102958	MSC-D-16-M15(24VDC)/BBA	102975
	100	50	6.3 - 10	MSC-D-10-M17(230V50HZ)/BBA	102959	MSC-D-10-M17(24VDC)/BBA	102976
	100	50	8 - 12	MSC-D-12-M17(230V50HZ)/BBA	102960	MSC-D-12-M17(24VDC)/BBA	102977
	50	50	10 - 16	MSC-D-16-M17(230V50HZ)/BBA	102961	MSC-D-16-M17(24VDC)/BBA	102978
	50	50	20 - 25	MSC-D-25-M25(230V50HZ)/BBA	102962	MSC-D-25-M25(24VDC)/BBA	102979
	50	50	25 - 32	MSC-D-32-M32(230V50HZ)/BBA	102963	MSC-D-32-M32(24VDC)/BBA	102980
PKZ and DILM complete devices on BBA for reversing starters							
	100	50	0.16 - 0.25	MSC-R-0,25-M7(230V50HZ)/BBA	102981	MSC-R-0,25-M7(24VDC)/BBA	102997
	100	50	0.25 - 0.4	MSC-R-0,4-M7(230V50HZ)/BBA	102982	MSC-R-0,4-M7(24VDC)/BBA	102998
	100	50	0.4 - 0.63	MSC-R-0,63-M7(230V50HZ)/BBA	102983	MSC-R-0,63-M7(24VDC)/BBA	102999
	100	50	0.63 - 1	MSC-R-1-M7(230V50HZ)/BBA	102984	MSC-R-1-M7(24VDC)/BBA	103000
	100	50	1 - 1.6	MSC-R-1,6-M7(230V50HZ)/BBA	102985	MSC-R-1,6-M7(24VDC)/BBA	103001
	100	50	1.6 - 2.5	MSC-R-2,5-M7(230V50HZ)/BBA	102986	MSC-R-2,5-M7(24VDC)/BBA	103002
	100	50	2.5 - 4	MSC-R-4-M7(230V50HZ)/BBA	102987	MSC-R-4-M7(24VDC)/BBA	103003
	100	50	4 - 6.3	MSC-R-6,3-M7(230V50HZ)/BBA	102988	MSC-R-6,3-M7(24VDC)/BBA	103004
	100	-	6.3 - 10	MSC-R-10-M7(230V50HZ)/BBA	102989	MSC-R-10-M7(24VDC)/BBA	103005
	100	-	6.3 - 10	MSC-R-10-M9(230V50HZ)/BBA	102990	MSC-R-10-M9(24VDC)/BBA	103006
	100	-	8 - 12	MSC-R-12-M12(230V50HZ)/BBA	102991	MSC-R-12-M12(24VDC)/BBA	103007
	100	50	6.3 - 10	MSC-R-10-M17(230V50HZ)/BBA	102992	MSC-R-10-M17(24VDC)/BBA	103008
	100	50	8 - 12	MSC-R-12-M17(230V50HZ)/BBA	102993	MSC-R-12-M17(24VDC)/BBA	103009
	50	50	10 - 16	MSC-R-16-M17(230V50HZ)/BBA	102994	MSC-R-16-M17(24VDC)/BBA	103010
	50	50	20 - 25	MSC-R-25-M25(230V50HZ)/BBA	102995	MSC-R-25-M25(24VDC)/BBA	103011
	50	50	25 - 32	MSC-R-32-M32(230V50HZ)/BBA	102996	MSC-R-32-M32(24VDC)/BBA	103012



Function		Rated operational power AC-53a	Setting range Overload release	Connection system	Operating voltage 24 V DC Part no. Article no.	Operating voltage 230 V AC Part no. Article no.
		380 V 400 V 415 V P kW	I _r A 			
EMS2 electronic motor starter						
Motor protection						
Switching mode: safety output stage with bypass, three-phase cut-off.						
Emergency stop via an additional enable terminal up to SIL3/PLe.						
DOL starter						
		0.06 - 0.75	0.18 - 2.4	Push-in terminals	EMS2-DO-T-2,4-24VDC 192391	
	Emergency stop	0.06 - 1.1	0.18 - 3		EMS2-DOS-T-3-24VDC ^{1) 2)} 192393	
		0.55 - 3	1.5 - 7 (AC-53a) 9 (AC-51)		EMS2-DO-T-9-24VDC 192395	
	Emergency stop		1.5 - 7 (AC-53a) 9 (AC-51)		EMS2-DOS-T-9-24VDC ^{1) 2)} 192397	
For connection to SmartWire-DT for extended diagnostics, motor current can also be adjusted via SmartWire-DT						
		0.06 - 1.1	0.18 - 3		EMS2-DO-T-3-SWD	
	Emergency stop	0.06 - 1.1	0.18 - 3		EMS2-DOS-T-3-SWD ^{1) 2)}	
		0.55 - 3	1.5 - 6.5 (AC-53a) 9 (AC-51)		EMS2-DO-T-9-SWD	
	Emergency stop		1.5 - 7 (AC-53a) 9 (AC-51)		EMS2-DOS-T-9-SWD ^{1) 2)}	
		0.06 - 0.75	0.18 - 2.4	Screw terminals	EMS2-DO-Z-2,4-24VDC 197160	EMS2-DO-Z-2,4-230VAC 197168
	Emergency stop	0.06 - 1.1	0.18 - 3		EMS2-DOS-Z-3-24VDC ^{1) 2)} 197162	
		0.55 - 3	1.5 - 6.5 (AC-53a) 9 (AC-51)		EMS2-DO-Z-9-24VDC 197164	EMS2-DO-Z-9-230VAC 197170
	Emergency stop		1.5 - 7 (AC-53a) 9 (AC-51)		EMS2-DOS-Z-9-24VDC ^{1) 2)} 197166	
Reversing starter						
		0.06 - 0.75	0.18 - 2.4	Push-in terminals	EMS2-RO-T-2,4-24VDC 192392	
	Emergency stop	0.06 - 1.1	0.18 - 3		EMS2-ROS-T-3-24VDC ^{1) 2)} 192394	
		0.55 - 3	1.5 - 6.5 (AC-53a) 9 (AC-51)		EMS2-RO-T-9-24VDC 192396	
	Emergency stop		1.5 - 7 (AC-53a) 9 (AC-51)		EMS2-ROS-T-9-24VDC ^{1) 2)} 192398	
For connection to SmartWire-DT for extended diagnostics, motor current can also be adjusted via SmartWire-DT						
		0.06 - 1.1	0.18 - 3		EMS2-RO-T-3-SWD	
	Emergency stop	0.06 - 1.1	0.18 - 3		EMS2-ROS-T-3-SWD ^{1) 2)}	
		0.55 - 3	1.5 - 7 (AC-53a) 9 (AC-51)		EMS2-RO-T-9-SWD	
	Emergency stop		1.5 - 7 (AC-53a) 9 (AC-51)		EMS2-ROS-T-9-SWD ^{1) 2)}	
		0.06 - 0.75	0.18 - 2.4	Screw terminals	EMS2-RO-Z-2,4-24VDC 197161	EMS2-RO-Z-2,4-230VAC 197169
	Emergency stop	0.06 - 1.1	0.18 - 3		EMS2-ROS-Z-3-24VDC ^{1) 2)} 197163	
		0.55 - 3	1.5 - 6.5 (AC-53a) 9 (AC-51)		EMS2-RO-Z-9-24VDC 197165	EMS2-RO-Z-9-230VAC 197171
	Emergency stop		1.5 - 7 (AC-53a) 9 (AC-51)		EMS2-ROS-Z-9-24VDC ^{1) 2)} 197167	
Reversing starter with integrated short-circuit protection						
		0.06 - 1.1	0.18 - 3	Screw terminals	EMS2-ROSF-Z-3-24VDC ^{1) 2)} 192399	
	Emergency stop	0.55 - 3	1.5 - 7 (AC-53a) 9 (AC-51)		EMS2-ROSF-Z-9-24VDC ^{1) 2)} 192400	
Notes		1) Explosion-proof (according to ATEX 94/9/EC) II (2) G [Ex db] [Ex eb] [Ex pxb] II (2) D [Ex tb] [Ex pb]			2) EC-type examination certificate, PTB 13 ATEX 3000	

Moeller series

	Poles	Devices Quantity	For use with	Part no.	Article no.
Mains voltage (50/60 Hz) U_{LN} : 200 (-10%) - 240 (+10%) V U_e = 1-phase / U_2 = 3-phase					
	3	2	EMS2-D0-Z EMS2-R0-Z	EMS2-XBR-Z-2	197172
			EMS2-D0-T EMS2-D0-T-SWD EMS2-R0-T EMS2-R0-T-SWD	EMS2-XBR-T-2	197176
			3	EMS2-D0-Z EMS2-R0-Z	EMS2-XBR-Z-3
EMS2-D0-T EMS2-D0-T-SWD EMS2-R0-T EMS2-R0-T-SWD			EMS2-XBR-T-3	197177	
		4	EMS2-D0-Z EMS2-R0-Z	EMS2-XBR-Z-4	197174
			EMS2-D0-T EMS2-D0-T-SWD EMS2-R0-T EMS2-R0-T-SWD	EMS2-XBR-T-4	197178
		5	EMS2-D0-Z EMS2-R0-Z	EMS2-XBR-Z-5	197175
			EMS2-D0-T EMS2-D0-T-SWD EMS2-R0-T EMS2-R0-T-SWD	EMS2-XBR-T-5	197179
	1	2 3 4 5	EMS2-...-T-... EMS2-...-Z-...	EMS-XBR-2 EMS-XBR-3 EMS-XBR-4 EMS-XBR-5	171268 171269 171270 171271
Control current connectors A=0.75 mm², blue, 2 m cable					
	3	2 3 4 5	EMS2-...-T-... EMS2-...-Z-...	EMS-XCW-2 EMS-XCW-3 EMS-XCW-4 EMS-XCW-5	172741 172742 172743 172744
Adapter Mounting rail adapter					
	3	1	EMS2-ROSF-...	EMS2-XTH	192401
Busbar adapter					
	3	1	EMS2-ROSF-...	EMS2-XBB-60	192408



HLR solid state relays

Eaton's HLR solid state relays are reliable, responsive and provide high accuracy and precise switching. Installing the relays is simple, fast and safe. Thanks to their compact size, they save additional space inside the control cabinet, allowing you to save both time and money.

As the relays produce very little electrical and acoustic noise, their operation is silent, meaning they are ideally suited for noise-sensitive environments, such as offices or hospitals. With no moving or mechanical parts, the solid state relays have a long service life and do not require regular maintenance.



Get more information

Rated current load		Input voltage		Output ratings	Dimensions		Part no.	Article no.
A		VAC	VDC	VAC	H x B x T (mm)	I _{2t}		
1-phase, DIN rail with integrated heat sink								
15			3-32VDC	230	110 x 17.8 x 103.5	525	HLR15/1(DC)230V	360038
15			4-32VDC	600	110 x 17.8 x 103.5	525	HLR15/1(DC)600V	360040
15			4-32VDC	600	110 x 17.8 x 103.5	6600	HLR15/1(DC)600V/S	360043
25			3-32VDC	230	110 x 17.8 x 103.5	1800	HLR25/1(DC)230V	360039
25			4-32VDC	600	110 x 17.8 x 103.5	1800	HLR25/1(DC)600V	360041
25	20-275VAC		24-190VDC	600	110 x 17.8 x 103.5	1800	HLR25/1(AC)600V	360045
40			4-32VDC	600	110 x 35.6 x 141	18000	HLR40/1(DC)600V/S	360042
3-phase, DIN rail with integrated heat sink								
20			4-32VDC	600	110 x 54 x 103	1800	HLR20/3(DC)600V	360046
20	20-275VAC		24-190VDC	600	110 x 54 x 103	1800	HLR20/3(AC)600V	360047
30			4-32VDC	600	110 x 72 x 126	6600	HLR30/3(DC)600V/S	360048
30	20-275VAC		24-190VDC	600	110 x 72 x 126	6600	HLR30/3(AC)600V/S	360049
1-phase, hockey puck								
25			3-32VDC	230	58.2 x 44.8 x 28.8	525	HLR25/1H(DC)230V	360050
25			4-32VDC	600	58.2 x 44.8 x 28.8	525	HLR25/1H(DC)600V	360051
50			3-32VDC	230	58.2 x 44.8 x 28.8	1800	HLR50/1H(DC)230V	360052
50			4-32VDC	600	58.2 x 44.8 x 28.8	1800	HLR50/1H(DC)600V	360053
50			4-32VDC	600	58.2 x 44.8 x 28.8	3200	HLR50/1H(DC)600V/S	360054
100			4-32VDC	600	58.2 x 44.8 x 28.8	6600	HLR100/1H(DC)600V/S	360055
125			4-32VDC	600	58.2 x 44.8 x 28.8	18000	HLR125/1H(DC)600V/S	360056

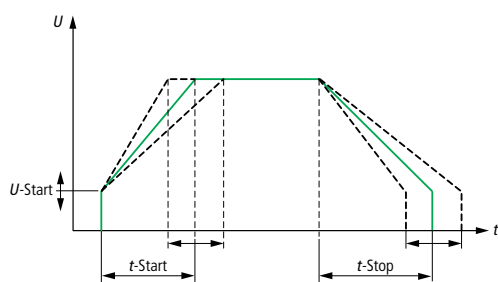


DS7

S811+

DS7 and S811+ soft starters

Soft starting for any application



Soft starters enable the drive to be optimally adapted to the application in question, and stop functions and the starting voltage can also be configured.

Soft starting is the modern alternative to star-delta starters.

Electronic soft starters meet customer requirements for smooth torque increases and targeted current reduction during the start-up phase. During the start-up phase, they control the power supply of a three-phase motor in such a way that it adapts to the load behavior of the machine. As a result, the mechanical equipment is accelerated gently, which has positive effects on the operating characteristics and work processes while avoiding any negative impact.

With the DS7 up to 200 A and the S811+ up to 1000 A, we offer two separate soft starter series. The DS7 is the ideal choice for standard applications, while the S811+ series offers maximum functionality.



DS7 soft starter – soft start, strong torque

Soft starters have now become a viable alternative to star-delta starters. The DS7 replaces the mechanical contactor and also adds a soft start function. Our patented technology ensures exceptionally smooth motor run-ups at higher torques than alternative solutions are able to deliver. Extended maintenance intervals and reduced operating costs are welcome side effects of this technology. The compact DS7 soft starter has been conceived for standard applications such as pumps, fans and small conveyor belts.



S811+ soft starter – a powerful yet compact device

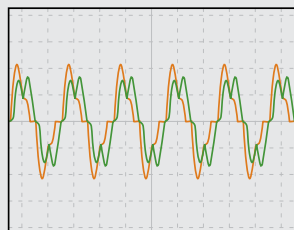
Thanks to the combination of three-phase control, internal bypass and comprehensive monitoring and protection features, the S811+ ensures smooth starts and safe continuous operation of three-phase motors, even in applications with high load torques. The devices can be connected by means of both in-line and delta connections. Using a digital operating and display unit, the soft starters of the S811+ series can be adapted to both simple and more demanding applications.

Consisting of only five sizes with rated currents from 37 A to 1000 A and mains voltages from 200 V to 690 V, the S811+ is one of the world's smallest, most compact soft starters.

Application examples

- Three-phase inductive loads
- Silent and smooth motor start in transportation and conveyor systems
- Smooth pump start reduces the load on the entire system (water hammer)
- Contactless switching of pumps in the harsh environments of chemical and tank facilities
- In fan drive applications, soft starting reduces wear on the V belts

Current flow during the uncontrolled phase



Standard control options:

Orange Symmetrical control with high DC components

New process from Eaton:

Green Asymmetrical control without any DC components

Asymmetrical control: it doesn't get any smoother than this

The special control mode (asymmetrical ignition control) of the soft start function avoids the DC components that normally occur when using two-phase soft starters (technology patented by Eaton). This suppresses the formation of an elliptical rotating field, which would lead to irregular acceleration of the motor and unnecessarily prolong the ramp-up time. The true running characteristics of the DS7 are thus comparable with those of a three-phase soft starter.

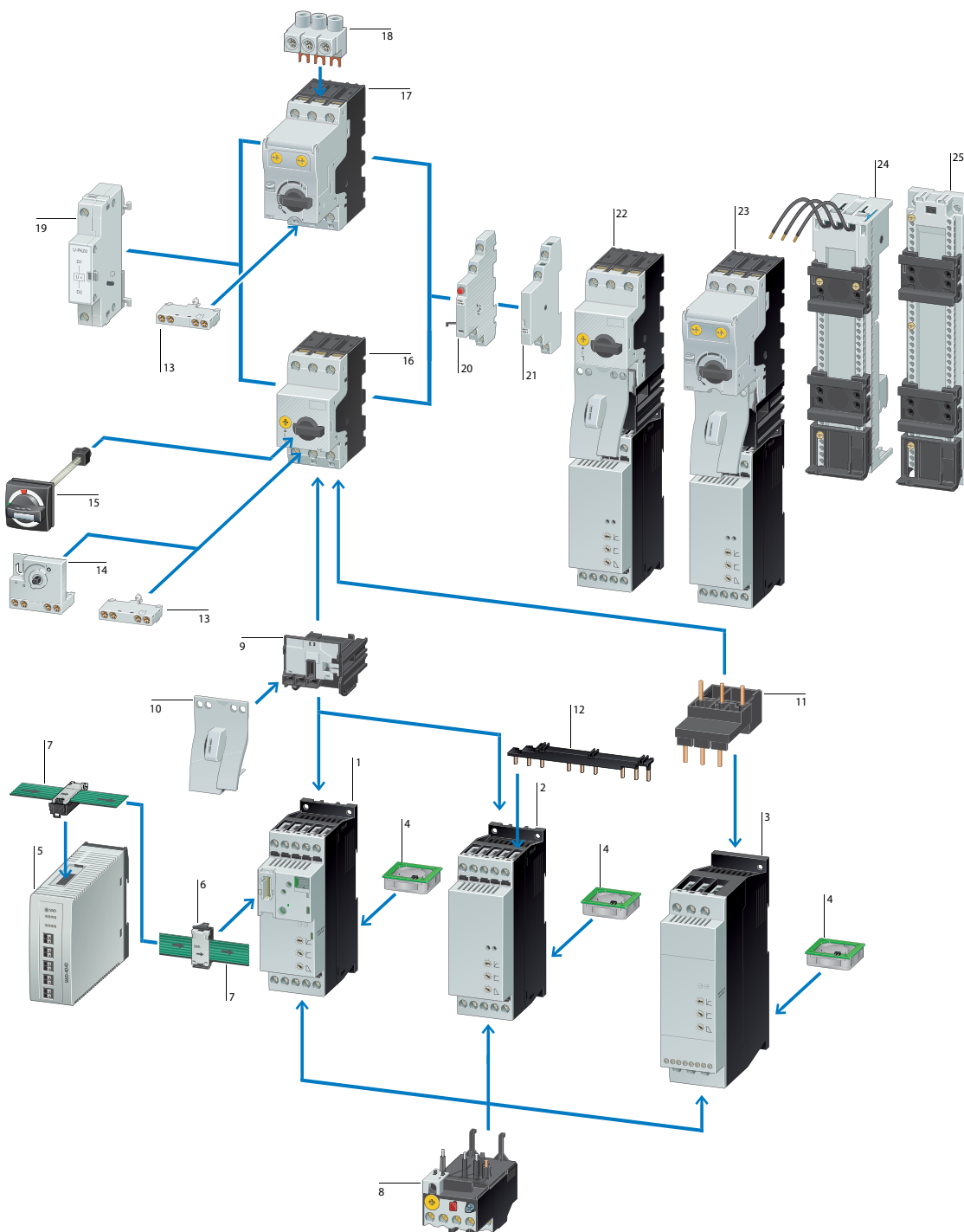
DS7 soft starters with SmartWire-DT – direct access to all parameters

Direct control access to all parameters of SmartWire-DT equipped soft starters for maximum ease of operation. Users are able to read and overwrite the potentiometer settings and to directly retrieve status, error and diagnostic messages, which ensures maximum data transparency. And thanks to the plug-in technology, which also includes the power supply, connecting the soft starter is fast and error-free.

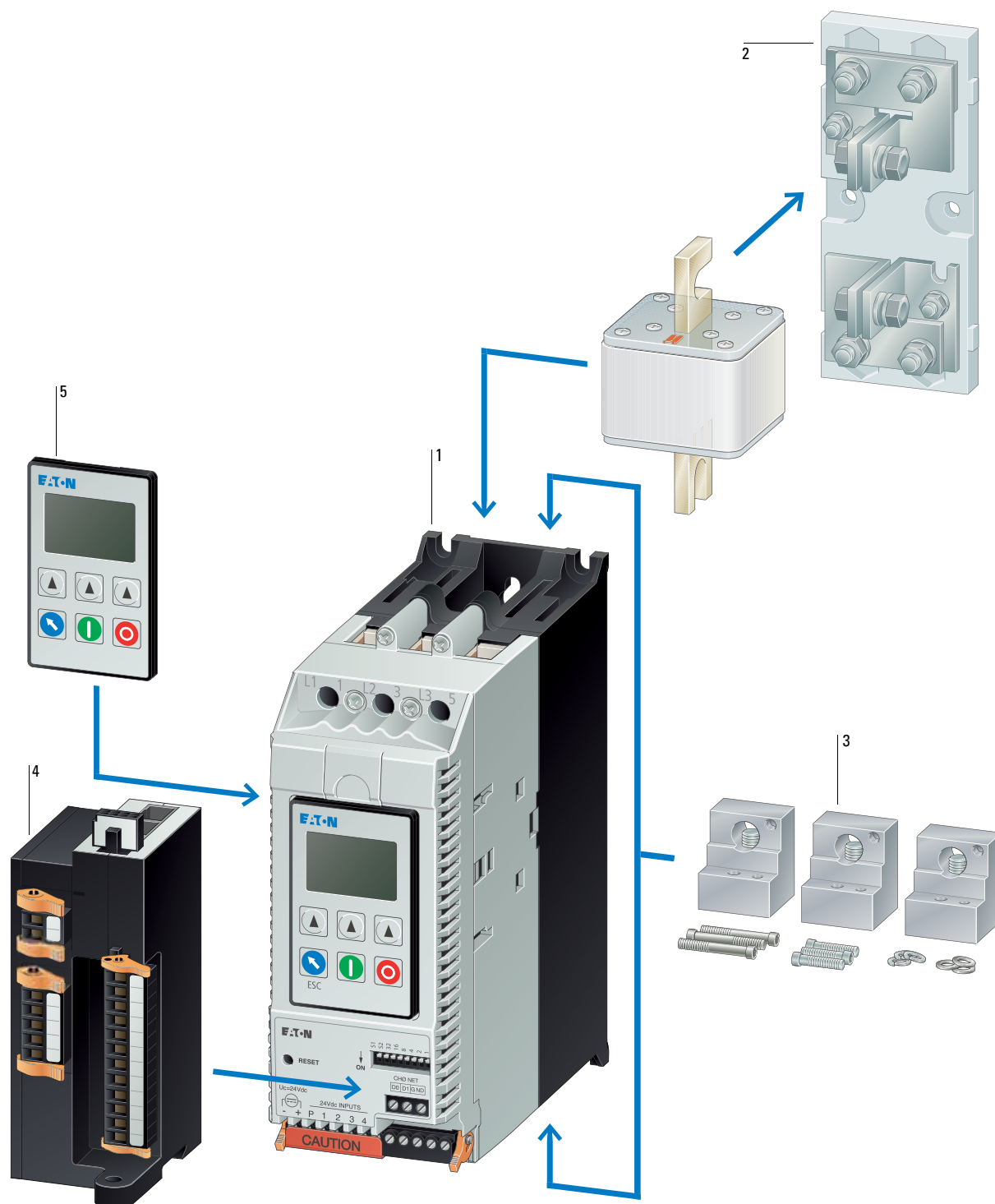
The benefits at a glance:

- Reduction of the I/O level
- Plug-in control wiring avoids wiring errors
- Integrated solution that doesn't require any additional options






- | | | | |
|-------|---|----|---|
| 1 | Soft starter DS7 with SmartWire-DT | 14 | Early-make auxiliary contacts |
| 2 | DS7 soft starter in frame size 1 for assigned motor currents up to 12 A | 15 | Door-coupling handle |
| 3 | DS7 soft starter in frame size 2 for assigned motor currents up to 32 A | 16 | PKZM0 motor-protective circuit breakers |
| 4 | Device fan (DS7-FAN-32) | 17 | PKE motor-protective circuit breaker |
| 5 | SmartWire-DT gateway | 18 | Incoming terminal |
| 6 | SmartWire-DT device plug | 19 | Voltage release |
| 7 | SmartWire-DT ribbon cable | 20 | Trip indicators |
| 8 | Motor-protection relays | 21 | Standard auxiliary contacts |
| 9, 10 | Wiring set PKZM0-XDM, with combination plug-in technology | 22 | Motor-starter combination with PKZ |
| 11 | PKZM0-XM wiring set | 23 | Motor-starter combination with PKE |
| 12 | Three-phase busbar link | 24 | Busbar adapter |
| 13 | Standard auxiliary contacts | 25 | DIN-rail adapter |





- 1 S811+ soft starter
- 2 Superfast semiconductor fuses
- 3 Terminal blocks
- 4 EtherNET/IP - Modbus/TCP adapter
- 5 External keypad

Rated operational current of the device (AC-53)			Part no.	Article no.	Part no.	Article no.
Assigned motor rating						
At 400 V, 50 Hz						
At 460 V, 60 Hz						
I_e	P	P				
A	kW	HP	U _c 24 V AC/DC U _s 24 V AC/DC Standard temperature range		U _c 24 V AC/DC U _s 24 V AC/DC Expanded temperature down to -40 °C	
Soft starters						
Soft starters for three-phase loads						
Mains voltage (50/60 Hz)						
U _{LN} 200 - 480 V AC						
4	1.5	2	DS7-340SX004N0-N	134847	DS7-340SX004N0-L	171740
7	3	5	DS7-340SX007N0-N	134849	DS7-340SX007N0-L	171741
9	4	5	DS7-340SX009N0-N	134910	DS7-340SX009N0-L	171742
12	5.5	10	DS7-340SX012N0-N	134911	DS7-340SX012N0-L	171743
16	7.5	10	DS7-340SX016N0-N	134912	DS7-340SX016N0-L	171744
24	11	15	DS7-340SX024N0-N	134913	DS7-340SX024N0-L	171745
32	15	25	DS7-340SX032N0-N	134914	DS7-340SX032N0-L	171746
41	22	30	DS7-340SX041N0-N	134916	DS7-340SX041N0-L	171747
55	30	40	DS7-340SX055N0-N	134917	DS7-340SX055N0-L	171748
70	37	50	DS7-340SX070N0-N	134918	DS7-340SX070N0-L	171749
81	45	60	DS7-340SX081N0-N	134919	DS7-340SX081N0-L	171750
100	55	75	DS7-340SX100N0-N	134920	DS7-340SX100N0-L	171751
135	75	100	DS7-340SX135N0-N	134921	DS7-340SX135N0-L	171752
160	90	125	DS7-340SX160N0-N	134922	DS7-340SX160N0-L	171753
200	110	150	DS7-340SX200N0-N	134923	DS7-340SX200N0-L	171754
			U _c 110 - 230 V AC U _s 110 - 230 V AC		U _c 24 V DC U _s 24 V DC	
						
4	1.5	2	DS7-342SX004N0-N	134925	DS7-342SX004N0-D	134943
7	3	5	DS7-342SX007N0-N	134927	DS7-342SX007N0-D	134945
9	4	5	DS7-342SX009N0-N	134928	DS7-342SX009N0-D	134946
12	5.5	10	DS7-342SX012N0-N	134929	DS7-342SX012N0-D	134947
16	7.5	10	DS7-342SX016N0-N	134930	DS7-342SX016N0-D	134948
24	11	15	DS7-342SX024N0-N	134931	DS7-342SX024N0-D	134949
32	15	25	DS7-342SX032N0-N	134932	DS7-342SX032N0-D	134950
41	22	30	DS7-342SX041N0-N	134934	DS7-342SX041N0-D	134952
55	30	40	DS7-342SX055N0-N	134935	DS7-342SX055N0-D	134953
70	37	50	DS7-342SX070N0-N	134936	DS7-342SX070N0-D	134954
81	45	60	DS7-342SX081N0-N	134937	DS7-342SX081N0-D	134955
100	55	75	DS7-342SX100N0-N	134938	DS7-342SX100N0-D	134956
135	75	100	DS7-342SX135N0-N	134939	DS7-342SX135N0-D	134957
160	90	125	DS7-342SX160N0-N	134940	DS7-342SX160N0-D	134958
200	110	150	DS7-342SX200N0-N	134941	DS7-342SX200N0-D	134959

Notes

DS7 frame sizes



For use with	Part no.	Article no.
Devices fans		
Device fans for increasing the load cycle (more starts per hour/higher or longer starting current)		
Flush-mounted fans  DS7-34...SX004... DS7-34...SX007... DS7-34...SX009... DS7-34...SX012... DS7-34...SX016... DS7-34...SX024... DS7-34...SX032...	DS7-FAN-032	135553
Bottom fan  DS7-34...SX041... DS7-34...SX055... DS7-34...SX070... DS7-34...SX081... DS7-34...SX100... DS7-34...SX135... DS7-34...SX160... DS7-34...SX200...	DS7-FAN-100	169021
	DS7-FAN-200	169022

Frame size	Rated operational current AC-53 I_e A	Assigned motor rating				Part no.	Article no.
		At 230 V, 50 Hz kW	At 230 V, 60 Hz HP	At 400 V, 50 Hz kW	At 460 V, 60 Hz HP		
S811+ soft starter							
Soft starters for three-phase loads with control panel Mains voltage (50/60 Hz) U_{LN} : 200 - 600 V AC In-line/delta configuration Supply voltage U_s : 24 V DC Control voltage U_c : 24 V DC With integrated bypass contacts Terminal blocks are required for connecting the frame sizes T, U, V -> accessories							
N	37	7.5	10	18.5	25	S811+N37P3S	168977
	66	18.5	20	30	50	S811+N66P3S	168979
R	105	30	40	55	75	S811+R10P3S	168981
	135	37	50	75	100	S811+R13P3S	168983
T	180	55	60	90	150	S811+T18P3S	168985
	240	75	75	132	200	S811+T24P3S	168988
	304	90	100	160	250	S811+T30P3S	168991
U	361	110	125	200	300	S811+U36P3S	169872
	420	132	150	200	350	S811+U42P3S	169873
V	361	110	125	200	300	S811+V36P3S	168994
	420	132	150	200	350	S811+V42P3S	168997
	500	160	200	250	400	S811+V50P3S	169000
	650	200	250	315	500	S811+V65P3S	169003
	720	250	-	400	600	S811+V72P3S	169006
	850	-	-	450	600	S811+V85P3S	169009
	1000	-	-	560	750	S811+V10P3S	169012

Notes

S811+ frame sizes



S811+, N



S811+, R



S811+, T



S811+, U



S811+, V



PowerXL – the right drive technology for every application



Download the catalog:
Eaton.com/catalog

Our efficient drive solutions are as diverse as the requirements of our customers – from starting motors in simply machines to controlling the speed of complex applications and heavy loads.

The two product families PowerXL and 9000X* cover every application, from speed starters to water-cooled variable frequency drives. The latest additions to the PowerXL family are the DB1 and DM1 variable frequency drives.



*For further information on the 9000X variable frequency drives, please refer to the relevant product catalog.



Get more information

PowerXL selection aid Simple project planning and engineering

Thanks to this online selection aid, planning is easy, enabling you to select the right drive for your application, as well as the associated switchgear, protective devices, chokes and filters, in each case with reference to the relevant part numbers.
Eaton.com/selectiontools

PowerXL DE1/DE11 variable speed starter



The PowerXL DE1/DE11 variable speed starter provides ease of use and maximum reliability while offering adjustable motor speed and improved energy efficiency. These Eaton products thus close the gap between conventional motor starters and variable speed drives, combining the advantages of both in a single device. In addition to the standard features, the DE11 version also comes with CANopen, plug-in control terminals and a configurable output relay.

Power range:

- 0.25 ... 2.2 kW (U_e: 1~ 230 V, U₂: 3~ 230 V)
- 0.37 ... 7.5 kW (U_e: 3~ 400 V, U₂: 3~ 400 V)

Features:

- Space-saving overall width of 45 mm (frame size 1)
- Out-of-box commissioning without any configuration
- No special drive technology knowledge required
- Can be configured with a screwdriver via the optional DXE-EXT-SET module
- Trip-free design for maximum machine availability
- Suitable for ambient temperatures up to 60 °C
- International standards (CE, UL, cUL, cTick, RoHS)
- DE11: CANopen, plug-in control terminals, configurable output relay
- DE1: Modbus RTU integrated
- Optional communication modules: PROFINET, EtherNet/IP and SmartWire-DT



Commissioning

Easy handling, just like a motor starter

The DE1 variable speed starter does not require any specialized knowledge of drive technology – neither during installation nor commissioning. The handling of the compact variable speed starter is as convenient and simple as that of a motor starter.

You only need to take the device out of the box, wire it like a motor starter, and the DE1 variable speed starter is ready for operation. It couldn't be easier. In addition, out-of-the-box commissioning minimizes the likelihood of installation errors and thus reduces the amount of work and the associated costs compared to previous solutions.



1 Snap the speed starter onto the top-hat rail.



2 Connect the main circuits.



3 Connect the control current.



4 Switch on the device. The motor will run with variable speed.

Switching and operating motors

Configuration by means of a screwdriver

DXE-EXT-SET plug-in configuration module

In addition to out-of-the-box commissioning, which does not require any prior configuration, you can use the optional DXE-EXT-SET plug-in configuration module to individually adjust the most important parameters (such as the ramp time or the motor protection and control terminal functions) to the needs of your application – simply by using a screwdriver.



PowerXL DC1 variable frequency drive – compact machinery drive



The compact PowerXL variable frequency drive is particularly suitable for basic pump, fan and conveyor belt systems. The device is very quick and easy to configure and commission and thus generates measurable cost savings.

Power range:

- 0.37 ... 0.55 kW (U_e: 1~ 115 V, U₂: 1~ 115 V)
- 0.37 ... 1.1 kW (U_e: 1~ 115 V, U₂: 3~ 230 V)
- 0.37 ... 1.1 kW (U_e: 1~ 230 V, U₂: 1~ 230 V)
- 0.37 ... 4 kW (U_e: 1~ 230 V, U₂: 3~ 230 V)
- 0.37 ... 11 kW (U_e: 3~ 230 V, U₂: 3~ 230 V)
- 0.75 ... 22 kW (U_e: 3~ 400 V, U₂: 3~ 400 V)

Features:

- Fast commissioning thanks to 14 basic parameters
- High overload resistance: 150 % for 60 seconds, 175 % for two seconds.

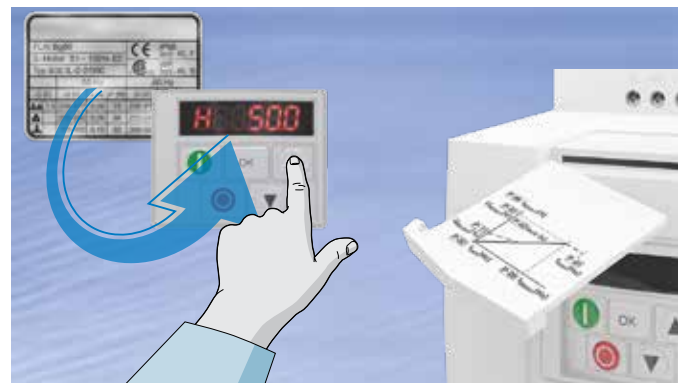


- Ambient temperatures of up to 50 °C without derating
- Integrated Modbus RTU and CANopen
- Optional communication modules: PROFINET, EtherNet/IP and SmartWire-DT
- Degree of protection: IP20 and IP66
- Integrated EMC filter
- Integrated braking transistor
- Integrated PI controller
- V/f control, sensorless vector control, PM motors, BLDC motors, SynRel motors
- Voltage boost
- DC brake
- Removable control terminal block
- International standards (CE, UL, cUL, c-Tick, RoHS, EAC, UkrSEPRO)



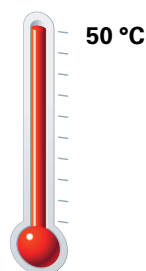
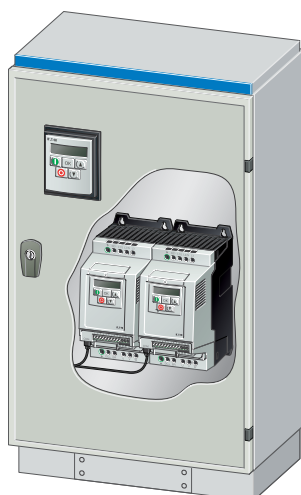
Simply copy the configuration via the COM stick

Using the communication stick, you can easily and quickly transfer parameters from your laptop to the PowerXL drives via Bluetooth. And you can just as easily copy parameter sets from one variable frequency drive to another.



Optimized configuration

The DC1 and DA1 series can be conveniently configured using the input keys. For the DE1, an optional plug-in configuration module is also available. Using the 14 basic parameters, the main data of all devices (such as the motor current, ramp times and the input and output functions) can be quickly and easily adjusted, and applications can be rapidly put into operation. The factory settings of the 14 basic parameters for all DE1, DC1, DA1, DB1 and Rapid Link products enable direct commissioning of the application without any additional configuration changes. The integrated info card further supports quick and easy wiring and commissioning.



No derating at 50 °C

All IP20 devices from the DE1, DC1 and DA1 series support ambient temperatures of up to 50 °C without derating, i.e. the devices can also be operated at their rated current under these conditions. In addition, the devices can be mounted side-by-side to reduce the amount of space required inside the control cabinet.

The benefits at a glance:

- Optimized control cabinet design
- Cost savings, as no additional ventilation/cooling is needed

PowerXL DA1 variable frequency drive – advanced machinery drive



The PowerXL DA1 is a variable frequency drive for the machine building sector. It offers multiple communication protocols, can be tailored to your specific needs thanks to the integrated function block editor (PLC), and features a powerful vector mode for highly dynamic applications.

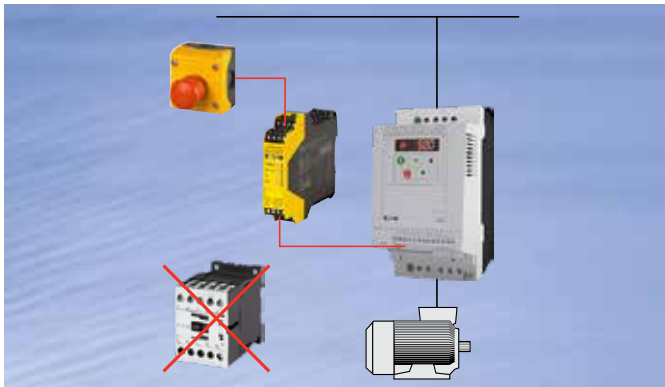
Power range:

- 0.75 ... 2.2 kW (Ue: 1~ 230 V, U2: 3~ 230 V)
- 0.75 ... 75 kW (Ue: 3~ 230 V, U2: 3~ 230 V)
- 0.75 ... 250 kW (Ue: 3~ 400 V, U2: 3~ 400 V)
- 0.75 ... 110 kW (Ue: 3~ 575 V, U2: 3~ 575 V)

Features:

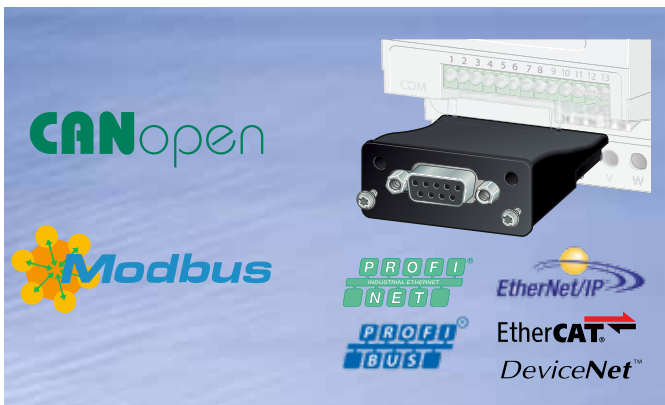
- High overload resistance: 150 % for 60 seconds, 200 % for four seconds.
- Modbus RTU and CANopen integrated
- Ambient temperatures of up to 50 °C without derating
- Integrated EMC filter

- Integrated braking transistor
- Various I/O expansions
- V/f control, sensorless and closed-loop vector control, PM motors, BLDC motors, SynRel motors
- Optional fieldbus interfaces
- STO (safe torque off) SIL 2/Pl d
- Optional high-resolution OLED display
- International standards (CE, UL, cUL, c-Tick, RoHS, EAC, UkrSEPRO, DNV)



Built-in STO (safe torque off) safety function

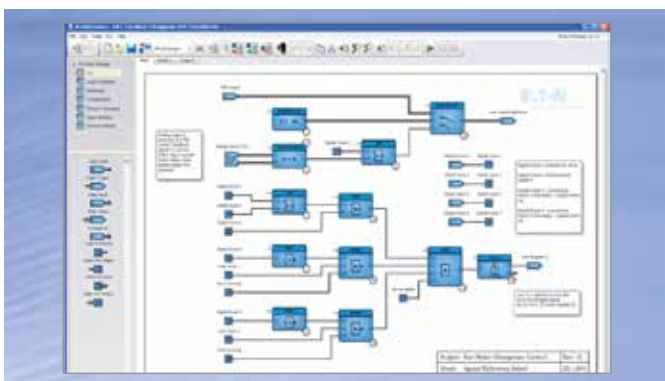
With its safe torque off (STO) function, the DA1 drive meets the basic requirements for built-in safety. This ensures that the motor remains torque-free and prevents unintentional start-up, so that there is no need for any additional mains contactor.



Maximum flexibility when it comes to communication

The DE1 series comes with Modbus RTU as the standard integrated communication protocol. In addition, the DE11, DC1, DB1 and DA1 series also feature the CANopen protocol. All devices of the DE1, DC1 and DA1 series can be expanded by means of PROFINET, EtherNet/IP and SmartWire-DT modules. Via PROFINET and SmartWire-DT, you can control, configure and diagnose the DE1, DC1 and DA1 variable frequency drives based on the cyclic and acyclic services in the Profidrive profile. The DA1 series comes with an expansion slot for plug-in modules for PROFIBUS, PROFINET, EtherNet/IP, EtherCAT, DeviceNet or Modbus/TCP communication. Function modules are available for connecting the DE1, DC1 and DA1 devices to a PLC or an HMI.

Switching and
operating motors



Function block editor – programming made easy

Using the function block editor, you can create your own logical links for the DA1, such as time dependencies within the drive, thus enabling you to generate your own applications. This makes it possible to adapt the drives to any application, cutting down on additional hardware costs in the process.

PowerXL DM1 and DG1 universal variable frequency drives



The DM1 universal variable frequency drives are part of our next-generation PowerXL series. They have been specifically designed for today's demanding applications: Thanks to their energy saving algorithm, high short-circuit rating and rugged design, they offer increased efficiency, safety and reliability.



The DG1 universal variable frequency drives are part of our next-generation PowerXL series. They are specifically designed for modern, demanding applications: Thanks to their patented energy-saving algorithm, high short-circuit ratings and rugged design, they offer increased efficiency, safety and reliability, with additional circuit-board protection (conformal coated) for aggressive environments.

Power range:

- 0.37- 1.1 kW (115 V)
- 0.55- 15 kW (230 V)
- 0.75- 22 kW (400 V)
- 5- 25 HP (575 V)

Features:

- The integrated web server makes it possible to configure and operate the device without the need to install any additional software.
- The DM1 can also communicate with PowerXpert inControl via Bluetooth, without the need to open the control panel.
- IP20 degree of protection, with optional IP21/NEMA1 kit.

Power range:

- 0.75- 90 kW (230 V)
- 0.75- 630 kW (400 V)
- 1- 800 HP (575 V)

Features:

- 19 setting parameters, including language and time
- Plain text menus and displays
- Best in class communication on board: Modbus RTU & TCP, BACnet MSTP, EtherNet/IP
- Optional Profinet & Profibus, CANopen, SmartWire-DT interfaces
- Degree of protection: FS0: IP20, FS1-6: IP21 & 54, FS7-8: IP00



Comprehensive functionality

The standard version of the DM1 Pro and the DG1 series cover the power ranges up to 22 kW and 630 kW, respectively. They offer multiple functions, including Modbus RTU, Modbus TCP, Ethernet IP and Bacnet MSTP protocols, an integrated EMC filter (C2 for public grids) and a braking transistor.



A dual-port Profinet interface is available for the DM1 and DG1 series port Profinet interface is available to integrate the drives into larger automation systems.



Energy saving function



The DM1's active energy control function minimizes energy losses through a patented process that dynamically adjusts the V/f curve to optimize efficiency. Compared to other out-of-the-box solutions, this enables energy savings of 2-10 %.

Energy cost calculator

The integrated energy cost calculator facilitates a direct comparison to conventional contactor-controlled systems. Once the energy costs of the local utility have been entered, it becomes immediately apparent how much money the use of the DM1/DG1 has already saved. This makes it possible to keep operating costs (OPEX) under control at all times.



Multi-pump drives

For water/wastewater applications, different modes are available to control and regulate systems consisting of several pumps. Since the DM1 and the DG1 come with a built-in PID controller for level and pressure control, there is no need for any external controller. They can both be used to control one or more master or back-up drives, while a real-time clock is also available for runtime compensation of all pumps. This level of versatility not only reduces equipment costs but also increases system availability and efficiency.

Cold-weather functionality

The DM1 and the DG1 are also suitable for use in extreme weather conditions. They are heat-resistant up to 50 °C and come with a special cold weather mode that allows them to operate at temperatures as low as -30 °C without the need for any external heating systems. As such, the devices are the perfect choice for outdoor applications involving extremely low temperatures.

Fire mode

If used for fire protection in buildings or sensitive structures such as tunnels, the DM1 and the DG1 can be operated in fire mode. In this mode, internal safety features that would normally shut down the device are disabled to ensure that fire pumps and smoke ventilation systems remain operational. The fire mode can be configured using a comprehensive range of options, including fixed setpoints, switchable setpoint inputs and fail-safe activation.

Manual/automatic operation

Operators can switch between manual and automatic operation by means of a control command or via the keypad, enabling them to intervene in the control system at any time.



The DB1 PowerXL brings together all the functions of the established DC1 series while conforming to the smallest IEC-compatible size. Thanks to cold plate technology, this powerful device is the ideal solution for customers who want to integrate frequency drives into existing systems that lack the space for heat sinks or proper ventilation.

Power range:

- 0.37 ... 1.5 kW (U_e: 1 ~ 230 V, U₂: 3 ~ 230 V)
- 0.75 ... 4 kW (U_e: 3 ~ 400 V, U₂: 3 ~ 400 V)

Features:

- Optimal integration into existing housings
- 40 % smaller footprint than a comparable drive with active cooling

- Heat dissipation via the housing material
- Removable control module
- High-efficiency motor control (for IE4 motors)
- Modbus RTU and CANopen on board
- International standards (IEC, cUL, RoHs)



Cold plate technology

What is it all about?

The DB1 is a cold plate frequency drive that functions without a heat sink. But how does the technology work? It's simple. The cooling of the electronics is handled by the materials in the enclosure itself. This passive cooling effect is achieved, for example, via the installation plate, the casting parts or the housing directly. A system-specific and therefore flexible integration based on customer needs is thus possible.

What are the advantages of this technology?

By eliminating the heat sink, the devices can be installed even in confined spaces that lack sufficient ventilation. Cabinets or enclosures can be sealed off without any problems, as the materials they contain will themselves conduct the heat away from the device. This makes the devices suitable for use in harsh and demanding environments, including high temperatures or humidity.

The advantages at a glance

Compact frequency controls

At a height of merely 74 mm (frame size 1), the DB1 is a variable frequency drive in the smallest IEC-compatible class. This compact size is the result of eliminating the need for any display, keypad or heat sink. As such, the DB1 takes up 40 % less space than a comparable frequency drive with active cooling.

A wide range of applications

The Cold Plate unit consists of a power module and a detachable control module. The control module contains several I/O interfaces, as well as ports for CANopen and Modbus-RTU communications. In addition to the COM interface (RJ45), the Modbus protocol is served by data cables that are routed via two control signal terminals. Eaton's Push-in technology simplifies the wiring of the terminals and also saves time during installation.

Compact installation of the DB1 in motors, pumps and compressors.

As the DB1 is fully compatible with our external keypads, no integrated display or keypad are required.

drivesConnect – The software for optimal implementation

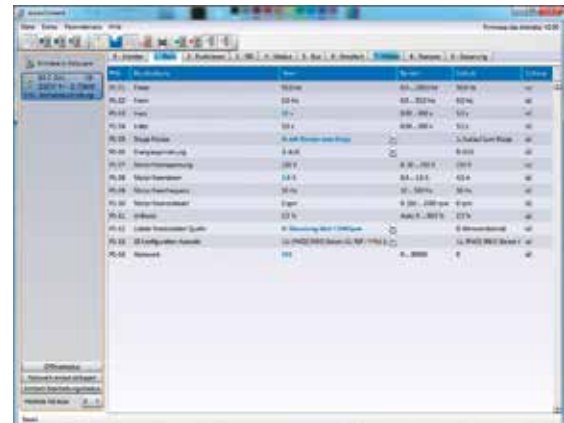
The drivesConnect computer program and the drivesConnect mobile smartphone app are powerful commissioning tools for PowerXL DE1, DC1, DA1, DB1 variable frequency drives and the Rapid Link 5 electronic drive system. Beside parameterization and diagnosis userdefined internal logic links can be set up through the function block editor and transferred to the variable frequency drives.



Android/iOS
drivesConnect
mobile App

Parameter editor

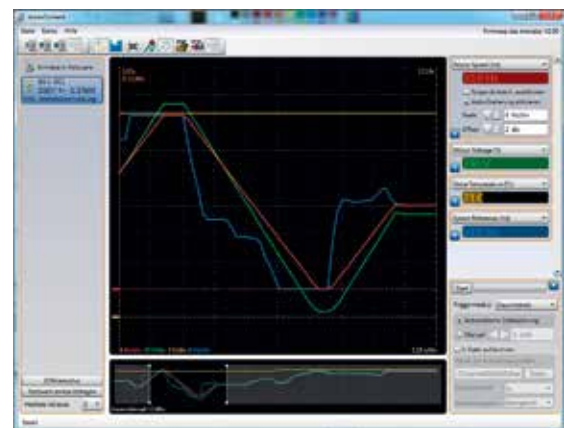
The parameterization function has an uncluttered, easy to understand user interface. With the editor variable frequency drives can be parameterized both online and offline. In online mode monitor values can be used for diagnostics.



Parameter-Editor starting screen

Scope/Data logger

The scope/data logger can be used to graphically show up to four selected variable frequency drive parameters as curves. This ensures that the behavior of display values such as motor voltage and motor current during ongoing operation can be tracked directly – and even recorded.



Display showing recorded signals

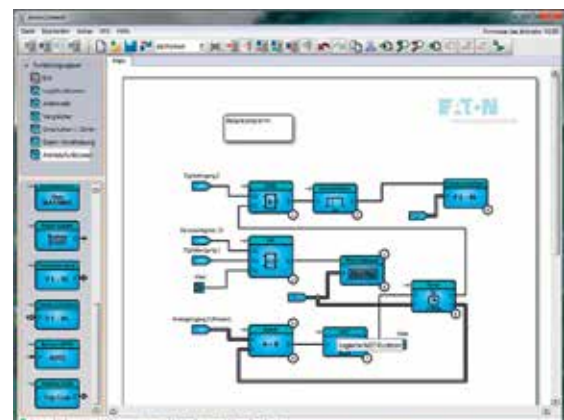
Function block editor

Together with the DA1 variable frequency drive, the Function Block Editor provides the option of using PLC programming to create separate logic operations – with time dependencies, for example – within the variable frequency drive. In fact, using the blocks from the "Inputs/Outputs," "Logic Functions," "Arithmetic," "Comparators," "Timers," "Counters," "Data Handling," and "Drive Functions" function groups makes it possible to generate our own applications within the Editor.

By simulating the PLC program, invalid blocks can be identified as errors and corrected directly. This makes it possible to adapt the variable frequency drive to any application, cutting down on additional hardware costs in the process.

Online installation:

www.drive-support-studio.com/OTS/Eaton/downloads/deploy/drivesConnect.htm



Example of visualization with various function blocks

Communications stick

Easily transfer parameter configurations

The “DX-COM-STICK3-KIT” communications stick makes it possible to quickly and easily transfer parameters from your laptop to PowerXL variable frequency drives using Bluetooth. In addition, the stick can be used to establish a connection to the drivesConnect mobile smartphone app. The convenience of this feature is only matched by the stick’s copy function, which can be used to transfer parameter sets from one variable frequency drive to another. This makes the stick a perfect little helper – especially when it comes to mass production operations.



Additional PC tools

Selection aid

Simple planning and engineering

An electronic selection aid provides simple planning, helping you quickly select the drive required for your application and the associated switchgear, protective elements, chokes, and filters complete with the corresponding article number.

Eaton.com/drives-configurator



Energy savings estimator

A few steps are all it takes to determine your energy needs and save big

The “Energy Savings Estimator” is a program that calculates the estimated energy needed for applications involving fans and/or pumps. After entering your project information, you will get an estimate of the energy savings and payback time that can be achieved when using variable frequency drives instead of conventional speed controllers.

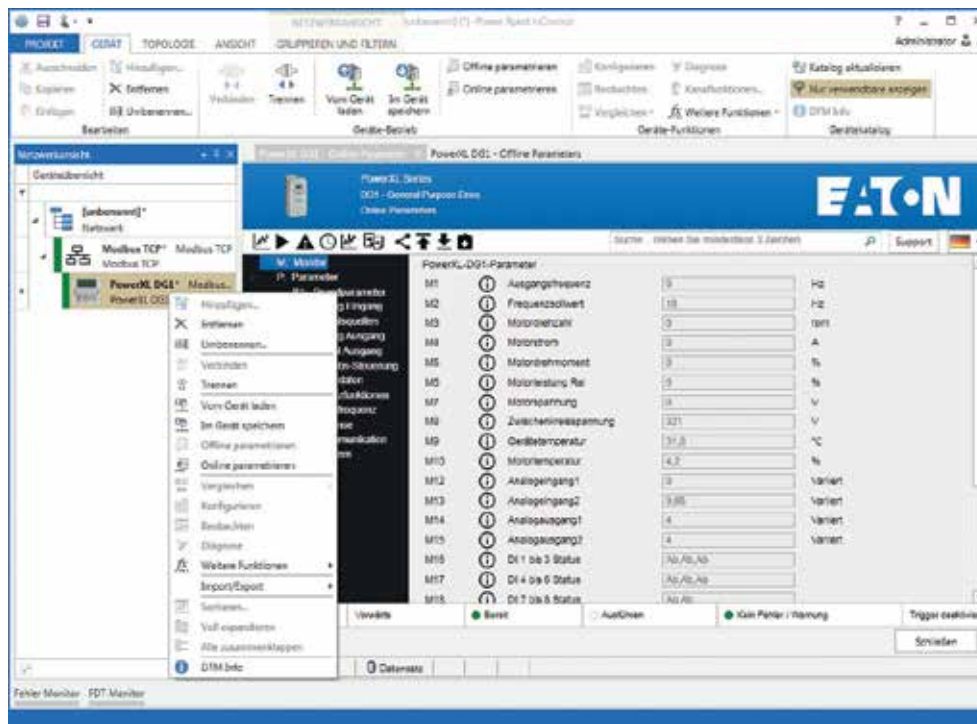
Eaton.com/energysavingsestimator



Switching and
operating motors

Power Xpert inControl – The Eaton platform that makes configuring parameters a cinch.

The Power Xpert inControl computer program is a powerful commissioning tool for PowerXL DG1 and DM1 variable frequency drives. In addition to its parameter configuration and diagnostic functionalities, it can be used to configure and view the internal oscilloscope featured by DG1 devices, making it possible to obtain plots for up to eight channels using 10 ms intervals. Moreover, Power Xpert inControl is not a platform for DG1 variable frequency drives exclusively, but instead will be used for all future Eaton devices with communication capabilities as well.



Serial or Ethernet

The connection to a computer can be established either with a serial RS-485 connection or via Ethernet. DG1 units feature hardware ports for both of these options, and Power Xpert inControl has drivers for both interfaces. In other words, the choice is up to you.

Parameterization

Online and offline

The parameterization function has an uncluttered, easy to understand user interface. With the editor variable frequency drives can be parameterized both online and offline. In online mode monitor values can be used for diagnostics.



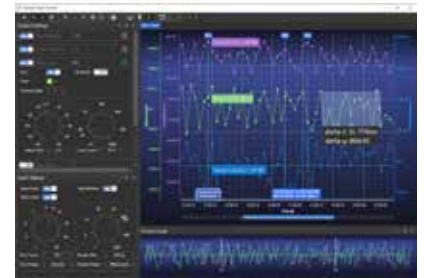
Download Power Xpert inControl as part of the PowerXL OneInstaller package:

Eaton.com/powerxl-oneinstaller

Internal DG1 oscilloscope

Faster analysis with 10 ms intervals

Together with Power Xpert inControl, DG1 devices can be used to plot up to 8 signals at the same time. However, most serial connections to a computer only allow for data to be sampled at relatively large time intervals, which is why DG1 units feature an integrated 8 channel oscilloscope as well. This oscilloscope makes it possible to analyze faster processes with plots using 10 ms as the time interval, and Power Xpert inControl provides comprehensive options for configuring the oscilloscope and selecting trigger signals.



Compare and document data sets

Online and offline

The comparison function enables DG1 devices to compare their parameters to another data set quickly and easily. Likewise, data can be quickly and easily entered in a spreadsheet program and filtered to see changed/different parameters – regardless of whether the comparison data comes from a different device in the system or from a saved or default data set. This provides an optimal way of reliably documenting all changes without having to go through each parameter individually.

A screenshot of the EATON software interface showing a comparison table. The table has columns for 'Parameter', 'Value 1', 'Value 2', 'Difference', and 'Status'. It lists various parameters like 'Motor Power', 'Motor Speed', 'Motor Torque', etc., with their corresponding values and differences. The interface includes a search bar at the top and a table with multiple rows of data.

Exceptional memory

Track changes easily

Made some changes by accident? Do you need to figure out why your drive won't start anymore all of a sudden?

This is where the DG1's ability to save the last 100 parameter changes, together with a timestamp, comes in handy. Power Xpert inControl can read and show these changes, making it easy to undo undesirable changes.

A screenshot of the EATON software interface showing a list of parameter changes. The table has columns for 'Time', 'Parameter', 'Value 1', 'Value 2', 'Difference', and 'Status'. It lists various parameters like 'Motor Power', 'Motor Speed', 'Motor Torque', etc., with their corresponding values and differences. The interface includes a search bar at the top and a table with multiple rows of data.

Switching and
operating motors

PC-connection

Cable (Modbus RTU):

By using a wired USB connection, up to 63 variable frequency drives can be connected to a PC via Modbus RTU. The software can then be used to conveniently configure their parameters.

Cable (Modbus TCP):

By using a wired Ethernet connection, virtually any number of variable frequency drives can be connected to a PC via Modbus RTU. The software can then be used to conveniently configure their parameters.

Wireless via WLAN:

An external WLAN gateway can be used to integrate the DG1 into industrial wireless networks. The connection to the actual DG1 is established with an Ethernet connection in this case. When using this type of connection, inControl will work as though it were directly connected to the corresponding DG1, and remote diagnostics will work smoothly as always.

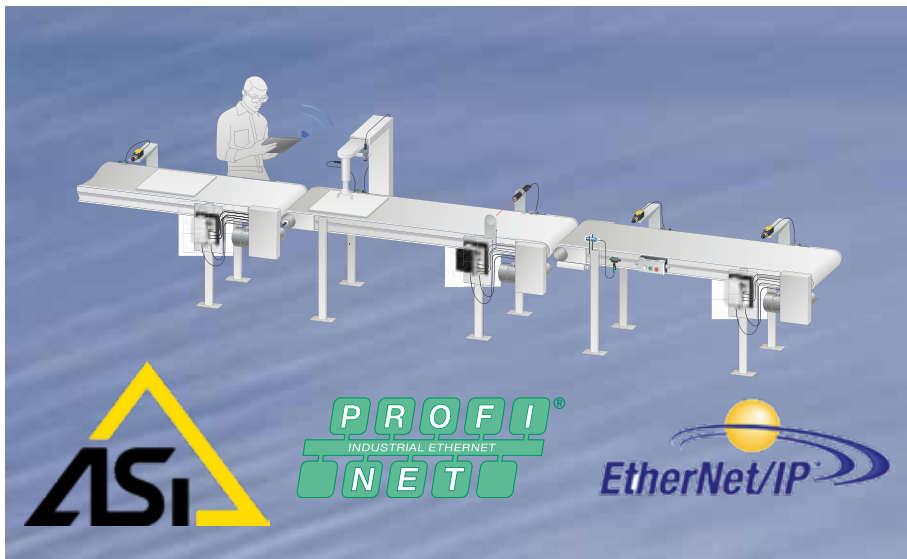
PowerXL Rapid Link 5 – decentralized electronic drive system



Whether it's baggage handling systems at airports, parcel distribution systems or production logistics: Rapid Link 5 offers the right solution for a wide range of material handling applications. Rapid Link 5, the latest addition to the PowerXL™ family, takes the success of this series (which was first launched in 2004) to the next level by enabling integration into modern Industrial Internet of Things (IIoT) applications.

System features

- Switching, control and protection of 3 AC 400/480 V motors
- Communication via AS-Interface, PROFINET and EtherNet/IP
- The motor starters and variable frequency drives have the same footprint across the entire power range.
- Quick and error-free installation with plug-in connections
- Diagnostic LEDs for fast fault localization
- Same commissioning tools for RAMO5 and RASP5: drivesConnect configuration software for PC, drivesConnect mobile app, OLED keypad, communication/copy stick.
- Integrated manual/automatic mode for easy handling during commissioning and in the event of a fault
- Identical footprint for all types and performances classes
- Sensor inputs for signal transmission via fieldbus or for direct signal processing in the device
- Rapid stop: direct processing of sensor signals within the device without any PLC programming
- Different control voltages for external electromagnetic motor brakes
- Optional integrated switch-disconnector with padlock for interlocking
- Rugged design with IP65/NEMA12 protection for use in harsh environments



Wide range of fieldbus systems

Rapid Link 5 forms an integrated system and covers the AS-Interface, Profinet and Ethernet/IP fieldbus systems. Integration into IIoT solutions is therefore possible without any problems.

The high level of data transparency down to the device level allows for the implementation of remote maintenance and comprehensive power management.

Flexible mounting options

The power supply and the motor connection can be implemented from the right, left or bottom, thanks to the rotatable device base. The installation of the Rapid Link 5 system is flexible and saves space, for optimal alignment with the requirements of the application at hand.



PowerXL RASP5 variable frequency drives



Power range:

- 0.75 kW/1.0 HP Ue: 3 AC 400/480 V, 50/60 Hz Ie: 2.4 A
- 1.5 kW/2.0 HP Ue: 3 AC 400/480 V, 50/60 Hz Ie: 4.3 A
- 2.2 kW/3.0 HP Ue: 3 AC 400/480 V, 50/60 Hz Ie: 5.6 A
- 4.0 kW/5.0 HP Ue: 3 AC 400/480 V, 50/60 Hz Ie: 8.6 A

Features:

- A single size covers the entire performance range from 0.75 kW to 4 kW
- For operating standard asynchronous motors, high-efficiency permanent magnet motors, synchronous reluctance motors as well as brushless DC motors

- V/f, smart vector and sensorless vector control
- Integrated EMC filter for motor cable lengths up to 25 m
- Integrated braking resistor for dynamic or lifting applications
- Built-in STO (safe torque off) safety function with SIL3/PL e
- Approvals: CE, cUL



RAMO5 electronic motor starter



Power range:

- 0.09 ...3.0 kW Ue: 3 AC 400 V, 50 Hz Ie: 6.6 A
- 0.125..4.0 HP Ue: 3 AC 480 V, 60 Hz Ie: 6.6 A

Features:

- DOL and reversing starter
- Programmable motor protection from 90 W to 3.0 kW (400 V) with only one device
- Service life of more than 10 million cycles
- Approvals: CE, cUL, CCC

Configuration tools

Thanks to the uniform PowerXL tools, the devices can be conveniently and easily configured and diagnosed: via the OLED keypad, the drivesConnect configuration software or a communication stick in combination with the drivesConnect mobile APP.



Eaton's drivesConnect mobile App

Our drivesConnect app turns any smartphone or tablet into a human-machine interface, for easy configuration, control and monitoring.

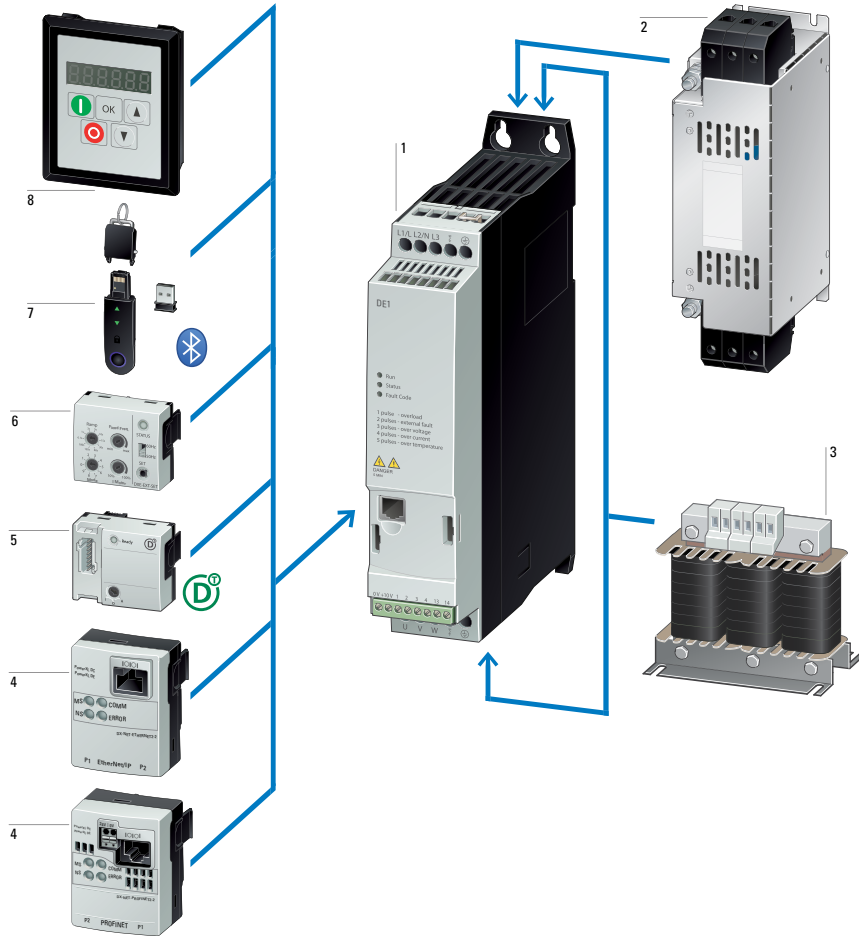
Download the software and the drivesConnect app
Eaton.com/drivesConnect



PowerXL DE1 variable speed starters and DC1 variable frequency drives

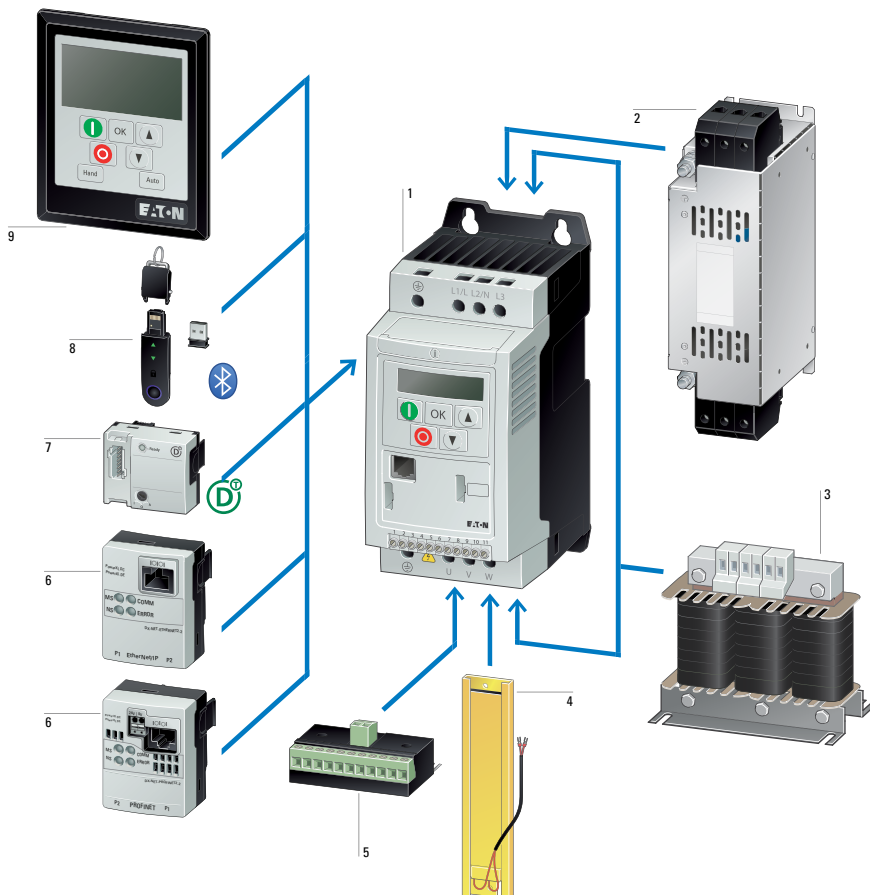
System overview

DE1



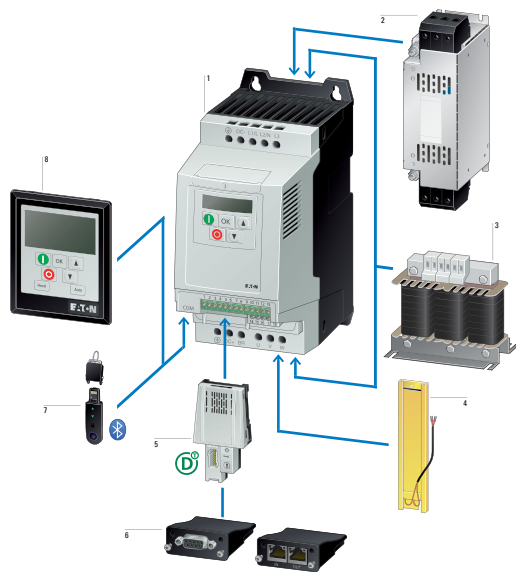
- 1 DE1 variable speed starter
- 2 Radio interference suppression filter
- 3 Mains choke, motor reactors
- 4 Communication modules
- 5 SmartWire-DT module
- 6 Configuration module
- 7 Memory and Bluetooth stick
- 8 External keypad

DC1



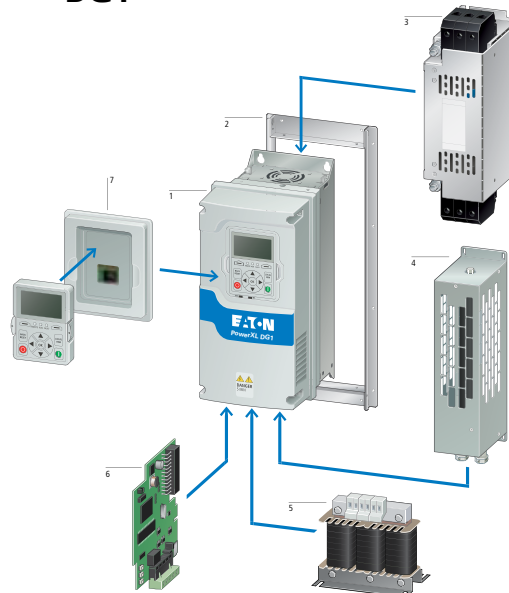
- 1 DC1 variable frequency drive
- 2 External radio interference suppression filter
- 3 Mains choke, motor choke, sine filter
- 4 Braking resistance
- 5 Expansion modules
- 6 Communication modules
- 7 SmartWire-DT module
- 8 Memory and Bluetooth stick
- 9 External keypad

DA1



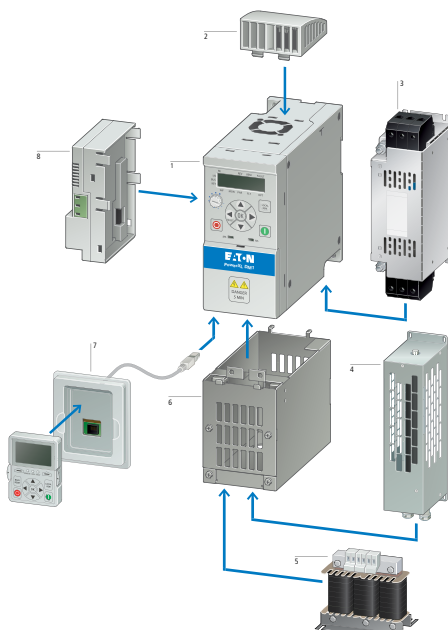
- 1 DA1 variable frequency drive
- 2 Radio interference suppression filter
- 3 Mains choke, motor choke, sine filter
- 4 Braking resistance
- 5 SmartWire-DT module
- 6 Communication modules, expansion modules
- 7 Memory and Bluetooth communication stick
- 8 External keypad

DG1



- 1 DG1 variable frequency drive
- 2 Mounting frame through-hole mounting
- 3 EMV filter
- 4 Braking resistances
- 5 Mains/motor choke, harmonic filter, sine filter
- 6 Expansions and communication cards
- 7 External keypad

DM1/DM1 Pro



- 1 DM1/DM1 Pro
- 2 + 6 NEMA1/IP21 kits DXM-ACC...
- 3 EMC filters DX-EMC...
- 4 Braking resistance
- 5 Net-/motor chokes, harmonic filter
- 7 Remote keypad kit DXG-KEY-RMTKIT
- 8 Communication card DXM-NET...

PowerXL variable speed starters

DE1/DE11, for three-phase motors, 230 V/400 V, IP20

Rated operational current ¹⁾	Assigned motor rating ^{1), 2), 3)}		Radio interference filter	Frame size	Degree of protection	Part no.	Article no.
I _e	P	P					
A	kW	HP					
Mains voltage (50/60 Hz) U _{LN} : 200 (-10%) - 240 (+10%) V U _e = 1-phase / U ₂ = 3-phase							
1.4	0.25	0.33	✓	FS1	IP20/NEMA 0	DE1-121D4FN-N20N	174327
2.3	0.37	0.5	✓			DE1-122D3FN-N20N	174328
2.7	0.55	0.5	✓			DE1-122D7FN-N20N	174329
4.3	0.75	1	✓			DE1-124D3FN-N20N	174330
7	1.5	2	✓			DE1-127D0FN-N20N	174331
9.6	2.2	3	✓	FS2		DE1-129D6FN-N20N	174332
Mains voltage (50/60 Hz) U _{LN} : 380 (-10%) - 480 (+10%) V U _e = 3-phase / U ₂ = 3-phase							
1.3	0.37	0.5	✓	FS1	IP20/NEMA 0	DE1-341D3FN-N20N	174333
2.1	0.75	1	✓			DE1-342D1FN-N20N	174334
3.6	1.5	2	✓			DE1-343D6FN-N20N	174335
5	2.2	3	✓	FS2		DE1-345D0FN-N20N	174336
6.6	3	3	✓			DE1-346D6FN-N20N	174337
8.5	4	5	✓			DE1-348D5FN-N20N	174338
11.3	5.5	7.5	✓			DE1-34011FN-N20N	174339
16	7.5	10	✓			DE1-34016FN-N20N	174340
Mains voltage (50/60 Hz) U _{LN} : 200 (-10%) - 240 (+10%) V U _e = 1-phase / U ₂ = 3-phase							
1.4	0.25	0.33	✓	FS1	IP20/NEMA 0	DE11-121D4FN-N20N ⁴⁾	180650
2.3	0.37	0.5	✓			DE11-122D3FN-N20N ⁴⁾	180651
2.7	0.55	0.5	✓			DE11-122D7FN-N20N ⁴⁾	180652
4.3	0.75	1	✓			DE11-124D3FN-N20N ⁴⁾	180653
7	1.5	2	✓			DE11-127D0FN-N20N ⁴⁾	180654
9.6	2.2	3	✓	FS2		DE11-129D6FN-N20N ⁴⁾	180655
Mains voltage (50/60 Hz) U _{LN} : 380 (-10%) - 480 (+10%) V U _e = 3-phase / U ₂ = 3-phase							
1.3	0.37	0.5	✓	FS1	IP20/NEMA 0	DE11-341D3FN-N20N ⁴⁾	180662
2.1	0.75	1	✓			DE11-342D1FN-N20N ⁴⁾	180663
3.6	1.5	2	✓			DE11-343D6FN-N20N ⁴⁾	180664
5	2.2	3	✓	FS2		DE11-345D0FN-N20N ⁴⁾	180665
6.6	3	3	✓			DE11-346D6FN-N20N ⁴⁾	180666
8.5	4	5	✓			DE11-348D5FN-N20N ⁴⁾	180667
11.3	5.5	7.5	✓			DE11-34011FN-N20N ⁴⁾	180668
16	7.5	10	✓			DE11-34016FN-N20N ⁴⁾	180669

Notes

- ¹⁾ Overload cycle: 150 % for 60 s every 600 s
- ²⁾ DE1/DE11-12...: at 230 V, 50 Hz/at 220 - 240 V, 60 Hz
DE1/DE11-34...: at 400 V, 50 Hz/at 440 - 480 V, 60 Hz
- ³⁾ For normal four-pole, internally and externally ventilated three-phase asynchronous motors with 1500 min⁻¹ at 50 Hz or 1800 min⁻¹ at 60 Hz
- ⁴⁾ The DE11 offers additional features compared to the DE1: CANopen, plug-in control terminals, a configurable output relay



DE1/DE11, FS1



DE1/DE11, FS2

PowerXL variable frequency drives

DC1, for three-phase motors, 115V/230V/400V, IP20/IP66

Input/output voltage [V]	Assigned motor rating ¹⁾ 2) 3)		Input phases	Output phases	Rated operational current ¹⁾	FS	Part no. Article no. IP20 / NEMA 0	Part no. Article no. IP66 / NEMA 4x	Part no. Article no. IP66 / NEMA 4x local control
	[kW]	[HP]							
115	0.37	0.5	1	1	7	1	DC1-S17D0NN-A20CE1 186073		
	0.37	0.5		3	2.3	1	DC1-1D2D3NN-A20CE1 185765	DC1-1D2D3NN-A660E1 199393	DC1-1D2D3NN-A6S0E1 199394
	0.55	0.75		1	10.5	2	DC1-S1011NB-A20CE1 186076		
	0.75	1		3	4.3	1	DC1-1D4D3NN-A20CE1 185768	DC1-1D4D3NN-A660E1 199395	DC1-1D4D3NN-A6S0E1 199396
	1.1	1.5		3	2.3	2	DC1-1D5D8NB-A20CE1 185771	DC1-1D5D8NB-A660E1 199397	DC1-1D5D8NB-A6S0E1 199398
230	0.37	0.5	1	3	2.3	1	DC1-122D3FN-A20CE1 185803	DC1-122D3FN-A660E1 199399	DC1-122D3FN-A6S0E1 199400
	0.75	1			4.3	1	DC1-124D3FN-A20CE1 185806	DC1-124D3FN-A660E1 199401	DC1-124D3FN-A6S0E1 199402
	1.5	2			7	2	DC1-127D0FN-A20CE1 185809	DC1-127D0FN-A660E1 199403	DC1-127D0FN-A6S0E1 199404
	0.37	0.5	3	3	2.3	1	DC1-1D2D3NN-A20CE1 185765	DC1-1D2D3NN-A660E1 199393	DC1-1D2D3NN-A6S0E1 199394
	0.75	1			4.3	1	DC1-1D4D3NN-A20CE1 185768	DC1-1D4D3NN-A660E1 199395	DC1-1D4D3NN-A6S0E1 199396
	1.1	1.5			2.3	2	DC1-1D5D8NB-A20CE1 185771	DC1-1D5D8NB-A660E1 199397	DC1-1D5D8NB-A6S0E1 199398
	1.5	2			7	2	DC1-127D0FB-A20CE1 185812	DC1-127D0FB-A660E1 199405	DC1-127D0FB-A6S0E1 199406
	2.2	3			10.5	2	DC1-12011FB-A20CE1 185815	DC1-12011FB-A660E1 199407	DC1-12011FB-A6S0E1 199408
	4.0	2.3			2.3	3	DC1-12015NB-A20CE1 185800	DC1-12015FB-A660E1 199409	DC1-12015FB-A6S0E1 199410
	0.37	2.3				1	DC1-322D3NN-A20CE1 185818	DC1-322D3FN-A660E1 199411	DC1-322D3FN-A6S0E1 199412
	0.75	2.3				1	DC1-324D3NN-A20CE1 185821	DC1-324D3FN-A660E1 199413	DC1-324D3FN-A6S0E1 199414
	1.5	2.3				1	DC1-327D0NN-A20CE1 185827	DC1-327D0FN-A660E1 199415	DC1-327D0FN-A6S0E1 199416
	1.5	2.3				2	DC1-327D0FB-A20CE1 185836	DC1-327D0FB-A660E1 199417	DC1-327D0FB-A6S0E1 199418
	2.2	2.3				2	DC1-32011FB-A20CE1 185839	DC1-32011FB-A660E1 199419	DC1-32011FB-A6S0E1 199420
	4.0	2.3				3	DC1-32018FB-A20CE1 185842	DC1-32018FB-A660E1 199421	DC1-32018FB-A6S0E1 199422
	5.5	2.3				3	DC1-32024FB-A20CE1 185774	DC1-32024FB-A660E1 199423	DC1-32024FB-A6S0E1 199424
	7.5	2.3				4	DC1-32030FB-A20CE1 185775	DC1-32030FB-A660E1 199425	DC1-32030FB-A6S0E1 199426
	11.0	2.3				4	DC1-32046FB-A20CE1 185776	DC1-32046FB-A660E1 199427	DC1-32046FB-A6S0E1 199428
	0.75	1	3	3	2.2	1	DC1-342D2FN-A20CE1 185743	DC1-342D2FN-A660E1 199429	DC1-342D2FN-A6S0E1 199430
	1.5	2		3	4.1	1	DC1-344D1FN-A20CE1 185746	DC1-344D1FN-A660E1 199431	DC1-344D1FN-A6S0E1 199432
	1.5	2		3	4.1	1	DC1-344D1FB-A20CE1 185749	DC1-344D1FB-A660E1 199433	DC1-344D1FB-A6S0E1 199434
	2.2	3		3	5.8	2	DC1-345D8FB-A20CE1 185752	DC1-345D8FB-A660E1 199435	DC1-345D8FB-A6S0E1 199436
	4	5		3	9.5	2	DC1-349D5FB-A20CE1 185755	DC1-349D5FB-A660E1 199437	DC1-349D5FB-A6S0E1 199438
	5.5	7.5		3	14	3	DC1-34014FB-A20CE1 185758	DC1-34014FB-A660E1 199439	DC1-34014FB-A6S0E1 199440
	7.5	10		3	18	3	DC1-34018FB-A20CE1 185761	DC1-34018FB-A660E1 199441	DC1-34018FB-A6S0E1 199442
	11	15		3	24	3	DC1-34024FB-A20CE1 185764	DC1-34024FB-A660E1 199443	DC1-34024FB-A6S0E1 199444
	15	20		3	30	4	DC1-34030FB-A20CE1 185780	DC1-34030FB-A660E1 199445	DC1-34030FB-A6S0E1 199446
	18.5	25		3	39	4	DC1-34039FB-A20CE1 185781	DC1-34039FB-A660E1 199447	DC1-34039FB-A6S0E1 199448
	22	30		3	46	4	DC1-34046FB-A20CE1 185782	DC1-34046FB-A660E1 199449	DC1-34046FB-A6S0E1 199450
400	0.75	1	3	3	2.2	1	DC1-342D2FN-A20CE1 185743	DC1-342D2FN-A660E1 199429	DC1-342D2FN-A6S0E1 199430
	1.5	2		3	4.1	1	DC1-344D1FN-A20CE1 185746	DC1-344D1FN-A660E1 199431	DC1-344D1FN-A6S0E1 199432
	1.5	2		3	4.1	1	DC1-344D1FB-A20CE1 185749	DC1-344D1FB-A660E1 199433	DC1-344D1FB-A6S0E1 199434
	2.2	3		3	5.8	2	DC1-345D8FB-A20CE1 185752	DC1-345D8FB-A660E1 199435	DC1-345D8FB-A6S0E1 199436
	4	5		3	9.5	2	DC1-349D5FB-A20CE1 185755	DC1-349D5FB-A660E1 199437	DC1-349D5FB-A6S0E1 199438
	5.5	7.5		3	14	3	DC1-34014FB-A20CE1 185758	DC1-34014FB-A660E1 199439	DC1-34014FB-A6S0E1 199440
	7.5	10		3	18	3	DC1-34018FB-A20CE1 185761	DC1-34018FB-A660E1 199441	DC1-34018FB-A6S0E1 199442
	11	15		3	24	3	DC1-34024FB-A20CE1 185764	DC1-34024FB-A660E1 199443	DC1-34024FB-A6S0E1 199444
	15	20		3	30	4	DC1-34030FB-A20CE1 185780	DC1-34030FB-A660E1 199445	DC1-34030FB-A6S0E1 199446
	18.5	25		3	39	4	DC1-34039FB-A20CE1 185781	DC1-34039FB-A660E1 199447	DC1-34039FB-A6S0E1 199448

Notes: ¹⁾ Overload cycle: 150 % for 60 s every 600 s

²⁾ DC1-S1... & DC1-1D...: at 115 V, 50 Hz/at 110-120 V, 60 Hz DC1-S2...; DC1-12... & DC1-32...: at 230 V, 50 Hz/at 220-240 V, 60 Hz DC1-34...: at 400 V, 50 Hz/at 440-480 V, 60 Hz

³⁾ For normal four-pole, internally and externally ventilated three-phase asynchronous motors with 1500 min⁻¹ at 50 Hz or 1800 min⁻¹ at 60 Hz

PowerXL variable frequency drives

DA1 for three-phase motors 230 V, IP20/IP55

Rated operational current ^{1) 4)}	Assigned motor output ^{1) 2) 3)}		Configuration							Frame size	Protection type	Part no.	Article no.
I _e	P	P	Radio interference suppression filter	Brake chopper	DC link choke	7-segment display	Plain text display	Safe Torque Off	Local controls				
A	kW	HP											
PowerXL variable frequency drives DA1													
U _e 230 V AC, single-phase/ U ₂ 230 V AC, three-phase													
Mains voltage (50/60Hz)													
U _{LN} 200 (-10%) - 240 (+10%) V													
4.3	0.75	1	✓	✓	–	✓	–	✓	–	FS2	IP20/NEMA 0	DA1-124D3FB-A20C	169078
7	1.5	2	✓	✓	–	✓	–	✓	–			DA1-127D0FB-A20C	169081
10.5	2.2	3	✓	✓	–	✓	–	✓	–			DA1-12011FB-A20C	169084
U _e 230 V AC, three-phase / U ₂ 230 V AC, three-phase													
Mains voltage (50/60Hz)													
U _{LN} 200 (-10%) - 240 (+10%) V													
4.3	0.75	1	✓	✓	–	✓	–	✓	–	FS2	IP20/NEMA 0	DA1-324D3FB-A20C	169087
7	1.5	2	✓	✓	–	✓	–	✓	–			DA1-327D0FB-A20C	169090
10.5	2.2	3	✓	✓	–	✓	–	✓	–			DA1-32011FB-A20C	169093
18	4	5	✓	✓	–	✓	–	✓	–	FS3		DA1-32018FB-A20C	169096
24	5.5	7.5	✓	✓	–	✓	–	✓	–			DA1-32024FB-A20C	169099
30	7.5	10	✓	✓	–	–	✓	✓	–	FS4		DA1-32030FB-B20C	197488
46	11	15	✓	✓	–	–	✓	✓	–			DA1-32046FB-B20C	197489
61	15	20	✓	✓	✓	–	✓	✓	–	FS5		DA1-32061FB-B20C	197490
72	18.5	25	✓	✓	✓	–	✓	✓	–			DA1-32072FB-B20C	197491
24 ⁵⁾	5.5	7.5	✓	✓	–	–	✓	✓	–	FS4	IP55/NEMA 12	DA1-32024FB-B55C	169361
30	7.5	10	✓	✓	–	–	✓	✓	–			DA1-32030FB-B55C	169362
46	11	15	✓	✓	–	–	✓	✓	–			DA1-32046FB-B55C	169363
61	15	20	✓	✓	✓	–	✓	✓	–	FS5		DA1-32061FB-B55C	169364
72	18.5	25	✓	✓	✓	–	✓	✓	–			DA1-32072FB-B55C	169365
90 ⁵⁾	22	30	✓	✓	✓	–	✓	✓	–	FS6		DA1-32090FB-B55C	169367
110 ⁵⁾	30	40	✓	✓	✓	–	✓	✓	–			DA1-32110FB-B55C	169369
150 ⁵⁾	45	50	✓	✓	✓	–	✓	✓	–			DA1-32150FB-B55C	169371
180 ⁵⁾	55	60	✓	✓	✓	–	✓	✓	–			DA1-32180FB-B55C	169373
202 ⁵⁾	55	75	✓	✓	✓	–	✓	✓	–	FS7		DA1-32202FB-B55C	169375
248 ⁵⁾	75	100	✓	✓	✓	–	✓	✓	–			DA1-32248FB-B55C	169377

PowerXL variable frequency drives DA1													
U _e 400 V AC, three-phase / U ₂ 400 V AC, three-phase													
Mains voltage (50/60Hz)													
U _{LN} 380 (-10%) - 480 (+10%) V													
2.2	0.75	1	✓	✓	–	✓	–	✓	–	FS2	IP20/NEMA 0	DA1-342D2FB-A20C	169117
4.1	1.5	2	✓	✓	–	✓	–	✓	–			DA1-344D1FB-A20C	169120
5.8	2.2	3	✓	✓	–	✓	–	✓	–			DA1-345D8FB-A20C	169051
9.5	4	5	✓	✓	–	✓	–	✓	–			DA1-349D5FB-A20C	169054
14	5.5	7.5	✓	✓	–	✓	–	✓	–	FS3		DA1-34014FB-A20C	169057
18	7.5	10	✓	✓	–	✓	–	✓	–			DA1-34018FB-A20C	169060
24	11	15	✓	✓	–	✓	–	✓	–			DA1-34024FB-A20C	169063
30	15	20	✓	✓	–	–	✓	✓	–	FS4		DA1-34030FB-B20C	197493
39	18.5	25	✓	✓	–	–	✓	✓	–			DA1-34039FB-B20C	197494
46	22	30	✓	✓	–	–	✓	✓	–			DA1-34046FB-B20C	197495
61	30	40	✓	✓	✓	–	✓	✓	–	FS5		DA1-34061FB-B20C	197496
72	37	50	✓	✓	✓	–	✓	✓	–			DA1-34072FB-B20C	197497
24	11	15	✓	✓	–	–	✓	✓	–	FS4	IP55/NEMA 12	DA1-34024FB-B55C	169390
30	15	20	✓	✓	–	–	✓	✓	–			DA1-34030FB-B55C	169391
39	18.5	25	✓	✓	–	–	✓	✓	–			DA1-34039FB-B55C	169392
46	22	30	✓	✓	–	–	✓	✓	–			DA1-34046FB-B55C	169393
61	30	40	✓	✓	✓	–	✓	✓	–	FS5		DA1-34061FB-B55C	169394
72	37	50	✓	✓	✓	–	✓	✓	–			DA1-34072FB-B55C	169395
90 ⁵⁾	45	60	✓	✓	✓	–	✓	✓	–	FS6		DA1-34090FB-B55C	169397
110 ⁵⁾	55	75	✓	✓	✓	–	✓	✓	–			DA1-34110FB-B55C	169399
150 ⁵⁾	75	100	✓	✓	✓	–	✓	✓	–			DA1-34150FB-B55C	169401
180 ⁵⁾	90	125	✓	✓	✓	–	✓	✓	–			DA1-34180FB-B55C	169403
202 ⁵⁾	110	150	✓	✓	✓	–	✓	✓	–	FS7		DA1-34202FB-B55C	169405
240 ⁵⁾	132	200	✓	✓	✓	–	✓	✓	–			DA1-34240FB-B55C	169407
302 ⁵⁾	160	250	✓	✓	✓	–	✓	✓	–			DA1-34302FB-B55C	169217

Notes:

¹⁾ Overload cycle for 60 s every 600 s

²⁾ At 230 V, 50 Hz/at 220 - 240 V, 60 Hz

³⁾ For normal internally and externally ventilated four-pole three-phase asynchronous motors with 1500 rpm at 50 Hz and 1800 rpm at 60 Hz

⁴⁾ IP20/NEMA 0: Rated operational current at an operating frequency of 16 kHz and an ambient air temperature of +50°C

IP55/NEMA 12: Rated operational current at a switching frequency of 16 kHz and an ambient air temperature of +40°C

⁵⁾ IP20/NEMA 0: Rated operational current at an operating frequency of 8 kHz and an ambient air temperature of +50°C

IP55/NEMA 12: Rated operational current at a switching frequency of 8 kHz and an ambient air temperature of +40°C

Rated operational current ^{1) 4)}	Assigned motor output ^{1) 2) 3)}	Configuration								Frame size	Protection type	Part no.	Article no.
I _e	P	P	Radio interference suppression filter	Brake chopper	DC link choke	7-segment display	Plain text display	Safe Torque Off	Local controls				
A	kW	HP											
PowerXL variable frequency drives DA1													
U _e 230 V AC, single-phase / U ₂ 230 V AC, three-phase Mains voltage (50/60Hz) U _{LN} 200 (-10%) - 240 (+10%) V													
4.3	0.75	1	✓	✓	—	—	✓	✓	—	FS2	IP66/NEMA 4X	DA1-124D3FB-B660	EP-400015
4.3	0.75	1	✓	✓	—	—	✓	✓	✓			DA1-124D3FB-B6S0	EP-400016
7	1.5	2	✓	✓	—	—	✓	✓	—			DA1-127D0FB-B660	EP-400017
7	1.5	2	✓	✓	—	—	✓	✓	✓			DA1-127D0FB-B6S0	EP-400018
10.5	2.2	3	✓	✓	—	—	✓	✓	—			DA1-12011FB-B660	EP-400019
10.5	2.2	3	✓	✓	—	—	✓	✓	✓			DA1-12011FB-B6S0	EP-400020
U _e 230 V AC, three-phase / U ₂ 230 V AC, three-phase Mains voltage (50/60Hz) U _{LN} 200 (-10%) - 240 (+10%) V													
4.3	0.75	1	✓	✓	—	—	✓	✓	—	FS2	IP66/NEMA 4X	DA1-324D3FB-B660	EP-400021
4.3	0.75	1	✓	✓	—	—	✓	✓	✓			DA1-324D3FB-B6S0	EP-400022
7	1.5	2	✓	✓	—	—	✓	✓	—			DA1-327D0FB-B660	EP-400023
7	1.5	2	✓	✓	—	—	✓	✓	✓			DA1-327D0FB-B6S0	EP-400024
10.5	2.2	3	✓	✓	—	—	✓	✓	—			DA1-32011FB-B660	EP-400025
19.5	2.2	3	✓	✓	—	—	✓	✓	✓			DA1-32011FB-B6S0	EP-400026
18	4	5	✓	✓	—	—	✓	✓	—			DA1-32018FB-B660	EP-400027
18	4	5	✓	✓	—	—	✓	✓	✓	FS3		DA1-32018FB-B6S0	EP-400028
24	5.5	7,5	✓	✓	—	—	✓	✓	—			DA1-32024FB-B660	EP-400029
24	5.5	7,5	✓	✓	—	—	✓	✓	✓			DA1-32024FB-B6S0	EP-400030
30	7.5	10	✓	✓	—	—	✓	✓	—	FS4		DA1-32030FB-B660	EP-400031
30	7.5	10	✓	✓	—	—	✓	✓	✓			DA1-32030FB-B6S0	EP-400032
46	11	15	✓	✓	—	—	✓	✓	—			DA1-32046FB-B660	EP-400033
46	11	15	✓	✓	—	—	✓	✓	✓			DA1-32046FB-B6S0	EP-400034

Notes:¹⁾ Overload cycle for 60 s every 600 s²⁾ At 230 V, 50 Hz/at 220 - 240 V, 60 Hz³⁾ For normal internally and externally ventilated four-pole three-phase asynchronous motors with 1500 rpm at 50 Hz and 1800 rpm at 60 Hz⁴⁾ Rated operational current at a switching frequency of 16 kHz and an ambient air temperature of +40°C**PowerXL variable frequency drives DA1**

U _e 400 V AC, three-phase / U ₂ 400 V AC, three-phase Mains voltage (50/60Hz) U _{LN} 380 (-10%) - 480 (+10%) V													
2.2	0.75	1	✓	✓	—	—	✓	✓	—	FS2	IP66/NEMA 4X	DA1-342D2FB-B660	EP-400035
2.2	0.75	1	✓	✓	—	—	✓	✓	✓			DA1-342D2FB-B6S0	EP-400036
4.1	1.5	2	✓	✓	—	—	✓	✓	—			DA1-344D1FB-B660	EP-400037
4.1	1.5	2	✓	✓	—	—	✓	✓	✓			DA1-344D1FB-B6S0	EP-400038
5.8	2.2	3	✓	✓	—	—	✓	✓	—	FS3		DA1-345D8FB-B660	EP-400039
5.8	2.2	3	✓	✓	—	—	✓	✓	✓			DA1-345D8FB-B6S0	EP-400040
9.5	4	5	✓	✓	—	—	✓	✓	—			DA1-349D5FB-B660	EP-400041
9.5	4	5	✓	✓	—	—	✓	✓	✓			DA1-349D5FB-B6S0	EP-400042
14	5.5	7.5	✓	✓	—	—	✓	✓	—	FS4		DA1-34014FB-B660	EP-400043
14	5.5	7.5	✓	✓	—	—	✓	✓	✓			DA1-34014FB-B6S0	EP-400044
18	7.5	10	✓	✓	—	—	✓	✓	—			DA1-34018FB-B660	EP-400045
18	7.5	10	✓	✓	—	—	✓	✓	✓			DA1-34018FB-B6S0	EP-400046
24	11	15	✓	✓	—	—	✓	✓	—	FS4		DA1-34024FB-B660	EP-400047
24	11	15	✓	✓	—	—	✓	✓	✓			DA1-34024FB-B6S0	EP-400048
30	15	20	✓	✓	—	—	✓	✓	—			DA1-34030FB-B660	EP-400049
30	15	20	✓	✓	—	—	✓	✓	✓			DA1-34030FB-B6S0	EP-400050
39	18.5	25	✓	✓	—	—	✓	✓	—	FS4		DA1-34039FB-B660	EP-400051
39	18.5	25	✓	✓	—	—	✓	✓	✓			DA1-34039FB-B6S0	EP-400052
46	22	30	✓	✓	—	—	✓	✓	—			DA1-34046FB-B660	EP-400053
46	22	30	✓	✓	—	—	✓	✓	✓			DA1-34046FB-B6S0	EP-400054

Notes:¹⁾ Overload cycle for 60 s every 600 s²⁾ DA1-34...: at 400 V, 50 Hz/at 440 - 480 V, 60 Hz

DA1-35...: at 500 V, 50 Hz/bei 550 - 600 V, 60 Hz

³⁾ For normal internally and externally ventilated four-pole three-phase asynchronous motors with 1500 rpm at 50 Hz and 1800 rpm at 60 Hz⁴⁾ Rated operational current at a switching frequency of 8 kHz and an ambient air temperature of +40°C

PowerXL variable frequency drives

DM1, for three-phase motors, 115 V/230 V/400 V, IP20

Rated operational current ¹⁾		Assigned motor rating ^{1), 2), 3)}		Rated operational current ¹⁾		Assigned motor rating ^{1), 2), 3)}		Features Radio interference filter Brake chopper 7-segment display	Frame size	Degree of protection	Part no.	Article no.					
$I_n = 150\%$				$I_n = 110\%$													
I_e				I_e													
A	kW	HP	A	kW	HP												
U _e 230 V AC, 3-phase / U ₂ 230 V AC, 3-phase, with EMC filter																	
Mains voltage (50/60 Hz) U _{LN} : 200 (-15%) - 240 (+10%) V																	
1.6	0.25	0.25	3	0.55	0.5	✓	✓	FS1	IP20/NEMA0	DM1-321D6EB-N20B-EM	3-5017-005A						
3	0.55	0.5	4.8	1.1	1	✓	✓			DM1-323D0EB-N20B-EM	3-5017-006A						
4.8	1.1	1	7.8	1.5	2	✓	✓			DM1-324D8EB-N20B-EM	3-5017-007A						
7.8	1.5	2	11	2.2	3	✓	✓			DM1-327D8EB-N20B-EM	3-5017-008A						
11	2.2	3	17.5	4	5	✓	✓	FS2		DM1-32011EB-N20B-EM	3-5019-003A						
17.5	4	5	25	5.5	7.5	✓	✓	FS3	FS4	DM1-32017EB-N20B-EM	3-5019-004A						
25	5.5	7.5	32	7.5	10	✓	✓			DM1-32025EB-N20B-EM	3-5021-002A						
32	7.5	10	48	11	15	✓	✓			DM1-32032EB-N20B-EM	3-5023-003A						
48	11	15	61	15	20	✓	✓			DM1-32048EB-N20B-EM	3-5023-004A						
U _e 400 V AC, 3-phase / U ₂ 400 V AC, 3-phase, with EMC filter																	
Mains voltage (50/60Hz) U _{LN} : 380 (-15%) - 500 (+10%) V																	
2.2	0.55	0.5	2.2	0.75	1	✓	✓	FS1	IP20/NEMA0	DM1-341D5EB-N20B-EM	3-5025-005A						
3.3	0.75	1	4.3	1.5	2	✓	✓			DM1-342D2EB-N20B-EM	3-5025-006A						
4.3	1.5	2	5.6	2.2	3	✓	✓			DM1-344D3EB-N20B-EM	3-5025-007A						
5.6	2.2	3	7.6	3	5	✓	✓			DM1-345D6EB-N20B-EM	3-5025-008A						
7.6	3	5	12	5.5	7.5	✓	✓	FS2		DM1-347D6EB-N20B-EM	3-5027-004A						
12	5.5	7.5	16	7.5	10	✓	✓	FS3	FS4	DM1-34012EB-N20B-EM	3-5027-005A						
16	7.5	10	23	11	15	✓	✓			DM1-34016EB-N20B-EM	3-5027-006A						
23	11	15	31	15	20	✓	✓			DM1-34023EB-N20B-EM	3-5029-002A						
31	15	20	38	18.5	25	✓	✓			DM1-34031EB-N20B-EM	3-5031-003A						
38	18.5	25	46	22	30	✓	✓			DM1-34038EB-N20B-EM	3-5031-004A						
U _e 115 V AC, 1-phase / U ₂ 230 V AC, 3-phase, with EMC filter																	
Mains voltage (50/60Hz) U _{LN} : 100 (-15%) - 120 (+10%) V																	
1.6	0.18	0.25	3	0.37	0.5	✓	✓	FS1	IP20/NEMA0	DM1-111D6EB-S20S-EM	3-5041-003A						
3	0.37	0.5	4.8	0.55	1	✓	✓			DM1-113D0EB-S20S-EM	3-5041-004A						
4.8	0.55	1	6.9	0.75	1.5	✓	✓			DM1-114D8EB-S20S-EM	3-5043-003A						
6.9	0.75	1.5	7.8	1.1	2	✓	✓			DM1-116D9EB-S20S-EM	3-5043-004A						
U _e 230 V AC, 1-phase / U ₂ 230 V AC, 3-phase, with EMC filter																	
Mains voltage (50/60Hz) U _{LN} : 200 (-15%) - 240 (+10%) V																	
1.6	0.25	0.25	3	0.55	0.5	✓	✓	FS1	IP20/NEMA0	DM1-121D6EB-S20S-EM	3-5045-004A						
3	0.55	0.5	4.8	1.1	1	✓	✓			DM1-123D0EB-S20S-EM	3-5045-005A						
4.8	1.1	1	7.8	1.5	2	✓	✓			DM1-124D8EB-S20S-EM	3-5045-006A						
7.8	1.5	2	11	2.2	3	✓	✓			DM1-127D8EB-S20S-EM	3-5047-003A						
11	2.2	3	17.5	4	5	✓	✓	FS2		DM1-12011EB-S20S-EM	3-5047-004A						
17.5	4	5	25	5.5	7.5	✓	✓	FS3		DM1-12017EB-S20S-EM	3-5049-002A						

Notes: ¹⁾ Overload cycle: 150 % for 60 s every 600 s

²⁾ DA1-12...: at 230 V, 50 Hz/at 220-240 V, 60 Hz

DA1-34...: at 400 V, 50 Hz/at 440-480 V, 60 Hz

³⁾ For normal four-pole, internally and externally ventilated three-phase asynchronous motors with 1500 min⁻¹ at 50 Hz or 1800 min⁻¹ at 60 Hz

Rated operational current ¹⁾			Assigned motor rating ^{1), 2), 3)}			Rated operational current ¹⁾			Assigned motor rating ^{1), 2), 3)}			Features			Frame size	Degree of protection	Part no.	Article no.
I _n = 150%			I _n = 110 %			I _n = 110 %			I _n = 110 %			Radio interference filter Brake chopper 7-segment display						
I _e A	kW	HP	I _e A	kW	HP	I _e A	kW	HP	I _e A	kW	HP	I _e A	kW	HP				
U _e 230 V AC, 3-phase / U ₂ 230 V AC, 3-phase, with EMC filter																		
Mains voltage (50/60 Hz) U _{LN} : 200 (-15%) - 240 (+10%) V																		
1.6	0.25	0.25	3	0.55	0.5	✓	✓	✓	FS1	IP20/NEMA0	DM1-321D6EB-S20S-EM	3-5001-005A						
3	0.55	0.5	4.8	1.1	1	✓	✓	✓	DM1-323D0EB-S20S-EM		3-5001-006A							
4.8	1.1	1	7.8	1.5	2	✓	✓	✓	DM1-324D8EB-S20S-EM		3-5001-007A							
7.8	1.5	2	11	2.2	3	✓	✓	✓	DM1-327D8EB-S20S-EM		3-5001-008A							
11	2.2	3	17.5	4	5	✓	✓	✓	FS2		DM1-32011EB-S20S-EM	3-5003-003A						
17.5	4	5	25	5.5	7.5	✓	✓	✓	DM1-32017EB-S20S-EM		3-5003-004A							
25	5.5	7.5	32	7.5	10	✓	✓	✓	FS2		DM1-32025EB-S20S-EM	3-5005-002A						
32	7.5	10	48	11	15	✓	✓	✓	FS4		DM1-32032EB-S20S-EM	3-5007-003A						
48	11	15	61	15	20	✓	✓	✓	DM1-32048EB-S20S-EM		3-5007-004A							
U _e 400 V AC, 3-phase / U ₂ 400 V AC, 3-phase, with EMC filter																		
Mains voltage (50/60Hz) U _{LN} : 380 (-15%) - 500 (+10%) V																		
1.5	0.55	0.5	2.2	0.75	1	✓	✓	✓	FS1	IP20/NEMA0	DM1-341D5EB-S20S-EM	3-5009-005A						
2.2	0.75	1	4.3	1.5	2	✓	✓	✓	DM1-342D2EB-S20S-EM		3-5009-006A							
4.3	1.5	2	5.6	2.2	3	✓	✓	✓	DM1-344D3EB-S20S-EM		3-5009-007A							
5.6	2.2	3	7.6	3	5	✓	✓	✓	DM1-345D6EB-S20S-EM		3-5009-008A							
7.6	3	5	12	5.5	7.5	✓	✓	✓	FS2		DM1-347D6EB-S20S-EM	3-5011-004A						
12	5.5	7.5	16	7.5	10	✓	✓	✓	DM1-34012EB-S20S-EM		3-5011-005A							
16	7.5	10	23	11	15	✓	✓	✓	DM1-34016EB-S20S-EM		3-5011-006A							
23	11	15	31	15	20	✓	✓	✓	FS3		DM1-34023EB-S20S-EM	3-5013-002A						
31	15	20	38	18.5	25	✓	✓	✓	FS4		DM1-34031EB-S20S-EM	3-5015-003A						
38	18.5	25	46	22	30	✓	✓	✓	DM1-34038EB-S20S-EM		3-5015-004A							
U _e 575 V AC, 3-phase / U ₂ 575 V AC, 3-phase, with EMC filter																		
Mains voltage (50/60Hz) U _{LN} : 525 (-15%) - 600 (+10%) V																		
4.5	2.2	3	7.5	4	5	✓	✓	✓	FS2	IP20/NEMA0	DM1-354D5EB-S20S-EM	3-5060-004A						
7.5	4	5	10	5.5	7.5	✓	✓	✓	DM1-357D5EB-S20S-EM		3-5060-005A							
10	5.5	7.5	13.5	7.5	10	✓	✓	✓	DM1-35010EB-S20S-EM		3-5060-006A							
13.5	7.5	10	18	11	15	✓	✓	✓	FS3		DM1-35013EB-S20S-EM	3-5061-002A						
18	11	15	22	15	20	✓	✓	✓	FS4		DM1-35018EB-S20S-EM	3-5062-003A						
22	15	20	27	18.5	25	✓	✓	✓	DM1-35022EB-S20S-EM		3-5062-004A							

Notes: ¹⁾ Overload cycle: 150 % for 60 s every 600 s

²⁾ DA1-12...: at 230 V, 50 Hz/at 220-240 V, 60 Hz

DA1-34...: at 400 V, 50 Hz/at 440-480 V, 60 Hz

³⁾ For normal four-pole, internally and externally ventilated three-phase asynchronous motors with 1500 min⁻¹ at 50 Hz or 1800 min⁻¹ at 60 Hz

PowerXL variable frequency drive

DG1 for three-phase motors 230 V, three-phase

Rated operational current ¹⁾	Assigned motor output ^{1) 2) 3)}		Rated operational current ¹⁾	Assigned motor output ^{1) 2) 3)}		Configuration			Frame size	Protection type	Part no.	Article no.
I _n = 150% I _e			I _n = 110% I _e			Radio interference suppression filter	Brake chopper	DC choke				
A	KW	HP	A	KW	HP							
U_e 230 V AC, three-phase / U_e 230 V AC, three-phase, with BU, IP20												
Mains voltage (50/60Hz) U _{LN} : 200 (-15%) - 240 (+10%) V												
3.7	0.75	0.75	4.8	1.1	1	✓	✓	–	FS0	IP20/NEMA0	DG1-323D7EB-C20C	9701-0200
4.8	1.1	1	6.6	1.5	1.5	✓	✓	–			DG1-324D8EB-C20C	9701-0201
6.6	1.5	1.5	7.8	1.5	2	✓	✓	–			DG1-326D6EB-C20C	9701-0202
U_e 230 V AC, three-phase / U_e 230 V AC, three-phase, with BU, IP21												
Mains voltage (50/60Hz) U _{LN} : 200 (-15%) - 240 (+10%) V												
3.7	0.75	0.75	4.8	1.1	1	✓	✓	✓	FS1	IP21/NEMA1	DG1-323D7FB-C21C	9701-1002-00P
4.8	1.1	1	6.6	1.5	1.5	✓	✓	✓			DG1-324D8FB-C21C	9701-1004-00P
6.6	1.5	1.5	7.8	1.5	2	✓	✓	✓			DG1-326D6FB-C21C	9701-1006-00P
7.8	1.5	2	11	2.2	3	✓	✓	✓			DG1-327D8FB-C21C	9701-1008-00P
11	2.2	3	12.5	3	3	✓	✓	✓			DG1-32011FB-C21C	9701-1001-00P
12.5	3	3	17.5	4	5	✓	✓	✓	FS2		DG1-32012FB-C21C	9701-2002-00P
17.5	4	5	25	5.5	7.5	✓	✓	✓			DG1-32017FB-C21C	9701-2004-00P
25	5.5	7.5	31	7.5	10	✓	✓	✓			DG1-32025FB-C21C	9701-2001-00P
31	7.5	10	48	11	15	✓	✓	✓	FS3		DG1-32031FB-C21C	9701-3002-00P
48	11	15	61	15	20	✓	✓	✓			DG1-32048FB-C21C	9701-3001-00P
61	15	20	75	22	25	✓	✓	✓	FS4		DG1-32061FB-C21C	9701-4002-00P
75	22	25	88	22	30	✓	✓	✓			DG1-32075FB-C21C	9701-4006-00P
88	22	30	114	30	40	✓	✓	✓			DG1-32088FB-C21C	9701-4010-00P
114	30	40	143	45	50	✓	✓	✓	FS5		DG1-32114FB-C21C	9701-5002-00P
143	45	50	170	45	60	✓	✓	✓			DG1-32143FB-C21C	9701-5006-00P
170	45	60	211	55	75	✓	✓	✓			DG1-32170FB-C21C	9701-5010-00P
211	55	75	261	75	100	✓	✓	✓	FS6		DG1-32211FB-C21C	9701-6001-00P
248	75	100	312	90	125	✓	✓	✓			DG1-32248FB-C21C	9701-6005-00P
U_e 230 V AC, three-phase / U_e 230 V AC, three-phase, without BU, IP21												
Mains voltage (50/60Hz) U _{LN} : 200 (-15%) - 240 (+10%) V												
61	15	20	75	22	25	✓	–	✓	FS4	IP21/NEMA1	DG1-32061FN-C21C	9701-4004-00P
75	22	25	88	22	30	✓	–	✓			DG1-32075FN-C21C	9701-4008-00P
88	22	30	114	30	40	✓	–	✓			DG1-32088FN-C21C	9701-4001-00P
114	30	40	143	45	50	✓	–	✓	FS5		DG1-32114FN-C21C	9701-5004-00P
143	45	50	170	45	60	✓	–	✓			DG1-32143FN-C21C	9701-5008-00P
170	45	60	211	55	75	✓	–	✓			DG1-32170FN-C21C	9701-5001-00P
211	55	75	261	75	100	✓	–	✓	FS6		DG1-32211FN-C21C	9701-6003-00P
248	75	100	312	90	125	✓	–	✓			DG1-32248FN-C21C	9701-6007-00P
U_e 230 V AC, three-phase / U_e 230 V AC, three-phase, with BU, IP54												
Mains voltage (50/60Hz) U _{LN} : 200 (-15%) - 240 (+10%) V												
3.7	0.75	0.75	4.8	1.1	1	✓	✓	✓	FS1	IP54/NEMA12	DG1-323D7FB-C54C	9701-1101-00P
4.8	1.1	1	6.6	1.5	1.5	✓	✓	✓			DG1-324D8FB-C54C	9701-1103-00P
6.6	1.5	1.5	7.8	1.5	2	✓	✓	✓			DG1-326D6FB-C54C	9701-1105-00P
7.8	1.5	2	11	2.2	3	✓	✓	✓			DG1-327D8FB-C54C	9701-1107-00P
11	2.2	3	12.5	3	3	✓	✓	✓			DG1-32011FB-C54C	9701-1109-00P
12.5	3	3	17.5	4	5	✓	✓	✓	FS2		DG1-32012FB-C54C	9701-2101-00P
17.5	4	5	25	5.5	7.5	✓	✓	✓			DG1-32017FB-C54C	9701-2103-00P
25	5.5	7.5	31	7.5	10	✓	✓	✓			DG1-32025FB-C54C	9701-2105-00P
31	7.5	10	48	11	15	✓	✓	✓	FS3		DG1-32031FB-C54C	9701-3101-00P
48	11	15	61	15	20	✓	✓	✓			DG1-32048FB-C54C	9701-3103-00P
61	15	20	75	22	25	✓	✓	✓	FS4		DG1-32061FB-C54C	9701-4101-00P
75	22	25	88	22	30	✓	✓	✓			DG1-32075FB-C54C	9701-4105-00P
88	22	30	114	30	40	✓	✓	✓			DG1-32088FB-C54C	9701-4109-00P
114	30	40	143	45	50	✓	✓	✓	FS5		DG1-32114FB-C54C	9701-5101-00P
143	45	50	170	45	60	✓	✓	✓			DG1-32143FB-C54C	9701-5105-00P
170	45	60	211	55	75	✓	✓	✓			DG1-32170FB-C54C	9701-5109-00P
211	55	75	261	75	100	✓	✓	✓	FS6		DG1-32211FB-C54C	9701-6101-00P
248	75	100	312	90	125	✓	✓	✓			DG1-32248FB-C54C	9701-6105-00P
U_e 230 V AC, three-phase / U_e 230 V AC, three-phase, without BU, IP54												
Mains voltage (50/60Hz) U _{LN} : 200 (-15%) - 240 (+10%) V												
61	15	20	75	22	25	✓	–	✓	FS4	IP54/NEMA12	DG1-32061FN-C54C	9701-4103-00P
75	22	25	88	22	30	✓	–	✓			DG1-32075FN-C54C	9701-4107-00P
88	22	30	114	30	40	✓	–	✓			DG1-32088FN-C54C	9701-4111-00P
114	30	40	143	45	50	✓	–	✓	FS5		DG1-32114FN-C54C	9701-5103-00P
143	45	50	170	45	60	✓	–	✓			DG1-32143FN-C54C	9701-5107-00P
170	45	60	211	55	75	✓	–	✓			DG1-32170FN-C54C	9701-5111-00P
211	55	75	261	75	100	✓	–	✓	FS6		DG1-32211FN-C54C	9701-6103-00P
248	75	100	312	90	125	✓	–	✓			DG1-32248FN-C54C	9701-6107-00P

Notes: ¹⁾ Overload cycle for 60 s every 600 s, 150% at 50°C ambient temperature, 110% at 40°C ambient temperature

²⁾ or normal internally and externally ventilated four-pole three-phase asynchronous motors with 1500 rpm at 50 Hz and 1800 rpm at 60 Hz

³⁾ At 400 V, 50 Hz/at 480 V, 60 Hz

Rated operational current ¹⁾	Assigned motor output ^{1) 2) 3)}		Rated operational current ¹⁾	Assigned motor output ^{1) 2) 3)}		Configuration			Frame size	Protection type	Part no.	Article no.
$I_n = 150\%$ I_e A	kW	HP	$I_n = 110\%$ I_e A	kW	HP	Radio interference suppression filter	Brake chopper	DC choke				
U_e 400 V AC, three-phase / U₂ 400 V AC, three-phase, with BU, IP20												
Mains voltage (50/60Hz) U _{LN} : 380 (-15%) - 500 (+10%) V												
2.2	0.75	1	3.3	1.1	1.5	✓	✓	—	FS0	IP20/NEMA0	DG1-342D2EB-C20C	9702-0200
3.3	1.1	1.5	4.3	1.5	2	✓	✓	—			DG1-343D3EB-C20C	9702-0201
4.3	1.5	2	5.6	2.2	3	✓	✓	—			DG1-344D3EB-C20C	9702-0202
5.6	2.2	3	7.6	3	5	✓	✓	—			DG1-345D6EB-C20C	9702-0203
U_e 400 V AC, three-phase / U₂ 400 V AC, three-phase, with BU, IP21												
Mains voltage (50/60Hz) U _{LN} : 380 (-15%) - 500 (+10%) V												
2.2	0.75	1	3.3	1.1	1.5	✓	✓	✓	FS1	IP21/NEMA1	DG1-342D2FB-C21C	9702-1002-00P
3.3	1.1	1.5	4.3	1.5	2	✓	✓	✓			DG1-343D3FB-C21C	9702-1004-00P
4.3	1.5	2	5.6	2.2	3	✓	✓	✓			DG1-344D3FB-C21C	9702-1006-00P
5.6	2.2	3	7.6	3	5	✓	✓	✓			DG1-345D6FB-C21C	9702-1008-00P
7.6	3	5	9	4	5	✓	✓	✓			DG1-347D6FB-C21C	9702-1001-00P
9	4	5	12	5.5	7.5	✓	✓	✓			DG1-349D0FB-C21C	9702-1011-00P
12	5.5	7.5	16	7.5	10	✓	✓	✓	FS2		DG1-34012FB-C21C	9702-2002-00P
16	7.5	10	23	11	15	✓	✓	✓			DG1-34016FB-C21C	9702-2004-00P
23	11	15	31	15	20	✓	✓	✓			DG1-34023FB-C21C	9702-2001-00P
31	15	20	38	18.5	25	✓	✓	✓	FS3		DG1-34031FB-C21C	9702-3002-00P
38	18.5	25	46	22	30	✓	✓	✓			DG1-34038FB-C21C	9702-3004-00P
46	22	30	61	30	40	✓	✓	✓			DG1-34046FB-C21C	9702-3001-00P
61	30	40	72	37	50	✓	✓	✓	FS4		DG1-34061FB-C21C	9702-4002-00P
72	37	50	87	45	60	✓	✓	✓			DG1-34072FB-C21C	9702-4006-00P
87	45	60	105	55	75	✓	✓	✓			DG1-34087FB-C21C	9702-4010-00P
105	55	75	140	75	100	✓	✓	✓	FS5		DG1-34105FB-C21C	9702-5002-00P
140	75	100	170	90	125	✓	✓	✓			DG1-34140FB-C21C	9702-5006-00P
170	90	125	205	110	150	✓	✓	✓			DG1-34170FB-C21C	9702-5010-00P
205	110	150	261	132	200	✓	✓	✓	FS6		DG1-34205FB-C21C	9702-6001-00P
245	132	200	310	160	250	✓	✓	✓			DG1-34245FB-C21C	9702-6005-00P
U_e 400 V AC, three-phase / U₂ 400 V AC, three-phase, without BU, IP21												
Mains voltage (50/60Hz) U _{LN} : 380 (-15%) - 500 (+10%) V												
61	30	40	72	37	50	✓	—	✓	FS4	IP21/NEMA1	DG1-34061FN-C21C	9702-4004-00P
72	37	50	87	45	60	✓	—	✓			DG1-34072FN-C21C	9702-4008-00P
87	45	60	105	55	75	✓	—	✓			DG1-34087FN-C21C	9702-4001-00P
105	55	75	140	75	100	✓	—	✓	FS5		DG1-34105FN-C21C	9702-5004-00P
140	75	100	170	90	125	✓	—	✓			DG1-34140FN-C21C	9702-5008-00P
170	90	125	205	110	150	✓	—	✓			DG1-34170FN-C21C	9702-5001-00P
205	110	150	261	132	200	✓	—	✓	FS6		DG1-34205FN-C21C	9702-6003-00P
245	132	200	310	160	250	✓	—	✓			DG1-34245FN-C21C	9702-6007-00P
U_e 400 V AC, three-phase / U₂ 400 V AC, three-phase, with BU, IP00												
310	160	250	385	200	300	✓	✓	✓	FS7	IP00	DG1-34310FB-C00C	3-4917-102A
385	200	300	460	250	350	✓	✓	✓			DG1-34385FB-C00C	3-4917-104A
460	250	350	520	250	450	✓	✓	✓			DG1-34460FB-C00C	3-4917-106A
520	250	450	590	315	500	✓	✓	✓			DG1-34520FB-C00C	3-4917-108A
590	315	500	650	355	500	✓	✓	✓	FS8		DG1-34590FB-C00C	3-4918-102A
650	355	500	730	400	600	✓	✓	✓			DG1-34650FB-C00C	3-4918-104A
730	400	600	820	450	600	✓	✓	✓			DG1-34730FB-C00C	3-4918-106A
820	450	600	920	500	750	✓	✓	✓			DG1-34820FB-C00C	3-4918-108A
920	500	750	1010	560	750	✓	✓	✓			DG1-34920FB-C00C	3-4918-110A
920	500	750	1180	630	850	✓	✓	✓			DG1-341K0FB-C00C	3-4918-112A
U_e 400 V AC, three-phase / U₂ 400 V AC, three-phase, without BU, IP00												
310	160	250	385	200	300	✓	—	✓	FS7	IP00	DG1-34310FN-C00C	3-4917-101A
385	200	300	460	250	350	✓	—	✓			DG1-34385FN-C00C	3-4917-103A
460	250	350	520	250	450	✓	—	✓			DG1-34460FN-C00C	3-4917-105A
520	250	450	590	315	500	✓	—	✓			DG1-34520FN-C00C	3-4917-107A
590	315	500	650	355	500	✓	—	✓	FS8		DG1-34590FN-C00C	3-4918-101A
650	355	500	730	400	600	✓	—	✓			DG1-34650FN-C00C	3-4918-103A
730	400	600	820	450	600	✓	—	✓			DG1-34730FN-C00C	3-4918-105A
820	450	600	920	500	750	✓	—	✓			DG1-34820FN-C00C	3-4918-107A
920	500	750	1010	560	750	✓	—	✓			DG1-34920FN-C00C	3-4918-109A
920	500	750	1180	630	850	✓	—	✓			DG1-341K0FN-C00C	3-4918-111A

Notes:¹⁾ Overload cycle for 60 s every 600 s, 150% at 50°C ambient temperature, 110% at 40°C ambient temperature²⁾ For normal internally and externally ventilated four-pole three-phase asynchronous motors with 1500 rpm at 50 Hz and 1800 rpm at 60 Hz³⁾ At 400 V, 50 Hz/at 480 V, 60 Hz

PowerXL Variable frequency drive

DG1Pro for three-phase motors 400 V, three-phase

Rated operational current ¹⁾	Assigned motor output ^{1) 2) 3)}		Rated operational current ¹⁾	Assigned motor output ^{1) 2) 3)}		Configuration			Frame size	Protection type	Part no.	Article no.
I _n = 150%			I _n = 110%			Radio interference suppression filter	Brake chopper	DC choke				
I _e			I _e									
A	kW HP		A	kW HP								
U _e 400 V AC, three-phase / U ₂ 400 V AC, three-phase, with BU, IP54												
Mains voltage (50/60Hz) U _{LN} : 380 (-15%) - 500 (+10%) V												
2.2	0.75	1	3.3	1.1	1.5	✓	✓	✓	FS1	IP54/NEMA12	DG1-342D2FB-C54C	9702-1101-00P
3.3	1.1	1.5	4.3	1.5	2	✓	✓	✓			DG1-343D3FB-C54C	9702-1103-00P
4.3	1.5	2	5.6	2.2	3	✓	✓	✓			DG1-344D3FB-C54C	9702-1105-00P
5.6	2.2	3	7.6	3	5	✓	✓	✓			DG1-345D6FB-C54C	9702-1107-00P
7.6	3	5	9	4	5	✓	✓	✓			DG1-347D6FB-C54C	9702-1109-00P
9	4	5	12	5.5	7.5	✓	✓	✓			DG1-349D0FB-C54C	9702-1111-00P
12	5.5	7.5	16	7.5	10	✓	✓	✓	FS2		DG1-34012FB-C54C	9702-2101-00P
16	7.5	10	23	11	15	✓	✓	✓			DG1-34016FB-C54C	9702-2103-00P
23	11	15	31	15	20	✓	✓	✓			DG1-34023FB-C54C	9702-2105-00P
31	15	20	38	18.5	25	✓	✓	✓	FS3		DG1-34031FB-C54C	9702-3101-00P
38	18.5	25	46	22	30	✓	✓	✓			DG1-34038FB-C54C	9702-3103-00P
46	22	30	61	30	40	✓	✓	✓			DG1-34046FB-C54C	9702-3105-00P
61	30	40	72	37	50	✓	✓	✓	FS4		DG1-34061FB-C54C	9702-4101-00P
72	37	50	87	45	60	✓	✓	✓			DG1-34072FB-C54C	9702-4105-00P
87	45	60	105	55	75	✓	✓	✓			DG1-34087FB-C54C	9702-4109-00P
105	55	75	140	75	100	✓	✓	✓	FS5		DG1-34105FB-C54C	9702-5101-00P
140	75	100	170	90	125	✓	✓	✓			DG1-34140FB-C54C	9702-5105-00P
170	90	125	205	110	150	✓	✓	✓			DG1-34170FB-C54C	9702-5109-00P
205	110	150	261	132	200	✓	✓	✓	FS6		DG1-34205FB-C54C	9702-6101-00P
245	132	200	310	160	250	✓	✓	✓			DG1-34245FB-C54C	9702-6105-00P
U _e 400 V AC, three-phase / U ₂ 400 V AC, three-phase, without BU, IP54												
Mains voltage (50/60Hz) U _{LN} : 380 (-15%) - 500 (+10%) V												
61	30	40	72	37	50	✓	–	✓	FS4	IP54/NEMA12	DG1-34061FN-C54C	9702-4103-00P
72	37	50	87	45	60	✓	–	✓			DG1-34072FN-C54C	9702-4107-00P
87	45	60	105	55	75	✓	–	✓			DG1-34087FN-C54C	9702-4111-00P
105	55	75	140	75	100	✓	–	✓	FS5		DG1-34105FN-C54C	9702-5103-00P
140	75	100	170	90	125	✓	–	✓			DG1-34140FN-C54C	9702-5107-00P
170	90	125	205	110	150	✓	–	✓			DG1-34170FN-C54C	9702-5111-00P
205	110	150	261	132	200	✓	–	✓	FS6		DG1-34205FN-C54C	9702-6103-00P
245	132	200	310	160	250	✓	–	✓			DG1-34245FN-C54C	9702-6107-00P
U _e 575 V AC, three-phase / U ₂ 575 V AC, three-phase, with BU, IP21												
Mains voltage (50/60Hz) U _{LN} : 380 (-15%) - 500 (+10%) V												
3.3	1.5	2	4.5	2.2	3	✓	✓	✓	FS1	IP21/NEMA1	DG1-353D3FB-C21C	9703-1002-00P
4.5	2.2	3	7.5	4	5	✓	✓	✓			DG1-354D5FB-C21C	9703-1004-00P
7.5	4	5	10	5.5	7.5	✓	✓	✓			DG1-357D5FB-C21C	9703-1006-00P
10	5.5	7.5	13.5	7.5	10	✓	✓	✓	FS2		DG1-35010FB-C21C	9703-2002-00P
13.5	7.5	10	18	11	15	✓	✓	✓			DG1-35013FB-C21C	9703-2004-00P
18	11	15	22	15	20	✓	✓	✓			DG1-35018FB-C21C	9703-2006-00P
22	15	20	27	18.5	25	✓	✓	✓	FS3		DG1-35022FB-C21C	9703-3002-00P
27	18.5	25	34	22	30	✓	✓	✓			DG1-35027FB-C21C	9703-3004-00P
34	22	30	41	30	40	✓	✓	✓			DG1-35034FB-C21C	9703-3006-00P
41	30	40	52	37	50	✓	✓	✓	FS4		DG1-35041FB-C21C	9703-4002-00P
52	37	50	62	45	60	✓	✓	✓			DG1-35052FB-C21C	9703-4006-00P
62	45	60	80	55	75	✓	✓	✓			DG1-35062FB-C21C	9703-4010-00P
80	55	75	100	75	100	✓	✓	✓	FS5		DG1-35080FB-C21C	9703-5002-00P
100	75	100	125	90	125	✓	✓	✓			DG1-35100FB-C21C	9703-5006-00P
125	90	125	144	110	150	✓	✓	✓			DG1-35125FB-C21C	9703-5010-00P
144	110	150	208	160	200	✓	✓	✓	FS6		DG1-35144FB-C21C	9703-6002-00P
208	160	200	250	200	250	✓	✓	✓			DG1-35208FB-C21C	9703-6005-00P
U _e 575 V AC, three-phase / U ₂ 575 V AC, three-phase without BU, IP21												
Mains voltage (50/60Hz) U _{LN} : 380 (-15%) - 500 (+10%) V												
41	30	40	52	37	50	✓	–	✓	FS4	IP21/NEMA1	DG1-35041FN-C21C	9703-4004-00P
52	37	50	62	45	60	✓	–	✓			DG1-35052FN-C21C	9703-4008-00P
62	45	60	80	55	75	✓	–	✓			DG1-35062FN-C21C	9703-4012-00P
80	55	75	100	75	100	✓	–	✓	FS5		DG1-35080FN-C21C	9703-5004-00P
100	75	100	125	90	125	✓	–	✓			DG1-35100FN-C21C	9703-5008-00P
125	90	125	144	110	150	✓	–	✓			DG1-35125FN-C21C	9703-5012-00P
144	110	150	208	160	200	✓	–	✓	FS6		DG1-35144FN-C21C	9703-6004-00P
208	160	200	250	200	250	✓	–	✓			DG1-35208FN-C21C	9703-6006-00P

Notes: ¹⁾ Overload cycle for 60 s every 600 s, 150% at 50°C ambient temperature, 110% at 40°C ambient temperature

²⁾ For normal internally and externally ventilated four-pole three-phase asynchronous motors with 1500 rpm at 50 Hz and 1800 rpm at 60 Hz

³⁾ At 400 V, 50 Hz/at 480 V, 60 Hz

Rated operational current ¹⁾	Assigned motor output ^{1) 2) 3)}		Rated operational current ¹⁾	Assigned motor output ^{1) 2) 3)}		Configuration			Frame size	Protection type	Part no.	Article no.
$I_n = 150\%$ I_e A	kW	HP	$I_n = 110\%$ I_e A	kW	HP	Radio interference suppression filter	Brake chopper	DC choke				
U_e 575 V AC, three-phase / U₂ 575 V AC, three-phase, with BU, IP54												
Mains voltage (50/60Hz) U _{LN} : 380 (-15%) - 500 (+10%) V												
3.3	1.5	2	4.5	2.2	3	✓	✓	✓	FS1	IP54/NEMA12	DG1-353D3FB-C54C	9703-1102-00P
4.5	2.2	3	7.5	4	5	✓	✓	✓			DG1-354D5FB-C54C	9703-1104-00P
7.5	4	5	10	5.5	7.5	✓	✓	✓			DG1-357D5FB-C54C	9703-1106-00P
10	5.5	7.5	13.5	7.5	10	✓	✓	✓	FS2		DG1-35010FB-C54C	9703-2102-00P
13.5	7.5	10	18	11	15	✓	✓	✓			DG1-35013FB-C54C	9703-2104-00P
18	11	15	22	15	20	✓	✓	✓			DG1-35018FB-C54C	9703-2106-00P
22	15	20	27	18.5	25	✓	✓	✓	FS3		DG1-35022FB-C54C	9703-3102-00P
27	18.5	25	34	22	30	✓	✓	✓			DG1-35027FB-C54C	9703-3104-00P
34	22	30	41	30	40	✓	✓	✓			DG1-35034FB-C54C	9703-3106-00P
41	30	40	52	37	50	✓	✓	✓	FS4		DG1-35041FB-C54C	9703-4102-00P
52	37	50	62	45	60	✓	✓	✓			DG1-35052FB-C54C	9703-4106-00P
62	45	60	80	55	75	✓	✓	✓			DG1-35062FB-C54C	9703-4110-00P
80	55	75	100	75	100	✓	✓	✓	FS5		DG1-35080FB-C54C	9703-5102-00P
100	75	100	125	90	125	✓	✓	✓			DG1-35100FB-C54C	9703-5106-00P
125	90	125	144	110	150	✓	✓	✓			DG1-35125FB-C54C	9703-5110-00P
144	110	150	208	160	200	✓	✓	✓	FS6		DG1-35144FB-C54C	9703-6102-00P
208	160	200	250	200	250	✓	✓	✓			DG1-35208FB-C54C	9703-6105-00P
U_e 575 V AC, three-phase / U₂ 575 V AC, three-phase, without BU, IP54												
Mains voltage (50/60Hz) U _{LN} : 380 (-15%) - 500 (+10%) V												
41	30	40	52	37	50	✓	–	✓	FS4	IP54/NEMA12	DG1-35041FN-C54C	9703-4104-00P
52	37	50	62	45	60	✓	–	✓			DG1-35052FN-C54C	9703-4108-00P
62	45	60	80	55	75	✓	–	✓			DG1-35062FN-C54C	9703-4112-00P
80	55	75	100	75	100	✓	–	✓	FS5		DG1-35080FN-C54C	9703-5104-00P
100	75	100	125	90	125	✓	–	✓			DG1-35100FN-C54C	9703-5108-00P
125	90	125	144	110	150	✓	–	✓			DG1-35125FN-C54C	9703-5112-00P
144	110	150	208	160	200	✓	–	✓	FS6		DG1-35144FN-C54C	9703-6104-00P
208	160	200	250	200	250	✓	–	✓			DG1-35208FN-C54C	9703-6106-00P
U_e 575 V AC, three-phase / U₂ 575 V AC, three-phase, with BU, IP00												
261	200	250	325	250	300	✓	✓	✓	FS7	IP00	DG1-35261FB-C00C	3-4917-304A
325	250	300	385	315	400	✓	✓	✓			DG1-35325FB-C00C	3-4917-306A
385	315	400	416	315	450	✓	✓	✓			DG1-35385FB-C00C	3-4917-308A
416	315	450	460	355	450	✓	✓	✓	FS8		DG1-35416FB-C00C	3-4918-302A
460	355	450	520	400	500	✓	✓	✓			DG1-35460FB-C00C	3-4918-304A
520	400	500	590	450	600	✓	✓	✓			DG1-35520FB-C00C	3-4918-306A
590	450	600	650	500	600	✓	✓	✓			DG1-35590FB-C00C	3-4918-308A
650	500	600	750	560	750	✓	✓	✓			DG1-35650FB-C00C	3-4918-310A
650	500	600	820	630	750	✓	✓	✓			DG1-35820FB-C00C	3-4918-312A
U_e 575 V AC, three-phase / U₂ 575 V AC, three-phase, without BU, IP00												
261	200	250	325	250	300	✓	–	✓	FS7	IP00	DG1-35261FN-C00C	3-4917-303A
325	250	300	385	315	400	✓	–	✓			DG1-35325FN-C00C	3-4917-305A
385	315	400	416	315	450	✓	–	✓			DG1-35385FN-C00C	3-4917-307A
416	315	450	460	355	450	✓	–	✓	FS8		DG1-35416FN-C00C	3-4918-301A
460	355	450	520	400	500	✓	–	✓			DG1-35460FN-C00C	3-4918-303A
520	400	500	590	450	600	✓	–	✓			DG1-35520FN-C00C	3-4918-305A
590	450	600	650	500	600	✓	–	✓			DG1-35590FN-C00C	3-4918-307A
650	500	600	750	560	750	✓	–	✓			DG1-35650FN-C00C	3-4918-309A
650	500	600	820	630	750	✓	–	✓			DG1-35820FN-C00C	3-4918-311A

Note: ¹⁾ Overload cycle for 60 s every 600 s, 150% at 50°C ambient temperature, 110% at 40°C ambient temperature

²⁾ For normal internally and externally ventilated four-pole three-phase asynchronous motors with 1500 rpm at 50 Hz and 1800 rpm at 60 Hz

³⁾ At 400 V, 50 Hz/at 480 V, 60 Hz

PowerXL cold plate unit

DB1 for three-phase motors, 230 V/400 V, IP20

Rated operational current ¹⁾	Assigned motor rating ^{1), 2), 3)}		Radio interference filter	Brake chopper	Frame size	Degree of protection	Part no.	Article no.
I _e A	P kW	P HP						
Mains voltage (50/60 Hz) U _{LN} 110 (-10%) - 115 (+10%) V U _e = 1-phase / U ₂ = 3-phase								
3.2	0.75	1.00	✓	-	FS1	IP20/NEMA 0	DB1-1D3D2FN-N2CC	199347
Mains voltage (50/60 Hz) U _{LN} 110 (-10%) - 240 (+10%) V U _e = 1-phase / U ₂ = 3-phase								
4.3	0.75	1.00	✓	-	FS1C	IP20/NEMA 0	DB1-1M4D3FN-N2CC-PFC	199738
Mains voltage (50/60 Hz) U _{LN} 200 (-10%) - 240 (+10%) V U _e = 1-phase / U ₂ = 3-phase								
2.3	0.37	0.50	✓	-	FS1	IP20/NEMA 0	DB1-122D3FN-N2CC	197193
4.3	0.75	1	✓	-			DB1-124D3FN-N2CC	197194
7	1.5	2	✓	-	FS1C		DB1-127D0FN-N2CC-PFC	199739
Mains voltage (50/60 Hz) U _{LN} 200 (-10%) - 240 (+10%) V U _e = 3-phase / U ₂ = 3-phase								
2.3	0.37	0.50	✓	-	FS1	IP20/NEMA 0	DB1-322D3FN-N2CC	199735
4.3	0.75	1	✓	-			DB1-324D3FN-N2CC	199736
7	1.5	2	✓	-			DB1-327D0FN-N2CC	199737
Mains voltage (50/60 Hz) U _{LN} 380 (-10%) - 480 (+10%) V U _e = 3-phase / U ₂ = 3-phase								
2.2	0.75	1	✓		FS1	IP20/NEMA 0	DB1-342D2FN-N2CC	197196
4.1	1.5	2	✓				DB1-344D1FN-N2CC	197197
5.8	2.2	3	✓				DB1-345D8FB-N2CC	197565
9.5	4	5	✓				DB1-349D5FB-N2CC	197566

Notes: ¹⁾ Overload cycle for 60 s every 600 s

²⁾ DB1-1D....: at 115 V, 50 Hz/at 110 – 120 V, 60 Hz

DB1-1M....: at 115 – 230 V, 50 Hz/at 110 – 240 V, 60 Hz

DB1-12... & DB1-32....: at 230 V, 50 Hz/at 220 – 240 V, 60 Hz

DB1-34....: at 400 V, 50 Hz/at 440 – 480 V, 60 Hz

³⁾ For normal four-pole, internally and externally ventilated three-phase asynchronous motors with 1500 min⁻¹ at 50 Hz or 1800-1 at 60 Hz



DB1, FS1



DB1, FS2

AS-Interface profile: S7.4 for 31 stations

RAMO5 motor starter

Rated operational current ¹⁾	Assigned motor rating ^{2),3)}		Control voltage External brake ⁴⁾	Inputs/ outputs		DOL starter		Reversing starter	
	P kW	P HP		Sensor input	Actuator output ⁵⁾	Without repair switch	With repair switch	Without repair switch	With repair switch
I _a A	P kW	P HP	(50/60 Hz)	Sensor input	Actuator output ⁵⁾	Part no. Article no.	Part no. Article no.	Part no. Article no.	Part no. Article no.
6.6	0.09-3	0.125-4	-	2	0	RAMO5-D200A31-4120S1 199060	RAMO5-D200A31-412RS1 199069	RAMO5-W200A31-4120S1 199080	RAMO5-W200A31-412RS1 199099
				2	1			RAMO5-W210A31-4120S1 199084	RAMO5-W210A31-412RS1 199103
			180/207 V DC	2	0	RAMO5-D201A31-4120S1 199061	RAMO5-D201A31-412RS1 199070	RAMO5-W201A31-4120S1 199081	RAMO5-W201A31-412RS1 199100
				2	1			RAMO5-W211A31-4120S1 199085	RAMO5-W211A31-412RS1 199104
			230/277 V DC	2	0	RAMO5-D202A31-4120S1 199062	RAMO5-D202A31-412RS1 199071	RAMO5-W202A31-4120S1 199082	RAMO5-W202A31-412RS1 199101
				2	1			RAMO5-W212A31-4120S1 199086	RAMO5-W212A31-412RS1 199105
			400/480 V AC	2	0	RAMO5-D204A31-4120S1 199063	RAMO5-D204A31-412RS1 199072	RAMO5-W204A31-4120S1 199083	RAMO5-W204A31-412RS1 199102
				2	1			RAMO5-W214A31-4120S1 199087	RAMO5-W214A31-412RS1 199106

RASP5 variable frequency drive

Rated operational current ¹⁾	Assigned motor rating ^{2),3)}		Control voltage External brake ⁴⁾	Inputs/ outputs		Without integrated brake resistor		With integrated brake resistor	
	P kW	P HP		Sensor input	Actuator output ⁵⁾	Without repair switch	With repair switch	Without repair switch	With repair switch
I _a A	P kW	P HP	(50/60 Hz)	Sensor input	Actuator output ⁵⁾	Part no. Article no.	Part no. Article no.	Part no. Article no.	Part no. Article no.
2.4	0.75	1	-	4	0	RASP5-2400A31-412000S1 198728	RASP5-2400A31-412R000S1 198744	RASP5-2400A31-4120100S1 198732	RASP5-2400A31-412R100S1 198748
			180/207 V DC	4	0	RASP5-2401A31-412000S1 198729	RASP5-2401A31-412R000S1 198745	RASP5-2401A31-4120100S1 198733	RASP5-2401A31-412R100S1 198749
			230/277 V DC	4	0	RASP5-2402A31-412000S1 198730	RASP5-2402A31-412R000S1 198746	RASP5-2402A31-4120100S1 198734	RASP5-2402A31-412R100S1 198750
			400/480 V AC	4	0	RASP5-2404A31-412000S1 198731	RASP5-2404A31-412R000S1 198747	RASP5-2404A31-4120100S1 198735	RASP5-2404A31-412R100S1 198751
4.3	1.5	2	-	4	0	RASP5-4400A31-412000S1 198764	RASP5-4400A31-412R000S1 198780	RASP5-4400A31-4120100S1 198768	RASP5-4400A31-412R100S1 198784
			180/207 V DC	4	0	RASP5-4401A31-412000S1 198765	RASP5-4401A31-412R000S1 198781	RASP5-4401A31-4120100S1 198769	RASP5-4401A31-412R100S1 198785
			230/277 V DC	4	0	RASP5-4402A31-412000S1 198766	RASP5-4402A31-412R000S1 198782	RASP5-4402A31-4120100S1 198770	RASP5-4402A31-412R100S1 198786
			400/480 V AC	4	0	RASP5-4404A31-412000S1 198767	RASP5-4404A31-412R000S1 198783	RASP5-4404A31-4120100S1 198771	RASP5-4404A31-412R100S1 198787
5.6	2.2	3	-	4	0	RASP5-5400A31-412000S1 198800	RASP5-5400A31-412R000S1 198816	RASP5-5400A31-4120100S1 198804	RASP5-5400A31-412R100S1 198820
			180/207 V DC	4	0	RASP5-5401A31-412000S1 198801	RASP5-5401A31-412R000S1 198817	RASP5-5401A31-4120100S1 198805	RASP5-5401A31-412R100S1 198821
			230/277 V DC	4	0	RASP5-5402A31-412000S1 198802	RASP5-5402A31-412R000S1 198818	RASP5-5402A31-4120100S1 198806	RASP5-5402A31-412R100S1 198822
			400/480 V AC	4	0	RASP5-5404A31-412000S1 198803	RASP5-5404A31-412R000S1 198819	RASP5-5404A31-4120100S1 198807	RASP5-5404A31-412R100S1 198823
8.5	4	5	-	4	0	RASP5-8400A31-412000S1 198836	RASP5-8400A31-412R001S1 198852	RASP5-8400A31-4120101S1 198840	RASP5-8400A31-412R101S1 198856
			180/207 V DC	4	0	RASP5-8401A31-412000S1 198837	RASP5-8401A31-412R001S1 198853	RASP5-8401A31-4120101S1 198841	RASP5-8401A31-412R101S1 198857
			230/277 V DC	4	0	RASP5-8402A31-412000S1 198838	RASP5-8402A31-412R001S1 198854	RASP5-8402A31-4120101S1 198842	RASP5-8402A31-412R101S1 198858
			400/480 V AC	4	0	RASP5-8404A31-412000S1 198839	RASP5-8404A31-412R001S1 198855	RASP5-8404A31-4120101S1 198843	RASP5-8404A31-412R101S1 198859

Notes

- 1) Adjustable from 0.3 - 6.6
- 2) For normal four-pole, internally and externally ventilated three-phase asynchronous motors with 1500 min⁻¹ at 50 Hz or 1800 min⁻¹ at 60 Hz
- 3) At 400 V, 50 Hz
at 440-480 V, 60 Hz
- 4) For controlling motors with mechanical brakes
- 5) Operation with external 24 V DC supply

RAMO5 motor starter

Rated operational current ¹⁾	Assigned motor rating ^{2), 3)}		Control voltage External brake ⁴⁾	Inputs/ outputs		DOL starter		Reversing starter	
						Without repair switch	With repair switch	Without repair switch	With repair switch
I _e A	P kW	P HP	(50/60 Hz)	Sensor input	Actuator output ⁵⁾	Part no. Article no.	Part no. Article no.	Part no. Article no.	Part no. Article no.
6.6	0.09-3	0.125-4	-	4	2	RAMO5-D420PNT-4120S1 199125	RAMO5-D420PNT-412RS1 199129	RAMO5-W420PNT-4120S1 199133	RAMO5-W420PNT-412RS1 199137
			180/207 V DC	4	2	RAMO5-D421PNT-4120S1 199126	RAMO5-D421PNT-412RS1 199130	RAMO5-W421PNT-4120S1 199134	RAMO5-W421PNT-412RS1 199138
			230/277 V DC	4	2	RAMO5-D422PNT-4120S1 199127	RAMO5-D422PNT-412RS1 199131	RAMO5-W422PNT-4120S1 199135	RAMO5-W422PNT-412RS1 199139
			400/480 V AC	4	2	RAMO5-D424PNT-4120S1 199128	RAMO5-D424PNT-412RS1 199132	RAMO5-W424PNT-4120S1 199136	RAMO5-W424PNT-412RS1 199140

RASP5 variable frequency drive

Rated operational current ¹⁾	Assigned motor rating ²⁾ ³⁾		Control voltage External brake ⁴⁾	Inputs/ outputs		Without integrated brake resistor		With integrated brake resistor	
						Without repair switch	With repair switch	Without repair switch	With repair switch
I _e A	P kW	P HP	(50/60 Hz)	Sensor input	Actuator output ⁵⁾	Part no. Article no.	Part no. Article no.	Part no. Article no.	Part no. Article no.
2.4	0.75	1	-	4	2	RASP5-2420PNT-4120000S1 198932	RASP5-2420PNT-412R000S1 198948	RASP5-2420PNT-4120100S1 198936	RASP5-2420PNT-412R100S1 198952
			180/207 V DC	4	2	RASP5-2421PNT-4120000S1 198933	RASP5-2421PNT-412R000S1 198949	RASP5-2421PNT-4120100S1 198937	RASP5-2420PNT-412R100S1 198953
			230/277 V DC	4	2	RASP5-2422PNT-4120000S1 198934	RASP5-2422PNT-412R000S1 198950	RASP5-2422PNT-4120100S1 198938	RASP5-2421PNT-412R100S1 198954
			400/480 V AC	4	2	RASP5-2424PNT-4120000S1 198935	RASP5-2424PNT-412R000S1 198951	RASP5-2424PNT-4120100S1 198939	RASP5-2422PNT-412R100S1 198955
4.3	1.5	2	-	4	2	RASP5-4420PNT-4120000S1 198964	RASP5-4420PNT-412R000S1 198980	RASP5-4420PNT-4120100S1 198968	RASP5-2424PNT-412R100S1 198984
			180/207 V DC	4	2	RASP5-4421PNT-4120000S1 198965	RASP5-4421PNT-412R000S1 198981	RASP5-4421PNT-4120100S1 198969	RASP5-4420PNT-412R100S1 198985
			230/277 V DC	4	2	RASP5-4422PNT-4120000S1 198966	RASP5-4422PNT-412R000S1 198982	RASP5-4422PNT-4120100S1 198970	RASP5-4421PNT-412R100S1 198986
			400/480 V AC	4	2	RASP5-4424PNT-4120000S1 198967	RASP5-4424PNT-412R000S1 198983	RASP5-4424PNT-4120100S1 198971	RASP5-4422PNT-412R100S1 198987
5.6	2.2	3	-	4	2	RASP5-5420PNT-4120000S1 198996	RASP5-5420PNT-412R000S1 199012	RASP5-5420PNT-4120100S1 199000	RASP5-4424PNT-412R100S1 199016
			180/207 V DC	4	2	RASP5-5421PNT-4120000S1 198997	RASP5-5421PNT-412R000S1 199013	RASP5-5421PNT-4120100S1 199001	RASP5-5420PNT-412R100S1 199017
			230/277 V DC	4	2	RASP5-5422PNT-4120000S1 198998	RASP5-5422PNT-412R000S1 199014	RASP5-5422PNT-4120100S1 199002	RASP5-5421PNT-412R100S1 199018
			400/480 V AC	4	2	RASP5-5424PNT-4120000S1 198999	RASP5-5424PNT-412R000S1 199015	RASP5-5424PNT-4120100S1 199003	RASP5-5422PNT-412R100S1 199019
8.5	4	5	-	4	2	RASP5-8420PNT-4120001S1 199028	RASP5-8420PNT-412R001S1 199044	RASP5-8420PNT-4120101S1 199032	RASP5-8420PNT-412R101S1 199048
			180/207 V DC	4	2	RASP5-8421PNT-4120001S1 199029	RASP5-8421PNT-412R001S1 199045	RASP5-8421PNT-4120101S1 199033	RASP5-8421PNT-412R101S1 199049
			230/277 V DC	4	2	RASP5-8422PNT-4120001S1 199030	RASP5-8422PNT-412R001S1 199046	RASP5-8422PNT-4120101S1 199034	RASP5-8422PNT-412R101S1 199050
			400/480 V AC	4	2	RASP5-8424PNT-4120001S1 199031	RASP5-8424PNT-412R001S1 199047	RASP5-8424PNT-4120101S1 199035	RASP5-8424PNT-412R101S1 199051

Notes

- 1) Rated operational current at a switching frequency of 6 kHz and an ambient temperature of +40 °C
- 2) For normal four-pole, internally and externally ventilated three-phase asynchronous motors with 1500 min⁻¹ at 50 Hz or 1800 min⁻¹ at 60 Hz
- 3) At 400 V, 50 Hz
at 440-480 V, 60 Hz
- 4) For controlling motors with mechanical brakes
- 5) Integrated brake chopper with resistor for dynamic braking

EtherNet/IP

RAMO5 motor starter

Rated operational current ¹⁾	Assigned motor rating ^{2),3)}		Control voltage External brake ⁴⁾	Inputs/ outputs		DOL starter		Reversing starter	
						Without repair switch	With repair switch	Without repair switch	With repair switch
I _e A	P kW	P HP	(50/60 Hz)	Sensor input	Actuator output ⁵⁾	Part no. Article no.	Part no. Article no.	Part no. Article no.	Part no. Article no.
6.6	0.09-3	0.125-4	-	4	2		RAMO5-D420EIP-412RS1 199117		RAMO5-W420PNT-412RS1 199121
			180/207 V DC	4	2		RAMO5-D421PNT-412RS1 199118		RAMO5-W421PNT-412RS1 199122
			230/277 V DC	4	2		RAMO5-D422PNT-412RS1 199119		RAMO5-W422PNT-412RS1 199123
			400/480 V AC	4	2		RAMO5-D424PNT-412RS1 199120		RAMO5-W424PNT-412RS1 199124

RASP5 variable frequency drive

Rated operational current ¹⁾	Assigned motor rating ^{2),3)}		Control voltage External brake ⁴⁾	Inputs/ outputs		Without integrated brake resistor		With integrated brake resistor	
						Without repair switch	With repair switch	Without repair switch	With repair switch
I _e A	P kW	P HP	(50/60 Hz)	Sensor input	Actuator output ⁵⁾	Part no. Article no.	Part no. Article no.	Part no. Article no.	Part no. Article no.
2.4	0.75	1	-	4	2		RASP5-2420EIP-412R000S1 198868		RASP5-2420EIP-412R100S1 198872
			180/207 V DC	4	2		RASP5-2421EIP-412R000S1 198869		RASP5-2421EIP-412R100S1 198873
			230/277 V DC	4	2		RASP5-2422EIP-412R000S1 198870		RASP5-2422EIP-412R100S1 198874
			400/480 V AC	4	2		RASP5-2424EIP-412R000S1 198871		RASP5-2424EIP-412R100S1 198875
4.3	1.5	2	-	4	2		RASP5-4420EIP-412R000S1 198884		RASP5-4420EIP-412R100S1 198888
			180/207 V DC	4	2		RASP5-4421EIP-412R000S1 198885		RASP5-4421EIP-412R100S1 198889
			230/277 V DC	4	2		RASP5-4422EIP-412R000S1 198886		RASP5-4422EIP-412R100S1 198890
			400/480 V AC	4	2		RASP5-4424EIP-412R000S1 198887		RASP5-4424EIP-412R100S1 198891
5.6	2.2	3	-	4	2		RASP5-5420EIP-412R000S1 198900		RASP5-5420EIP-412R100S1 198904
			180/207 V DC	4	2		RASP5-5421EIP-412R000S1 198901		RASP5-5421EIP-412R100S1 198905
			230/277 V DC	4	2		RASP5-5422EIP-412R000S1 198902		RASP5-5422EIP-412R100S1 198906
			400/480 V AC	4	2		RASP5-5424EIP-412R000S1 198903		RASP5-5424EIP-412R100S1 198907
8.5	4	5	-	4	2		RASP5-8420EIP-412R001S1 198916		RASP5-8420EIP-412R101S1 198920
			180/207 V DC	4	2		RASP5-8421EIP-412R001S1 198917		RASP5-8421EIP-412R101S1 198921
			230/277 V DC	4	2		RASP5-8422EIP-412R001S1 198918		RASP5-8422EIP-412R101S1 198922
			400/480 V AC	4	2		RASP5-8424EIP-412R001S1 198919		RASP5-8424EIP-412R101S1 198923

Notes

- 1) Rated operational current at a switching frequency of 6 kHz and an ambient temperature of +40 °C
- 2) For normal four-pole, internally and externally ventilated three-phase asynchronous motors with 1500 min-1 at 50 Hz or 1800 min-1 at 60 Hz
- 3) At 400 V, 50 Hz
at 440-480 V, 60 Hz
- 4) For controlling motors with mechanical brakes
- 5) Integrated brake chopper with resistor for dynamic braking

PowerXL variable frequency drives













Accessories

	Description	For use with	Part no.	Article no.
External control unit				
	7-digit display IP54 at the front With approx. 3 m long, pluggable connection cable (RJ45, 8-pin)	DE1, DE11, DC1, DB1, DA1	DX-KEY-LED2	186946
	OLED display IP54 at the front Multi-language With approx. 3 m long, pluggable connection cable (RJ45, 8-pin)	DC1, DB1, DA1, RAM05, RASP5	DX-KEY-OLED	169133
	LCD display IP54 at the front Multi-language	DG1	DXG-KEY-LCD	730-32047-00P
	Mounting frame With approx. 0.5 m long, pluggable connection cable	DG1, DM1	DXG-KEY-RMTKIT	730-32033-00P
	Mounting frame		DXG-KEY-HOLDER	730-32032-00P
	Cover for RJ45 interface		DXG-KEY-N12PLUG	730-32038-00P
Configuration module				
Plug-in module (front)				
	With selector switch for ramp time and operating mode With potentiometer for motor protection and fixed speed	DE1, DE11	DXE-EXT-SET	174621
Expansion modules				
Output expansion				
	2 relay outputs (N/O, 250 V AC/220 V DC, max. 1 A) 1 analog output (0 - +10 V, max. 20 mA) For connection to the DC1 control signal terminals	DC1	DXC-EXT-2R01A0	169030
	2 relay outputs (N/O, 250 V AC/220 V DC, max. 1 A) For connection to the DC1 control signal terminals	DC1	DXC-EXT-2R0	169031
	Plug-in module with pluggable terminal strip, 5-pole 3 relay outputs (N/O, 250 V AC, max. 6 A/ 30 V DC, max. 5 A)	DA1	DXA-EXT-3R0	169121
Input/output expansion				
	Plug-in module with pluggable terminal strip, 6-pole 3 digital inputs (+24 V) 1 relay output (N/O, 250 V AC, max. 6 A/ 30 V DC, max. 5 A)	DA1	DXA-EXT-3DI1R0	169036
	3 digital inputs 3 digital outputs 1 thermistor input	DG1	DXG-EXT-3DI3DO1T	744-A2612-00P
	1 analog input 2 analog outputs	DG1	DXG-EXT-1AI2AO	744-A2613-00P

	Description	For use with	Part no.	Article no.
Expansion modules				
Input/output expansion				
	3 PT100 inputs	DG1	DXG-EXT-THER1	744-A2615-00P
	3 relay outputs	DG1	DXG-EXT-3R0	744-A2614-00P
	240 V AC input (galvanically isolated) For 6 digital inputs	DG1	DXG-EXT-6DI	744-A2616-00P
Encoder module				
	Plug-in module with pluggable terminal strip, 5-pole 2 channels max. 500 kHz 5 V TTL, A & B, /A & /B, 5 V DC, max. 200 mA 24 V HTL, A & B, /A & /B, 24 V DC, external power supply required, max. 30 V DC	DA1	DXA-EXT-ENCOD	169035
Coupling module				
	115 V AC input (galvanically isolated) For 4 digital inputs For connection to the DC1 control signal terminals	DC1	DXC-EXT-IO110	169032
	230 V AC input (galvanically isolated) For 4 digital inputs For connection to the DC1 control signal terminals	DC1	DXC-EXT-IO230	169033
Fieldbus module				
	PROFIBUS-DP SUB-D socket, 9-pole	DA1	DX-NET-PROFIBUS	169124
	PROFINET 2 x RJ45, 8-pole Plug-in module	DA1	DX-NET-PROFINET-2	169125
	Modbus-TCP 2 x RJ45, 8-pole	DA1	DX-NET-MODBUSTCP-2	169126
	EtherNet/IP 2 x RJ45, 8-pole	DA1	DX-NET-ETHERNET-2	169122
	EtherCAT 2 x RJ45, 8-pole	DA1	DX-NET-ETHERCAT-2	169127
	PROFINET 2 x RJ45, 8-pole Plug-in module (front)	DE1, DE11, DC1 (IP20)	DX-NET-PROFINET2-2	184947
	EtherNet/IP 2 x RJ45, 8-pole Plug-in module (front)	DE1, DE11, DC1 (IP20)	DX-NET-ETHERNET2-2	184969
DG1 network interfaces				
	PROFIBUS-DP SUB-D socket, 9-pole	DG1	DXG-NET-PROFIBUS	744-A2617-00P
	Interface converter from 9-pole SUB-D connector to 3-pole control terminals	DXG-NET-PROFIBUS	DXG-MNT-PROFIBUS	744-A2618-00P
Network interfaces				
	DG1/DH1 networking: DEVICENET	DG1	DXG-NET-DEVICENET	744-F0117-00P
	DG1/DH1 networking: SWD-IP20	DG1, DM1	DXG-NET-SWD-IP20	744-F0190-00P
	DG1/DH1 networking: SWD-IP54	DG1	DXG-NET-SWD-IP54	744-F0191-00P
	DG1/DH1 networking: PROFINET	DG1	DXG-NET-PROFINET	EP-400003
DM1 Pro network interfaces				
	DM1 Profibus option with clip-on housing	DM1	DXM-NET-PROFIBUS	3-5039-001A
	DM1 CANopen option with clip-on housing	DM1	DXM-NET-CANOPEN	3-5040-001A
	DM1 Profinet option with clip-on housing	DM1	DXM-NET-PROFINET	EP-400004

PowerXL variable frequency drives

Accessories

	Description	For use with	Part no.	Article no.
SmartWire-DT modules				
	Plug-in module with slot for SWD4-8SF2-5 external device plug 	DA1 (IP20, IP55)	DX-NET-SWD1	169129
	Plug-in module (at the front) with slot for SWD4-8SF2-5 external device plug 	DE1, DE11, DC1 (IP20)	DX-NET-SWD3	169131
	Communication module for wiring (bottom mounting), slot for device plug SWD4-8SFS2-5	DG1, DM1 (IP20)	DXG-NET-SWD-IP20	744-F0190-00P
	Communication module for wiring (bottom mounting), slot for device plug SWD4-8SFS2-5	DG1 (IP54)	DXG-NET-SWD-IP54	744-F0191-00P
PC communication				
Memory and Bluetooth communication stick				
	For storage, copy and/or transfer of parameters via Bluetooth to a PC using the drivesConnect software or mobile app, with two function keys for uploading and downloading parameters from the memory using a Bluetooth dongle.	DE1, DE11, DC1, DB1, DA1, RAM05, RASP5	DX-COM-STICK3-KIT	197586
Interface converters				
	USB/RS485 interface converter with connection cable, RJ45, 8-pole Galvanically isolated	DE1, DE11, DC1, DB1, DA1, RAM05, RASP5	DX-CBL-PC-3M0	744-A306-00P
	RJ45/USB, with CD	DG1, DH1, DM1	DXG-CBL-PCCABLE	730-32037-00P
License key for activating the function block editor in the drivesConnect software				
	USB memory stick	DA1	DX-COM-SOFT	169136
Connecting cable				
	Patch cable with RJ45 plugs, 8-pole	Length: 0.5 m	DX-CBL-RJ45-0M5	169137
		Length: 1 m		169138
		Length: 3 m		169139
	Patch cable with RJ45 plugs, 8-pole	Length: 1 m	DXG-CBL-1M0	730-32034-00P
	Patch cable with RJ45 plugs, 8-pole	Length: 3 m	DXG-CBL-3M0	730-32035-00P

	Description	For use with	Part no.	Article no.
Bus terminating resistor				
	RJ45 8-pole Connection to CANopen® (PIN 1/2, 124 Ω) or Modbus-RTU (PIN 7/8, 120 Ω)	easyNet DX-SPL-RJ45-2SL-1PL	EASY-NT-R	256281
PC communication				
Splitter				
	RJ45, 8-pole, 3 sockets For CANopen® and Modbus RTU	DX-CBL-RJ45...	DX-SPL-RJ45-3SL	169141
	RJ45, 8-pole, 2 sockets/1 plug with approx. 10 cm long cable For CANopen® and Modbus RTU	DE1, DE11, DC1, DA1	DX-SPL-RJ45-2SL1PL	169142
Battery				
	Battery for real-time clock	DG1	DXG-ACC-RTBATT	730-32039-00P
Mounting accessories				
Mounting frame for through-hole mounting of the power section outside the control cabinet				
	Frame parts and mounting screws	DG1 (frame size FS1)	DXG-ACC-FR1N12FK	730-32022-00P
		DG1 (frame size FS2)	DXG-ACC-FR2N12FK	730-32023-00P
		DG1 (frame size FS3)	DXG-ACC-FR3N12FK	730-32024-00P
		DG1 (frame size FS4)	DXG-ACC-FR4N12FK	730-32025-00P
		DG1 (frame size FS5)	DXG-ACC-FR5N12FK	730-32026-00P
		DG1 (frame size FS6)	DXG-ACC-FR6N12FK	744-A3845-00P
Mounting kit for increasing the degree of protection from IP21/NEMA 1 to IP54/NEMA 12				
	Enclosure cover with seals and auxiliary fan	DG1-34... (frame size FS1, 400/480 V)	DXG-ACC-4FR1N12KIT	730-32029-00P
		DG1 (frame size FS2)	DXG-ACC-FR2N12KIT	730-32030-00P
		DG1-32... (frame size FS1, 230 V)	DXG-ACC-2FR1N12KIT	744-A2815-00P
IP21 / NEMA1 kit DM1				
	DM1 FR1 NEMA 1 kit	DM1	DXM-ACC-FR1N1KIT	3-5033-001A
	DM1 FR2 NEMA 1 kit	DM1	DXM-ACC-FR2N1KIT	3-5034-001A
	DM1 FR3 NEMA 1 kit	DM1	DXM-ACC-FR3N1KIT	3-5035-001A
	DM1 FR4 NEMA 1 kit	DM1	DXM-ACC-FR4N1KIT	3-5036-001A
IP21 / NEMA1 kit DM1 100 kA UL plenum rating				
	DM1 frame size 1, flame retardant NEMA 1 kit	DM1	DXM-ACC-FR1N1PKIT	3-5056-001A
	DM1 frame size 2, flame retardant NEMA 1 kit	DM1	DXM-ACC-FR2N1PKIT	3-5057-001A
	DM1 frame size 3, flame retardant NEMA 1 kit	DM1	DXM-ACC-FR3NPKIT	3-5058-001A
	DM1 frame size 4, flame retardant NEMA 1 kit	DM1	DXM-ACC-FR4N1PKIT	3-5059-001A

Safe switching and isolation



T rotary cam switches

- Main switches
- Maintenance / manual override switches
- Control switches
- Outputs up to 132 kW
- Non-standard options available

Page 6/68 ff.



P switch-disconnectors

- IP65
- Main switches
- Maintenance/repair switches
- Safety switches
- Outputs up to 110 kW

Page 6/68 ff.



Dumeco switch-disconnectors and QSA switch-disconnectors fuses

- Switch-disconnectors up to 3150 A



Get more information



P, N switch-disconnectors

- Four type sizes up to 1600 A
- 3 and 4 poles
- Wide range of installation and actuation options

Page 6/4 ff.



INX switch-disconnectors

- Disconnectors up to 6300 A



Get more information

Line and residual-current protection



FAZ miniature circuit breakers

- Only 80 mm tall
- Can be installed/removed without dismantling the busbars
- Switching capacity up to 25 kA

Page 6/24 ff.



RCDs

- RCCBs, RCBOs & RCD Blocks
- Type A, F & B
- Digital devices with residual current indicator & trip warning

Page 6/25 ff.



Hydraulic-magnetic circuit breakers

- 0.1 to 63 A
- 1 to 4 poles
- Up to 22 x I_n of the inrush current
- No derating required in case of temperature variations

Page 6/20 ff.

Electronic protection



PXS24 circuit breakers for 24 V DC

- Modular system
- For protection of long cables
- With active current limitation
- Integrated inputs/outputs
- Load switching
- Direct connection of up to three loads
- Sequence control – simple linking of channels
- Quick and easy wiring via Push-in terminals and busbars

Page 6/44 ff.

System protection



NZM circuit breakers with electromagnetic release

- NZM1 to NZM3
- Up to 500 A and 690 V AC
- Simple and efficient

Page 6/4 ff.



NZM circuit breakers with electromagnetic release

- NZM2 to NZM4
- Up to 1600 A and 690 V AC
- LSIG protection
- Integrated test function

Page 6/4 ff.



NZM circuit breaker with electromagnetic release and energy measurement module

- Class 1 to IEC 61557-12
- Can measure current, voltage, power, energy and much more
- Remaining service life indicator
- Maintenance mode
- Zone-selective interlocking
- Test function
- Communication

Page 6/4 ff.



NZM circuit breakers + residual-current protection module

- Up to 250 A
- Pulse-current sensitive/ AC/DC sensitive
- Rated residual current I_{Δn}=0.003 A ... 3.0 A



Get more information



IZMX circuit breakers

- IZMX circuit breakers up to 6300 A



Get more information

Enclosures and Busbar-Systems



Ci-K enclosures (IP65)

- Reliable protection of all types of distributed switching and automation devices
- Rugged and highly resistant to chemicals
- Glass-fiber reinforced polycarbonate
- Customized labeling
- Total insulation
- Metric cable entry knockouts

Page 6/75



CS enclosures

- Degree of protection: IP66 / IK09
- High-quality sheet steel
- UL/CSA approval, Nema Type 1, 4, 12
- Sizes from 250 x 200 x 150 mm to 1200 x 1200 x 250 mm
- Standardized locking system

Page 6/82 ff.



Sasy 60i

- Flat busbars with or busbars with double-T cross-section
- Innovative device adapters and NH fuse switch-disconnectors
- Modular system covers
- No drilling needed to establish electrical contacts (up to 1600 A)

Page 6/46 ff.



Ci enclosures

- Six types of protection: against dust, moisture, water, corrosive substances, mechanical damage, extreme short circuits
- Cover-lifting mechanism with overpressure compensation



Get more information

Bussmann series fuses



D & DO fuse links and fuse bases

- 400 and 500 VAC
- 2 to 100 Ampere
- Sizes: DI to DIV, D01 to D03
- IEC 60269 and VDE 0636
- Comprehensive portfolio of bases and accessories

Page 6/52 ff.



Cylindrical fuse links and fuse bases

- 400, 500 and 690 VAC
- 0.25 to 125 Ampere
- Sizes: 10 x 38, 14 x 51 and 22 x 58 mm
- IEC 60269
- Comprehensive portfolio of fuse holders

Page 6/52 ff.



UL branch circuit and supplementary fuse links

- up to 600 VAC/600 VDC
- Up to 1200 A
- CE, UL and CSA certified
- Comprehensive portfolio of fuse holders and fuse blocks

Page 6/54 ff.



High-speed square-body fuse links

- 690 and 1250 V AC
- 10 to 7500 Ampere
- Sizes: 000 to 5 IEC 60269-4, DIN 43653 and 43620
- UL and CSA certified

Page 6/62 ff.



High-speed, British Standard fuse links

- 240 and 690 V AC
- 6 to 710 Ampere
- BS88 Part 4 and IEC 60269-4



Get more information

Flexible voltage adjustment



Single-phase and three-phase transformers

- Control transformers
- Isolation transformers
- Safety transformers
- Multi-winding transformers

Page 6/76 ff.

Ensuring power quality



Single-phase UPSs

- Outputs of 500 VA to 20 kVA
- Compact protection against power issues
- Multiple communication options
- Up to 3 kVA Plug & play
- Hot-swappable batteries

Page 6/92 ff.



Three-phase UPSs

- Outputs of 8 kVA to 1200 kVA
- Maximum efficiency
- Multiple communication options
- Paralleling possible thanks to HotSync technology
- Eaton ABM technology for battery management

Page 6/92 ff.



Software + accessories

- Free shutdown and management software
- Orderly shutdown – also for VMware systems
- Management of large numbers of UPSs
- Intelligent power distribution

Page 6/92 ff.

Circuit protection for machines and systems

① Energy distribution

Reliable operation, additional safety functions and accurate process data are the hallmarks of our digital circuit breakers. All devices up to the air circuit breakers up to 6300 A rely on the same measurement and communication technology, thereby facilitating the design of energy management systems according to ISO 50001, from simple connections all the way to complete sub-distribution boards.

② Main switches for machines

Thanks to the multiple mounting options, including flexible options for rear or side operation, the switches can be used as versatile and space-saving main switches for machines while also meeting the special requirements for export to North America. The accessories are fully compatible, which simplifies the changeover to digital circuit breakers. Integrated energy measurement with category 1 accuracy as per IEC 61557-12 is also available.

③ Motor protection

Variations in motor current over time are an important indicator for the planning of predictive maintenance. The digital PKE and NZM PXR (MX, PMX) circuit breakers are not only able to record and communicate current values, but also to capture a digital motor image, diagnostic data, and much more. And all that across the entire power range and without the need for any additional sensors.

④ Protection of variable frequency drives

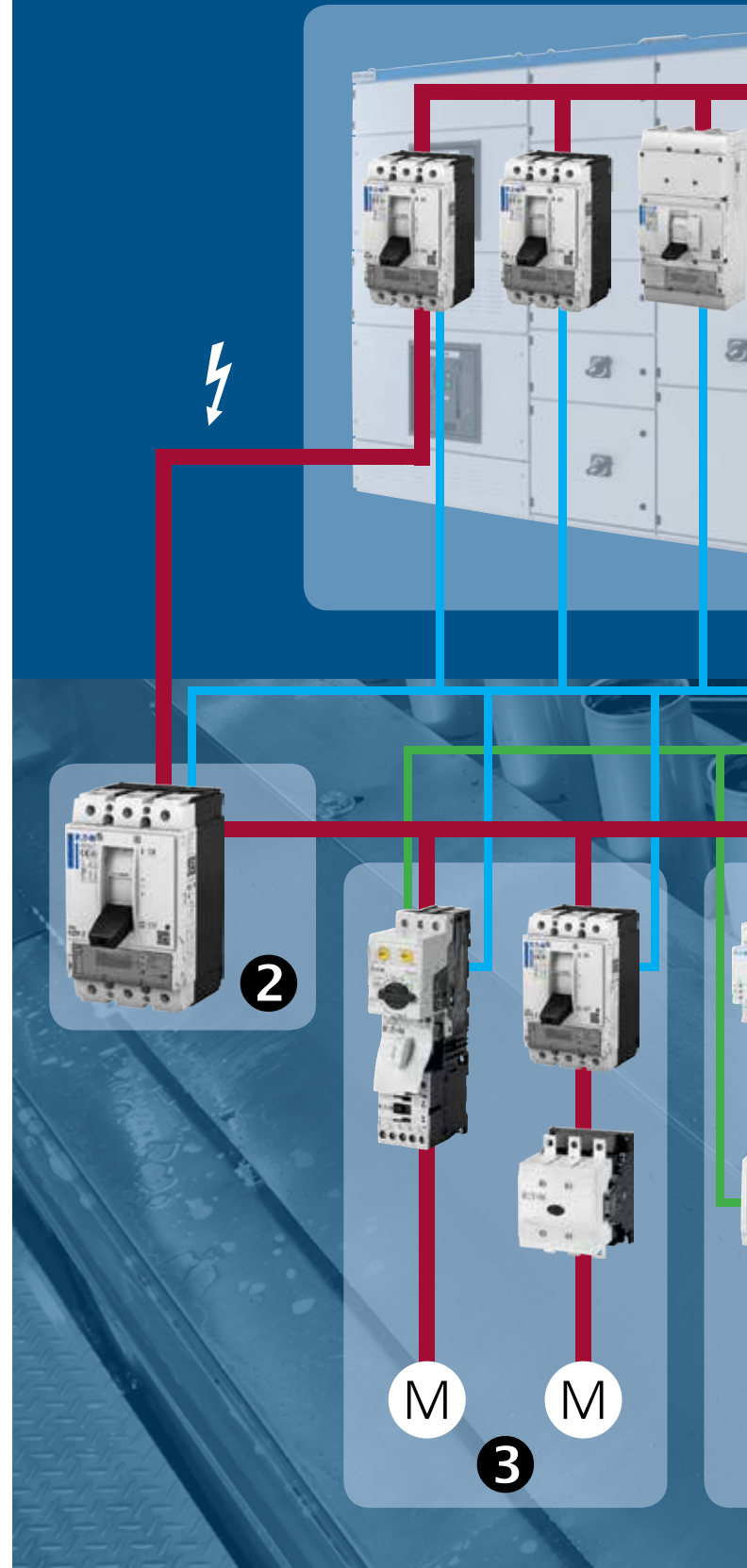
Leakage currents and harmonics pose a special challenge when it comes to the protection of variable frequency drives. Our digital, all-current sensitive RCDs prevent nuisance tripping and will always switch off if the maximum thresholds are exceeded. In addition, warning signals can be read off the device itself or transmitted digitally. We also offer a wide range of fuses for the protection of variable frequency drives. This option is particularly well suited for applications intended for the North American market, in order to achieve a high short-circuit rating for your control cabinets.

⑤ Protection of electrical loads and people

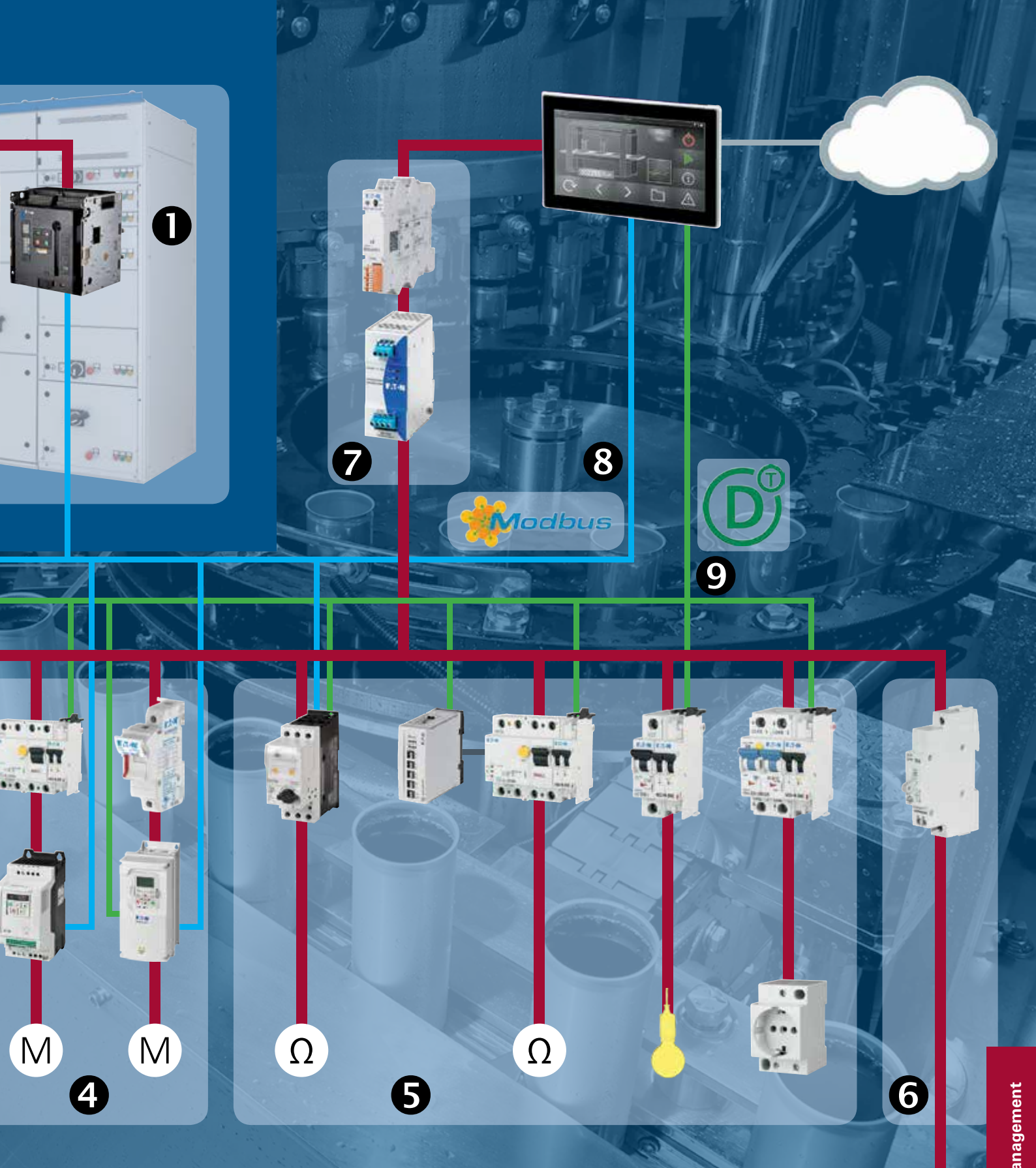
Whether you need fuses or circuit breakers, you will always find the ideal solution for protecting cables and installations in our portfolio. Plus, our SmartWire DT connection technology makes it possible to quickly and easily determine the circuit breaker status. The PKE circuit breaker supplies information on load currents, breaker values and early warning alerts and thus provides for early detection of anomalies and critical issues.

⑥ + ⑦ Protection of 24 V DC control circuits and long cables

Our fuses, PXS24 electronic circuit breakers and hydraulic-magnetic circuit breakers offer optimum protection for 24 V DC control circuits. They can quickly detect overloads and will only disconnect the power supply of those parts of the machine that are malfunctioning. The machine remains in a controllable state, so that an orderly shutdown is possible. Moreover, the PXS24 electronic breaker can also be integrated into the control system and operated either via a control panel or remotely.



We also offer fuses, electronic and hydraulic-magnetic circuit breakers for tailor-made line protection of long cables to mitigate the effects of capacitive circuits or current spikes when starting motors, which might otherwise lead to nuisance tripping.

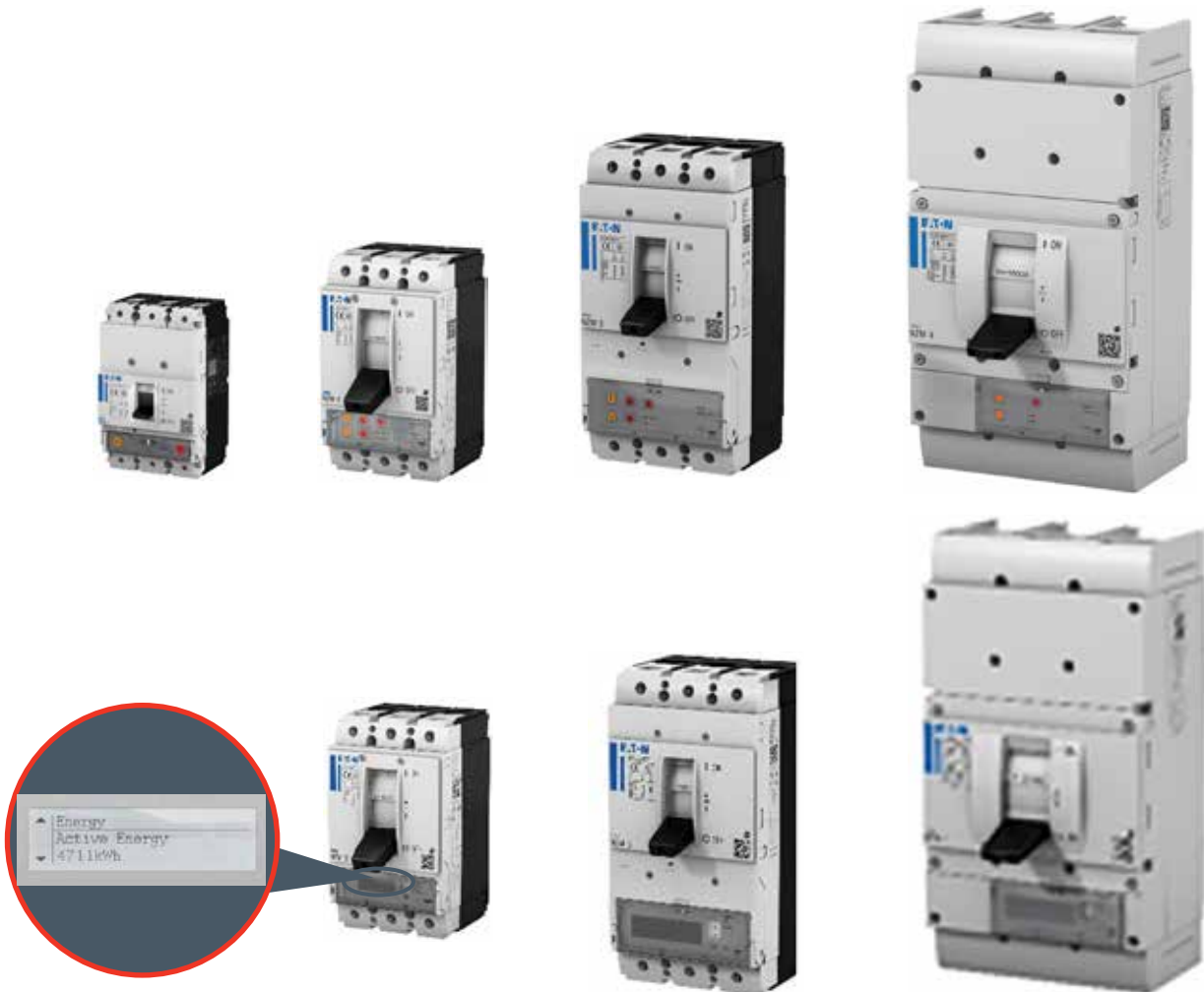


⑧ Modbus RTU

All operating data and measurements can be read out via the integrated Modbus RTU, and in the case of certain functions they can also be written. Our digital circuit breakers and variable frequency drives come with a wide range of fieldbus and industrial Ethernet interfaces.

⑨ SmartWire-DT connection technology

SmartWire-DT can be implemented quickly and is particularly effective when it comes to contact status and warning signals or the collection of current values, for example from a PKE circuit breaker.



NZM circuit breakers up to 1600 A – Four sizes and various versions are available



For the latest catalog, please visit
www.eaton.com/digitalNZM

Our NZM series of circuit breakers covers rated currents from 20 A to 1600 A – with only four sizes. The wide range of applications covers all industrial requirements, from power distribution and system protection to main switches for machinery.

Our new digital NZM, an electronic circuit breaker from the PXR family, stands out in particular:

- Thanks to the use of proven technology and extended protection functions, these new circuit breakers achieve a significantly higher level of machine safety during operation and maintenance.
- The remaining service life indicator and the associated prevention of unplanned shutdowns significantly improve machine availability.
- Highly accurate class 1 measurements can be used to verify the energy efficiency of the system.

The NZM accessories can also be used for the PXR family, as they have the same dimensions and are 100 % compatible.



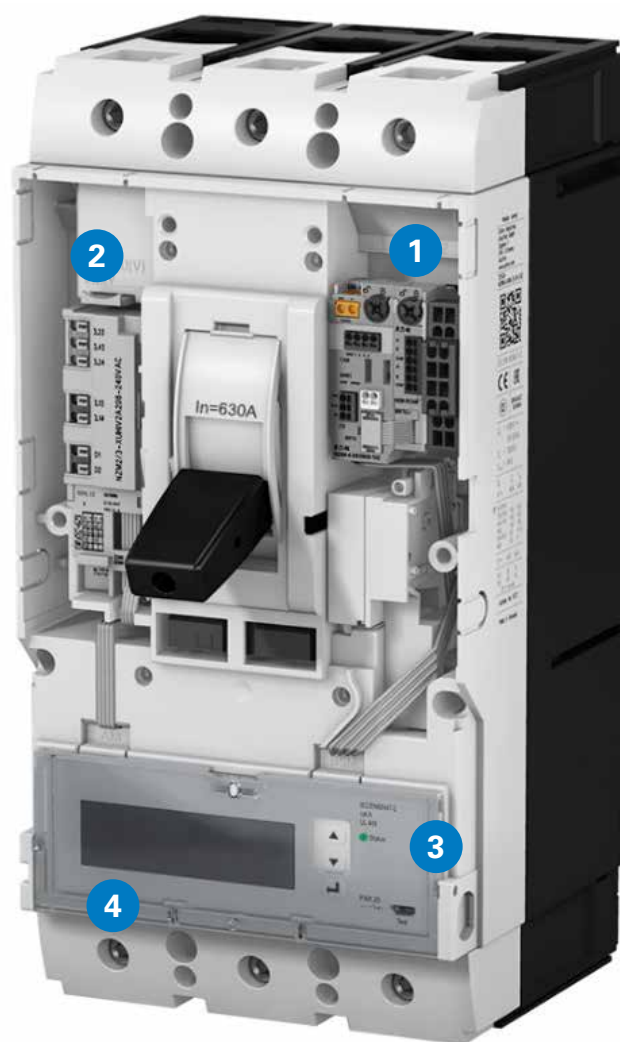
Power Xpert Release – our next generation electronic overcurrent release is now also available for the NZM

The Power Xpert Release – PXR for short – is our new trip unit platform. We have already successfully introduced this technology in our IZMX series of air circuit breakers. Achieving time savings for users and covering the broadest possible range of applications – these were the goals we had in mind when developing the Power Xpert Release platform.

- 1** The uniform design and user-friendly navigation menu of the PXR will simplify your everyday work. With the PXR, communication is also as simple as can be: Modules for various bus systems are available, offering high-performance connections in line with the respective system requirements. And the integrated Modbus RTU connection also saves space during installation.
- 2** Relays integrated in the voltage release enable the control of associated components and the indication of operating states, for example through alarm notifications, alongside the control of remote operators and motor-starter combinations – and much more.
- 3** The USB interface allows for easy connection to a PC to change the settings, conduct analyses or activate one of the extensive test functions, including continuity tests of current transformers and testing of the entire measurement and protection protocols and all connected components. This also simplifies access to the information generated by the switchgear, which can also be saved and printed, making it the fastest and most convenient way to continuously improve your control and maintenance systems. All sensitive data are password-protected to prevent unauthorized access.

The Rogowski coil transformer supports ISO 50001 energy management with class 1 accuracy in accordance with IEC 60557-12.
- 4** The high-resolution display facilitates the retrieval of information, enables intuitive operation and allows for quick configuration of the PXR25. You can enter the required settings via the display, with the option of choosing between protection settings and soft (additional) settings. The settings of PXR switches can also be easily adjusted using the Power Xpert Protection Manager (PXP)* software for PC. With the PXR20 version, you can adjust the protection settings via the rotary heads on the circuit breaker itself, while the soft settings can be adjusted using the PXP software.

* Software available for download at www.eaton.com/PXPM





Improved life-cycle management thanks to digital circuit protection

What is life-cycle management and what are the benefits for users? Our white paper explains the different Eaton solutions as well as their benefits and advantages.

Download your free copy at www.eaton.com

Zone selectivity and Arcflash Reduction Maintenance System maintenance mode Precise disconnection of upstream faults and protection against arc faults



Zone-selective interlocking

Zone selectivity is the next stage in the evolution of time selectivity. In contrast to time selectivity, any faults will be switched off instantaneously and at any point in the network. This ensures that the energy being generated (I^2t) – and thus the thermal and dynamic system load – is kept to a minimum. For this purpose, the circuit breakers are connected to a signal cable. In the event of a fault, the signal cable ensures that only the circuit breaker located directly upstream of the fault (i.e. the circuit breaker feeding into the short circuit) will switch off immediately. Any parts of the system that are not malfunctioning will remain operational, to minimize downtime as much as possible.

Arcflash Reduction Maintenance System™

Our circuit breakers can be optionally equipped with our new, patented Arcflash Reduction Maintenance System. In the event of an arc fault, this system ensures an immediate and accelerated shutdown, at a speed that beats even that of a non-delayed short-circuit release.

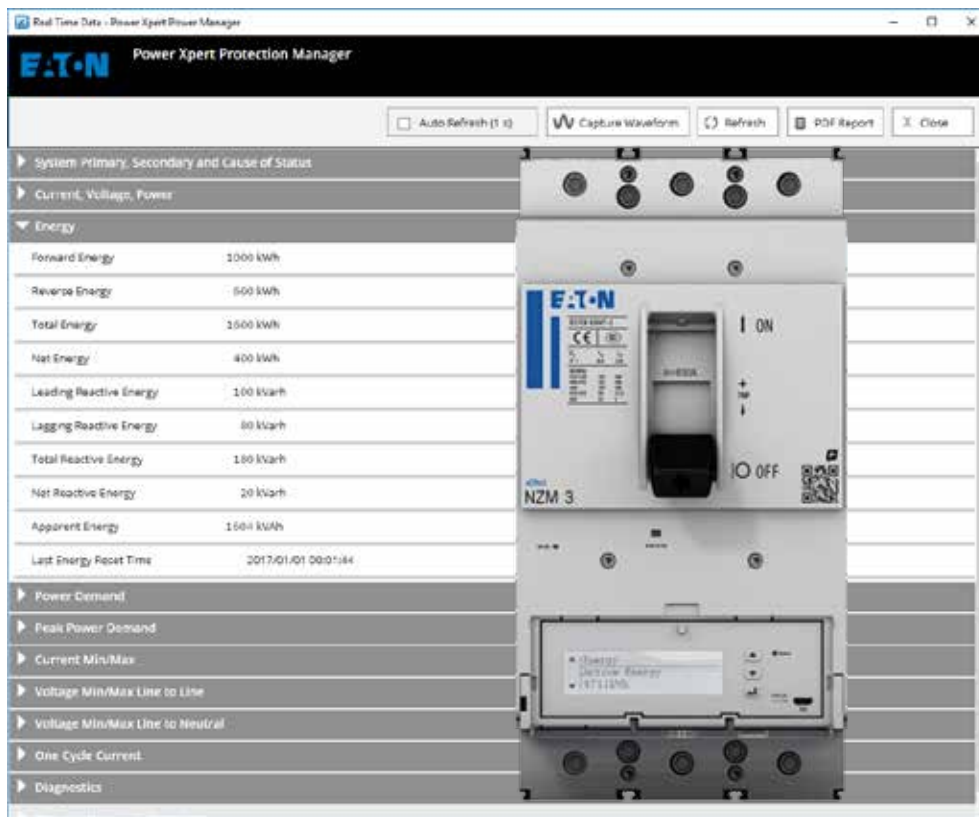
This feature can either be activated directly on the circuit breaker or via an external switch, for example once maintenance workers are about to enter a hazardous area. No special wiring is required.



Greater safety for work on live equipment

For us at Eaton, safety is a top priority, which is why we offer additional safety functions that go well beyond those required by the applicable standards. Our white paper explains the benefits for you.

Download your free copy at www.eaton.com



Greater efficiency thanks to ISO 50001

The international EN ISO 50001 standard was developed to facilitate the implementation of in-house energy management systems. The standard is aimed at reducing energy costs, energy consumption and CO2 emissions through appropriate measures. Implementing a proper energy management system not only saves resources, but also ensures cost transparency and savings, for both large corporations and small and medium-sized companies alike. In Germany, energy-intensive companies whose consumption exceeds 10 GWh or whose electricity costs account for more than 14 % of value added can benefit from enormous cost reductions in the form of lower energy taxes under the Renewable Energy Sources Act.

The importance of accurate metrics and analytics

Prerequisites for introducing an energy management system in accordance with ISO 50001 are accurate energy metrics, the identification of the main energy consumers and a full analysis of the company's energy costs, based on which specific measures for greater energy efficiency can then be derived.

Power Xpert Protection Manager

With the new PXPM software, we have developed a universal program that allows you to easily manage all Eaton PXR devices. Manual identification is no longer necessary, as the program automatically adapts to the connected devices. Guided and drop-down menus simplify the configuration process, while all data readings are clearly displayed via a single screen. The PXPM software speaks your language: We provide you with a wide range of language packs, and the system can either recognize the language of your computer automatically, or you

can set it manually. A comprehensive selection of additional options allows you to adapt the settings to your application:

- The protection function and the tripping characteristics can be viewed, adjusted and controlled via the display
- The comprehensive test function allows you to check all measuring and tripping functions of your device
- The trip actuator can be checked by optionally tripping the device during testing
- The transformer coil can be tested via continuity measurement

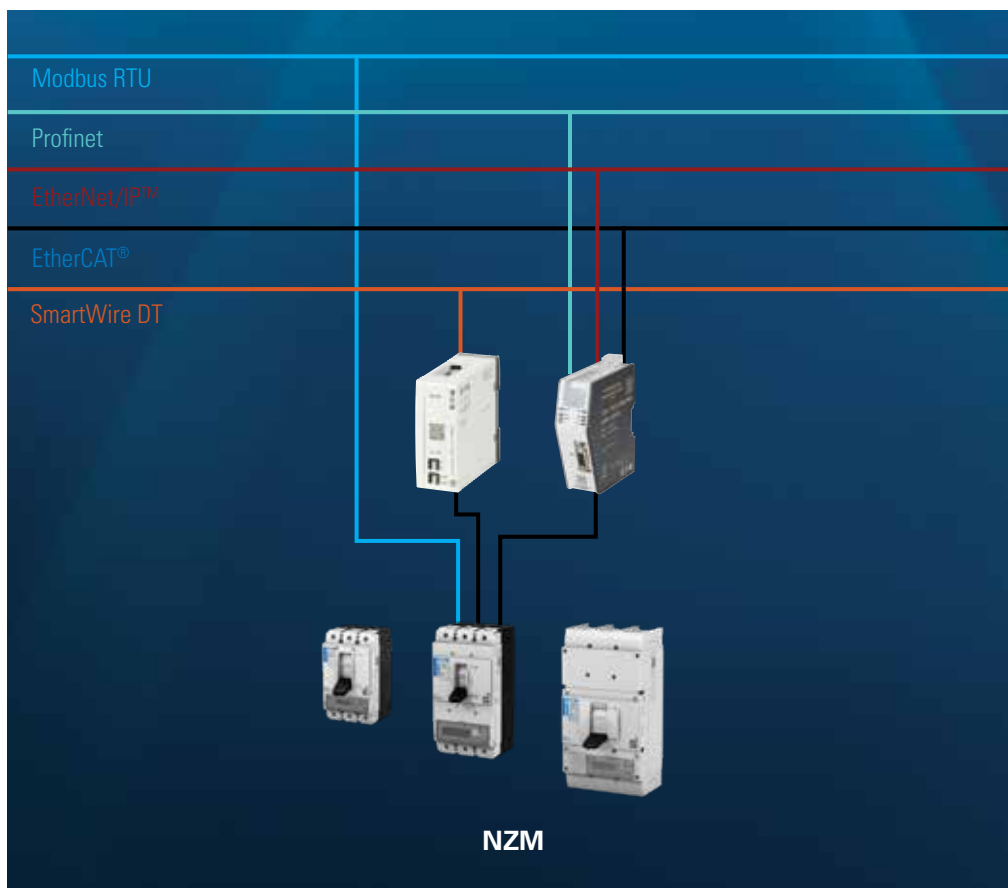
These are just a few examples of the software's capabilities.



xSpider

xSpider is our new planning and calculation software for low-voltage networks, supporting you in the selection and optimal configuration of your switchgear and protective devices. The option to select circuit breakers based on the network diagram, and to examine the tripping characteristics directly, allows for a quick assessment of the selectivity and the required back-up fuse. The integrated ArcRisk module, which is currently unique on the market, enables a quick and clear assessment of the arc-fault risk in low-voltage switchgear assemblies.

www.eaton.com

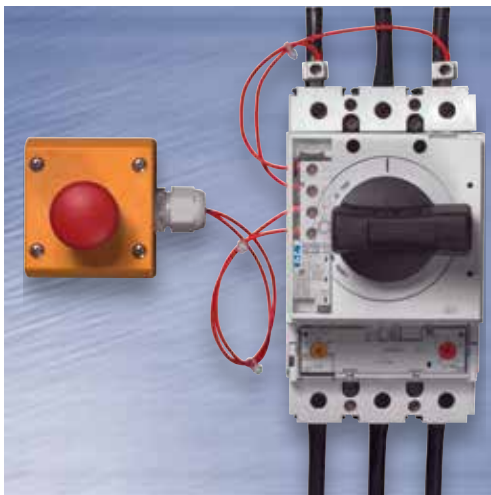


Integrated communication

Our PXR circuit breakers and measurement and communication modules enable reliable and efficient data collection. We offer a wide range of communication options to provide users with measurements in the required form and data format. The data can then be transferred to other communication platforms via various interfaces and gateways, as required.

Flexible integration into machinery

The complete range of NZM accessories can also be used with our new PXR circuit breakers.

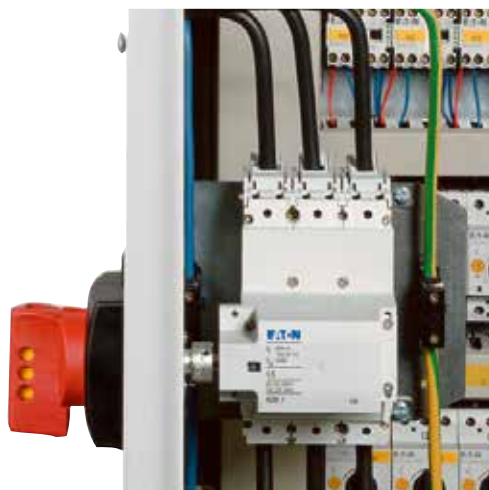


Rear actuator

In applications up to a rated current of 300 A where space is limited, the rear actuator can be used to quickly implement a compact main switch operated by means of a rugged rotary handle. All NZM1 and NZM2 circuit breakers and switch-disconnectors can be combined with a rear actuator.

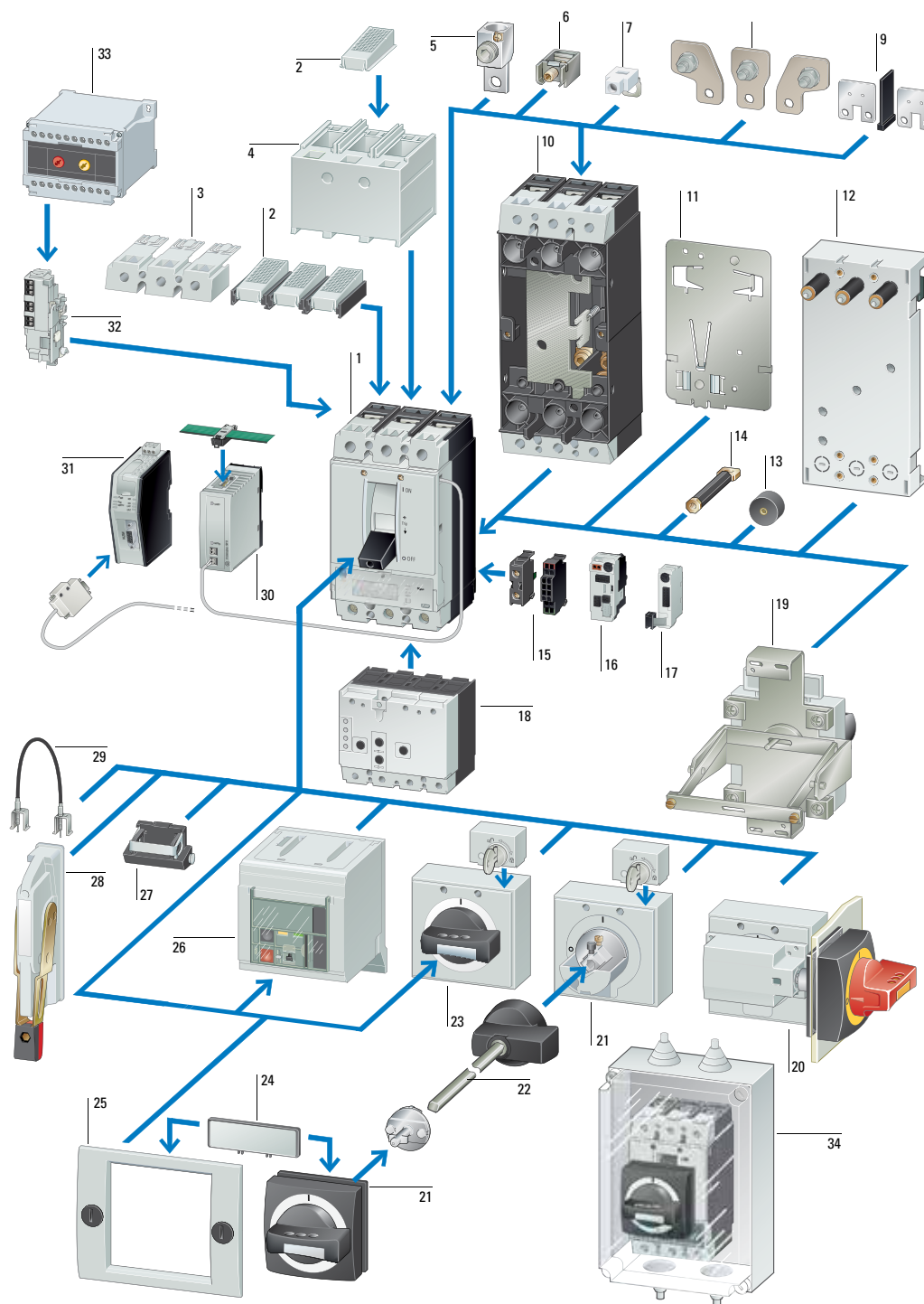
Use as a main switch

If an undervoltage release with two integrated early-make auxiliary contacts is used, all main and auxiliary circuits are de-energized when the breaker is switched off. This enables the easy and cost-effective implementation of main switch applications with emergency-stop function up to 1600 A in accordance with IEC 60204-1 and VDE 0113 Part 1.



Sidewall actuator

For applications up to 1600 A, the sidewall actuator can be used to operate the breaker from either the left- or right-hand side. With the optional addition of a mounting bracket, the space inside the control panel can be optimally used. This means that the mounting plate in the machine control system can be used for other control elements.















- | | | | |
|----------------------------------|---|--|--|
| 1 NZM base unit | 12 Busbar adapter | 21 Door-coupling rotary handle | 30 SmartWire-DT communication module |
| 2 IP2X finger guard | 13 Spacer | 22 Shaft extension | 31 Communication module for Ethernet-based protocols |
| 3 Removable terminal cover | 14 Connection at rear | 23 Rotary handle | 32 Voltage release, early-make auxiliary contact, relay module |
| 4 Terminal cover | 15 Auxiliary contacts | 24 External warning plate/ marking plate | 33 Delay unit, capacitor unit |
| 5 Tunnel terminals | 16 BSM interface module | 25 Bezel | 34 Ci insulated enclosures |
| 6 Box terminals | 17 Integrated Modbus RTU communication module | 26 Remote operator | |
| 7 Control circuit terminal | 18 Residual-current release | 27 Toggle-lever interlock device | |
| 8 Connection expansion | 19 Rear actuator | 28 Side-lever handle | |
| 9 Link set | 20 Main-switch rotary handle for side-wall mounting | 29 Mechanical interlock | |
| 10 Plug-in and withdrawable unit | | | |
| 11 Adapter plate | | | |

NZM circuit breakers, switch-disconnectors

3-pole circuit breakers

Moeller series






					Switching capacity: 400/415 V 50/60 Hz		Switching capacity: 400/415 V 50/60 Hz	
					Part no.	Article no.	Part no.	Article no.
Rated current = rated uninterrupted current								
Settings range								
Overload release								
Short-circuit release								
Instantaneous								
$I_i = I_n \times \dots$								
Delayed								
$I_{sd} = I_r \times \dots$								
$I_n = I_u$								
A								
A								
System and line protection: thermo-magnetic release								
Fixed installation, box terminal					Basic switching capacity: 25 kA		Normal switching capacity: 50 kA	
	20	15 - 20	350 A fixed	-	NZMB1-A20	280987	NZMN1-A20	281231
	25	20 - 25	350 A fixed	-	NZMB1-A25	280988	NZMN1-A25	281232
	32	25 - 32	350 A fixed	-	NZMB1-A32	280989	NZMN1-A32	281233
	40	32 - 40	8 - 10	-	NZMB1-A40	259075	NZMN1-A40	259081
	50	40 - 50	6 - 10	-	NZMB1-A50	259076	NZMN1-A50	259082
	63	50 - 63	6 - 10	-	NZMB1-A63	259077	NZMN1-A63	259083
	80	63 - 80	6 - 10	-	NZMB1-A80	259078	NZMN1-A80	259084
	100	80 - 100	6 - 10	-	NZMB1-A100	259079	NZMN1-A100	259085
	125	100 - 125	6 - 10	-	NZMB1-A125	259080	NZMN1-A125	259086
	160	125 - 160	1280 A fixed	-	NZMB1-A160	281230	NZMN1-A160	281234
Fixed installation, screw connection								
	160	125 - 160	6 - 10	-	NZMB2-A160	259088	NZMN2-A160	259092
	200	160 - 200	6 - 10	-	NZMB2-A200	259089	NZMN2-A200	259093
	250	200 - 250	6 - 10	-	NZMB2-A250	259090	NZMN2-A250	259094
	300	240 - 300	5 - 8.3	-	NZMB2-A300	107518	NZMN2-A300	107580
	320	250 - 320	6 - 10	-	-	-	NZMN3-A320	109669
	400	320 - 400	6 - 10	-	-	-	NZMN3-A400	109670
	500	400 - 500	6 - 10	-	-	-	NZMN3-A500	109671
System, line, selective and generator protection: electronic release								
Fixed installation, screw connection					Normal switching capacity: 50 kA		High breaking capacity: 150 kA	
	100	40 - 100	2 - 18	2 - 10	NZMN2-VX100	191628	NZMH2-VX100	191678
	160	64 - 160	2 - 18	2 - 10	NZMN2-VX160	191629	NZMH2-VX160	191679
	250	100 - 250	2 - 12	2 - 10	NZMN2-VX250	191630	NZMH2-VX250	191680
	250	100 - 250	2 - 18	2 - 10	NZMN3-VX250	191602	NZMH3-VX250	191349
	400	160 - 400	2 - 12	2 - 10	NZMN3-VX400	191603	NZMH3-VX400	191350
	630	252 - 630	2 - 8	1.5 - 7	NZMN3-VX630	191604	NZMH3-VX630	191351
System, line, selective and generator protection: electronic release with class 1 energy measurement according to IEC 61557-12								
Fixed installation, screw connection					Normal switching capacity: 50 kA		High breaking capacity: 150 kA	
	100	40 - 100	2 - 18	2 - 10	NZMN2-PX100	192239	NZMH2-PX100	192041
	160	64 - 160	2 - 18	2 - 10	NZMN2-PX160	192240	NZMH2-PX160	192042
	250	100 - 250	2 - 12	2 - 10	NZMN2-PX250	192241	NZMH2-PX250	192043
	250	100 - 250	2 - 18	2 - 10	NZMN3-PX250	192354	NZMH3-PX250	192360
	400	160 - 400	2 - 12	2 - 10	NZMN3-PX400	192355	NZMH3-PX400	192361
	630	252 - 630	2 - 8	1.5 - 7	NZMN3-PX630	192356	NZMH3-PX630	192362






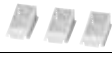






						Switching capacity: 400/415 V 50/60 Hz		Switching capacity: 400/415 V 50/60 Hz	
	Rated current = rated uninterrupted current	Settings range		Motor rating AC-3 50/60 Hz	Rated operational- current: AC-3 50/60 Hz	Part no.	Article no.	Part no.	Article no.
	$I_n = I_u$	Overload release	Short-circuit release Instantaneous	380 V 400 V	400 V				
	A	A	$I_i = I_n \times \dots$	P kW	I_e A				
Motor protection: thermo-magnetic release									
Trip class 10 A									
Fixed installation, box terminal with phase-failure sensitivity						Basic switching capacity: 25 kA		Normal switching capacity: 50 kA	
	40	32 - 40	8 - 14	18.5	36	NZMB1-M40	265710	NZMN1-M40	265718
	50	40 - 50	8 - 14	22	41	NZMB1-M50	265711	NZMN1-M50	265719
	63	50 - 63	8 - 14	30	55	NZMB1-M63	265712	NZMN1-M63	265720
	80	63 - 80	8 - 14	37	68	NZMB1-M80	265713	NZMN1-M80	265721
	100	80 - 100	8 - 12.5	45	81	NZMB1-M100	265714	NZMN1-M100	265722
Motor protection: electronic release									
Fixed installation, screw connection With phase-failure sensitivity, adjustable trip class						Normal switching capacity: 50 kA		High switching capacity: 150 kA	
	90	36 - 90	2 - 18	45	81	NZMN2-MX90	191631	NZMH2-MX90	191681
	140	56 - 140	2 - 18	75	134	NZMN2-MX140	191632	NZMH2-MX140	191682
	220	88 - 220	2 - 14	100	196	NZMN2-MX220	191633	NZMH2-MX220	191683
	220	88 - 220	2 - 18	110	196	NZMN3-MX220	191605	NZMH3-MX220	191352
	350	140 - 350	2 - 15	200	349	NZMN3-MX350	191606	NZMH3-MX350	191367
	450	180 - 450	2 - 12	250	437	NZMN3-MX450	191607	NZMH3-MX450	191368
Motor protection: electronic release with class 1 energy measurement according to IEC 61557-12									
Fixed installation, screw connection With phase-failure sensitivity, adjustable trip class						Normal switching capacity: 50 kA		High switching capacity: 150 kA	
	250	100 - 250	2 - 18	110	196	NZMN3-PMX250	192322	NZMH3-PMX250	192325
	350	140 - 350	2 - 15	200	349	NZMN3-PMX350	192323	NZMH3-PMX350	192326
	450	180 - 450	2 - 12	250	437	NZMN3-PMX450	192324	NZMH3-PMX450	192327
Rated current = rated uninterrupted current						Max. fuse rating of the short-circuit protection: gG/gL		Part no.	
$I_n = I_u$						A gL		Article no.	
A									
Switch-disconnector									
3 switch settings: I, +, 0 Can be remotely operated with XU/XA voltage release, XR remote operator Can be equipped with M22-K... trip-indicating auxiliary switch									
Fixed installation, box terminal									
	63				125	N1-63	259143		
	100				125	N1-100	259144		
	125				125	N1-125	259145		
	160				160	N1-160	281236		
Fixed installation, screw connection									
	160				250	N2-160	266008		
	200				250	N2-200	266009		
	250				250	N2-250	266010		
	400				630	N3-400	266019		
	630				630	N3-630	266020		

NZM circuit breakers and switch-disconnectors

UL/CSA, IEC circuit breakers, molded-case switches for use in North America, 3 - pole

Moeller series












				Switching capacity: 480 V 60 Hz		Switching capacity: 480 V 60 Hz	
				Part no.	Article no.	Part no.	Article no.
Rated current = rated uninterrupted current		Settings range					
		Overload release	Short-circuit release				
			Instantane- ous	Delayed			
$I_n = I_u$		I_r	$I_i = I_n \times \dots$	$I_{sd} = I_r \times \dots$			
A		A					
System and line protection: thermo-magnetic release							
Adjustable overload releases I_r							
Fixed installation, box terminal				Normal switching capacity: 35 kA			
	20	15 - 20	350 A fixed		NZMN1-A20-NA	281570	-
	25	20 - 25	350 A fixed		NZMN1-A25-NA	281571	-
	32	25 - 32	350 A fixed		NZMN1-A32-NA	281572	-
	40	32 - 40	8 - 10		NZMN1-A40-NA	274237	-
	50	40 - 50	6 - 10		NZMN1-A50-NA	274239	-
	63	50 - 63	6 - 10		NZMN1-A63-NA	274240	-
	80	63 - 80	6 - 10		NZMN1-A80-NA	274241	-
	100	80 - 100	6 - 10		NZMN1-A100-NA	274242	-
	125	100 - 125	6 - 10		NZMN1-A125-NA	281573	-
System and line protection: electronic release							
Adjustable overload releases I_r							
R.m.s. value measurement and thermal memory							
Fixed installation, screw connection				Normal switching capacity: 42 kA		High breaking capacity: 100 kA	
	100	40-100	2-12		NZMN2-AX100-NA	195225	NZMH2-AX100-NA 195229
	160	64-160	2-12		NZMN2-AX160-NA	195226	NZMH2-AX160-NA 195230
	250	100-250	2-12		NZMN2-AX250-NA	195227	NZMH2-AX250-NA 195231
	250	100 - 250	2 - 11		NZMN3-AX250-NA	192484	NZMH3-AX250-NA 192496
	400	160 - 400	2 - 11		NZMN3-AX400-NA	192485	NZMH3-AX400-NA 192497
	600	240 - 600	2 - 8		NZMN3-AX600-NA	192486	NZMH3-AX600-NA 192498
System, line, selective and generator protection: electronic release with class 1 energy measurement according to IEC 61557-12							
Adjustable overload releases I_r							
R.m.s. value measurement and thermal memory							
Fixed installation, screw connection							
	100	40-100	2-18	2 - 10	NZMN2-PX100-NA	192573	NZMH2-PX100-NA 192577
	160	64-160	2-18	2 - 10	NZMN2-PX160-NA	192574	NZMH2-PX160-NA 192578
	250	100-250	2-12	2 - 10	NZMN2-PX250-NA	192575	NZMH2-PX250-NA 192579
	250	100 - 250	2 - 18	2 - 10	NZMN3-PX250-NA	192586	NZMH3-PX250-NA 192589
	400	160 - 400	2 - 12	2 - 10	NZMN3-PX400-NA	192587	NZMH3-PX400-NA 192590
	600	240-600	2 - 8	1.5 - 7	NZMN3-PX600-NA	192588	NZMH3-PX600-NA 192591
Molded-case switches for use in North America							
Fixed short-circuit release (self-protection)							
Three switch settings: I, +, 0							
Can be remotely operated with XU/XA voltage release, XR remote operator							
Can be equipped with M22-K... trip-indicating auxiliary switch							
Fixed installation, box terminal				High breaking capacity: 35 kA			
	63	-	1250 A fixed		NS1-63-NA	102681	-
	100	-	1250 A fixed		NS1-100-NA	102682	-
	125	-	1250 A fixed		NS1-125-NA	102683	-
Fixed installation, screw connection				High breaking capacity: 100 kA			
	160	-	2500 A fixed		NS2-160-NA	102684	-
	200	-	2500 A fixed		NS2-200-NA	102685	-
	250	-	2500 A fixed		NS2-250-NA	102686	-
	400	-	6600 A fixed		NS3-400-NA	102687	-
	600	-	6600 A fixed		NS3-600-NA	102688	-






	For use with	Terminal capacity Terminal type	Terminal capacities mm ²	Part. no. suffix	Article no. if ordered together with base unit	Part no.	Article no. if ordered separately
NZM1 terminal types							
Control-circuit terminal							
	NZM1, PN1, N(S)1	Box terminal	1 x 0.75 - 2.5 2 x 0.75 - 1.5	-	-	NZM-XSTK	266739
Multi-tunnel terminal							
	NZM1, N(S)1 ≤ 160 A	Cu cable	6 x 2.5 - 16	-	-	NZM1-XKAM	144112
Terminal cover, with knockout, not UL/CSA approved For box terminals							
	NZM1, N1	-	-	-	-	NZM1-XKSFA	100780
Cover							
	NZM1, N(S)1	-	-	-	-	NZM1-XKSA	260021
IP2X finger protection							
For box terminals							
	NZM1, N1	-	-	-	-	NZM1-XIPK	266744
For covers NZM1-XKSA, NZM1, NZM1...(C)NA or N(S)1...NA							
	NZM1, N(S)1	-	-	-	-	NZM1-XIPA	266748
Phase isolator							
	NZM1, N(S)1	-	-	-	-	NZM1-XKP	119862
NZM2 terminal types							
Box terminal							
	NZM2, N(S)2 ≤ 160 A	Cu cable	1 x 10 - 185 2 x 4 - 70	+NZM2-160-XKCO 262218		NZM2-160-XKC 262240	
	NZM2, N(S)2 > 160 A			+NZM2-160-XKCU 262223		-	-
				+NZM2-250-XKCO 262242		NZM2-250-XKC 262244	
				+NZM2-250-XKCU 262243		-	-
Multi-tunnel terminal							
	NZM2, N(S)2 ≤ 250 A	Cu cable	6 x 2.5 - 35	-	-	NZM2-XKAM	144113
Control-circuit terminal							
	NZM2, PN2, N(S)2	Screw connection	1 x 0.75 - 2.5 2 x 0.75 - 1.5	-	-	NZM2-XSTS	260156
	NZM2, PN2, N(S)2	Box terminal	1 x 0.75 - 2.5 2 x 0.75 - 1.5	-	-	NZM-XSTK	266739
Cable-lug cover							
	NZM2, N(S)2	Cu cable lug Al cable lug	1 x 10 - 185 2 x 4 - 70 1 x 10 - 50 2 x 10 - 50	-	-	NZM2-XKSAE	119868





NZM circuit breakers and switch-disconnectors

Terminal type

Moeller series

	For use with	Terminal capacity Terminal type	Terminal capacity mm ²	Part. no. suffix	Article no. if ordered together with base unit	Part no.	Article no. if ordered separately
Phase isolator 	NZM2, N(S)2	-	-	-	-	NZM2-XKP	119864
IP2X finger protection							
For box terminals 	NZM2, PN2, N2	-	-	-	-	NZM2-XIPK	266773
For covers NZM2-XKSA, NZM2, NZM2...(C)NA or N(S)2...NA 	NZM2, PN2, N(S)2	-	-	-	-	NZM2-XIPA	266777
Cu cable lug Not UL/CSA approved If used without cover NZM2(-4)-XKSA, the cable lug must be insulated. 	NZM2, N2	-	95	-	-	KS95-NZM7	059775
		-	120	-	-	KS120-NZM7	059776
		-	150	-	-	KS150-NZM7	059777
		-	185	-	-	NZM2-XKS185	260032
NZM3 terminal types							
Box terminal 	NZM3, N(S)3	Cu cable	1 x 35 - 240 2 x 16 - 120	+NZM3-XKCO 262246 +NZM3-XKCU 262245		NZM3-XKC	260042
Control-circuit terminal 	NZM3, PN3, N(S)3	Screw connection	1 x 0.75 - 2.5 2 x 0.75 - 1.5	-	-	NZM3/4-XSTS	266797
		Box terminal	1 x 0.75 - 2.5 2 x 0.75 - 1.5	-	-	NZM-XSTK	266739
Cable-lug cover 	NZM3, N(S)3	Cu cable lug Al cable lug	1 x 16 - 240 2 x 16 - 240 1 x 10 - 120 2 x 10 - 120	-	-	NZM3-XKSAE	119869
Phase isolator 	NZM3, N(S)3	-	-	-	-	NZM3-XKP	100512
IP2X finger protection							
For box terminals 	NZM3, N3	-	-	-	-	NZM3-XIPK	266804
For covers NZM3-XKSA, NZM3, NZM3...(C)NA or N(S)3...NA 	NZM3, N(S)3	-	-	-	-	NZM3-XIPA	266808
Cu cable lug Not UL/CSA approved. If used without cover NZM3(-4)-XKSA, the cable lug must be insulated. 	NZM3, N3	-	185	-	-	NZM3-XKS185	260040
		-	240	-	-	NZM3-XKS240	260041
		-	300	-	-	NZM3-XKS300	153186












			For use with	Contacts ☉ = Safety function implemented with positive opening according to IEC/EN 60947-5-1 N/O = normally open N/C = normally closed		Part no.	Article no.
Auxiliary contact with screw terminal/spring-loaded terminal							
Standard auxiliary contact (HIN) Switches using the main contacts. Used for signaling and interlocking tasks.							
	Single contact	NZM1, 2, 3 N(S)1, 2, 3	1 N/O	-	M22-K10	216376	
			-	1 N/C ☉	M22-K01	216378	
Early-make auxiliary contacts For interlocking and load shedding circuits as well as early-make connection of the undervoltage release in main switch/emergency-stop applications.							
	With terminal block on the left-hand side of the switch	NZM1 N(S)1	2 N/O	-	NZM1-XHIV	259426	
	With screw connection	NZM2, 3 N(S)2, 3	2 N/O	-	NZM2/3-XHIV	259430	
	With Push-in terminals 	NZM2(3)-VX(MX)(PX) (PMX)...	1 N/O	-	NZM2/3-XHIV-PI	189748	
Trip-indicating auxiliary switch (HIA) General trip indication "+" if tripped by a voltage release, overload release, short-circuit release and due to residual current if a residual-current release is used.							
	Single contact	NZM1, 2, 3 N(S)1, 2, 3	1 N/O	-	M22-K10	216376	
			-	1 N/C ☉	M22-K01	216378	











			For use with	Contacts N/O = normally open N/C = normally closed		Part no.	Article no.
Relay module with undervoltage release							
For use with emergency-stop devices (in combination with an emergency-stop button). Two relays per unit, for signaling commands or different circuit-breaker states. The tripping criteria can be configured in the trip unit. Tripping of the undervoltage release will safely prevent unintentional contact with the main contacts when the circuit breaker switches on. Can only be used in combination with circuit breakers with electronic releases. The undervoltage release relay modules cannot be used together with the NZM...-XHIV early-make auxiliary contacts, the NZM...-XU... undervoltage releases or the NZM...-XA... shunt releases. Relay contacts for control wiring. Control wiring on Push-in terminals.							
		PXR20(25) NZM2(-4)-...X...	2 N/O	-	NZM2/3-XU2A24DC	189725	
		PXR20(25) NZM3(-4)-...X...	2 N/O	-	NZM2/3-XU2A208-240AC	189727	
Relay module with undervoltage release and early-make auxiliary contact							
For interlocking and load-shedding circuits as well as for early-break interruption of the undervoltage release in main switch applications. NZM circuit breakers will trip instantaneously if the control voltage drops below 35 - 70% Us. For use with emergency-stop devices (in combination with an emergency-stop button). Two relays per unit, for signaling commands or different circuit-breaker states. The tripping criteria can be configured in the trip unit. Tripping of the undervoltage release will safely prevent unintentional contact with the main contacts when the circuit breaker switches on. Can only be used in combination with circuit breakers with electronic releases. Cannot be used in combination with the NZM...-XR... remote operator. The undervoltage release relay modules cannot be used together with the NZM...-XHIV early-make auxiliary contacts, the NZM...-XU... undervoltage releases or the NZM...-XA... shunt releases. Control wiring on Push-in terminals.							
		PXR20(25) NZM2(-4)-...X...	2 (for relays) 1 (for HIV)	-	NZM2/3-XUHIV2A24DC	189733	
		PXR20(25) NZM3(-4)-...X...	2 (for relays) 1 (for HIV)	-	NZM2/3-XUHIV2A208-240AC	189735	







NZM circuit breakers and switch-disconnectors




Relay modules, voltage releases


Moeller series

For use with		Contacts		Part no.	Article no.	
		N/O = normally open	N/C = normally closed			
Relay module with shunt release						
The breakers will trip in the event of a voltage pulse or if a no-break current is applied. Two relays per unit, for signaling commands or different circuit-breaker states. The activation criteria can be configured in the trip unit. If the shunt release is energized, contact with the main contacts of the circuit breaker will be prevented when the latter is switched on. Can only be used in combination with circuit breakers with electronic releases. Shunt release relay modules cannot be used together with the NZM...-XHIV early-make auxiliary contacts, the NZM...-XU... undervoltage releases or the NZM...-XA.... shunt releases. Control wiring on Push-in terminals.						
		PXR20(25) NZM2(-4)-...X...	2 N/O	-	NZM2/3-XA2A24AC/DC	189740
		PXR20(25) NZM3(-4)-...X...	2 N/O	-	NZM2/3-XA2A208-240AC	189743
Relay module						
Two relays per unit, for signaling commands or different circuit-breaker states. The activation criteria can be configured in the trip unit. Can only be used in combination with circuit breakers with electronic releases. Relay modules cannot be used together with the NZM...-XHIV early-make auxiliary contacts, the NZM...-XU... undervoltage releases or the NZM...-XA.... shunt releases. Relay contacts for control wiring. Control wiring on Push-in terminals.						
		PXR20(25) NZM2(-4)-...X... PXR20(25) NZM3(-4)-...X...	2 N/O	-	NZM2/3-X2A	189722
For use with		Rated control voltage		Part no.	Article no.	
		U _s V				
Undervoltage releases						
Without auxiliary contact NZM circuit breakers and N switch-disconnectors will trip instantaneously if the control voltage drops below 35 - 70% U _s . For use with emergency-stop devices (in combination with an emergency-stop button).						
	With terminal block on the left-hand side of the switch	NZM1 N(S)1	208 - 240 V 50/60 Hz	NZM1-XU208-240AC	259442	
			380 - 440 V 50/60 Hz	NZM1-XU380-440AC	259444	
			24 V DC	NZM1-XU24DC	259452	
	With screw connection	NZM2, 3 N(S)2, 3	208 - 240 V 50/60 Hz	NZM2/3-XU208-240AC	259499	
			380 - 440 V 50/60 Hz	NZM2/3-XU380-440AC	259501	
	With Push-in terminals 		208 - 240 V 50/660 Hz	NZM2/3-XU208-240AC-PI	189754	
			24 V DC	NZM2/3-XU24DC-PI	189757	
Shunt releases						
Without auxiliary contact The circuit breakers will trip in the event of a voltage pulse or if a continuous voltage is applied.						
	With terminal block on the left-hand side of the switch	NZM1 N(S)1	24 V AC/DC	NZM1-XA24AC/DC	259708	
			208 - 250 V AC/DC	NZM1-XA208-250AC/DC	259726	
	With screw connection	NZM2, 3 N(S)2, 3	208 - 250 V AC/DC	NZM2/3-XA208-250AC/DC	259763	
				208 - 250 V AC/DC	NZM2/3-XA208-250AC/DC-PI	189803
				24 V AC/DC	NZM2/3-XA24AC/DC-PI	189799

	For use with	Part no.	Article no.	Notes	
Door-coupling rotary handles					
Complete handles including rotary drive and coupling parts Requires an additional extension shaft IP66 degree of protection, UL/CSA Type 4X, Type 12					
Standard, black/grey					
	Lockable in the 0 position on the handle with max. three padlocks With door interlock	NZM1, N(S)1	NZM1-XTVD	260166	Door interlock <ul style="list-style-type: none">• Cannot be overridden if ON or OFF is locked• Can be modified if ON is not locked• Can be overridden from the outside using a screwdriver• Door can be opened in OFF• External warning plate/designation label can be clipped on
		NZM2, N(S)2	NZM2-XTVD	260168	
		NZM3, N(S)3	NZM3-XTVD	260170	
	Lockable on the handle and the switch with up to three padlocks each Can also be modified on the handle in the I position With door interlock	NZM1, N(S)1	NZM1-XTVDV	260172	
		NZM2, N(S)2	NZM2-XTVDV	260174	
		NZM3, N(S)3	NZM3-XTVDV	260176	
					
Red-yellow for emergency-stop					
	Lockable on the handle and the switch with up to three padlocks each With door interlock	NZM1, N(S)1	NZM1-XTVDVR	260178	Door interlock <ul style="list-style-type: none">• Cannot be overridden if OFF is locked• Can be modified if ON is not locked• Can be overridden from the outside using a screwdriver• Door can be opened in OFF• External warning plate/designation label can be clipped on
		NZM2, N(S)2	NZM2-XTVDVR	260180	
		NZM3, N(S)3	NZM3-XTVDVR	260182	
					
Door-coupling rotary handles for use in North America					
Complete handles including rotary drive and coupling parts Requires an additional extension shaft IP66 degree of protection, UL/CSA Type 4X, Type 12					
Standard, black/grey					
	Lockable in the 0 position on the handle with up to three padlocks With door interlock	NZM1, N1	NZM1-XTVD-NA	271445	Door interlock <ul style="list-style-type: none">• Cannot be overridden if OFF is locked• Door can only be opened after active rotation beyond the 0 position• Cannot be combined with mechanical interlock• External warning plate/designation label can be clipped on
		NZM2, N2	NZM2-XTVD-NA	271446	
		NZM3, N3	NZM3-XTVD-NA	271447	
					
Red-yellow for emergency-stop					
	Lockable on the handle and the switch with up to three padlocks each With door interlock	NZM1, N(S)1	NZM1-XTVDVR-NA	271449	Door interlock <ul style="list-style-type: none">• Cannot be overridden if OFF is locked• Door can only be opened after active rotation beyond the 0 position• Cannot be combined with mechanical interlock• External warning plate/designation label can be clipped on
		NZM2, N(S)2	NZM2-XTVDVR-NA	271450	
		NZM3, N(S)3	NZM3-XTVDVR-NA	271451	
					
Extension shaft					
	Mounting depth: max. 400 mm	NZM1, N(S)1	NZM1/2-XV4	261232	Length: 290 mm, can be cut to the desired length
		NZM2, N(S)2			
		NZM3, N(S)3	NZM3/4-XV4	261234	
	Mounting depth: max. 600 mm	NZM1, N(S)1	NZM1/2-XV6	260191	Length: 425 mm, can be cut to the desired length
		NZM2, N(S)2			
		NZM3, N(S)3	NZM3/4-XV6	260193	

		For use with	Rated control voltage	Part no. Article no.
			U _s V	
Main switch assembly kit for IEC, UL/CSA				
Includes: <ul style="list-style-type: none">• Door-coupling rotary handle with rotary drive• NZM...-XV4 shaft extension• External warning plate in German/English• Black-and-yellow lightning symbol IP66 degree of protection, UL/CSA Type 4X, Type 12				
With black door-coupling rotary handle				
	Door can be locked in OFF position with up to three padlocks	NZM1, N(S)1	-	NZM1-XHB 266626
	Can also be modified in the I position			
	After the door interlock is activated it cannot be opened in the ON or TRIP position. Door can only be opened in the OFF position	NZM2, N(S)2	-	NZM2-XHB 266627
	Can be overridden from the outside using a screwdriver			
	Cannot be overridden if OFF is locked	NZM3, N(S)3	-	NZM3-XHB 266628
	Can only be switched on if the door is closed			
With red door-coupling rotary handle for use as an emergency-stop device in accordance with IEC/EN 60204-1, VDE 0113 Part 1				
	Door can be locked in the OFF position with up to three padlocks	NZM1, N(S)1	-	NZM1-XHBR 266632
	After the door interlock is activated it cannot be opened in the ON or TRIP position. Door can only be opened in the OFF position			
	Can be overridden from the outside using a screwdriver	NZM2, N(S)2	-	NZM2-XHBR 266633
	Cannot be overridden if OFF is locked			
	Can only be switched on if the door is closed	NZM3, N(S)3	-	NZM3-XHBR 266634
Main switch assembly kit with additional rotary handle for IEC, UL/CSA				
Includes: <ul style="list-style-type: none">• Door-coupling rotary handle with rotary drive• Additional rotary handle on the switch with "Deliberate Action" operating mode according to NFPA79 and UL508A Part 2• NZM1/2-XV4 shaft extension for mounting depth of 400 mm• External warning plate in German/English• Black-and-yellow lightning symbol IP66 degree of protection, UL/CSA Type 4X, Type 12				
With black door-coupling rotary handle				
	Door can be locked in the OFF position with up to three padlocks	NZM1, N(S)1	-	NZM1-XHB-DA-NA 125958
	With activated door interlock Cannot be opened in the ON, OFF or TRIP position Can only be opened in the RESET position			
	Can be overridden from the outside using a screwdriver	NZM2, N(S)2	-	NZM2-XHB-DA-NA 116897
	Cannot be overridden if OFF is locked			
		NZM3, N(S)3	-	NZM3-XHB-DA-NA 119000
With red door-coupling rotary handle for use as an emergency-stop device				
	Door can be locked in the OFF position with up to three padlocks	NZM1, N(S)1	-	NZM1-XHB-DAR-NA 125959
	With activated door interlock Cannot be opened in the ON, OFF or TRIP position			
	Can only be opened in the RESET position	NZM2, N(S)2	-	NZM2-XHB-DAR-NA 116898
	Can be overridden from the outside using a screwdriver			
	Cannot be overridden if OFF is locked	NZM3, N(S)3	-	NZM3-XHB-DAR-NA 119001
Remote operator				
For remote switching of circuit breakers and switch-disconnectors ON, OFF and reset by means of two-wire or three-wire control Can be manually switched on site Lockable in the 0 position of the remote operator with up to three padlocks (hasp thickness: 4 – 8 mm)				
Closing delay 110 - 170 ms, break time 110 - 170 ms				
	Sliding switch for "Auto" or "Manual"	NZM2, N(S)2	208 - 240 V 50/60 Hz	NZM2-XRD208-240AC 115391
	Max. number of auxiliary contacts: two standard auxiliary contacts, one trip-indicating auxiliary switch			
	-	NZM2, N(S)2	24 - 30 V DC	NZM2-XRD24-30DC 115393
Closing delay 60 - 100 ms, break time 300 - 3000 ms Synchronized				
	-	NZM3, N(S)3	208 - 240 V 50/60 Hz	NZM3-XR208-240AC 259850
		NZM3, N(S)3	24 - 30 V DC	NZM3-XR24-30DC 259854


Description	For use with	Part no. Article no.
Interface module for NZM2 PXR20 and communication interfaces		
 <p>For universal connection of optional circuit breaker functions. Required for connectivity. The connection types depend on the design of the interface module. Circuit-breaker status detection (I, +, 0) of the electronic release. The switch status can be communicated. 24 V DC auxiliary power connection. Connection for communications adapter module (CAM). Optional CAM available for various fieldbus communication systems (Profibus DP, SmartWire-DT, Ethernet-based fieldbuses). Connection to optional internal Modbus RTU module. Mechanical pass-through of the switch's status (I, 0) for use by the remote operator.</p>	NZM2(-4)-VX(MX)...	NZM2-XBSM 189825
	NZM3(-4)-VX(MX)...	NZM3-XBSM 189826
Integrated communication module, RS485, Modbus RTU, for use with NZM		
 <p>For fieldbus connections. For installation in the right-hand accessory pocket of the circuit breaker. For connection to Modbus RTU. RS485 interface. Cannot be used with the PXR10 NZM-AX electronic release.</p>	NZM2(3)(4)(-4)-VX(MX)(PX)(PMX)	PXR-RCAM-MRTU-I 189836
External communication modules, for use with NZM and IZMX		
<p>For fieldbus connections. For external installation in the vicinity of the circuit breaker. Cannot be used with the PXR10 NZM-AX electronic trip.</p>		
	For connection to Profinet Connection via PXR-RCAM-MRTU-I	PXR-ECAM-PNET 302050 PXR-ECAM-IP 302051 PXR-ECAM-ECT 302052
	For connection to Ethernet/IP Connection via PXR-RCAM-MRTU-I	
	For connection to Ethercat Connection via PXR-RCAM-MRTU-I	

No. of poles	Rated current = rated uninterrupted current $I_n = I_u$ A	Settings range		High switching capacity of 150 kA Part no.	Article no.
		Overload release I_r A	Short-circuit release I_i A		
				Screw connection	

Circuit breaker with residual-current release

For equipment with power electronics, such as inverters or variable frequency drives.
Not UL/CSA approved.
Suitable for use in three-phase systems.
3-pole
Rated fault current $I_{\Delta n} = 0.03 \text{ A}$
Internal power supply $U_a = 50 - 400 \text{ V (...-500 AC: 500 V)}$
AC/DC sensitive in the 0-100 kHz residual-current frequency range according to the core-balance principle
Pre-assembled combination of current-limiting circuit breaker and residual-current protection module
Adjustable and sealable buttons.



	Rated operating voltage: 400 V 50/60 Hz	100	80 - 100	600 - 1000	NZMH2-A100-FIA30	158530
		125	100 - 125	750 - 1250	NZMH2-A125-FIA30	129710
		160	125 - 160	960 - 1600	NZMH2-A160-FIA30	112627
		200	160 - 200	1200 - 2000	NZMH2-A200-FIA30	112628
		250	200 - 250	1500 - 2500	NZMH2-A250-FIA30	112629
	Rated operating voltage: 500 V 50/60 Hz	100	80 - 100	600 - 1000	NZMH2-A100-FIA30-500AC	184959
		125	100 - 125	750 - 1250	NZMH2-A125-FIA30-500AC	184960
		160	125 - 160	960 - 1600	NZMH2-A160-FIA30-500AC	184961
		200	160 - 200	1200 - 2000	NZMH2-A200-FIA30-500AC	184962
		250	200 - 250	1500 - 2500	NZMH2-A250-FIA30-500AC	184963



Using hydraulic-magnetic circuit breakers to design more reliable machines



Download the catalog:
Eaton.com/HMCB

Hydraulic-magnetic circuit breakers provide maximum protection for your equipment and avoid nuisance tripping during start-up current peaks (motor) or in inductive circuits with long cables, which also allows you to optimize the conductor cross-sections.

The transmission of low DC voltage across long cable runs is subject to many limitations. The reasons include circuit impedance, interference from long cables acting like antennas, voltage peaks from inductive circuits, or the starting of a motor. These types of issues often lead to nuisance tripping of the circuit-protection devices.

Hydraulic-magnetic circuit breakers, however, provide accurate, robust and reliable protection of your electrical equipment from the start, without any nuisance tripping. The benefits of our Heinemann hydraulic magnetic circuit breakers include the ability to manage current peaks generated by motor starts, a fixed tripping point that is insensitive to ambient temperature variations, proven resistance to shocks and vibrations and no derating over time or as a result of the type of usage.



Special tripping characteristics prevent nuisance tripping

The trip mechanism in a hydraulic-magnetic circuit breaker is based on solenoid coils. The coil is wound around a hermetic tube containing a movable core damped by silicone oil and held in place by a spring. The core is moved by the build-up of the magnetic field in the coil. The combination of the spring and the viscosity of the silicone oil creates a dynamic in the movement of the core that enables special tripping characteristics, thereby preventing nuisance tripping and providing precise, robust and reliable protection, immune to the effects of aging and frequency of use.

What makes this technology stand out

In the event of an overload or a fault, the core of the coil will be attracted towards the pole piece due to the increase in current, causing the resistor of the solenoid circuit to drop with the armature. As soon as the core comes into contact with the pole piece, the armature will be attracted and the switch mechanism will be triggered, separating the contacts. In the event of a short circuit, the magnetic field induced by the current in the solenoid coil will immediately attract the armature. This use of magnetism to achieve two different effects is the main hallmark of this technology.



ADS – hydraulic-magnetic circuit breakers for DIN-rail mounting

The ADS auxiliary protective device is rated for both DC and AC voltages, in accordance with the UL 1077, CSA 22.2, VDE 0660 and IEC 60947-2 standards. It is typically used in conjunction with a circuit breaker (if required), for example, as a substitute for fuses. Compared to fuses, this offers the advantage that the circuit breaker can be reset and that the switch status can be identified by the position of the lever.

In addition, you can also choose from a wide range of products that are tailored to the needs of your application. These devices are available with a wide range of rated currents, three inrush current tolerances (8-fold, 15-fold and 22-fold at 50 Hz) and flexible time characteristics (short, medium and long delay). Furthermore, ADS protection has no adverse effects and is insensitive to abnormal or variable ambient temperatures or harsh environments. As a result, these devices can be used in environments with high levels of fungal contamination or excessive shocks and vibrations.

Accessories

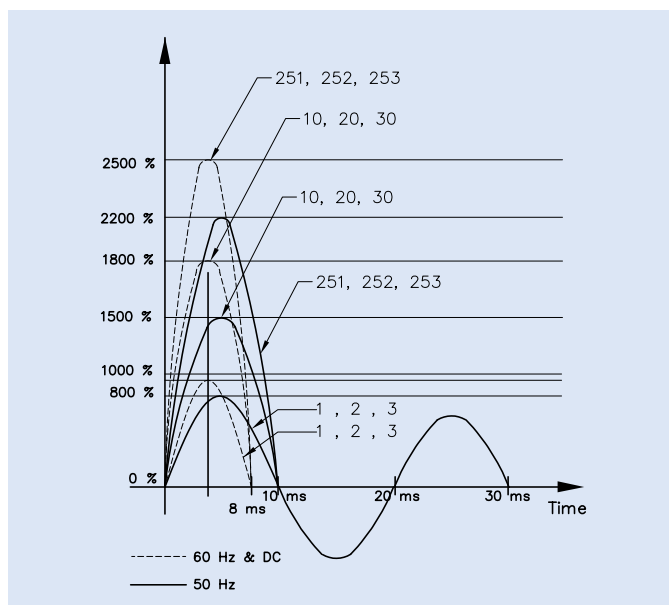
The wide range of internal circuits, levers, terminals, auxiliary contacts, mounting options and protection types make these circuit breakers the ideal choice for demanding applications.





Features, advantages and functions

- The devices can be used for overcurrent protection where line protection (for example according to UL 489 MCCB) is already available or not required.
- They can also be used as components in assemblies, devices or electrical equipment.
- They are an ideal substitute for fuses if additional protection is required, for instance in addition to line protection (if required).
- They come in a light gray housing with a white lever, marked "O" (Off) and "I" (On).
- They are resistant to environmental impacts, shocks and vibrations, moisture and salt fog and come with MIL specifications for fungus resistance.
- **Elimination of heat-induced nuisance tripping:**
The circuit breaker is designed to operate at 100 % continuous rated current without being affected by ambient temperatures from -40 °C to +85 °C.
- **Immediate reset after tripping:**
The circuit breaker can be reset (closed) immediately after an overcurrent trip without any "cooling-down" period.
- **High half-cycle inrush current tolerance – 8-fold (standard), 15-fold and 22-fold for 50 Hz (10-, 18-, 25-fold for 60 Hz):** The circuit breaker is available at different tolerance levels for current peaks at half a cycle. The standard tolerance is eight times the continuous current rating; versions with 18 and 25 times the continuous current rating are also available.
- **Overcurrent characteristics, short, medium or long delay:**
The circuit breaker is equipped with time characteristics for short, medium and long delay.
- **Integrated auxiliary contact (optional):** For each pole, one auxiliary contact (normally open or normally closed) can be pre-installed – an additional pole for the auxiliary contact is thus NOT required.
- **Precise overcurrent calibration:**
The circuit breaker can be calibrated to a wide range of current ratings, from 0.1 A to 63 A continuous.
- **DIN-rail mounting:** The circuit breaker can be quickly and easily mounted on a 35 mm DIN rail via the integrated quick-release spring clip.
- **Standards and certifications**
 - UL approval under UL 1077
 - UL File No. E69553
 - CSA 22.2 No. 235
 - IEC 60947-2
 - CE marking
 - CCC marking



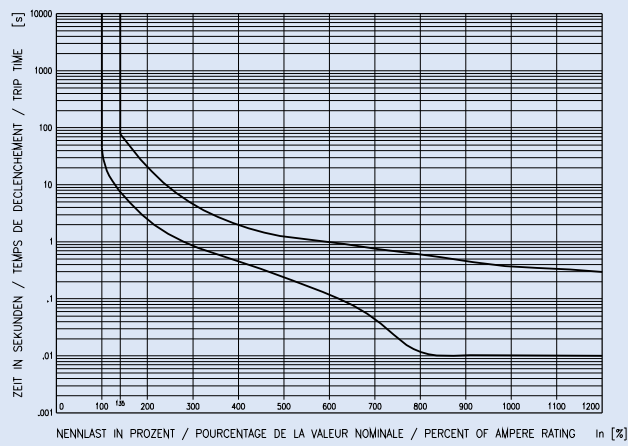
Inrush currents

The ADS circuit breakers are available with various tolerance levels for current peaks and prevent nuisance tripping due to inrush currents during start-up. The circuit breaker can thus be used as a motor-protective circuit breaker, for example – although a brief but high current amplitude will cause an overload when the motor is switched on, the circuit breaker will not trip.

Using AS type devices for high inrush currents makes it possible to avoid unnecessary and dangerous over-calibrations, which also require larger cable cross-sections. This saves both energy and money.

The magnetic shunt offers maximum possibilities in the case of half-waves, for instance 10 ms at a frequency of 50 Hz. At a frequency of 60 Hz, a half-wave has a duration of 8 ms, based on a value of 1800 % instead of 1500 %; at 50 Hz, the corresponding value is 2500 % instead of 2200 %.

Curve 20 50 Hz / 60 Hz / DC



Medium delay

Approvals

VDE 60947-2 : 80 V DC / 400 V AC
1-2 poles
63 A max.
Ic 1500 A

UL 1077 : 65 V DC / 250 – 277 V AC
1-4 poles
50 A max.
Ic 5000 A

In.%	135	200	300	400	500	600	700	800	900	1000	1100	1200
MAX.	85.0	20.0	4.50	2.00	1.20	1.00	.750	.600	.450	.290	–	–
MIN	8.0	2.5	.85	.45	.25	.13	.045	.012	.010	.010	–	–

Ordering information

15-fold inrush current (50 Hz) – medium delay characteristic 20 (AC / DC)

	Part no.	Part no.	Part no.	Part no.
Ampere	1-pole	2-pole	3-pole	4-pole
0.16	AD1S-Y50x-1	AD2S-Y50x-1	AD3S-Y50x-1	AD4S-Y50x-1
0.25	AD1S-Y50x-2	AD2S-Y50x-2	AD3S-Y50x-2	AD4S-Y50x-2
0.5	AD1S-Y50x-3	AD2S-Y50x-3	AD3S-Y50x-3	AD4S-Y50x-3
0.75	AD1S-Y50x-4	AD2S-Y50x-4	AD3S-Y50x-4	AD4S-Y50x-4
1	AD1S-Y50x-5	AD2S-Y50x-5	AD3S-Y50x-5	AD4S-Y50x-5
1.5	AD1S-Y50x-6	AD2S-Y50x-6	AD3S-Y50x-6	AD4S-Y50x-6
1.6	AD1S-Y50x-7	AD2S-Y50x-7	AD3S-Y50x-7	AD4S-Y50x-7
2	AD1S-Y50x-8	AD2S-Y50x-8	AD3S-Y50x-8	AD4S-Y50x-8
2.5	AD1S-Y50x-9	AD2S-Y50x-9	AD3S-Y50x-9	AD4S-Y50x-9
3	AD1S-Y50x-10	AD2S-Y50x-10	AD3S-Y50x-10	AD4S-Y50x-10
3.5	AD1S-Y50x-11	AD2S-Y50x-11	AD3S-Y50x-11	AD4S-Y50x-11
4	AD1S-Y50x-12	AD2S-Y50x-12	AD3S-Y50x-12	AD4S-Y50x-12
5	AD1S-Y50x-13	AD2S-Y50x-13	AD3S-Y50x-13	AD4S-Y50x-13
6	AD1S-Y50x-14	AD2S-Y50x-14	AD3S-Y50x-14	AD4S-Y50x-14
7	AD1S-Y50x-15	AD2S-Y50x-15	AD3S-Y50x-15	AD4S-Y50x-15
8	AD1S-Y50x-16	AD2S-Y50x-16	AD3S-Y50x-16	AD4S-Y50x-16
10	AD1S-Y50x-17	AD2S-Y50x-17	AD3S-Y50x-17	AD4S-Y50x-17
12	AD1S-Y50x-18	AD2S-Y50x-18	AD3S-Y50x-18	AD4S-Y50x-18
13	AD1S-Y50x-19	AD2S-Y50x-19	AD3S-Y50x-19	AD4S-Y50x-19
15	AD1S-Y50x-20	AD2S-Y50x-20	AD3S-Y50x-20	AD4S-Y50x-20
16	AD1S-Y50x-21	AD2S-Y50x-21	AD3S-Y50x-21	AD4S-Y50x-21
20	AD1S-Y50x-22	AD2S-Y50x-22	AD3S-Y50x-22	AD4S-Y50x-22
25	AD1S-Y50x-23	AD2S-Y50x-23	AD3S-Y50x-23	AD4S-Y50x-23
30	AD1S-Y50x-24	AD2S-Y50x-24	AD3S-Y50x-24	AD4S-Y50x-24
32	AD1S-Y50x-25	AD2S-Y50x-25	AD3S-Y50x-25	AD4S-Y50x-25
35	AD1S-Y50x-26	AD2S-Y50x-26	AD3S-Y50x-26	AD4S-Y50x-26
40	AD1S-Y50x-27	AD2S-Y50x-27	AD3S-Y50x-27	AD4S-Y50x-27
50	AD1S-Y50x-28	AD2S-Y50x-28	AD3S-Y50x-28	AD4S-Y50x-28
63	AD1S-Y50x-29	AD2S-Y50x-29	AD3S-Y50x-29	AD4S-Y50x-29



This is just one example of the many different types of internal circuits, tripping characteristics and inrush currents available.
For more information, see Eaton.com/HMCB

0: without auxiliary contact
X selection 1: with N/O auxiliary contact
2: with N/C auxiliary contact

The auxiliary contact is connected to the first pole by default, other configurations are possible.



Up to 25 kA

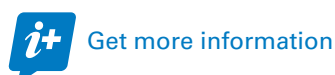
According to IEC/EN 60947-2

Protection for any application – safety up to 125 A



Eaton products and solutions are used in industrial, panel-building and commercial applications all over the world. Thanks to their proven quality, international certifications and marine or rail approvals, our xEffect industrial miniature circuit breakers offer the functionality and safety required by the global market. In conjunction with our versatile range of rail-mounted devices and accessories, they provide users with more options for solving complex tasks.

Furthermore, we offer a comprehensive range of residual-current circuit breakers to protect people from electric shock and installations against fire.





Industrial clients in many countries rely on our protective devices and switchgear.

Superior product quality and tested safety guarantee a high level of protection for people, installations and equipment. Approvals from many countries confirm that we build our products in accordance with the latest national and international standards. The high, IEC/EN 60947-2 compliant rated breaking capacity of the FAZ (15 kA) and FAZT (15 to 25 kA) devices, as well as their excellent current-limiting and selectivity characteristics, ensure maximum system protection and availability.



Powerful products for machine and panel building

The xEffect FAZ industrial circuit breakers are available with B, C and D characteristics in accordance with IEC/EN 60898-1. Due to the growth in the use of sensitive electronics, special characteristics are required for effective protection. To this end, the Z characteristic with a short-circuit trip current of 2 to $3 \times I_n$ provides fast overload protection. The K characteristic with a high short-circuit trip current of 8 to $12 \times I_n$ prevents nuisance tripping when switching three-phase loads. The most commonly used type in panel-building applications is the S characteristic with a limited trip range of 13 to $17 \times I_n$.



Digital residual-current protection for enhanced operational continuity

In both 3- and 4-pole applications, our new digital residual-current circuit breakers act as powerful multi-functional "bodyguards," designed to provide safety in a wide range of distributed environments. They are as intelligent as they are vigilant and will switch off any residual current. These digital bodyguards will immediately indicate any irregularities. Their advance warning function enables operators to intervene and ensures operational continuity. In the event of a real danger, the digital RCD will switch off with pinpoint accuracy – much more precisely than a conventional analog circuit breaker. This precise tripping behavior reduces nuisance tripping to a minimum and increases operational continuity.



Gradual fault warning

Digital circuit breakers use a potential-free switching contact to communicate with their surroundings. Operators therefore do not necessarily have to run to the distribution board to check the status of the system, but are automatically warned, for example, if $I_{\Delta} > 0.3 \times I_{\Delta n}$. Anything is possible, from the simple control of external lights and/or buzzers to the connection of monitoring systems, including mobile phone notifications via text message.

Continuous monitoring of electrical systems

An LED traffic light on the device makes it possible to determine the system status at a glance.

Green = normal range

Yellow = the leakage or fault current amounts to 30–50 % of $I_{\Delta n}$

Red = the leakage or fault current amounts to > 50 % of $I_{\Delta n}$. The device will trip once a value of 100 % is almost reached.



Ease of use combined with efficiency and safety

The test button of the digital RCD only needs to be pressed once a year. The integrated overload functionality means that no thermal back-up fuse is required. Thanks to the integrated short-time delay (G-type), the circuit breaker will not trip in the event of brief transient overvoltages (e.g. lightning strikes). Meanwhile, the lift/claw terminals at the top and bottom are also easy to use. The integrated red-green position indicator and the white-blue fault-current tripping indicator provide all the information you need directly on the circuit breaker. A wide range of accessories, such as the Z-HK, can be retrofitted, while the device can also be sealed for additional safety.



Type F residual-current device

Type F residual-current circuit breakers are specially designed for use in applications featuring single-phase variable frequency drives, such as pumps, welding units, vibrators or impact drills. In such applications, residual currents with mixed frequencies may occur, which cannot be detected by Type AC and Type A residual-current circuit breakers. Furthermore, these protective switching devices offer a high degree of system availability thanks to extended surge current resistance and delayed characteristics.



Versatile, modular devices

We offer a wide range of rail-mounted devices for controlling, switching and signaling. All devices are suitable for DIN-rail mounting and are easy to mount and wire, making them ideal for any industrial installation.



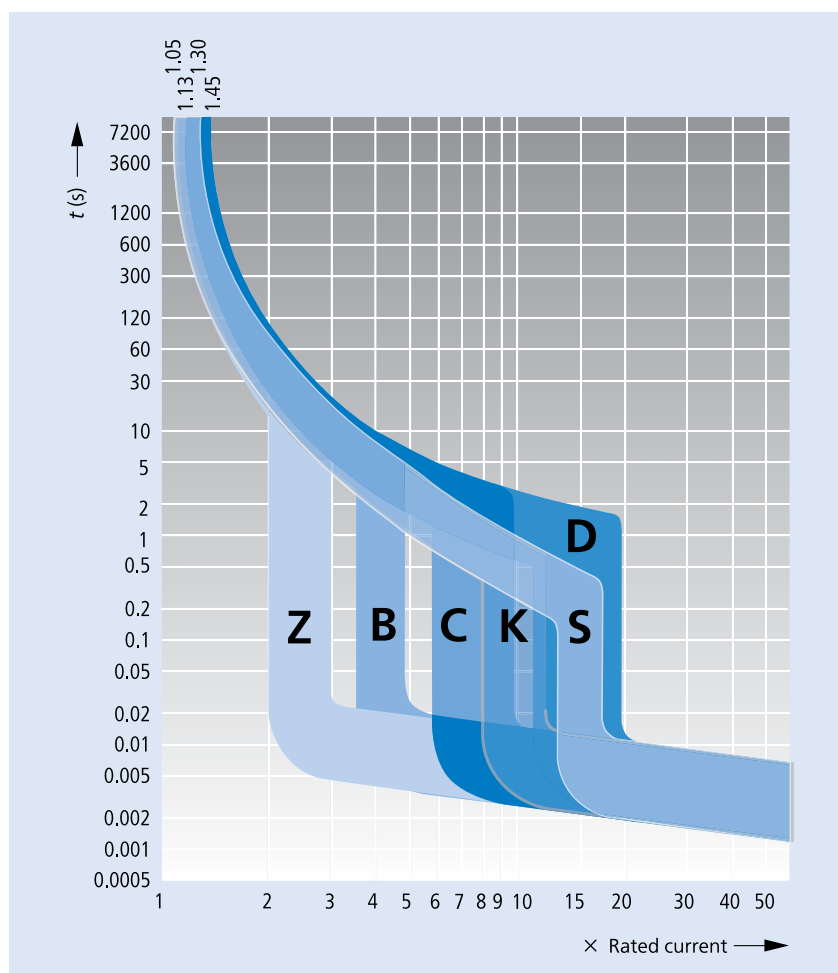
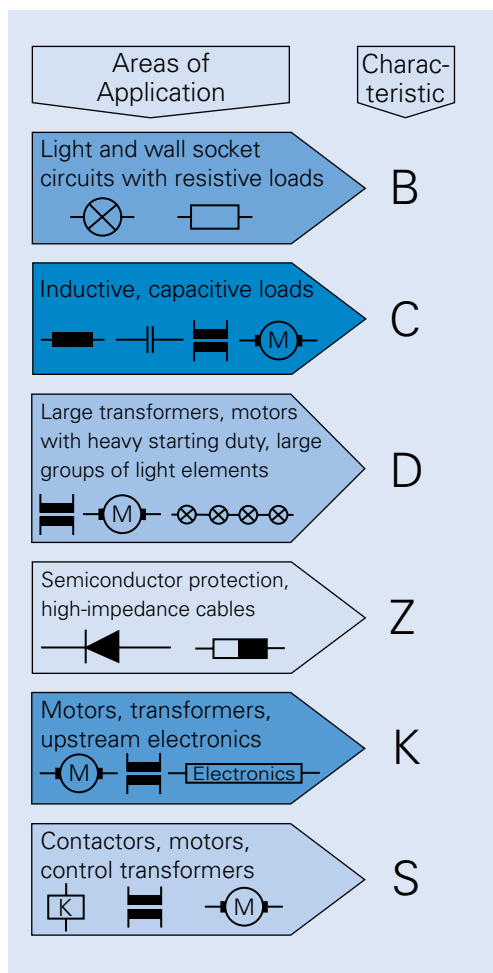
Lightning and surge protection

With its surge protection portfolio, Eaton offers a solution for all power engineering applications. The SPCT2 product family is the perfect all-rounder for mechanical engineering. Combined arresters such as the SPBT12 or SPRT12 offer the highest protection potential for buildings with external lightning protection or for overhead lines. A solution for all lightning protection classes is available.



A comprehensive product range

Our extensive portfolio also includes Schuko sockets for industrial installations, ammeters and voltmeters, energy and hour meters for DIN-rail mounting, main switches, on/off switches, control switches, pushbuttons (with and without indicator lights), indicator lights, analog and digital timers, staircase timers, twilight switches, buzzers and bells. We thus offer a comprehensive product range for your entire electrical installation from a single source.



Tripping characteristics of xEffect FAZ industrial miniature circuit breakers

In addition to line protection, the versatile, customizable tripping characteristics provide individual device and control-circuit protection. The high rated breaking capacity of 10 to 25 kA and the excellent current-limiting and selectivity characteristics ensure maximum system protection and availability. Devices with B characteristic are used for the protection of lighting and socket circuits. Devices with C characteristic are used wherever current peaks and other overcurrents may occur during operation that should not cause tripping. The D characteristic is the right solution for large transformers, motors with heavy starting duties or large groups of luminaires. All devices are available as single- and multi-pole versions up to a rated current of 63 A, irrespective of the characteristic.

Improved line protection with high operational continuity

In the event of short circuits, devices with K characteristic will trip at eight to 12 times the rated current and are thus used wherever current peaks and other overcurrents may occur during operation that should not cause tripping. These devices are therefore in the upper range of the C characteristic and in the lower range of the D characteristic. This enables motors, capacitors, welding transformers and electronically controlled ballasts to be optimally connected. Our K characteristic devices ensure improved line protection thanks to the narrower range of the bimetallic strip in the overload release.

Control-circuit safety

Circuit breakers with S characteristic are designed for the protection of control circuits with high inrush currents. The short-circuit current threshold of 13 to 17 $\times I_n$ is within a narrowed range of the D characteristic and thus higher than the inrush current of a typical control transformer in order to prevent nuisance tripping. Devices with S characteristic are tested according to IEC/EN 60947-2. As per this standard, these control circuit breakers only allow an overload of 5 to 30 %.

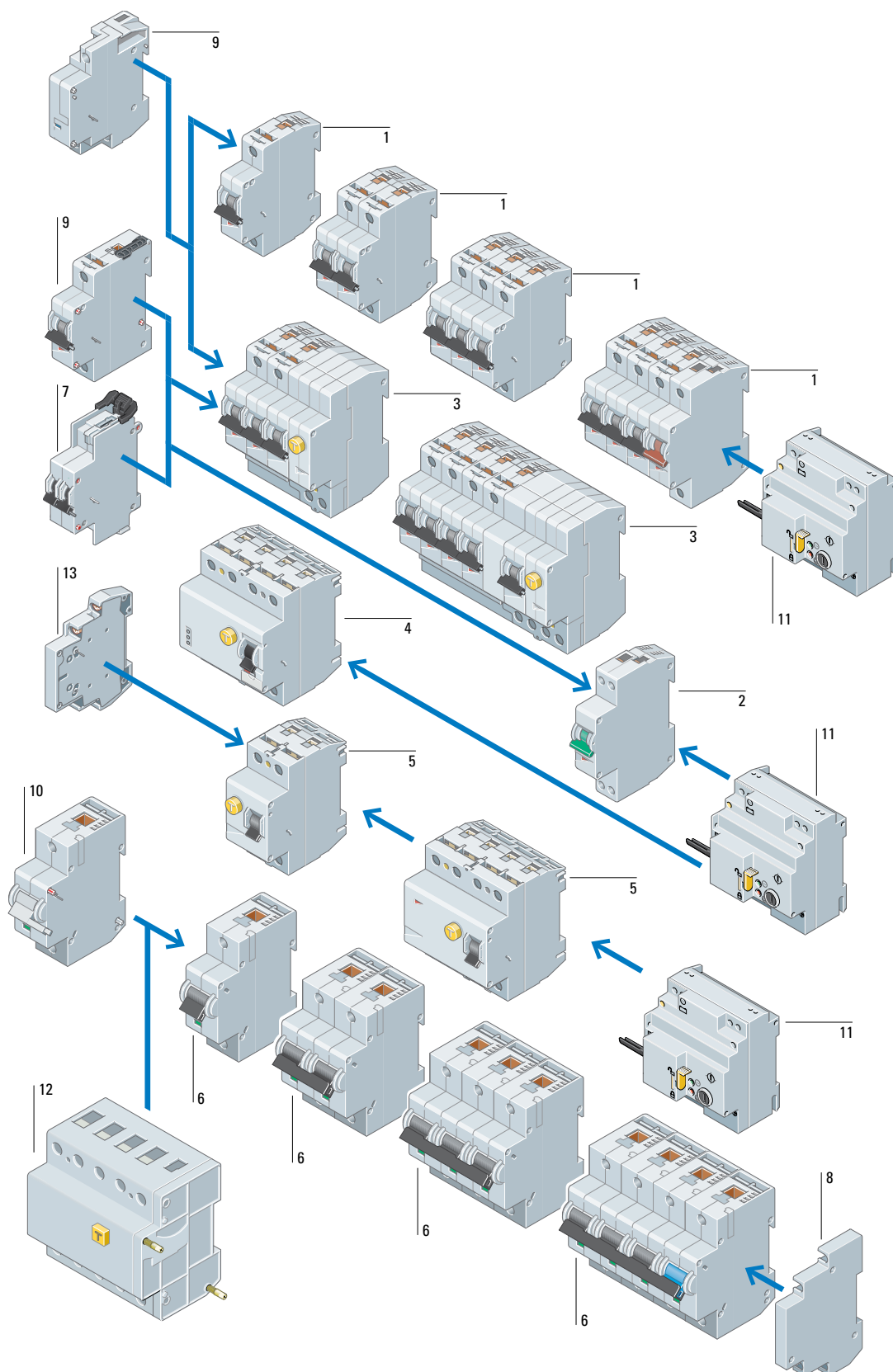
Rapid-response protection of electronic components

Even small overcurrents can destroy electronic components and devices. The xEffect FAZ industrial miniature circuit breakers with Z characteristic will trip instantaneously at two to three times the overcurrent threshold. Thanks to this characteristic, the circuit breakers are also suitable for protecting lines with high impedance.

Miniature circuit breakers and residual-current circuit breakers

System overview

Moeller series



- | | | | |
|---|---|----|--|
| 1 | FAZ miniature circuit breaker | 7 | FAZ auxiliary contact or SWD connection module |
| 1 | FAZT miniature circuit breaker | 8 | AZ auxiliary contact |
| 2 | FAZ-PN miniature circuit breaker | 9 | FAZ voltage release |
| 3 | FBSmV residual-current protective modules (for mounting on FAZ) | 10 | AZ voltage release |
| 4 | FRBmM combination switch | 11 | Remote switching module |
| 5 | FRCmM residual-current circuit breaker | 12 | FBHmV residual-current protective modules (for mounting on FAZ) |
| 6 | AZ miniature circuit breaker | 13 | Residual-current auxiliary contact module or SWD connection module |



Rated current	Switching capacity IEC 60947-2	1-pole		1-pole+N		2-pole		3-pole	
I_n		Part no.	Article no.	Part no.	Article no.	Part no.	Article no.	Part no.	Article no.
A	kA								
FAZ miniature circuit breakers									
(Circuit breakers with 3+N and 4 poles available on request)									
Characteristic: B									
Instantaneous release response current: $3 - 5 \times I_n$									
1	15	FAZ-B1/1	278520	FAZ-B1/1N	278633	FAZ-B1/2	278719	FAZ-B1/3	278832
1.5	15	FAZ-B1,5/1	278521	FAZ-B1,5/1N	278634	FAZ-B1,5/2	278720	FAZ-B1,5/3	278833
1.6	15	FAZ-B1,6/1	278522	FAZ-B1,6/1N	278635	FAZ-B1,6/2	278721	FAZ-B1,6/3	278834
2	15	FAZ-B2/1	278523	FAZ-B2/1N	278636	FAZ-B2/2	278722	FAZ-B2/3	278835
2.5	15	FAZ-B2,5/1	278524	FAZ-B2,5/1N	278637	FAZ-B2,5/2	278723	FAZ-B2,5/3	278836
3	15	FAZ-B3/1	278525	FAZ-B3/1N	278638	FAZ-B3/2	278724	FAZ-B3/3	278837
3.5	15	FAZ-B3,5/1	278526	FAZ-B3,5/1N	278639	FAZ-B3,5/2	278725	FAZ-B3,5/3	278838
4	15	FAZ-B4/1	278527	FAZ-B4/1N	278640	FAZ-B4/2	278726	FAZ-B4/3	278839
5	15	FAZ-B5/1	278528	FAZ-B5/1N	278641	FAZ-B5/2	278727	FAZ-B5/3	278840
6	15	FAZ-B6/1	278529	FAZ-B6/1N	278642	FAZ-B6/2	278728	FAZ-B6/3	278841
8	15	FAZ-B8/1	278530	FAZ-B8/1N	278643	FAZ-B8/2	278729	FAZ-B8/3	278842
10	15	FAZ-B10/1	278531	FAZ-B10/1N	278644	FAZ-B10/2	278730	FAZ-B10/3	278843
12	15	FAZ-B12/1	278532	FAZ-B12/1N	278645	FAZ-B12/2	278731	FAZ-B12/3	278844
13	15	FAZ-B13/1	278533	FAZ-B13/1N	278646	FAZ-B13/2	278732	FAZ-B13/3	278845
15	15	FAZ-B15/1	278534	FAZ-B15/1N	278647	FAZ-B15/2	278733	FAZ-B15/3	278846
16	15	FAZ-B16/1	278535	FAZ-B16/1N	278648	FAZ-B16/2	278734	FAZ-B16/3	278847
20	15	FAZ-B20/1	278536	FAZ-B20/1N	278649	FAZ-B20/2	278735	FAZ-B20/3	278848
25	15	FAZ-B25/1	278537	FAZ-B25/1N	278650	FAZ-B25/2	278736	FAZ-B25/3	278849
32	15	FAZ-B32/1	278538	FAZ-B32/1N	278651	FAZ-B32/2	278737	FAZ-B32/3	278850
40	15	FAZ-B40/1	278539	FAZ-B40/1N	278652	FAZ-B40/2	278738	FAZ-B40/3	278851
50	15	FAZ-B50/1	278540	FAZ-B50/1N	278653	FAZ-B50/2	278739	FAZ-B50/3	278852
63	15	FAZ-B63/1	278541	FAZ-B63/1N	278654	FAZ-B63/2	278740	FAZ-B63/3	278853
Characteristic: C									
Instantaneous release response current: $5 - 10 \times I_n$									
0.16	15	FAZ-C0,16/1	278542	FAZ-C0,16/1N	278655	FAZ-C0,16/2	278741	FAZ-C0,16/3	278854
0.25	15	FAZ-C0,25/1	278543	FAZ-C0,25/1N	278656	FAZ-C0,25/2	278742	FAZ-C0,25/3	278855
0.5	15	FAZ-C0,5/1	278544	FAZ-C0,5/1N	278657	FAZ-C0,5/2	278743	FAZ-C0,5/3	278856
0.75	15	FAZ-C0,75/1	278545	FAZ-C0,75/1N	278658	FAZ-C0,75/2	278744	FAZ-C0,75/3	278857
1	15	FAZ-C1/1	278546	FAZ-C1/1N	278659	FAZ-C1/2	278745	FAZ-C1/3	278858
1.5	15	FAZ-C1,5/1	278547	FAZ-C1,5/1N	278660	FAZ-C1,5/2	278746	FAZ-C1,5/3	278859
1.6	15	FAZ-C1,6/1	278548	FAZ-C1,6/1N	278661	FAZ-C1,6/2	278747	FAZ-C1,6/3	278860
2	15	FAZ-C2/1	278549	FAZ-C2/1N	278662	FAZ-C2/2	278748	FAZ-C2/3	278861
2.5	15	FAZ-C2,5/1	278550	FAZ-C2,5/1N	278663	FAZ-C2,5/2	278749	FAZ-C2,5/3	278862
3	15	FAZ-C3/1	278551	FAZ-C3/1N	278664	FAZ-C3/2	278750	FAZ-C3/3	278863
3.5	15	FAZ-C3,5/1	278552	FAZ-C3,5/1N	278665	FAZ-C3,5/2	278751	FAZ-C3,5/3	278864
4	15	FAZ-C4/1	278553	FAZ-C4/1N	278666	FAZ-C4/2	278752	FAZ-C4/3	278865
5	15	FAZ-C5/1	278554	FAZ-C5/1N	278667	FAZ-C5/2	278753	FAZ-C5/3	278866
6	15	FAZ-C6/1	278555	FAZ-C6/1N	278668	FAZ-C6/2	278754	FAZ-C6/3	278867
8	15	FAZ-C8/1	278556	FAZ-C8/1N	278669	FAZ-C8/2	278755	FAZ-C8/3	278868
10	15	FAZ-C10/1	278557	FAZ-C10/1N	278670	FAZ-C10/2	278756	FAZ-C10/3	278869
12	15	FAZ-C12/1	278558	FAZ-C12/1N	278671	FAZ-C12/2	278757	FAZ-C12/3	278870
13	15	FAZ-C13/1	278559	FAZ-C13/1N	278672	FAZ-C13/2	278758	FAZ-C13/3	278871
15	15	FAZ-C15/1	278560	FAZ-C15/1N	278673	FAZ-C15/2	278759	FAZ-C15/3	278872
16	15	FAZ-C16/1	278561	FAZ-C16/1N	278674	FAZ-C16/2	278760	FAZ-C16/3	278873
20	15	FAZ-C20/1	278562	FAZ-C20/1N	278675	FAZ-C20/2	278761	FAZ-C20/3	278874
25	15	FAZ-C25/1	278563	FAZ-C25/1N	278676	FAZ-C25/2	278762	FAZ-C25/3	278875
32	15	FAZ-C32/1	278564	FAZ-C32/1N	278677	FAZ-C32/2	278763	FAZ-C32/3	278876
40	15	FAZ-C40/1	278565	FAZ-C40/1N	278678	FAZ-C40/2	278764	FAZ-C40/3	278877
50	15	FAZ-C50/1	278566	FAZ-C50/1N	278679	FAZ-C50/2	278765	FAZ-C50/3	278878
63	15	FAZ-C63/1	278567	FAZ-C63/1N	278680	FAZ-C63/2	278766	FAZ-C63/3	278879



Rated current	Switching capacity IEC 60947-2	1-pole		1-pole+N		2-pole		3-pole	
I_n		Part no.	Article no.	Part no.	Article no.	Part no.	Article no.	Part no.	Article no.
A	kA								
FAZ miniature circuit breakers									
(Circuit breakers with 3+N and 4 poles available on request)									
Characteristic: D Instantaneous release response current: 10 - 20 x I_n									
0.5	15	FAZ-D0,5/1	278568	FAZ-D0,5/1N	278681	FAZ-D0,5/2	278767	FAZ-D0,5/3	278880
1	15	FAZ-D1/1	278569	FAZ-D1/1N	278682	FAZ-D1/2	278768	FAZ-D1/3	278881
1.5	15	FAZ-D1,5/1	278570	FAZ-D1,5/1N	278683	FAZ-D1,5/2	278769	FAZ-D1,5/3	278882
1.6	15	FAZ-D1,6/1	278571	FAZ-D1,6/1N	278684	FAZ-D1,6/2	278770	FAZ-D1,6/3	278883
2	15	FAZ-D2/1	278572	FAZ-D2/1N	278685	FAZ-D2/2	278771	FAZ-D2/3	278884
2.5	15	FAZ-D2,5/1	278573	FAZ-D2,5/1N	278686	FAZ-D2,5/2	278772	FAZ-D2,5/3	278885
3	15	FAZ-D3/1	278574	FAZ-D3/1N	278687	FAZ-D3/2	278773	FAZ-D3/3	278886
3.5	15	FAZ-D3,5/1	278575	FAZ-D3,5/1N	278688	FAZ-D3,5/2	278774	FAZ-D3,5/3	278887
4	15	FAZ-D4/1	278576	FAZ-D4/1N	278689	FAZ-D4/2	278775	FAZ-D4/3	278888
5	15	FAZ-D5/1	278577	FAZ-D5/1N	278690	FAZ-D5/2	278776	FAZ-D5/3	278889
6	15	FAZ-D6/1	278578	FAZ-D6/1N	278691	FAZ-D6/2	278777	FAZ-D6/3	278890
8	15	FAZ-D8/1	278579	FAZ-D8/1N	278692	FAZ-D8/2	278778	FAZ-D8/3	278891
10	15	FAZ-D10/1	278580	FAZ-D10/1N	278693	FAZ-D10/2	278779	FAZ-D10/3	278892
12	15	FAZ-D12/1	278581	FAZ-D12/1N	278694	FAZ-D12/2	278780	FAZ-D12/3	278893
13	15	FAZ-D13/1	278582	FAZ-D13/1N	278695	FAZ-D13/2	278781	FAZ-D13/3	278894
15	15	FAZ-D15/1	278583	FAZ-D15/1N	278696	FAZ-D15/2	278782	FAZ-D15/3	278895
16	15	FAZ-D16/1	278584	FAZ-D16/1N	278697	FAZ-D16/2	278783	FAZ-D16/3	278896
20	15	FAZ-D20/1	278585	FAZ-D20/1N	278698	FAZ-D20/2	278784	FAZ-D20/3	278897
25	15	FAZ-D25/1	278586	FAZ-D25/1N	278699	FAZ-D25/2	278785	FAZ-D25/3	278898
32	15	FAZ-D32/1	278587	FAZ-D32/1N	278700	FAZ-D32/2	278786	FAZ-D32/3	278899
40	15	FAZ-D40/1	278588	FAZ-D40/1N	278701	FAZ-D40/2	278787	FAZ-D40/3	278900
50	10	FAZ-D50/1	115370	FAZ-D50/1N	115378	FAZ-D50/2	115372	FAZ-D50/3	115374
63	10	FAZ-D63/1	115371	FAZ-D63/1N	115379	FAZ-D63/2	115373	FAZ-D63/3	115375
Characteristic: K Instantaneous release response current: 8 - 12 x I_n									
0.5	10	FAZ-K0,5/1	278589	FAZ-K0,5/1N	278702	FAZ-K0,5/2	278788	FAZ-K0,5/3	278901
1	10	FAZ-K1/1	278590	FAZ-K1/1N	278703	FAZ-K1/2	278789	FAZ-K1/3	278902
1.6	10	FAZ-K1,6/1	278591	FAZ-K1,6/1N	278704	FAZ-K1,6/2	278790	FAZ-K1,6/3	278903
2	10	FAZ-K2/1	278592	FAZ-K2/1N	278705	FAZ-K2/2	278791	FAZ-K2/3	278904
3	10	FAZ-K3/1	278593	FAZ-K3/1N	278706	FAZ-K3/2	278792	FAZ-K3/3	278905
4	10	FAZ-K4/1	278594	FAZ-K4/1N	278707	FAZ-K4/2	278793	FAZ-K4/3	278906
6	10	FAZ-K6/1	278595	FAZ-K6/1N	278708	FAZ-K6/2	278794	FAZ-K6/3	278907
8	10	FAZ-K8/1	278596	FAZ-K8/1N	278709	FAZ-K8/2	278795	FAZ-K8/3	278908
10	10	FAZ-K10/1	278597	FAZ-K10/1N	278710	FAZ-K10/2	278796	FAZ-K10/3	278909
13	10	FAZ-K13/1	278598	FAZ-K13/1N	278711	FAZ-K13/2	278797	FAZ-K13/3	278910
16	10	FAZ-K16/1	278599	FAZ-K16/1N	278712	FAZ-K16/2	278798	FAZ-K16/3	278911
20	10	FAZ-K20/1	278600	FAZ-K20/1N	278713	FAZ-K20/2	278799	FAZ-K20/3	278912
25	10	FAZ-K25/1	278601	FAZ-K25/1N	278714	FAZ-K25/2	278800	FAZ-K25/3	278913
32	10	FAZ-K32/1	278602	FAZ-K32/1N	278715	FAZ-K32/2	278801	FAZ-K32/3	278914
40	10	FAZ-K40/1	278603	FAZ-K40/1N	278716	FAZ-K40/2	278802	FAZ-K40/3	278915
50	10	FAZ-K50/1	278604	FAZ-K50/1N	278717	FAZ-K50/2	278803	FAZ-K50/3	278916
63	10	FAZ-K63/1	278605	FAZ-K63/1N	278718	FAZ-K63/2	278804	FAZ-K63/3	278917



Rated current I_n A	Switching capacity IEC 60947-2 kA	1-pole		2-pole		3-pole	
		Part no.	Article no.	Part no.	Article no.	Part no.	Article no.
FAZ miniature circuit breakers							
Characteristic: S Instantaneous release response current: $13 - 17 \times I_n$							
1	10	FAZ-S1/1	278606	FAZ-S1/2	278805	-	-
2	10	FAZ-S2/1	278607	FAZ-S2/2	278806	-	-
3	10	FAZ-S3/1	278608	FAZ-S3/2	278807	-	-
4	10	FAZ-S4/1	278609	FAZ-S4/2	278808	-	-
6	10	FAZ-S6/1	278610	FAZ-S6/2	278809	-	-
10	10	FAZ-S10/1	278611	FAZ-S10/2	278810	-	-
16	10	FAZ-S16/1	278612	FAZ-S16/2	278811	-	-
20	10	FAZ-S20/1	278613	FAZ-S20/2	278812	-	-
25	10	FAZ-S25/1	278614	FAZ-S25/2	278813	-	-
32	10	FAZ-S32/1	278615	FAZ-S32/2	278814	-	-
40	10	FAZ-S40/1	278616	FAZ-S40/2	278815	-	-
Characteristic: Z Instantaneous release response current: $2 - 3 \times I_n$							
0.5	10	FAZ-Z0,5/1	278617	FAZ-Z0,5/2	278816	FAZ-Z0,5/3	278918
1	10	FAZ-Z1/1	278618	FAZ-Z1/2	278817	FAZ-Z1/3	278919
1.6	10	FAZ-Z1,6/1	278619	FAZ-Z1,6/2	278818	FAZ-Z1,6/3	278920
2	10	FAZ-Z2/1	278620	FAZ-Z2/2	278819	FAZ-Z2/3	278921
3	10	FAZ-Z3/1	278621	FAZ-Z3/2	278820	FAZ-Z3/3	278922
4	10	FAZ-Z4/1	278622	FAZ-Z4/2	278821	FAZ-Z4/3	278923
6	10	FAZ-Z6/1	278623	FAZ-Z6/2	278822	FAZ-Z6/3	278924
8	10	FAZ-Z8/1	278624	FAZ-Z8/2	278823	FAZ-Z8/3	278925
10	10	FAZ-Z10/1	278625	FAZ-Z10/2	278824	FAZ-Z10/3	278926
16	10	FAZ-Z16/1	278626	FAZ-Z16/2	278825	FAZ-Z16/3	278927
20	10	FAZ-Z20/1	278627	FAZ-Z20/2	278826	FAZ-Z20/3	278928
25	10	FAZ-Z25/1	278628	FAZ-Z25/2	278827	FAZ-Z25/3	278929
32	10	FAZ-Z32/1	278629	FAZ-Z32/2	278828	FAZ-Z32/3	278930
40	10	FAZ-Z40/1	278630	FAZ-Z40/2	278829	FAZ-Z40/3	278931
50	10	FAZ-Z50/1	278631	FAZ-Z50/2	278830	FAZ-Z50/3	278932
63	10	FAZ-Z63/1	278632	FAZ-Z63/2	278831	FAZ-Z63/3	278933
FAZ miniature circuit breakers for DC applications ¹⁾							
Characteristic: C Instantaneous release response current: $5 - 10 \times I_n$							
2	10	FAZ-C2/1-DC	279122	FAZ-C2/2-DC	279134	-	-
3	10	FAZ-C3/1-DC	279123	FAZ-C3/2-DC	279135	-	-
4	10	FAZ-C4/1-DC	279124	FAZ-C4/2-DC	279136	-	-
6	10	FAZ-C6/1-DC	279125	FAZ-C6/2-DC	279137	-	-
10	10	FAZ-C10/1-DC	279126	FAZ-C10/2-DC	279138	-	-
13	10	FAZ-C13/1-DC	279127	FAZ-C13/2-DC	279139	-	-
16	10	FAZ-C16/1-DC	279128	FAZ-C16/2-DC	279140	-	-
20	10	FAZ-C20/1-DC	279129	FAZ-C20/2-DC	279141	-	-
25	10	FAZ-C25/1-DC	279130	FAZ-C25/2-DC	279142	-	-
32	10	FAZ-C32/1-DC	279131	FAZ-C32/2-DC	279143	-	-
40	10	FAZ-C40/1-DC	279132	FAZ-C40/2-DC	279144	-	-
50	10	FAZ-C50/1-DC	279133	FAZ-C50/2-DC	279145	-	-

Note: ¹⁾ FAZ miniature circuit breakers for DC applications are also available with B characteristic on request.



Rated current	Switching capacity IEC 60947-2	1-pole Part no.	Article no.	1-pole+N Part no.	Article no.	2-pole Part no.	Article no.	3-pole Part no.	Article no.
I _n A	kA								
FAZT miniature circuit breakers									
(Circuit breakers with 3+N and 4 poles available on request)									
Characteristic: B Instantaneous release response current: 3-5 x I _n									
1	25	FAZT-B1/1	240770	FAZT-B1/1N	240994	FAZT-B1/2	240820	FAZT-B1/3	240874
2	25	FAZT-B2/1	240771	FAZT-B2/1N	240995	FAZT-B2/2	240821	FAZT-B2/3	240875
3	25	FAZT-B3/1	240772	FAZT-B3/1N	240996	FAZT-B3/2	240822	FAZT-B3/3	240876
4	25	FAZT-B4/1	240777	FAZT-B4/1N	240997	FAZT-B4/2	240823	FAZT-B4/3	240877
6	25	FAZT-B6/1	240782	FAZT-B6/1N	240998	FAZT-B6/2	240824	FAZT-B6/3	240878
10	25	FAZT-B10/1	240787	FAZT-B10/1N	240999	FAZT-B10/2	240825	FAZT-B10/3	240879
12	25	FAZT-B12/1	240792	FAZT-B12/1N	241000	FAZT-B12/2	240826	FAZT-B12/3	240880
13	25	FAZT-B13/1	240793	FAZT-B13/1N	241001	FAZT-B13/2	240827	FAZT-B13/3	240881
15	25	FAZT-B15/1	240794	FAZT-B15/1N	241005	FAZT-B15/2	240828	FAZT-B15/3	240882
16	25	FAZT-B16/1	240795	FAZT-B16/1N	241009	FAZT-B16/2	240829	FAZT-B16/3	240883
20	25	FAZT-B20/1	240796	FAZT-B20/1N	241015	FAZT-B20/2	240830	FAZT-B20/3	240884
25	25	FAZT-B25/1	240797	FAZT-B25/1N	241019	FAZT-B25/2	240831	FAZT-B25/3	240885
32	20	FAZT-B32/1	141907	FAZT-B32/1N	142509	FAZT-B32/2	142485	FAZT-B32/3	142493
40	20	FAZT-B40/1	141908	FAZT-B40/1N	142510	FAZT-B40/2	142486	FAZT-B40/3	142494
Characteristic: C Instantaneous release response current: 5-10 x I _n									
1	25	FAZT-C1/1	240798	FAZT-C1/1N	241022	FAZT-C1/2	240832	FAZT-C1/3	240886
2	25	FAZT-C2/1	240799	FAZT-C2/1N	241023	FAZT-C2/2	240833	FAZT-C2/3	240887
3	25	FAZT-C3/1	240800	FAZT-C3/1N	241024	FAZT-C3/2	240838	FAZT-C3/3	240888
4	25	FAZT-C4/1	240801	FAZT-C4/1N	241025	FAZT-C4/2	240843	FAZT-C4/3	240889
6	25	FAZT-C6/1	240802	FAZT-C6/1N	241026	FAZT-C6/2	240850	FAZT-C6/3	240890
10	25	FAZT-C10/1	240803	FAZT-C10/1N	241027	FAZT-C10/2	240855	FAZT-C10/3	240891
12	25	FAZT-C12/1	240804	FAZT-C12/1N	241028	FAZT-C12/2	240858	FAZT-C12/3	240892
13	25	FAZT-C13/1	240805	FAZT-C13/1N	241029	FAZT-C13/2	240859	FAZT-C13/3	240893
15	25	FAZT-C15/1	240806	FAZT-C15/1N	241030	FAZT-C15/2	240860	FAZT-C15/3	240894
16	25	FAZT-C16/1	240807	FAZT-C16/1N	241034	FAZT-C16/2	240861	FAZT-C16/3	240895
20	25	FAZT-C20/1	240808	FAZT-C20/1N	241038	FAZT-C20/2	240862	FAZT-C20/3	240896
25	25	FAZT-C25/1	240809	FAZT-C25/1N	241044	FAZT-C25/2	240863	FAZT-C25/3	240897
32	20	FAZT-C32/1	141909	FAZT-C32/1N	142511	FAZT-C32/2	142487	FAZT-C32/3	142495
40	20	FAZT-C40/1	142480	FAZT-C40/1N	142512	FAZT-C40/2	142488	FAZT-C40/3	142496
Characteristic: D Instantaneous release response current: 10-20 x I _n									
1	25	FAZT-D1/1	240810	FAZT-D1/1N	241048	FAZT-D1/2	240864	FAZT-D1/3	240898
2	25	FAZT-D2/1	240811	FAZT-D2/1N	241051	FAZT-D2/2	240865	FAZT-D2/3	240899
3	25	FAZT-D3/1	240812	FAZT-D3/1N	241052	FAZT-D3/2	240866	FAZT-D3/3	240900
4	25	FAZT-D4/1	240813	FAZT-D4/1N	241053	FAZT-D4/2	240867	FAZT-D4/3	240901
6	25	FAZT-D6/1	240814	FAZT-D6/1N	241054	FAZT-D6/2	240868	FAZT-D6/3	240902
10	25	FAZT-D10/1	240815	FAZT-D10/1N	241055	FAZT-D10/2	240869	FAZT-D10/3	240903
12	25	FAZT-D12/1	240816	FAZT-D12/1N	241056	FAZT-D12/2	240870	FAZT-D12/3	240904
13	25	FAZT-D13/1	240817	FAZT-D13/1N	241057	FAZT-D13/2	240871	FAZT-D13/3	240905
15	20	FAZT-D15/1	240818	FAZT-D15/1N	241058	FAZT-D15/2	240872	FAZT-D15/3	240910
16	20	FAZT-D16/1	240819	FAZT-D16/1N	241059	FAZT-D16/2	240873	FAZT-D16/3	240915
20	20	FAZT-D20/1	142481	FAZT-D20/1N	142513	FAZT-D20/2	142489	FAZT-D20/3	142497
25	15	FAZT-D25/1	142482	FAZT-D25/1N	142514	FAZT-D25/2	142490	FAZT-D25/3	142498
32	15	FAZT-D32/1	142483	FAZT-D32/1N	142515	FAZT-D32/2	142491	FAZT-D32/3	142499
40	15	FAZT-D40/1	142484	FAZT-D40/1N	142516	FAZT-D40/2	142492	FAZT-D40/3	142500



Rated current I _n A	Switching capacity (UL489) kA	1-pole		2-pole		3-pole	
		Part no.	Article no.	Part no.	Article no.	Part no.	Article no.
FAZ circuit breakers for use in North America							
Characteristic: B Instantaneous release response current: 3-5 x I _n							
1	10	FAZ-B1/1-NA	132414	FAZ-B1/2-NA	132693	FAZ-B1/3-NA	132712
1.5	10	FAZ-B1,5/1-NA	132415	FAZ-B1,5/2-NA	132694	FAZ-B1,5/3-NA	132713
2	10	FAZ-B2/1-NA	132416	FAZ-B2/2-NA	132695	FAZ-B2/3-NA	132714
3	10	FAZ-B3/1-NA	132417	FAZ-B3/2-NA	132696	FAZ-B3/3-NA	132715
4	10	FAZ-B4/1-NA	132418	FAZ-B4/2-NA	132697	FAZ-B4/3-NA	132716
5	10	FAZ-B5/1-NA	132419	FAZ-B5/2-NA	132698	FAZ-B5/3-NA	132717
6	10	FAZ-B6/1-NA	132680	FAZ-B6/2-NA	132699	FAZ-B6/3-NA	132718
7	10	FAZ-B7/1-NA	132681	FAZ-B7/2-NA	132700	FAZ-B7/3-NA	132719
8	10	FAZ-B8/1-NA	132682	FAZ-B8/2-NA	132701	FAZ-B8/3-NA	132720
10	10	FAZ-B10/1-NA	132683	FAZ-B10/2-NA	132702	FAZ-B10/3-NA	132721
13	10	FAZ-B13/1-NA	132684	FAZ-B13/2-NA	132703	FAZ-B13/3-NA	132722
15	14	FAZ-B15/1-NA	132685	FAZ-B15/2-NA	132704	FAZ-B15/3-NA	132723
16	14	FAZ-B16/1-NA	132686	FAZ-B16/2-NA	132705	FAZ-B16/3-NA	132724
20	14	FAZ-B20/1-NA	132687	FAZ-B20/2-NA	132706	FAZ-B20/3-NA	132725
25	14	FAZ-B25/1-NA	132688	FAZ-B25/2-NA	132707	FAZ-B25/3-NA	132726
30	10	FAZ-B30/1-NA	132689	FAZ-B30/2-NA	132708	FAZ-B30/3-NA	132727
32	10	FAZ-B32/1-NA	132690	FAZ-B32/2-NA	132709	FAZ-B32/3-NA	132728
35	10	FAZ-B35/1-NA	132691	FAZ-B35/2-NA	132710	FAZ-B35/3-NA	132729
40	10	FAZ-B40/1-NA	132692	FAZ-B40/2-NA	132711	FAZ-B40/3-NA	132730
Characteristic: C Instantaneous release response current: 5-10 x I _n							
0.5	10	FAZ-C0,5/1-NA	102077	FAZ-C0,5/2-NA	102157	FAZ-C0,5/3-NA	102237
1	10	FAZ-C1/1-NA	102078	FAZ-C1/2-NA	102158	FAZ-C1/3-NA	102238
1.5	10	FAZ-C1,5/1-NA	102079	FAZ-C1,5/2-NA	102159	FAZ-C1,5/3-NA	102239
2	10	FAZ-C2/1-NA	102080	FAZ-C2/2-NA	102160	FAZ-C2/3-NA	102240
3	10	FAZ-C3/1-NA	102081	FAZ-C3/2-NA	102161	FAZ-C3/3-NA	102241
4	10	FAZ-C4/1-NA	102082	FAZ-C4/2-NA	102162	FAZ-C4/3-NA	102242
5	10	FAZ-C5/1-NA	102083	FAZ-C5/2-NA	102163	FAZ-C5/3-NA	102243
6	10	FAZ-C6/1-NA	102084	FAZ-C6/2-NA	102164	FAZ-C6/3-NA	102244
7	10	FAZ-C7/1-NA	102085	FAZ-C7/2-NA	102165	FAZ-C7/3-NA	102245
8	10	FAZ-C8/1-NA	102086	FAZ-C8/2-NA	102166	FAZ-C8/3-NA	102246
10	10	FAZ-C10/1-NA	102087	FAZ-C10/2-NA	102167	FAZ-C10/3-NA	102247
13	10	FAZ-C13/1-NA	102088	FAZ-C13/2-NA	102168	FAZ-C13/3-NA	102248
15	14	FAZ-C15/1-NA	102089	FAZ-C15/2-NA	102169	FAZ-C15/3-NA	102249
16	14	FAZ-C16/1-NA	102090	FAZ-C16/2-NA	102170	FAZ-C16/3-NA	102250
20	14	FAZ-C20/1-NA	102091	FAZ-C20/2-NA	102171	FAZ-C20/3-NA	102251
25	14	FAZ-C25/1-NA	102092	FAZ-C25/2-NA	102172	FAZ-C25/3-NA	102252
30	10	FAZ-C30/1-NA	102093	FAZ-C30/2-NA	102173	FAZ-C30/3-NA	102253
32	10	FAZ-C32/1-NA	102094	FAZ-C32/2-NA	102174	FAZ-C32/3-NA	102254
35	10	FAZ-C35/1-NA	102095	FAZ-C35/2-NA	102175	FAZ-C35/3-NA	102255
40	10	FAZ-C40/1-NA	102096	FAZ-C40/2-NA	102176	FAZ-C40/3-NA	102256

Circuit breakers

FAZ-NA, FAZ-NA-DC miniature circuit breakers for use in North America

Moeller series



Rated current I _n A	Switching capacity (UL489) kA	1-pole		2-pole		3-pole	
		Part no.	Article no.	Part no.	Article no.	Part no.	Article no.
FAZ circuit breakers for use in North America							
Characteristic: D Instantaneous release response current: 10-20 x I _n							
0.5	10	FAZ-D0,5/1-NA	102097	FAZ-D0,5/2-NA	102177	FAZ-D0,5/3-NA	102257
1	10	FAZ-D1/1-NA	102098	FAZ-D1/2-NA	102178	FAZ-D1/3-NA	102258
1.5	10	FAZ-D1,5/1-NA	102099	FAZ-D1,5/2-NA	102179	FAZ-D1,5/3-NA	102259
2	10	FAZ-D2/1-NA	102100	FAZ-D2/2-NA	102180	FAZ-D2/3-NA	102260
3	10	FAZ-D3/1-NA	102101	FAZ-D3/2-NA	102181	FAZ-D3/3-NA	102261
4	10	FAZ-D4/1-NA	102102	FAZ-D4/2-NA	102182	FAZ-D4/3-NA	102262
5	10	FAZ-D5/1-NA	102103	FAZ-D5/2-NA	102183	FAZ-D5/3-NA	102263
6	10	FAZ-D6/1-NA	102104	FAZ-D6/2-NA	102184	FAZ-D6/3-NA	102264
7	10	FAZ-D7/1-NA	102105	FAZ-D7/2-NA	102185	FAZ-D7/3-NA	102265
8	10	FAZ-D8/1-NA	102106	FAZ-D8/2-NA	102186	FAZ-D8/3-NA	102266
10	10	FAZ-D10/1-NA	102107	FAZ-D10/2-NA	102187	FAZ-D10/3-NA	102267
13	10	FAZ-D13/1-NA	102108	FAZ-D13/2-NA	102188	FAZ-D13/3-NA	102268
15	14	FAZ-D15/1-NA	102109	FAZ-D15/2-NA	102189	FAZ-D15/3-NA	102269
16	14	FAZ-D16/1-NA	102110	FAZ-D16/2-NA	102190	FAZ-D16/3-NA	102270
20	14	FAZ-D20/1-NA	102111	FAZ-D20/2-NA	102191	FAZ-D20/3-NA	102271
25	14	FAZ-D25/1-NA	102112	FAZ-D25/2-NA	102192	FAZ-D25/3-NA	102272
30	10	FAZ-D30/1-NA	102113	FAZ-D30/2-NA	102193	FAZ-D30/3-NA	102273
32	10	FAZ-D32/1-NA	102114	FAZ-D32/2-NA	102194	FAZ-D32/3-NA	102274
35	10	FAZ-D35/1-NA	102115	FAZ-D35/2-NA	102195	FAZ-D35/3-NA	102275
40	10	FAZ-D40/1-NA	102116	FAZ-D40/2-NA	102196	FAZ-D40/3-NA	102276
Miniature circuit breakers for DC applications for use in North America							
Characteristic: C Instantaneous release response current: 5-10 x I _n							
2	10	FAZ-C2/1-NA-DC	113752	FAZ-C2/2-NA-DC	137239	-	-
3	10	FAZ-C3/1-NA-DC	113753	FAZ-C3/2-NA-DC	137250	-	-
4	10	FAZ-C4/1-NA-DC	113754	FAZ-C4/2-NA-DC	137251	-	-
5	10	FAZ-C5/1-NA-DC	113755	FAZ-C5/2-NA-DC	137252	-	-
6	10	FAZ-C6/1-NA-DC	113756	FAZ-C6/2-NA-DC	120638	-	-
7	10	FAZ-C7/1-NA-DC	113757	FAZ-C7/2-NA-DC	120639	-	-
8	10	FAZ-C8/1-NA-DC	113758	FAZ-C8/2-NA-DC	120640	-	-
10	10	FAZ-C10/1-NA-DC	113759	FAZ-C10/2-NA-DC	120641	-	-
13	10	FAZ-C13/1-NA-DC	113760	FAZ-C13/2-NA-DC	120642	-	-
15	10	FAZ-C15/1-NA-DC	113761	FAZ-C15/2-NA-DC	120643	-	-
16	10	FAZ-C16/1-NA-DC	113762	FAZ-C16/2-NA-DC	120644	-	-
20	10	FAZ-C20/1-NA-DC	113763	FAZ-C20/2-NA-DC	120645	-	-
25	10	FAZ-C25/1-NA-DC	113764	FAZ-C25/2-NA-DC	120646	-	-
30	10	FAZ-C30/1-NA-DC	113765	FAZ-C30/2-NA-DC	120647	-	-
32	10	FAZ-C32/1-NA-DC	113766	FAZ-C32/2-NA-DC	120648	-	-
35	10	FAZ-C35/1-NA-DC	113767	FAZ-C35/2-NA-DC	120649	-	-
40	10	FAZ-C40/1-NA-DC	113768	FAZ-C40/2-NA-DC	120650	-	-



Rated current I_n A	Rated fault current $I_{\Delta N}$ A	Part no.	Article no.	Part no.	Article no.	Part no.	Article no.
FRCdM digital residual-current circuit breakers (60 Hz products available on request)		Type B, AC/DC all-current sensitive, 240/415 V		Type B+, AC/DC all-current sensitive, 240/415 V		Type Bfq, AC/DC sensitive - converter proof, 240/415 V	
Type G, short-time delayed							
25	0.03	FRCdM-25/4/003-G/B	167892	FRCdM-25/4/003-G/B+	167880	FRCdM-25/4/003-G/BFQ	179530
40	0.03	FRCdM-40/4/003-G/B	167893	FRCdM-40/4/003-G/B+	167881	FRCdM-40/4/003-G/BFQ	179531
63	0.03	FRCdM-63/4/003-G/B	167894	FRCdM-63/4/003-G/B+	167882	FRCdM-63/4/003-G/BFQ	179532
25	0.3	FRCdM-25/4/03-G/B	167896	FRCdM-25/4/03-G/B+	167884	FRCdM-25/4/03-G/BFQ	167904
40	0.3	FRCdM-40/4/03-G/B	167897	FRCdM-40/4/03-G/B+	167885	FRCdM-40/4/03-G/BFQ	167905
63	0.3	FRCdM-63/4/03-G/B	167898	FRCdM-63/4/03-G/B+	167886	FRCdM-63/4/03-G/BFQ	167906
Type S, selective switch-off							
25	0.3	FRCdM-25/4/03-S/B	167900	FRCdM-25/4/03-S/B+	167888	FRCdM-25/4/03-S/BFQ	167908
40	0.3	FRCdM-40/4/03-S/B	167901	FRCdM-40/4/03-S/B+	167889	FRCdM-40/4/03-S/BFQ	167909
63	0.3	FRCdM-63/4/03-S/B	167902	FRCdM-63/4/03-S/B+	167890	FRCdM-63/4/03-S/BFQ	167910
FRCmM-125 residual-current circuit breakers							
125	0.03	FRCmM-125/4/003-G/B	171188	FRCmM-125/4/003-G/B+	171189	-	-
125	0.03	FRCmM-125/4/003-B	171184	-	-	-	-
125	0.1	FRCmM-125/4/01-B	171185	-	-	-	-
125	0.3	FRCmM-125/4/03-B	171186	-	-	FRCmM-125/4/03-S/BFQ	171190
125	0.5	FRCmM-125/4/05-B	171187	-	-	FRCmM-125/4/05-S/BFQ	171191
FRCdM digital residual-current circuit breakers						Type A, pulse-current sensitive, 240/415 V	
Type G, short-time delayed							
25	0.03	-	-	-	-	FRCdM-25/4/003-G/A	168646
40	0.03	-	-	-	-	FRCdM-40/4/003-G/A	168648
63	0.03	-	-	-	-	FRCdM-63/4/003-G/A	168650
80	0.03	-	-	-	-	FRCdM-80/4/003-G/A	168634
25	0.3	-	-	-	-	FRCdM-25/4/03-G/A	168647
40	0.3	-	-	-	-	FRCdM-40/4/03-G/A	168649
63	0.3	-	-	-	-	FRCdM-63/4/03-G/A	168651
80	0.3	-	-	-	-	FRCdM-80/4/03-G/A	168635
Type S, selective switch-off							
40	0.3	-	-	-	-	FRCdM-40/4/03-S/A	168637
63	0.3	-	-	-	-	FRCdM-63/4/03-S/A	168638
80	0.3	-	-	-	-	FRCdM-80/4/03-S/A	168639
FRCmM residual-current circuit breakers							
Type G, short-time delayed		Type F, pulse-current sensitive - 1-phase converter applications, 240/415 V		Type F, pulse-current sensitive - 1-phase converter applications, 240/415 V			
16	0.03	FRCmM-16/2/003-G/F	187365	FRCmM-16/4/003-G/F	187407	-	-
25	0.03	FRCmM-25/2/003-G/F	187366	FRCmM-25/4/003-G/F	187408	-	-
40	0.03	FRCmM-40/2/003-G/F	187367	FRCmM-40/4/003-G/F	187409	-	-
63	0.03	FRCmM-63/2/003-G/F	187368	FRCmM-63/4/003-G/F	187010	-	-
80	0.03	FRCmM-80/2/003-G/F	187369	FRCmM-80/4/003-G/F	187411	-	-
100	0.03	FRCmM-100/2/003-G/F	187370	FRCmM-100/4/003-G/F	187412	-	-
25	0.3	FRCmM-25/2/03-G/F	187378	FRCmM-25/4/03-G/F	187420	-	-
40	0.3	FRCmM-40/2/03-G/F	187379	FRCmM-40/4/03-G/F	187421	-	-
62	0.3	FRCmM-63/2/03-G/F	187380	FRCmM-63/4/03-G/F	187422	-	-
80	0.3	FRCmM-80/2/03-G/F	187381	FRCmM-80/4/03-G/F	187423	-	-
100	0.3	FRCmM-100/2/03-G/F	187382	FRCmM-100/4/03-G/F	187424	-	-
Type S, selective switch-off							
25	0.3	FRCmM-25/2/03-S/F	187396	FRCmM-25/4/03-S/F	187438	-	-
40	0.3	FRCmM-40/2/03-S/F	187397	FRCmM-40/4/03-S/F	187439	-	-
63	0.3	FRCmM-63/2/03-S/F	187398	FRCmM-63/4/03-S/F	187440	-	-
80	0.3	FRCmM-80/2/03-S/F	187399	FRCmM-80/4/03-S/F	187441	-	-
100	0.3	FRCmM-100/2/03-S/F	187400	FRCmM-100/4/03-S/F	187442	-	-



Rated current I_n A	Rated fault current $I_{\Delta N}$ A	2-pole 240/415 V Part no.	Article no.	4-pole 240/415 V Part no.	Article no.
FRCmM residual-current circuit breakers					
(Products for other voltage ranges available on request)					
Type A, pulse-current sensitive					
16	0.03	FRCMM-16/2/003-A	170430	FRCMM-16/4/003-A	170285
25	0.03	FRCMM-25/2/003-A	170431	FRCMM-25/4/003-A	170332
40	0.03	FRCMM-40/2/003-A	170432	FRCMM-40/4/003-A	170333
63	0.03	FRCMM-63/2/003-A	170433	FRCMM-63/4/003-A	170334
80	0.03	FRCMM-80/2/003-A	170434	FRCMM-80/4/003-A	170335
100	0.03	FRCMM-100/2/003-A	170435	FRCMM-100/4/003-A	170336
125	0.03	FRCMM-125/2/003-A	171164	FRCMM-125/4/003-A	171174
16	0.3	FRCMM-16/2/03-A	170278	FRCMM-16/4/03-A	170340
25	0.3	FRCMM-25/2/03-A	170279	FRCMM-25/4/03-A	170341
40	0.3	FRCMM-40/2/03-A	170280	FRCMM-40/4/03-A	170342
63	0.3	FRCMM-63/2/03-A	304063	FRCMM-63/4/03-A	170343
80	0.3	FRCMM-80/2/03-A	304064	FRCMM-80/4/03-A	170344
100	0.3	FRCMM-100/2/03-A	304065	FRCMM-100/4/03-A	170345
125	0.3	FRCMM-125/2/03-A	171166	FRCMM-125/4/03-A	171176
16	0.5	FRCMM-16/2/05-A	170281	FRCMM-16/4/05-A	170346
25	0.5	FRCMM-25/2/05-A	170282	FRCMM-25/4/05-A	170347
40	0.5	FRCMM-40/2/05-A	170283	FRCMM-40/4/05-A	170348
63	0.5	FRCMM-63/2/05-A	170284	FRCMM-63/4/05-A	170349
80	0.5	-	-	FRCMM-80/4/05-A	170350
100	0.5	-	-	FRCMM-100/4/05-A	170351
125	0.5	FRCMM-125/2/05-A	171167	FRCMM-125/4/05-A	171177
Type G/A (ÖVE E 8601), short-time delayed					
16	0.03	FRCMM-16/2/003-G/A	170382	FRCMM-16/4/003-G/A	170293
25	0.03	FRCMM-25/2/003-G/A	170383	FRCMM-25/4/003-G/A	170294
40	0.03	FRCMM-40/2/003-G/A	170384	FRCMM-40/4/003-G/A	170295
63	0.03	FRCMM-63/2/003-G/A	170385	FRCMM-63/4/003-G/A	170296
80	0.03	FRCMM-80/2/003-G/A	170386	FRCMM-80/4/003-G/A	170297
100	0.03	FRCMM-100/2/003-G/A	170387	FRCMM-100/4/003-G/A	170298
125	0.03	FRCMM-125/2/003-G/A	171168	FRCMM-125/4/003-G/A	171178
16	0.3	FRCMM-16/2/03-G/A	170290	FRCMM-16/4/03-G/A	170302
25	0.3	FRCMM-25/2/03-G/A	170291	FRCMM-25/4/03-G/A	170303
40	0.3	FRCMM-40/2/03-G/A	170292	FRCMM-40/4/03-G/A	170304
63	0.3	-	-	FRCMM-63/4/03-G/A	170305
80	0.3	-	-	FRCMM-80/4/03-G/A	170306
100	0.3	-	-	FRCMM-100/4/03-G/A	170307
125	0.3	FRCMM-125/2/03-G/A	171170	FRCMM-125/4/03-G/A	171180
Type S/A, selective switch-off					
40	0.3	-	-	FRCMM-40/4/03-S/A	170448
63	0.3	-	-	FRCMM-63/4/03-S/A	170449
FRCmM-NA residual-current circuit breakers for use in North America		IEC: 240/415 V; UL: 480Y/277 V		IEC: 240/415 V; UL: 480Y/277 V	
Type A, pulse-current sensitive					
25	0.03	FRCMM-25/2/003-A-NA	167113	FRCMM-25/4/003-A-NA	167125
40	0.03	FRCMM-40/2/003-A-NA	167114	FRCMM-40/4/003-A-NA	167102
63	0.03	FRCMM-63/2/003-A-NA	167115	FRCMM-63/4/003-A-NA	167103
25	0.3	FRCMM-25/2/03-A-NA	167116	FRCMM-25/4/03-A-NA	167104
40	0.3	FRCMM-40/2/03-A-NA	167117	FRCMM-40/4/03-A-NA	167105
63	0.3	FRCMM-63/2/03-A-NA	167118	FRCMM-63/4/03-A-NA	167106
Type G/A (ÖVE E 8601), short-time delayed					
25	0.03	FRCMM-25/2/003-G/A-NA	167119	FRCMM-25/4/003-G/A-NA	167107
40	0.03	FRCMM-40/2/003-G/A-NA	167120	FRCMM-40/4/003-G/A-NA	167108
63	0.03	FRCMM-63/2/003-G/A-NA	167121	FRCMM-63/4/003-G/A-NA	167109
25	0.3	FRCMM-25/2/03-G/A-NA	167122	FRCMM-25/4/03-G/A-NA	167110
40	0.3	FRCMM-40/2/03-G/A-NA	167123	FRCMM-40/4/03-G/A-NA	167111
63	0.3	FRCMM-63/2/03-G/A-NA	167124	FRCMM-63/4/03-G/A-NA	167112






Rated current I_n A	Rated fault current $I_{\Delta N}$ A	2-pole Part no.	Article no.	4-pole Part no.	Article no.
FRCmM-NA-110 residual-current circuit breakers for use in North America					
IEC: 110/190 V; UL: 208/120 V					
Type A, pulse-current sensitive					
25	0.03	-	-	FRCMM-25/4/003-A-NA-110	167699
40	0.03	-	-	FRCMM-40/4/003-A-NA-110	167700
63	0.03	-	-	FRCMM-63/4/003-A-NA-110	167701
25	0.3	-	-	FRCMM-25/4/03-A-NA-110	167702
40	0.3	-	-	FRCMM-40/4/03-A-NA-110	167703
63	0.3	-	-	FRCMM-63/4/03-A-NA-110	167704
Type G/A (ÖVE E 8601), short-time delayed					
25	0.03	FRCMM-25/2/003-G/A-NA-110	167693	FRCMM-25/4/003-G/A-NA-110	167705
40	0.03	FRCMM-40/2/003-G/A-NA-110	167694	FRCMM-40/4/003-G/A-NA-110	167706
63	0.03	FRCMM-63/2/003-G/A-NA-110	167695	FRCMM-63/4/003-G/A-NA-110	167707
25	0.3	FRCMM-25/2/03-G/A-NA-110	167696	FRCMM-25/4/03-G/A-NA-110	167708
40	0.3	FRCMM-40/2/03-G/A-NA-110	167697	FRCMM-40/4/03-G/A-NA-110	167709
63	0.3	FRCMM-63/2/03-G/A-NA-110	167698	FRCMM-63/4/03-G/A-NA-110	167710
FBSmV add-on residual-current protection unit					
240/415 V (Products for 120 V and 440 V available on request)					
Type A, pulse-current sensitive					
40	0.03	FBSMV-40/2/003-A	170207	FBSMV-40/4/003-A	170227
63	0.03	FBSMV-63/2/003-A	170208	FBSMV-63/4/003-A	170228
40	0.1	FBSMV-40/2/01-A	170209	FBSMV-40/4/01-A	170229
63	0.1	FBSMV-63/2/01-A	170210	FBSMV-63/4/01-A	170230
40	0.3	FBSMV-40/2/03-A	170211	FBSMV-40/4/03-A	170231
63	0.3	FBSMV-63/2/03-A	170212	FBSMV-63/4/03-A	170232
40	0.5	FBSMV-40/2/05-A	170213	FBSMV-40/4/05-A	170233
63	0.5	FBSMV-63/2/05-A	170214	FBSMV-63/4/05-A	170234
40	1	FBSMV-40/2/1-A	170215	FBSMV-40/4/1-A	170235
63	1	FBSMV-63/2/1-A	170216	FBSMV-63/4/1-A	170236
Type S/A, selective switch-off					
40	0.1	FBSMV-40/2/01-S/A	170158	FBSMV-40/4/01-S/A	170166
63	0.1	FBSMV-63/2/01-S/A	170159	FBSMV-63/4/01-S/A	170167
40	0.3	FBSMV-40/2/03-S/A	170160	FBSMV-40/4/03-S/A	170168
63	0.3	FBSMV-63/2/03-S/A	170161	FBSMV-63/4/03-S/A	170169
FBHmV add-on residual-current protection unit					
240/415 V (Products 440 V available on request)					
Type A, pulse-current sensitive					
80	0.03	FBHMV-80/2/003-A	170257	FBHMV-80/4/003-A	170265
125	0.03	FBHMV-125/2/003-A	170258	FBHMV-125/4/003-A	170130
80	0.3	FBHMV-80/2/03-A	170259	FBHMV-80/4/03-A	170131
125	0.3	FBHMV-125/2/03-A	170260	FBHMV-125/4/03-A	170132
80	0.5	FBHMV-80/2/05-A	170261	FBHMV-80/4/05-A	170133
125	0.5	FBHMV-125/2/05-A	170262	FBHMV-125/4/05-A	170134
80	1	FBHMV-80/2/1-A	170263	FBHMV-80/4/1-A	170135
125	1	FBHMV-125/2/1-A	170264	FBHMV-125/4/1-A	170136
Type A, selective switch-off					
80	0.3	FBHMV-80/2/03-S/A	170137	FBHMV-80/4/03-S/A	170171
125	0.3	FBHMV-125/2/03-S/A	170138	FBHMV-125/4/03-S/A	170172
80	0.5	FBHMV-80/2/05-S/A	170139	FBHMV-80/4/05-S/A	170173
125	0.5	FBHMV-125/2/05-S/A	170140	FBHMV-125/4/05-S/A	170174
80	1	FBHMV-80/2/1-S/A	170141	FBHMV-80/4/1-S/A	170175
125	1	FBHMV-125/2/1-S/A	170170	FBHMV-125/4/1-S/A	170176

Circuit breakers

FRB residual-current circuit breakers with overcurrent protection

Moeller series

							
Rated current	Rated fault current	Tripping characteristic: B Instantaneous release response current: $3-5 \times I_n$		Tripping characteristic: C Instantaneous release response current: $5-10 \times I_n$		Tripping characteristic: D Instantaneous release response current: $10-20 \times I_n$	
I_n	$I_{\Delta n}$	Part no.	Article no.	Part no.	Article no.	Part no.	Article no.
A	A						
FRBdM digital residual-current circuit breakers with overcurrent protection Type F, pulse-current sensitive, recognizes frequency mixture, high system availability							
1-pole, short-time delayed							
6	0.01	-	-	FRBDM-C6/1N/001-F	300518	FRBDM-D6/1N/001-F	300521
10	0.01	FRBDM-B10/1N/001-F	300539	FRBDM-C10/1N/001-F	300546	FRBDM-D10/1N/001-F	300549
13	0.01	FRBDM-B13/1N/001-F	300567	FRBDM-C13/1N/001-F	300570	FRBDM-D13/1N/001-F	300573
16	0.01	FRBDM-B16/1N/001-F	300587	FRBDM-C16/1N/001-F	300590	FRBDM-D16/1N/001-F	300593
20	0.01	-	-	FRBDM-C20/1N/001-F	300612	FRBDM-D20/1N/001-F	300615
25	0.01	-	-	FRBDM-C25/1N/001-F	300629	FRBDM-D25/1N/001-F	300632
6	0.03	-	-	FRBDM-C6/1N/003-F	300519	FRBDM-D6/1N/003-F	300522
10	0.03	FRBDM-B10/1N/003-F	300540	FRBDM-C10/1N/003-F	300547	FRBDM-D10/1N/003-F	300550
13	0.03	FRBDM-B13/1N/003-F	300568	FRBDM-C13/1N/003-F	300571	FRBDM-D13/1N/003-F	300574
16	0.03	FRBDM-B16/1N/003-F	300588	FRBDM-C16/1N/003-F	300591	FRBDM-D16/1N/003-F	300594
20	0.03	-	-	FRBDM-C20/1N/003-F	300613	FRBDM-D20/1N/003-F	300616
25	0.03	-	-	FRBDM-C25/1N/003-F	300630	FRBDM-D25/1N/003-F	300633
6	0.1	-	-	FRBDM-C6/1N/01-F	300517	FRBDM-D6/1N/01-F	300520
10	0.1	FRBDM-B10/1N/01-F	300538	FRBDM-C10/1N/01-F	300541	FRBDM-D10/1N/01-F	300548
13	0.1	FRBDM-B13/1N/01-F	300566	FRBDM-C13/1N/01-F	300569	FRBDM-D13/1N/01-F	300572
16	0.1	FRBDM-B16/1N/01-F	300586	FRBDM-C16/1N/01-F	300589	FRBDM-D16/1N/01-F	300592
20	0.1	-	-	FRBDM-C20/1N/01-F	300611	FRBDM-D20/1N/01-F	300614
25	0.1	-	-	FRBDM-C25/1N/01-F	300628	FRBDM-D25/1N/01-F	300631
FRBdM digital residual-current circuit breakers with overcurrent protection Type A, pulse-current sensitive, 240 V							
1-pole+N, short-time delayed							
6	0.01	-	-	FRBDM-C6/1N/001-G/A	168252	FRBDM-D6/1N/001-G/A	168258
10	0.01	FRBDM-B10/1N/001-G/A	168249	FRBDM-C10/1N/001-G/A	168253	FRBDM-D10/1N/001-G/A	168259
13	0.01	FRBDM-B13/1N/001-G/A	168250	FRBDM-C13/1N/001-G/A	168254	FRBDM-D13/1N/001-G/A	168260
16	0.01	FRBDM-B16/1N/001-G/A	168251	FRBDM-C16/1N/001-G/A	168255	FRBDM-D16/1N/001-G/A	168261
20	0.01	-	-	FRBDM-C20/1N/001-G/A	168256	FRBDM-D20/1N/001-G/A	168262
25	0.01	-	-	FRBDM-C25/1N/001-G/A	168257	FRBDM-D25/1N/001-G/A	168263
6	0.03	-	-	FRBDM-C6/1N/003-G/A	168267	FRBDM-D6/1N/003-G/A	168273
10	0.03	FRBDM-B10/1N/003-G/A	168264	FRBDM-C10/1N/003-G/A	168268	FRBDM-D10/1N/003-G/A	168274
13	0.03	FRBDM-B13/1N/003-G/A	168265	FRBDM-C13/1N/003-G/A	168269	FRBDM-D13/1N/003-G/A	168275
16	0.03	FRBDM-B16/1N/003-G/A	168266	FRBDM-C16/1N/003-G/A	168270	FRBDM-D16/1N/003-G/A	168276
20	0.03	-	-	FRBDM-C20/1N/003-G/A	168271	FRBDM-D20/1N/003-G/A	168277
25	0.03	-	-	FRBDM-C25/1N/003-G/A	168272	FRBDM-D25/1N/003-G/A	168278
6	0.1	-	-	FRBDM-C6/1N/01-G/A	168282	FRBDM-D6/1N/01-G/A	168288
10	0.1	FRBDM-B10/1N/01-G/A	168279	FRBDM-C10/1N/01-G/A	168283	FRBDM-D10/1N/01-G/A	168289
13	0.1	FRBDM-B13/1N/01-G/A	168280	FRBDM-C13/1N/01-G/A	168284	FRBDM-D13/1N/01-G/A	168290
16	0.1	FRBDM-B16/1N/01-G/A	168281	FRBDM-C16/1N/01-G/A	168285	FRBDM-D16/1N/01-G/A	168291
20	0.1	-	-	FRBDM-C20/1N/01-G/A	168286	FRBDM-D20/1N/01-G/A	168292
25	0.1	-	-	FRBDM-C25/1N/01-G/A	168287	FRBDM-D25/1N/01-G/A	168293
2-pole, short-time delayed							
6	0.01	-	-	FRBDM-C6/2/001-G/A	168297	FRBDM-D6/2/001-G/A	168303
10	0.01	FRBDM-B10/2/001-G/A	168294	FRBDM-C10/2/001-G/A	168298	FRBDM-D10/2/001-G/A	168304
13	0.01	FRBDM-B13/2/001-G/A	168295	FRBDM-C13/2/001-G/A	168299	FRBDM-D13/2/001-G/A	168305
16	0.01	FRBDM-B16/2/001-G/A	168296	FRBDM-C16/2/001-G/A	168300	FRBDM-D16/2/001-G/A	168195
20	0.01	-	-	FRBDM-C20/2/001-G/A	168301	FRBDM-D20/2/001-G/A	168196
25	0.01	-	-	FRBDM-C25/2/001-G/A	168302	FRBDM-D25/2/001-G/A	168197




Rated current	Rated fault current	Tripping characteristic: B Instantaneous release response current: $3-5 \times I_n$		Tripping characteristic: C Instantaneous release response current: $5-10 \times I_n$		Tripping characteristic: D Instantaneous release response current: $10-20 \times I_n$	
I_n A	$I_{\Delta N}$ A	Part no.	Article no.	Part no.	Article no.	Part no.	Article no.
6	0.03	-	-	FRBDM-C6/2/003-G/A	168201	FRBDM-D6/2/003-G/A	168207
10	0.03	FRBDM-B10/2/003-G/A	168198	FRBDM-C10/2/003-G/A	168202	FRBDM-D10/2/003-G/A	168208
13	0.03	FRBDM-B13/2/003-G/A	168199	FRBDM-C13/2/003-G/A	168203	FRBDM-D13/2/003-G/A	168209
16	0.03	FRBDM-B16/2/003-G/A	168200	FRBDM-C16/2/003-G/A	168204	FRBDM-D16/2/003-G/A	168210
20	0.03	-	-	FRBDM-C20/2/003-G/A	168205	FRBDM-D20/2/003-G/A	168211
25	0.03	-	-	FRBDM-C25/2/003-G/A	168206	FRBDM-D25/2/003-G/A	168212
6	0.1	-	-	FRBDM-C6/2/01-G/A	168216	FRBDM-D6/2/01-G/A	168222
10	0.1	FRBDM-B10/2/01-G/A	168213	FRBDM-C10/2/01-G/A	168217	FRBDM-D10/2/01-G/A	168223
13	0.1	FRBDM-B13/2/01-G/A	168214	FRBDM-C13/2/01-G/A	168218	FRBDM-D13/2/01-G/A	168224
16	0.1	FRBDM-B16/2/01-G/A	168215	FRBDM-C16/2/01-G/A	168219	FRBDM-D16/2/01-G/A	168225
20	0.1	-	-	FRBDM-C20/2/01-G/A	168220	FRBDM-D20/2/01-G/A	168226
25	0.1	-	-	FRBDM-C25/2/01-G/A	168221	FRBDM-D25/2/01-G/A	168227
FRBmM residual-current circuit breakers with overcurrent protection							
Type A, pulse-current sensitive, 240 V (products for other voltage ranges available on request)							
1-pole+N, instantaneous							
2	0.03	-	-	FRBMM-C2/1N/003-A	170614	FRBMM-D2/1N/003-A	170643
4	0.03	-	-	FRBMM-C4/1N/003-A	170615	FRBMM-D4/1N/003-A	170644
6	0.03	FRBMM-B6/1N/003-A	170702	FRBMM-C6/1N/003-A	170616	FRBMM-D6/1N/003-A	170645
10	0.03	FRBMM-B10/1N/003-A	170703	FRBMM-C10/1N/003-A	170617	FRBMM-D10/1N/003-A	170646
13	0.03	FRBMM-B13/1N/003-A	170704	FRBMM-C13/1N/003-A	170618	FRBMM-D13/1N/003-A	170647
16	0.03	FRBMM-B16/1N/003-A	170705	FRBMM-C16/1N/003-A	170619	FRBMM-D16/1N/003-A	170648
20	0.03	FRBMM-B20/1N/003-A	170706	FRBMM-C20/1N/003-A	170620	FRBMM-D20/1N/003-A	170649
25	0.03	FRBMM-B25/1N/003-A	170707	FRBMM-C25/1N/003-A	170621	-	-
32	0.03	FRBMM-B32/1N/003-A	170708	FRBMM-C32/1N/003-A	170622	-	-
40	0.03	FRBMM-B40/1N/003-A	170709	FRBMM-C40/1N/003-A	170623	-	-



Rated current	Rated fault current	Tripping characteristic: B		Tripping characteristic: C		Tripping characteristic: D	
I_n	$I_{\Delta N}$	Instantaneous release response current: $3-5 \times I_n$	Article no.	Instantaneous release response current: $5-10 \times I_n$	Article no.	Instantaneous release response current: $10-20 \times I_n$	Article no.
A	A	Part no.	Article no.	Part no.	Article no.	Part no.	Article no.
FRBdM residual-current circuit breakers with overcurrent protection							
Type A, pulse-current sensitive, 240 V (products for other voltage ranges available on request)							
1-pole+N, instantaneous							
2	0.1	-	-	FRBMM-C2/1N/01-A	170682	FRBMM-D2/1N/01-A	170544
4	0.1	-	-	FRBMM-C4/1N/01-A	170683	FRBMM-D4/1N/01-A	170545
6	0.1	FRBMM-B6/1N/01-A	170664	FRBMM-C6/1N/01-A	170684	FRBMM-D6/1N/01-A	170546
10	0.1	FRBMM-B10/1N/01-A	170665	FRBMM-C10/1N/01-A	170685	FRBMM-D10/1N/01-A	170547
13	0.1	FRBMM-B13/1N/01-A	170666	FRBMM-C13/1N/01-A	170686	FRBMM-D13/1N/01-A	170548
16	0.1	FRBMM-B16/1N/01-A	170667	FRBMM-C16/1N/01-A	170687	FRBMM-D16/1N/01-A	170549
20	0.1	FRBMM-B20/1N/01-A	170668	FRBMM-C20/1N/01-A	170688	FRBMM-D20/1N/01-A	170550
25	0.1	FRBMM-B25/1N/01-A	170669	FRBMM-C25/1N/01-A	170689	-	-
32	0.1	FRBMM-B32/1N/01-A	170670	FRBMM-C32/1N/01-A	170690	-	-
40	0.1	FRBMM-B40/1N/01-A	170671	FRBMM-C40/1N/01-A	170691	-	-
2	0.3	-	-	FRBMM-C2/1N/03-A	170571	FRBMM-D2/1N/03-A	170594
4	0.3	-	-	FRBMM-C4/1N/03-A	170572	FRBMM-D4/1N/03-A	170595
6	0.3	FRBMM-B6/1N/03-A	170607	FRBMM-C6/1N/03-A	170573	FRBMM-D6/1N/03-A	170596
10	0.3	FRBMM-B10/1N/03-A	170608	FRBMM-C10/1N/03-A	170574	FRBMM-D10/1N/03-A	170597
13	0.3	FRBMM-B13/1N/03-A	170609	FRBMM-C13/1N/03-A	170575	FRBMM-D13/1N/03-A	170598
16	0.3	FRBMM-B16/1N/03-A	170610	FRBMM-C16/1N/03-A	170576	FRBMM-D16/1N/03-A	170599
20	0.3	FRBMM-B20/1N/03-A	170611	FRBMM-C20/1N/03-A	170577	FRBMM-D20/1N/03-A	170868
25	0.3	FRBMM-B25/1N/03-A	170552	FRBMM-C25/1N/03-A	170578	-	-
32	0.3	FRBMM-B32/1N/03-A	170553	FRBMM-C32/1N/03-A	170579	-	-
40	0.3	FRBMM-B40/1N/03-A	170554	FRBMM-C40/1N/03-A	170580	-	-
2-pole, instantaneous							
6	0.03	-	-	FRBMM-C6/2/003-A	170785	-	-
10	0.03	FRBMM-B10/2/003-A	170879	FRBMM-C10/2/003-A	170786	-	-
13	0.03	FRBMM-B13/2/003-A	170880	FRBMM-C13/2/003-A	170787	-	-
16	0.03	FRBMM-B16/2/003-A	170881	FRBMM-C16/2/003-A	170788	-	-
20	0.03	FRBMM-B20/2/003-A	170882	FRBMM-C20/2/003-A	170789	-	-
25	0.03	FRBMM-B25/2/003-A	170883	-	-	-	-
32	0.03	FRBMM-B32/2/003-A	170884	-	-	-	-
40	0.03	FRBMM-B40/2/003-A	170885	-	-	-	-
6	0.1	-	-	FRBMM-C6/2/01-A	170819	-	-
10	0.1	FRBMM-B10/2/01-A	170803	FRBMM-C10/2/01-A	170820	-	-
13	0.1	FRBMM-B13/2/01-A	170804	FRBMM-C13/2/01-A	170821	-	-
16	0.1	FRBMM-B16/2/01-A	170805	FRBMM-C16/2/01-A	170822	-	-
20	0.1	FRBMM-B20/2/01-A	170806	FRBMM-C20/2/01-A	170823	-	-
6	0.3	-	-	FRBMM-C6/2/03-A	170863	-	-
10	0.3	FRBMM-B10/2/03-A	170844	FRBMM-C10/2/03-A	170864	-	-
13	0.3	FRBMM-B13/2/03-A	170845	FRBMM-C13/2/03-A	170865	-	-
16	0.3	FRBMM-B16/2/03-A	170846	FRBMM-C16/2/03-A	170866	-	-
20	0.3	FRBMM-B20/2/03-A	170847	FRBMM-C20/2/03-A	170867	-	-
3-pole, instantaneous, 415 V							
6	0.03	-	-	FRBMM-C6/3/003-A	170737	FRBMM-D6/3/003-A	170774
10	0.03	FRBMM-B10/3/003-A	170733	FRBMM-C10/3/003-A	170738	FRBMM-D10/3/003-A	170775
13	0.03	FRBMM-B13/3/003-A	170734	FRBMM-C13/3/003-A	170739	FRBMM-D13/3/003-A	170776
16	0.03	FRBMM-B16/3/003-A	170735	FRBMM-C16/3/003-A	170740	FRBMM-D16/3/003-A	170777
20	0.03	FRBMM-B20/3/003-A	170736	FRBMM-C20/3/003-A	170741	FRBMM-D20/3/003-A	170778
25	0.03	-	-	FRBMM-C25/3/003-A	170772	FRBMM-D25/3/003-A	170779
32	0.03	-	-	FRBMM-C32/3/003-A	170773	-	-
6	0.1	-	-	FRBMM-C6/3/01-A	170742	FRBMM-D6/3/01-A	170749
10	0.1	FRBMM-B10/3/01-A	170780	FRBMM-C10/3/01-A	170743	FRBMM-D10/3/01-A	170750

Rated current	Rated fault current	Tripping characteristic: B Instantaneous release response current: 3-5 x I _n		Tripping characteristic: C Instantaneous release response current: 5-10 x I _n		Tripping characteristic: D Instantaneous release response current: 10-20 x I _n	
I _n A	I _{ΔN} A	Part no.	Article no.	Part no.	Article no.	Part no.	Article no.
FRBmM residual-current circuit breakers with overcurrent protection							
Type A, pulse-current sensitive (products for other voltage ranges available on request)							
13	0.1	FRBMM-B13/3/01-A	170781	FRBMM-C13/3/01-A	170744	FRBMM-D13/3/01-A	170751
16	0.1	FRBMM-B16/3/01-A	170782	FRBMM-C16/3/01-A	170745	FRBMM-D16/3/01-A	170752
20	0.1	FRBMM-B20/3/01-A	170783	FRBMM-C20/3/01-A	170746	FRBMM-D20/3/01-A	170753
25	0.1	-	-	FRBMM-C25/3/01-A	170747	FRBMM-D25/3/01-A	170754
32	0.1	-	-	FRBMM-C32/3/01-A	170748	-	-
6	0.3	-	-	FRBMM-C6/3/03-A	170759	FRBMM-D6/3/03-A	170766
10	0.3	FRBMM-B10/3/03-A	170755	FRBMM-C10/3/03-A	170760	FRBMM-D10/3/03-A	170767
13	0.3	FRBMM-B13/3/03-A	170756	FRBMM-C13/3/03-A	170761	FRBMM-D13/3/03-A	170768
16	0.3	FRBMM-B16/3/03-A	170757	FRBMM-C16/3/03-A	170762	FRBMM-D16/3/03-A	170769
20	0.3	FRBMM-B20/3/03-A	170758	FRBMM-C20/3/03-A	170763	FRBMM-D20/3/03-A	170770
25	0.3	-	-	FRBMM-C25/3/03-A	170764	FRBMM-D25/3/03-A	170771
32	0.3	-	-	FRBMM-C32/3/03-A	170765	-	-
3-pole+N, instantaneous, 240/415 V							
6	0.03	-	-	FRBM6-C6/3N/003-A	170996	FRBM6-D6/3N/003-A	171008
10	0.03	-	-	FRBM6-C10/3N/003-A	170997	FRBM6-D10/3N/003-A	170892
13	0.03	FRBM6-B13/3N/003-A	170987	FRBM6-C13/3N/003-A	170998	FRBM6-D13/3N/003-A	170893
16	0.03	FRBM6-B16/3N/003-A	170988	FRBM6-C16/3N/003-A	170999	FRBM6-D16/3N/003-A	170894
20	0.03	-	-	FRBM4-C20/3N/003-A	171000	FRBM4-D20/3N/003-A	170895
25	0.03	-	-	FRBM4-C25/3N/003-A	171001	-	-
32	0.03	-	-	FRBM4-C32/3N/003-A	171002	-	-
6	0.1	-	-	FRBM6-C6/3N/01-A	170926	FRBM6-D6/3N/01-A	170938
10	0.1	-	-	FRBM6-C10/3N/01-A	170927	FRBM6-D10/3N/01-A	170939
13	0.1	FRBM6-B13/3N/01-A	170898	FRBM6-C13/3N/01-A	170928	FRBM6-D13/3N/01-A	170940
16	0.1	FRBM6-B16/3N/01-A	170899	FRBM6-C16/3N/01-A	170929	FRBM6-D16/3N/01-A	170941
20	0.1	-	-	FRBM4-C20/3N/01-A	170930	FRBM4-D20/3N/01-A	170942
25	0.1	-	-	FRBM4-C25/3N/01-A	170931	-	-
32	0.1	-	-	FRBM4-C32/3N/01-A	170932	-	-
6	0.3	-	-	FRBM6-C6/3N/03-A	170954	FRBM6-D6/3N/03-A	170966
10	0.3	-	-	FRBM6-C10/3N/03-A	170955	FRBM6-D10/3N/03-A	170967
13	0.3	FRBM6-B13/3N/03-A	170945	FRBM6-C13/3N/03-A	170956	FRBM6-D13/3N/03-A	170968
16	0.3	FRBM6-B16/3N/03-A	170946	FRBM6-C16/3N/03-A	170957	FRBM6-D16/3N/03-A	170969
20	0.3	-	-	FRBM4-C20/3N/03-A	170958	FRBM4-D20/3N/03-A	170970
25	0.3	-	-	FRBM4-C25/3N/03-A	170959	-	-
32	0.3	-	-	FRBM4-C32/3N/03-A	170960	-	-
Type F, 1-phase converter applications, 240 V							
1-pole+N, short-time delayed							
13	0.03	FRBMM-B13/1N/003-F	193479	FRBMM-C13/1N/003-F	193482	FRBMM-D13/1N/003-F	193485
16	0.03	FRBMM-B16/1N/003-F	193480	FRBMM-C16/1N/003-F	193483	FRBMM-D16/1N/003-F	193486
20	0.03	FRBMM-B20/1N/003-F	193481	FRBMM-C20/1N/003-F	193484	FRBMM-D20/1N/003-F	193487
25	0.03	FRBMM-B25/1N/003-F	193488	FRBMM-C25/1N/003-F	193491	-	-
32	0.03	FRBMM-B32/1N/003-F	193489	FRBMM-C32/1N/003-F	193492	-	-
40	0.03	FRBMM-B40/1N/003-F	193490	FRBMM-C40/1N/003-F	193493	-	-
13	0.3	FRBMM-B13/1N/03-F	193494	FRBMM-C13/1N/03-F	193497	FRBMM-D13/1N/03-F	193500
16	0.3	FRBMM-B16/1N/03-F	193495	FRBMM-C16/1N/03-F	193498	FRBMM-D16/1N/03-F	193501
20	0.3	FRBMM-B20/1N/03-F	193496	FRBMM-C20/1N/03-F	193499	FRBMM-D20/1N/03-F	193502
25	0.3	FRBMM-B25/1N/03-F	193503	FRBMM-C25/1N/03-F	193506	-	-
32	0.3	FRBMM-B32/1N/03-F	193504	FRBMM-C32/1N/03-F	193507	-	-
40	0.3	FRBMM-B40/1N/03-F	193505	FRBMM-C40/1N/03-F	193508	-	-

Description	Part no.	Article no.
Accessories for IEC circuit breakers		
SWD connection module for miniature circuit breakers, residual-current circuit breakers and residual-current circuit breakers with overcurrent protection	MCB-HK-SWD 	177175
Screw-in auxiliary contact		
Auxiliary contact for residual-current circuit breakers, 1 N/O, 1 N/C	Z-HK	248432
Auxiliary contact for miniature circuit breakers and residual-current circuit breakers with overcurrent protection, 1 N/O, 1 N/C	Z-AHK	248433
Tripping signal contact for miniature circuit breakers, residual-current circuit breakers and residual-current circuit breakers with overcurrent protection, 2 W	Z-NHK	248434
Snap-on auxiliary contact		
Auxiliary contact for miniature circuit breakers and residual-current circuit breakers with overcurrent protection, 1 N/O, 1 N/C	ZP-IHK	286052
Auxiliary contact for miniature circuit breakers and residual-current circuit breakers with overcurrent protection, 1 W	ZP-WHK	286053
Tripping signal contact for miniature circuit breakers and residual-current circuit breakers with overcurrent protection, 2 W	ZP-NHK	248437
Snap-on shunt release		
12 - 110 V DC	ZP-ASA/24	248438
110 - 415 V DC	ZP-ASA/230	248439
Undervoltage release, instantaneous		
115 V DC	Z-USA/115	248288
230 V DC	Z-USA/230	248289
400 V DC	Z-USA/400	248290
Accessories for UL/CSA circuit breakers		
Auxiliary contact for FAZ-NA, -RT	Z-IHK-NA	113895
Shunt release for FAZ-NA, -RT, 12 - 110 V AC	FAZ-XAA-NA12-110VAC	102037
Shunt release for FAZ-NA, -RT, 110 - 415 V AC	FAZ-XAA-NA110-415VAC	102036

Moeller series

Description	Devices Quantity	Type	Part no.	Article no.
Busbars				
Busbar for FAZ, can be cut to the required length, 100 A				
Cross-section: 18 mm ²	-	1-phase	BB-UL-18/1P-1M/57	121981
Cross-section: 18 mm ²	-	2-phase	BB-UL-18/2P-2M/56	121982
Cross-section: 18 mm ²	-	3-phase	BB-UL-18/3P-3M/57	121983
Cross-section: 25 mm ²	-	1-phase	BB-UL-25/1P-1M/57	121989
Cross-section: 25 mm ²	-	2-phase	BB-UL-25/2P-2M/56	121990
Cross-section: 25 mm ²	-	3-phase	BB-UL-25/3P-3M/57	121991
Busbar for FAZ-NA and -RT, can be cut to the required length, 100 A				
Cross-section: 25 mm ²	-	1-phase	Z-BB/UL25/1P1MU/57	171131
Cross-section: 25 mm ²	-	1-phase + auxiliary contact	Z-BB/UL25/1P1MU+AUX/37	171137
Cross-section: 25 mm ²	-	2 x 1-phase + auxiliary contact	Z-BB/UL25/2X1P1MU+AUX/38	171143
Cross-section: 25 mm ²	-	3 x 1-phase + auxiliary contact	Z-BB/UL25/3X1P1MU+AUX/39	171141
Cross-section: 25 mm ²	-	2-phase	Z-BB/UL25/2P1MU/56	171132
Cross-section: 25 mm ²	-	2-phase + auxiliary contact	Z-BB/UL25/2P1MU+AUX/46	171138
Cross-section: 25 mm ²	-	3-phase	Z-BB/UL25/3P1MU/57	171133
Cross-section: 25 mm ²	-	3-phase + auxiliary contact	Z-BB/UL25/3P1MU+AUX/48	171139
End cap for shroud section	-	-	Z-ECUL	171145
Extension terminals	-	-	Z-TEUL35	171144
Busbar tag shroud	-	-	Z-FPUL	171146
Z-SV/UL busbar for FAZ-NA and -RT, 80 A				
Cross-section: 16 mm ²	6	1-phase	Z-SV/UL-16/1P-1TE/6	104892
Cross-section: 16 mm ²	12	1-phase	Z-SV/UL-16/1P-1TE/12	104893
Cross-section: 16 mm ²	18	1-phase	Z-SV/UL-16/1P-1TE/18	104894
Cross-section: 16 mm ²	6	2-phase	Z-SV/UL-16/2P-2TE/6	104895
Cross-section: 16 mm ²	12	2-phase	Z-SV/UL-16/2P-2TE/12	104896
Cross-section: 16 mm ²	18	2-phase	Z-SV/UL-16/2P-2TE/18	104897
Cross-section: 16 mm ²	6	3-phase	Z-SV/UL-16/3P-3TE/6	104898
Cross-section: 16 mm ²	12	3-phase	Z-SV/UL-16/3P-3TE/12	104899
Cross-section: 16 mm ²	18	3-phase	Z-SV/UL-16/3P-3TE/18	104900
Connection terminal: 2.5 - 35 mm ²	-	-	Z-EK/35/UL	104901
Connection terminal: 1.5 - 50 mm ²	-	-	Z-EB/50/UL	104902
Busbar tag shroud for three pins	-	-	ZV-BS-UL	104904



PXS24 electronic overload protection - highlights:

- Modular system – single-channel modules
- Protection of long cables
- Active current limitation
- Integrated inputs/outputs
- Protection and switching of loads
- Direct connection of up to three loads
- Push-in terminals

Electronic protection for maximum safety in 24 V DC circuits



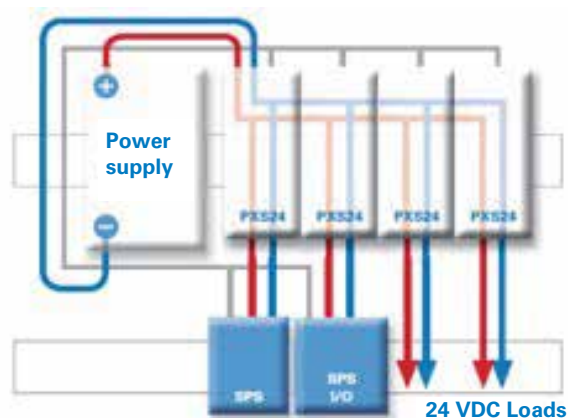
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The rise of electronic current monitoring is unstoppable. We are at the forefront of this development, with electronic solutions that provide maximum protection and a wide range of practical application benefits.

While electromechanical circuit breakers used to provide sufficient safety in 24 V DC circuits featuring conventional power supplies, this is no longer the case if modern electronic power supplies are used. Although electronic power supplies are short-circuit-proof, in the event of a fault they reduce the output voltage to such a low level that there is no longer sufficient energy to trip conventional circuit breakers.

Electronic protection modules offer much greater protection in this respect: They can quickly detect an overload and will only disconnect the malfunctioning parts of the machine from the power supply. The machine remains controllable and can be shut down automatically, for example.

The PXS24 electronic protection device not only ensures the highest possible system availability but also saves time, space and installation costs.



Loads can be directly connected to the output side of the PXS24 electronic protection device. This helps to reduce the number of potential-distributor terminals, which in turn reduces the size of the control cabinet.

Additional features such as Push-in terminals also help to reduce the time required for installation. There is no need for coupling relays, since all switching operations are carried out via the PXS24 electronic protection device.

Rated current I_n (A)	Rated voltage U_n (V)	With feed-in terminal	Without feed-in terminal
		Part no.	Article no.

PXS24...F/ORT-IT and PXS24...F/ORT



Standard (with communication plug)

Rated current I_n (A)	Rated voltage U_n (V)	Part no.	Article no.	Part no.	Article no.
2	24	PXS24S-e2/F/ORT-IT	PXS24S02A001	PXS24S-e2/F/ORT	PXS24S02A002
4	24	PXS24S-e4/F/ORT-IT	PXS24S04A001	PXS24S-e4/F/ORT	PXS24S04A002
6	24	PXS24S-e6/F/ORT-IT	PXS24S06A001	PXS24S-e6/F/ORT	PXS24S06A002
8	24	PXS24S-e8/F/ORT-IT	PXS24S08A001	PXS24S-e8/F/ORT	PXS24S08A002
10	24	PXS24S-e10/F/ORT-IT	PXS24S10A001	PXS24S-e10/F/ORT	PXS24S10A002
13	24	PXS24S-e13/F/ORT-IT	PXS24S13A001	PXS24S-e13/F/ORT	PXS24S13A002
16	24	PXS24S-e16/F/ORT-IT	PXS24S16A001	PXS24S-e16/F/ORT	PXS24S16A002






PXS24E...-It and PXS24E...-F



Economy (without communication plug)

Rated current I_n (A)	Rated voltage U_n (V)	Part no.	Article no.	Part no.	Article no.
2	24	PXS24E-e2/F-IT	PXS24E02A001	PXS24E-e2/F	PXS24E02A002
4	24	PXS24E-e4/F-IT	PXS24E04A001	PXS24E-e4/F	PXS24E04A002
6	24	PXS24E-e6/F-IT	PXS24E06A001	PXS24E-e6/F	PXS24E06A002
8	24	PXS24E-e8/F-IT	PXS24E08A001	PXS24E-e8/F	PXS24E08A002
10	24	PXS24E-e10/F-IT	PXS24E10A001	PXS24E-e10/F	PXS24E10A002

Accessories

	Description	Length	Part no.	Article no.
Busbar with max. 30 V				
	Can be cut to the required length Current-carrying capacity: 80 A (at an ambient temperature of 55° C)	1 m	PXS24-BB/80A/1m	PXS24BB00001
		4 HP (approx. 70 mm)	PXS24-BB/80A/4TE	PXS24BB00004
		8 HP (approx. 140 mm)	PXS24-BB/80A/8TE	PXS24BB00008
		12 HP (approx. 210 mm)	PXS24-BB/80A/12TE	PXS24BB00012
Busbar cover				
	Can be cut to the required length	1 m	PXS24-BBC	PXS24ACC0002
Placeholder modules				
	Empty module without any electrical function		PXS24-PCH	PXS24ACC0000
Connection terminals				
	Insulated Two terminals are required! Terminal cross-section: 1.5 - 16 mm²		AKI16/10	184515
	Two terminals are required! Terminal cross-section: 1.5 - 16 mm² with or without ferrules, rigid and flexible Current-carrying capacity: 60 A (at an ambient temperature of 50° C, only in connection with PXS24-BB...)		PXS24-IT	PXS24ACC0001



The SASY 60i busbar system ensures maximum efficiency inside the control cabinet

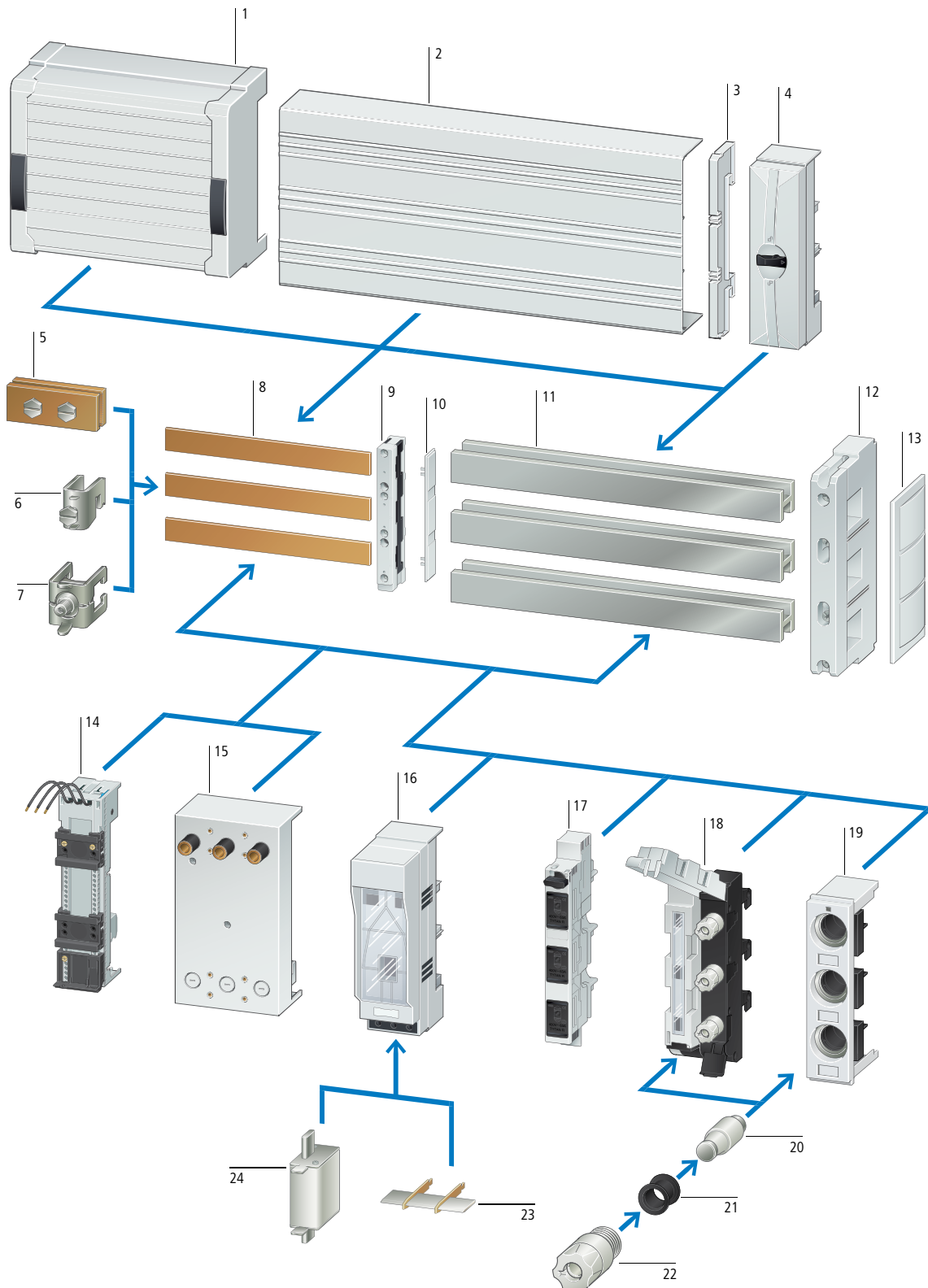


SASY 60i – safe and reliable: SASY 60i is a comprehensive and UL-certified switching, control and power distribution solution that is designed for use with our standard and motor-protective circuit breakers. The modular SASY 60i busbar system has been specifically designed for efficient power distribution inside the control panel. Thanks to the busbar adapter, incoming and outgoing circuit breakers can be mounted directly on the busbar system – quickly, easily and in a space-saving manner.

The double-T busbars of the SASY 60i system reduce the time and effort required for preparing the contact points. The busbar has a very high rated impulse withstand current and yet requires only a small number of supports, thus making optimum use of the limited space inside the control cabinet. In addition, the large surface area of the busbar ensures the best possible dissipation of power losses.



Get more information




















- | | | | |
|--|-----------------------------------|--|---------------------------------|
| 1 System cover | 7 Clamp terminal | 15 Busbar adapter for NZM | 19 D busbar-mounted fuse device |
| 2 Modular cover for empty sections | 8 Flat busbars | 16 NH fuse switch-disconnector | 20 Fuse link |
| 3 Support for the cover for empty sections | 9 Double-T busbar supports | 17 D fuse switch-disconnector with flash function | 21 Fuse adapter |
| 4 Terminal plates | 10 End shroud | 18 D fuse switch-disconnector without flash function | 22 Screw cap |
| 5 Busbar end-to-end connectors | 11 Double-T busbars | | 23 NH disconnecting blades |
| 6 Universal conductor terminals | 12 Busbar supports | | 24 NH fuse link |
| | 13 End shroud | | |
| | 14 Busbar adapter for PKZ and PKE | | |

SASY 60-mm busbar system

For flat busbars and busbars with double-T cross-sections

Moeller series









Description		Poles	Rated operational current I _e A	For use with	Part no. Article no.
Busbar supports					
Thermoplast, silicone- and chlorine-free Halogen-free					
IEC busbar supports					
	Can be adapted to busbar sizes using a concertina mechanism With screw blocks on the inside	3	630	Flat busbars	BBS-3/FL 107066
		4	630	Flat busbars	BBS-4/FL 138381
UL busbar supports					
	Can be adapted to busbar sizes using a concertina mechanism With screw blocks on the inside	3	630	Flat busbars	BBS-3/FL-NA 107067
PE/N busbar supports					
	Can be adapted to busbar sizes using a concertina mechanism Can be individually mounted	1	630	Flat busbars	BBS-1/FL 107161
		2	630	Flat busbars	BBS-2/FL 107069
Double-T busbar supports					
	Can be used to assemble a PE or N busbar	1	1600	Double-T busbars	BBS-1/PR-N-PE 302105
	Can be used at the end or in the middle of the busbar With screw blocks on the inside	3	1600	Double-T busbars	BBS-3/PR 107162
End shroud					
	For covering the busbars	-	-	BBS-3/FL BBS-3/FL-NA	ES-BBS-3/FL 107068
		-	-	BBS-3/PR	ES-BBS-3/PR 107164
		-	-	BBS-1/PR-N-PE	ES-BBS-1/PR-N-PE 302107
UL bottom plate					
	To be used use if the air gap between the busbars and the mounting plate is insufficient	-	-	BBS-3/FL BBS-3/FL-NA BBS-3/PR	BBC-BT-NA 107172
Busbar covers					
	-	-	-	All flat busbars with a thickness of 5 mm	BBC-FL5 107173
	-	-	-	All flat busbars with a thickness of 10 mm	BBC-FL10 107174
	-	-	-	Double-T busbars	BBC-CU-BAR/PR 107175
Double-T busbars					
	Cross-section: 500 mm ² , 2400 mm long, tin-plated	-	1250	BBS-3/PR, BBS-1/PR-N-PE	CU-BAR-500/T 107166
	Cross-section: 720 mm ² , 2400 mm long, tin-plated	-	1600	BBS-3/PR, BBS-1/PR-N-PE	CU-BAR-720/T 107167
Complete system covers					
	Length: 228 mm	3	-	-	BBC-CS1 107209
	Length: 228 mm	4	-	-	BBC-CS4 138387



Description	Width mm	Poles	Rated operational current I_e A	Terminal capacity	For use with	Part no. Article no.
Terminal plates						
 <p>The terminal can be removed to connect uncut conductors Looping is not possible</p>	54	3	300	6 - 50 mm ² AWG 10 - AWG 2/0	Double-T 12 x 5/10 15 x 5/10 20 x 5/10 25 x 5/10 30 x 5/10	BBA-TP3/50 107183
Clamp terminals						
 <p>No drilling required for termination on busbars</p>	38	-	480	35 - 150 mm ² AWG2/0 - MCM 300	12 x 5/10 20 x 5/10	AKS150 138374
 <p>No drilling required for termination on busbars</p>	38	-	500	95 - 185 mm ² AWG3/0 - MCM 350	Double-T 20 x 5/10 25 x 5/10 30 x 5/10	AKS185 107195
Profile terminals						
 <p>No drilling required for termination on busbars</p>	72	-	1600	800 mm ² , terminal area 41 x 20 - 42	Double-T	AKP800 107198
Universal conductor terminals						
 <p>With integrated retaining spring, open terminal chamber and captive terminal screw</p>	11.5	-	180	1.5 - 16 mm ² AWG 14 - AWG 6.	All flat busbars with a thickness of 5 mm	AKU16/5 107187
	23.5	-	440	16 - 120 mm ² AWG 4 - MCM 250	All flat busbars with a thickness of 10 mm	AKU120/10 107194
	38	-	630	M10 cable lugs	All flat busbars with a thickness of 10 mm	AKU-M10/10 138361
Busbar adapters for DIN devices						
Dual adapters						
	3-pole	35	54	Double-T 12x5/10 15x5/10 20x5/10 25x5/10 30x5/10		Z-SS-60-ADD/6-54 288791




SASY 60-mm busbar system

Busbar adapters for NZM, DIN devices

Moeller series

	No. of poles	Rated operational current I_e A	Adapter width mm	For use with	Part no. Article no.	
Adapters for circuit breakers and switch-disconnectors						
For surface mounting on flat copper busbars (12 - 30 x 5 - 10) as well as double-T						
	3-pole	160	92	NZM1, PN1, N(S)1	NZM1-XAD160 104554	
		250	106	NZM2, PN2, N(S)2	NZM2-XAD250 104555	
		630	140	NZM3, PN3, N(S)3	NZM3-XAD630 107206	
	4-pole	250	140	NZM2(-4), PN2(-4), N2(-4) NS2(-4)	NZM2-4-XAD250 138388	
		630	185	NZM3(-4), PN3(-4), N3(-4) NS3(-4)	NZM3-4-XAD630 138389	
Connection blocks for component adapters						
	3-pole	250	-	NZM2, PN2, N(S)2	NZM2-XKR4 281666	
		630	-	NZM3, PN3, N(S)3	NZM3-XKR13 281668	
	4-pole	250	-	NZM2-4, PN2-4, N2-4	NZM2-4-XKR4 118907	
		630	-	NZM3-4, PN3-4, N3-4	NZM3-4-XKR13 119020	
	No. of poles	Rated operational current I_e A	Adapter width mm	Cable entry	Cable cross-section	Part no. Article no.
NH fuse switch-disconnector without fuse monitoring						
IEC/EN 60947-3 Rated conditional short-circuit current 80 kA (690 V) Fuse link size NH000 (not included in scope of delivery)						
	3-pole	125	53	Bottom	Box terminal 1.5 - 50 mm ²	XNH000-S125-BT-BOT EP-500618
	3-pole	125	53	Top	Box terminal 1.5 - 50 mm ²	XNH000-S125-BT-TOP EP-500619

	Rated operational current I_e A	Frame size	Terminal type	Part no. Article no.
NH fuse-switch disconnectors				
IEC/EN 60947-3 3-pole With reach-over guard Rated conditional short-circuit currents of 120 kA (500 V) and 100 kA (690 V) Flammability characteristics as per UL94 (self-extinguishing) Cable connection at the top or bottom Contacts made of silver-plated electrolytic copper				
NH fuse switch-disconnectors without flash function				
	160	NH00	Box terminal: 1.5 - 95 mm ²	XNH00-S160-BT1 183034
	250	NH1	Box terminal: 35 - 150 mm ²	XNH1-S250-BT 183052
	400	NH2	Box terminal: 95 - 300 mm ²	XNH2-S400-BT 183066
	630	NH3	Box terminal: 95 - 300 mm ²	XNH3-S630-BT 183078
NH fuse switch-disconnector with flash function The flash function indicates that the fuse link has blown				
	160	NH00	Box terminal: 1.5 - 95 mm ²	XNH00-FCL-S160-BT1 183037
	250	NH1	Box terminal: 35 - 150 mm ²	XNH1-FCL-S250-BT 183054
	400	NH2	Box terminal: 95 - 300 mm ²	XNH2-FCL-S400-BT 183068
	630	NH3	Box terminal: 95 - 300 mm ²	XNH3-FCL-S630-BT 183080

	Rated operational current I_e A	Rated operating voltage U_e V AC	Frame size	Mounting width mm	For use with	Part no. Article no.
D busbar-mounted fuse devices						
Gauge ring Supplied empty, without screw caps						
	63	400	E18, D 02	27	12 x 5/10 20 x 5/10 25 x 5/10 30 x 5/10 Double-T	D02-S0/63/3-R-27 114315
D fuse switch-disconnectors without flash function						
Gauge ring Supplied empty, without screw caps						
	63	400	E18, D 02	36	20 x 5/10 30 x 5/10 Double-T	D02-S/63/3-RS 284649
D fuse switch-disconnector with flash function						
The flash function indicates that the fuse link has blown Supplied empty, without adapter sleeves or fuse links Contact-position indicator Switches the load on all poles without any manual intervention Sealable and lockable						
	63	400	E18, D02	27	12 x 5/10 15 x 5/10 20 x 5/10 25 x 5/10 30 x 5/10 Double-T	D02-LTS/63/3-R 114316



A single product range for comprehensive circuit protection

Eaton's Bussmann series range of DIN NH fuse links and bases offers unrivalled choice, with a wide range of functions to suit all industrial applications.

This comprehensive portfolio includes fuses with different voltages, currents, designs and sizes. The dual indicator saves time and money, as tripped fuses can be quickly identified and replaced. The insulated metal grip tabs are voltage-free and thus increase the safety of the fuses.

A product range that sets the standard for the protection of electrical installations.



Get more information



Dual indicator

Eaton's patented dual indicator clearly indicates if the fuse has tripped, thereby ensuring highly reliable local as well as remote signaling, which not only saves money but also reduces the time required for replacing the fuse links.



Low power loss

Eaton's Bussmann series low power loss NH fuse links reduce total cost of ownership and CO₂ emissions by reducing both energy consumption and heat transfer to other components.



Compliance with all global standards

Eaton's Bussmann series NH fuse links have been tested in accordance with IEC 60269-1 and 2, DIN 43620, VDE, CE and CCC (approved) and can therefore be used worldwide.



Recycling

We specialize in the manufacturing of recyclable products and are a member of the industry's recognized recycling system. The HRC symbol indicates that a product can be recycled. Our fuses are naturally lead- and cadmium-free and are suitable for use in RoHS-compliant applications.



NH 400 V

Eaton's Bussmann series 400 V class gG NH industrial fuses are suitable for a wide range of industrial and motor protection applications

- 2 to 630 Ampere
- Class gFF and gG/gL
- Breaking capacity: 120 kA~
- Frame sizes 000 to 3
- IEC 60269-1 and 2, VDE 0636, DIN 43620 and CE
- Available with metal grip lugs or insulated metal grip lugs



NH 500 V

Eaton's Bussmann series 500 V class gG NH industrial fuses are suitable for a wide range of industrial and motor protection applications

- 2 to 1250 Ampere
- Class gG/gL and aM
- Breaking capacity: 120 kA~
- Frame sizes 000 to 4
- IEC 60269-1 and 2, VDE 0636, DIN 43620 and CE
- Available with metal grip lugs or insulated metal grip lugs



NH 690 V

Eaton's Bussmann series 690 V class gG NH industrial fuses are suitable for a wide range of industrial and motor protection applications

- 2 to 800 Ampere
- Class gG/gL and aM
- Breaking capacity: 120 kA~
- Frame sizes 000 to 4
- IEC 60269-1 and 2, VDE 0636, DIN 43620 and CE
- Available with metal grip lugs or insulated metal grip lugs



NH bases

Eaton's Bussmann series NH fuse bases are suitable for DIN-Rail and/or screw mounting. We offer complete accessory kits for this product range, including phase separators, IP20 finger guards and neutral disconnecting blades.

- 160 to 1600 Ampere
- 690 V AC
- For fuse links with a breaking capacity of 120 kA
- Frame sizes 00 to 4
- IEC 60269-1 and 2, VDE 0636-1 and 2



A comprehensive portfolio of circuit protection solutions for UL markets



Download the catalog:
[Bussmann series UL Catalog](#)




Eaton provides a comprehensive selection of Eaton's Bussmann series UL-Certified fuse links, fuse bases and fuse blocks for use in industrial and infrastructure applications.

Eaton's Bussmann series portfolio includes fuses with different voltages, currents and sizes. These UL fuses and fuse accessories come with all the necessary approvals, meaning your machines and systems will be perfectly equipped for export to the U.S. or to other UL markets. Eaton's Bussmann series circuit protection solutions ensure safe handling of electrical voltages and provide optimum protection of people and equipment.





Get more information

UL low-voltage products – overview of fuse links for branch circuits




Class CC		Class J	Class T
			
Catalog numbers		LPJ-SP(I)	JJS, JJS
Rated operating voltage	V AC	600	600
	V DC	300	160/170
Rated operational current		Up to 600 A	Up to 1200 A
Breaking capacity	RMS Sym	200/300 kA	.. 200 kA
	DC	100 kA	20/100 kA
Operating class/tripping characteristic		Time-delayed (current-limiting)	Fast-acting, ultra-fast-acting (current-limiting)
Fuse holders		CUBEFuse, CH class J modular holder, J TM safety	N/ A
Fuse blocks		Power distribution, modular blade contacts, JM600, JP pyramid fuse blocks, front panel mounting, modular type, BH modular design.	BH modular design, T300 and T600 front plate mounting
Standards and regulations		CE, UL-listed and CSA-certified	
Applications		Special circuits, industrial control, insulated inline fuse holders, line protection for small control transformers	Power panelboards, circuit breakers for branch circuits, panelboards for main circuits, machine disconnectors, industrial controls




UL low-voltage products – overview of supplemental fuse-link types

Fast-acting fuses			Time-delayed fuses	
				
Catalog numbers			FNM	FNQ
Rated operating voltage	V AC	600	250	500
	V DC	-	-	-
Rated operational current			Up to 30 A	Up to 30 A
Breaking capacity	RMS Sym	100 kA	200/300 kA	.. 200 kA
	DC	N/ A	N/ A	N/ A
Operating class/tripping characteristic			Time-delayed fuse links	
Fuse holders			Optima, CH, HPG, HPC, HPS, HPM, HPF, HEB, HEX, HEY, NDNF1-WH, CCP	
Fuse blocks			BCM, 4421 and 4515	
Standards and regulations			CE, UL-listed and CSA-certified	
Applications			Circuits with high inrush currents (motor/transformer loads) Additional protection for 125 V AC and 250 V AC inductive circuits	Motor-control transformers, circuits with inrush currents

Bussmann series fuses

Cylindrical fuses

	Rated current	Rated voltage	Breaking capacity	Operating class	Size	Part no.
	A	V AC	kA		mm	
Cylindrical fuses: 10 x 38 mm and 14 x 51 mm						
	0.5	500	120	gG	10 x 38	C10G0.5
	1					C10G1
	2					C10G2
	4					C10G4
	6					C10G6
	8					C10G8
	10					C10G10
	12					C10G12
	16					C10G16
	20					C10G20
	25					C10G25
	32	400				C10G32
	0.16	500	120	aM	10 x 38	C10M0.16
	0.25					C10M0.25
	0.5					C10M0.5
	1					C10M1
	2					C10M2
	4					C10M4
	6					C10M6
	8					C10M8
	10					C10M10
	12					C10M12
	16					C10M16
	20	400				C10M20
	25					C10M25
	32					C10M32
	1	690	80	gG	14 x 51	C14G1
	2					C14G2
	4					C14G4
	6					C14G6
	8					C14G8
	10					C14G10
	12					C14G12
	16					C14G16
	20					C14G20
	25					C14G25
	32	500	120			C14G32
	40	500				C14G40
	50	400				C14G50

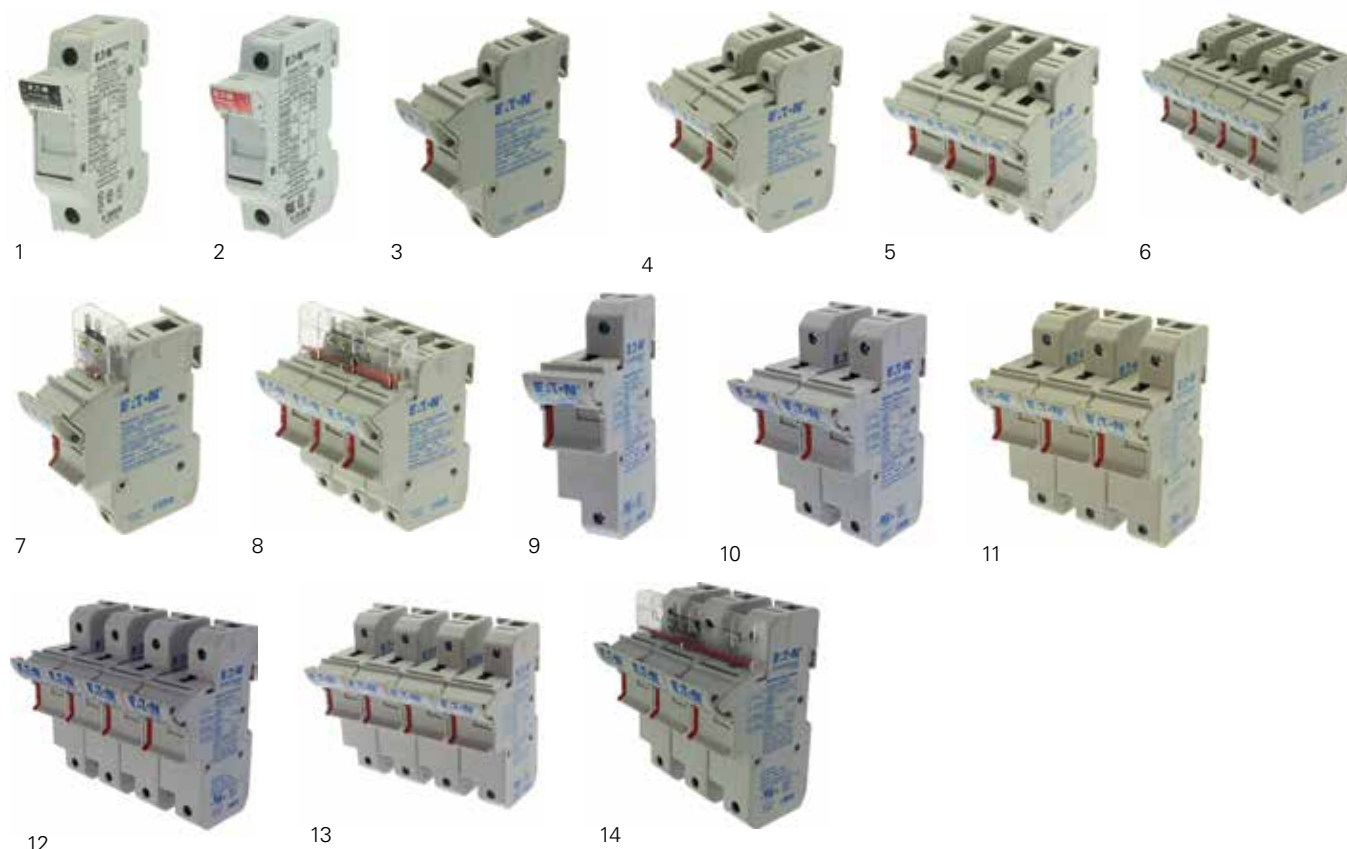
	Rated current	Rated voltage	Breaking capacity	Operating class	Size	Part no.	
	A	V AC	kA		mm		
Cylindrical fuses: 14 x 51 mm and 22 x 58 mm							
	0.25	500	80	aM	14 x 51	C14M0.25	
	0.5					C14M0.5	
	1					C14M1	
	2					C14M2	
	4					C14M4	
	6					C14M6	
	8					C14M8	
	10					C14M10	
	12					C14M12	
	16					C14M16	
	20					C14M20	
	25					C14M25	
	32					120	C14M32
	40						C14M40
	50						C14M50
	2	690	80	gG	22 x 58	C22G2	
	4					C22G4	
	6					C22G6	
	8					C22G8	
	10					C22G10	
	12					C22G12	
	16					C22G16	
	20					C22G20	
	25					C22G25	
	32					C22G32	
	40					C22G40	
	50					C22G50	
	63					C22G63	
	80	500	120	C22G80			
	100	500		C22G100			
	125	400		C22G125			
		2	690	80	aM	22 x 58	C22M2
		4					C22M4
		6					C22M6
8		C22M8					
10		C22M10					
12		C22M12					
16		C22M16					
20		C22M20					
25		C22M25					
32		C22M32					
40		C22M40					
50		C22M50					
63		C22M63					
80		500	120	C22M80			
100		500		C22M100			
125		400		C22M125			





Bussmann series fuses

Fuse holders for cylindrical fuses

Version as shown	Rated current	Rated voltage	Function	Part no.
	A	V/V AC		
Fuse holders for 10 x 38 mm cylindrical fuses				
1	30	600 V (UL)	1-pole with indicator	CHCC1DIU
			2-pole with indicator	CHCC2DIU
			3-pole with indicator	CHCC3DIU
			1-pole	CHCC1DU
			2-pole	CHCC2DU
			3-pole	CHCC3DU
2	32	690 V AC (IEC), 600 V (UL)	1-pole	CHM1DU
			2-pole	CHM2DU
			3-pole	CHM3DU
			4-pole	CHM4DU
			1-pole with indicator	CHM1DIU
			2-pole with indicator	CHM2DIU
			3-pole with indicator	CHM3DIU
			4-pole with indicator	CHM4DIU
Fuse holders for 14 x 51 mm cylindrical fuses				
3	50	690 V AC (IEC)	1-pole	CH141DU
4			2-pole	CH142DU
5			3-pole	CH143DU
6			4-pole	CH144DU
7			1-pole with micro switch	CH141DMSU-F
8			3-pole with micro switch	CH143DMSU-F
Fuse holders for 22 x 58 mm cylindrical fuses				
9	125	690 V AC (IEC)	1-pole	CH221DU
10			2-pole	CH222DU
11			3-pole	CH223DU
12			4-pole	CH224DU
13			3-pole with neutral	CH223DNU
14			3-pole with neutral and micro switch	CH223DMSU-L

Notes








	Rated current	Rated voltage	Breaking capacity	Operating class	Size	Type ¹⁾
	A	V AC	kA			
NH fuse links						
	2	500	120	gG/gL	000	2NHG000B
	4					4NHG000B
	6					6NHG000B
	10					10NHG000B
	16					16NHG000B
	20					20NHG000B
	25					25NHG000B
	32					32NHG000B
	35					35NHG000B
	40					40NHG000B
	50					50NHG000B
	63					63NHG000B
	80					80NHG000B
	100					100NHG000B
	50	500	120	gG/gL	00	50NHG00B
	63					63NHG00B
	80					80NHG00B
	100					100NHG00B
	125					125NHG00B
	160					160NHG00B
	6	500	120	gG/gL	0	6NHG0B
	10					10NHG0B
	16					16NHG0B
	20					20NHG0B
	25					25NHG0B
	32					32NHG0B
	35					35NHG0B
	40					40NHG0B
	50					50NHG0B
	63					63NHG0B
	80					80NHG0B
	100					100NHG0B
	125					125NHG0B
	160					160NHG0B
	6	500	120	gG/gL	01	6NHG01B
	10					10NHG01B
	16					16NHG01B
	20					20NHG01B
	25					25NHG01B
	32					32NHG01B
	35					35NHG01B
	40					40NHG01B
	50					50NHG01B
	63					63NHG01B
	80					80NHG01B
	100					100NHG01B
	125					125NHG01B
	160					160NHG01B

Notes

¹⁾ Insulated metal grip tabs (optional)







Bussmann series fuses

NH fuse links

	Rated current	Rated voltage	Breaking capacity	Operating class	Size	Type ¹⁾
	A	V AC	kA			
NH fuse links						
	50	500	120	gG/gL	1	50NHG1B
	63					63NHG1B
	80					80NHG1B
	100					100NHG1B
	125					125NHG1B
	160					160NHG1B
	200					200NHG1B
	224					224NHG1B
	250					250NHG1B
	315					315NHG1B
	355	440				355NHG1B
	35	500	120	gG/gL	02	35NHG02B
	40					40NHG02B
	50					50NHG02B
	63					63NHG02B
	80					80NHG02B
	100					100NHG02B
	125					125NHG02B
	160					160NHG02B
	200					200NHG02B
	224					224NHG02B
	250					250NHG02B
	300					300NHG2B
	315					315NHG2B
	355					355NHG2B
	400					400NHG2B
	425					425NHG2B
	450					450NHG2B
	500	440				500NHG2B
	250	500	120	gG/gL	03	250NHG03B
	315					315NHG03B
	355					355NHG03B
	400					400NHG03B
	315	500	120	gG/gL	3	315NHG3B
	355					355NHG3B
	400					400NHG3B
	425					425NHG3B
	500					500NHG3B
	630					630NHG3B




Notes


¹⁾ Insulated metal grip tabs (optional)

	Rated current	Rated voltage	Breaking capacity	Operating class	Size	Part no.
	A	V AC	kA			
NH fuse links						
	500	500	120	gG/gL	4	500NHG4G
	630	500	120	gG/gL	4	630NHG4G
	6	690	120	aM	000	6NHM000B-690
	10					10NHM000B-690
	16					16NHM000B-690
	20					20NHM000B-690
	25					25NHM000B-690
	32					32NHM000B-690
	35					35NHM000B-690
	40					40NHM000B-690
	50					50NHM000B-690
	63	690	120	aM	00	63NHM00B-690
	80					80NHM00B-690
	100					100NHM00B-690
	50	690	120	aM	1	50NHM1B-690
	63					63NHM1B-690
	80					80NHM1B-690
	100					100NHM1B-690
	125					125NHM1B-690
	160					160NHM1B-690
	125	690	120	aM	2	125NHM2B-690
	160					160NHM2B-690
	200					200NHM2B-690
	224					224NHM2B-690
	250					250NHM2B-690
	315					315NHM2B-690
	355					355NHM2B-690
	315	690	120	aM	3	315NHM3B-690
	355					355NHM3B-690
	400					400NHM3B-690
	500					500NHM3B-690

Bussmann series fuses

NH fuse bases, high-speed fuses

	Rated current	Rated voltage	Breaking capacity	Operating class	Size	Part no.
	A	V/V AC	kA			
NH fuse bases						
	160	690 V AC	-	-	00	SD00-D
	250		-	-	1	SD1-D
	400		-	-	2	SD2-D
	630		-	-	3	SD3-D
	160	690 V AC	-	-	00	TD00-D
	250		-	-	1	TD1-D
	400		-	-	2	TD2-D
	630		-	-	3	TD3-D
Square-body fuse links (DIN 43620) with dual indicator						
	10	690 (IEC), 700 (UL)	200	gR	000	170M1558D
	16					170M1559D
	20					170M1560D
	25					170M1561D
	32					170M1562D
	40					170M1563D
	50					170M1564D
	63					170M1565D
	80					170M1566D
	100					170M1567D
	125					170M1568D
	160					170M1569D
	200					170M1570D
	250					170M1571D
	315	690 (IEC), 700 (UL)	200	aR	00	170M1572D
	40	690 (IEC), 700 (UL)	200	aR	1	170M3808D
	50					170M3809D
	63					170M3810D
	80					170M3811D
	100					170M3812D
	125					170M3813D
	160					170M3814D
	200					170M3815D
	250					170M3816D
	315					170M3817D
	350					170M3818D
	400					170M3819D
	450					170M4863D
	500					170M4864D
	550					170M4865D
	630					170M4866D
	400	690 (IEC), 700 (UL)	200	aR	2	170M5808D
	450					170M5809D
	500					170M5810D
	550					170M5811D
	630					170M5812D
	500	690 (IEC), 700 (UL)	200	aR	3	170M6808D
	550					170M6809D
	630					170M6810D



Struggling to find the right fuse for your application?

Our field application engineers will help you select the right fuses for your application, based on our 100 years of experience in fuse design.

Eaton's field application engineers offer the following services:

Help in selecting Eaton Bussmann series fuses for a wide range of applications: machinery and equipment, AC/DC drives, traction and soft starters, grid rectifiers, photovoltaics, energy storage, hybrid and electric vehicles, UPS, etc.

The development of customized Eaton Bussmann series fuses for your application: new ratings, dimensions, connections, UL/IEC tests, approvals, standards.

General inquiries: cross references to competitors, selection of accessories (fuse holders, microswitches), technical documentation (data sheets, drawings, 3D files) and electrical certificates.

Contact us today:



For general inquiries about fuses:
buletechnical@eaton.com



For inquiries about high-speed fuses:
bulehighspeedtechnical@eaton.com

We make what matters work.

Bussmann series fuses


High-speed fuses

	Rated current	Rated voltage	Breaking capacity	Operating class	-TN/80 T indicator for micro switches	-TN/110 T indicator for micro switches
	A	V AC	kA		Part no.	Part no.
Square-body fuse links (DIN 43653) with mounting brackets						
	Frame size: 1					
	40	690 (IEC), 700 (UL)	200	aR	170M3058	170M3208
	50				170M3059	170M3209
	63				170M3060	170M3210
	80				170M3061	170M3211
	100				170M3062	170M3212
	125				170M3063	170M3213
	160				170M3064	170M3214
	200				170M3065	170M3215
	250				170M3066	170M3216
	315				170M3067	170M3217
	350				170M3068	170M3218
	400				170M3069	170M3219
	450				170M3070	170M3220
	500				170M3071	170M3221
	550				170M3072	170M3222
	630				170M3073	170M3223
	Frame size: 1					
	200	690 (IEC), 700 (UL)	200	aR	170M4058	170M4208
	250				170M4059	170M4209
	315				170M4060	170M4210
	350				170M4061	170M4211
	400				170M4062	170M4212
	450				170M4063	170M4213
	500				170M4064	170M4214
	550				170M4065	170M4215
	630				170M4066	170M4216
	Frame size: 2					
	400	690 (IEC), 700 (UL)	200	aR	170M5058	170M5208
	450				170M5059	170M5209
	500				170M5060	170M5210
	550				170M5061	170M5211
	630				170M5062	170M5212
	Frame size: 3					
	500	690 (IEC), 700 (UL)	200	aR	170M6058	170M6208
	550				170M6059	170M6209
	630				170M6060	170M6210
	Frame size: 2					
	250	1250 (IEC), 1300 (UL)	100	aR	-	170M5188
	280				-	170M5189
	315				-	170M5190
	350				-	170M5191
	400				-	170M5192
	450				-	170M5193
	500				-	170M5194
	550				-	170M5195
	630				-	170M5196

Rated current	Rated voltage	Operating class	-/80 visual indicator	-TN/80 T indicator for micro switches	
A	V/V AC		Part no.	Part no.	
Square-body fuse links (DIN 43653) with mounting brackets					
Breaking capacity: 200 kA (V AC), 50 kA (V DC) Frame size: 000					
	10	690 V AC (IEC), 700 V AC/V DC (UL)	gR	170M1358	170M1408
	16			170M1359	170M1409
	20			170M1360	170M1410
	25			170M1361	170M1411
	32			170M1362	170M1412
	40			170M1363	170M1413
	50			170M1364	170M1414
	63			aR	170M1365
	80	170M1366	170M1416		
	100	170M1367	170M1417		
	125	170M1368	170M1418		
	160	170M1369	170M1419		
	200	170M1370	170M1420		
	250	170M1371	170M1421		
	315	170M1372	170M1422		
Breaking capacity: 200 kA Frame size: 00					
	25	690 V AC (IEC)	gR	170M2608	170M2658
	32			170M2609	170M2659
	40			170M2610	170M2660
	50			170M2611	170M2661
	63			170M2612	170M2662
	80			170M2613	170M2663
	100	690 V AC (IEC) / 700 V AC (UL)	aR	170M2614	170M2664
	125			170M2615	170M2665
	160			170M2616	170M2666
	200			170M2617	170M2667
	250			170M2618	170M2668
	315			170M2619	170M2669
	350			170M2620	170M2670
	400			170M2621	170M2671

Bussmann series fuses

North American fuses

	Rated current	Rated voltage	Breaking capacity	Operating class	Part no.
	A	V	kA		
Low-peak dual element fuses, time-delayed					
	1	600 V AC/300 V DC	300 kA RMS sym. / 100 kA DC	Time-delayed	LPJ-1SP
	1.25				LPJ-1-1-4SP
	1.6				LPJ-1-6-10SP
	1.8				LPJ-1-8-10SP
	2				LPJ-2SP
	2.25				LPJ-2-1-4SP
	2.5				LPJ-2-1-2SP
	2.8				LPJ-2-8-10SP
	3				LPJ-3SP
	3.2				LPJ-3-2-10SP
	3.5				LPJ-3-1-2SP
	4				LPJ-4SP
	4.5				LPJ-4-1-2SP
	5				LPJ-5SP
	5.6				LPJ-5-6-10SP
	6				LPJ-6SP
	7				LPJ-7SP
	8				LPJ-8SP
	9				LPJ-9SP
	10				LPJ-10SP
	12				LPJ-12SP
	15				LPJ-15SP
	17.5				LPJ-17-1-2SP
	20				LPJ-20SP
	25				LPJ-25SP
	30				LPJ-30SP
	35				LPJ-35SP
	40				LPJ-40SP
	45				LPJ-45SP
	50				LPJ-50SP
	60				LPJ-60SP
	70				LPJ-70SP
	80				LPJ-80SP
	90				LPJ-90SP
	100				LPJ-100SP
	110				LPJ-110SP
	125				LPJ-125SP
	150				LPJ-150SP
	175				LPJ-175SP
	200				LPJ-200SP
	225				LPJ-225SP
	250				LPJ-250SP
	300				LPJ-300SP
	350				LPJ-350SP
	400				LPJ-400SP
	450				LPJ-450SP
	500				LPJ-500SP
	600				LPJ-600SP

Version as shown	Rated current	Rated voltage	Function	Part no.
	A	V DC		
Class J modular fuse holders				
1	30	600	1-pole	CH30J1
			1-pole with neon indicator	CH30J1I
			2-pole	CH30J2
			2-pole with neon indicator	CH30J2I
			3-pole	CH30J3
			3-pole with neon indicator	CH30J3I
2	60	600	1-pole	CH60J1
			1-pole with neon indicator	CH60J1I
			2-pole	CH60J2
			2-pole with neon indicator	CH60J2I
			3-pole	CH60J3
			3-pole with neon indicator	CH60J3I
Modular knife-blade fuse blocks				
3	70 - 100	600	1-pole	JM60100-1CR
			2-pole	JM60100-2CR
			3-pole	JM60100-3CR
4	110 - 200	600	1-pole	JM60200-1CR
			2-pole	JM60200-2CR
			3-pole	JM60200-3CR
5	225 - 400	600	1-pole	JM60400-1CR
			2-pole	JM60400-2CR
			3-pole	JM60400-3CR
6	450 - 600	600	1-pole	JM60600-1CR
			2-pole	JM60600-2CR
			3-pole	JM60600-3CR

Notes



1



2



3



4



5



6



T cam switches and P switch-disconnectors for safe switching, disconnection and control



Our powerful, rugged and compact T cam switches and P switch-disconnectors are found in many industrial, commercial and building applications. The surface-mounted switches and the switch front are equipped with IP65 protection, allowing them to be used in harsh environments. Ten basic switch types are available, featuring four different designs, a large number of standard circuits and a wide power range. We also offer customized designs in addition to standard ones, meaning the possibilities are almost unlimited. Our portfolio also includes a comprehensive range of accessories to match the needs of any application. All current paths are equipped with double-break contacts.

Using metal shaft extensions, our reliable P1 and P3 switches can be installed in control cabinets with a depth of up to 600 mm, while multiple handle and shaft options make it possible to find a solution for every application. The most common types are available as complete packages consisting of switch, shaft and handle.



Get more information



T cam switches

Our T cam switches are based on a highly flexible, compact and rugged modular system. The power ratings TM, T0, T3, T5B, T5, T6, T8 are available in four different designs. The rated operational power of the T cam switches ranges from 6.5 kW to 132 kW as per AC 23 A at 400/415 V, 50-60 Hz. The rated uninterrupted current I_u is between 10 A and 315 A. Our T cam switches can be used in a wide range of applications. We also offer tailor-made designs based on customer specifications.



P switch-disconnectors

Our P1 (up to 32 A), P3 (up to 100 A) and P5 (up to 315 A) switch-disconnectors feature a highly compact and rugged design. The manual drive acts directly on the contacts, which automatically open when the device is switched off. The P switch-disconnector can be used as a main switch with or without emergency-stop function, as an on/off switch, as a maintenance and repair switch or as a safety switch.



Main switch with emergency-stop function¹⁾

Machining and processing equipment requires a supply-disconnecting device according to EN 60204-1. In addition, it also needs to be ensured that machines are shut down in the event of an emergency. In the example of the textile processing machine shown on the left, these two functions are performed by a P3 switch-disconnector.

Emergency shutdown requirements:

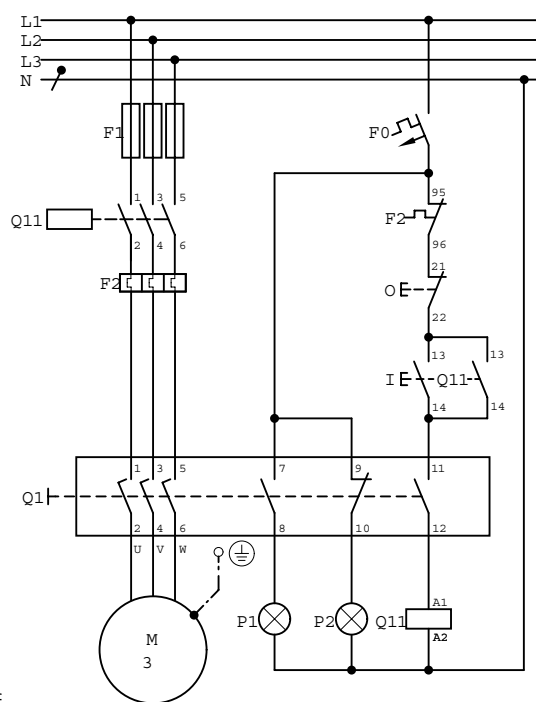
- Priority of the function and the option to activate it in all operating modes
- The ability to switch off any energy supply that leads to dangerous machine conditions as quickly as possible

¹⁾ Our emergency-stop devices can also be used as emergency-off devices.



Safety switch with load shedding and signaling

The P and T safety switches with load-shedding functionality are intended for use as maintenance and repair switches. Their main task is the safe disconnection of loads from the mains. Thanks to the load-shedding circuit, these switches are capable of handling the rated continuous current I_u . The switch will switch without any load, and the additional signal contacts can be used to signal the switch position. Integrating the switch properly in the application program of the system will increase its safety.



P1 = on
P2 = off
Q11 = load shedding

Cam switches, switch-disconnectors

Main switches, maintenance switches, repair switches

Moeller series

Main-circuits/ poles	Auxiliary-circuits	Rated uninterrupted current				
			Surface-mounted	Flush-mounted	Rear-mounted	Rear-mounted With metal shaft for control cabinets with a depth of 400 mm
			IP65	IP65 at the front	IP65 at the front	IP65 at the front
			Part no.	Part no.	Part no.	Part no.
		I_u A	Article no.	Article no.	Article no.	Article no.

Main switches, maintenance switches, repair switches

With red rotary handle and yellow locking ring

Note: All versions are also available with a black toggle → online catalog.

Lockable in the 0 (off) position

1	-	-	20	T0-1-8200/11/SVB	207145	T0-1-8200/EA/SVB	053110	T0-1-8200/V/SVB	057856	-
			32	T3-1-8200/12/SVB	207200	T3-1-8200/EA/SVB	066576	T3-1-8200/V/SVB	007255	-
			63	T5B-1-8200/14/SVB	207240	T5B-1-8200/EA/SVB	094279	T5B-1-8200/V/SVB	094273	-
			100	-	-	T5-1-8200/EA/SVB	097224	T5-1-8200/V/SVB	097222	-
2	-	-	20	T0-1-102/11/SVB	207143	T0-1-102/EA/SVB	091078	T0-1-102/V/SVB	095824	-
			32	T3-1-102/12/SVB	207198	T3-1-102/EA/SVB	014374	T3-1-102/V/SVB	019120	-
			63	T5B-1-102/14/SVB	207238	T5B-1-102/EA/SVB	094469	T5B-1-102/V/SVB	094463	-
			100	T5-1-102/15/SVB	207273	T5-1-102/EA/SVB	098808	T5-1-102/V/SVB	098806	-
3	-	-	20	T0-2-1/11/SVB	207147	T0-2-1/EA/SVB	038873	T0-2-1/V/SVB	043619	-
			25	P1-25/12/SVB	207293	P1-25/EA/SVB	041097	P1-25/V/SVB	055335	P1-25/M4/SVB 172875
			32	P1-32/12/SVB	207314	P1-32/EA/SVB	081438	P1-32/V/SVB	095676	P1-32/M4/SVB 172865
			63	P3-63/14/SVB	207343	P3-63/EA/SVB	031607	P3-63/V/SVB	048218	P3-63/M4/SVB 172784
			100	P3-100/15/SVB	207373	P3-100/EA/SVB	074320	P3-100/V/SVB	088558	P3-100/M4/SVB 172818
			125	DMM-125/3/15/P-R	172851	P5-125/EA/SVB	280898	P5-125/V/SVB	280914	DMM-125/3/M4/P-R 6094964
			160	DMM-160/3/15/P-R	172794	P5-160/EA/SVB	280922	P5-160/V/SVB	280928	DMM-160/3/M4/P-R 6094965
			250	-	-	P5-250/EA/SVB	280936	P5-250/V/SVB	280942	DMV-250/3/M4/P-R 6094966
			315	-	-	P5-315/EA/SVB	280950	P5-315/V/SVB	280956	-
			400	-	-	-	-	-	-	DMV-400/3/M4/P-R 6094967
3 + N	-	-	20	T0-2-8900/11/SVB	207151	-	-	-	-	-
			25	P1-25/12/SVB/N	207298	P1-25/EA/SVB/N	081587	P1-25/V/SVB/N	086333	P1-25/M4/SVB/N 172877
			32	P1-32/12/SVB/N	207319	P1-32/EA/SVB/N	091079	P1-32/V/SVB/N	095825	P1-32/M4/SVB/N 172867
			63	P3-63/14/SVB/N	207349	P3-63/EA/SVB/N	010398	P3-63/V/SVB/N	015144	P3-63/M4/K2-PR/N 172812
			100	P3-100/15/SVB/N	207379	P3-100/EA/SVB/N	019890	P3-100/V/SVB/N	024636	P3-100/M4/K2-PR/N 172828
			125	DMM-125/4/15/P-R	172854	P5-125/EA/SVB/N	280910	P5-125/V/SVB/N	280916	DMM-125/4/M4/P-R 6094968
			160	DMM-160/4/15/P-R	172797	P5-160/EA/SVB/N	280924	P5-160/V/SVB/N	280930	DMM-160/4/M4/P-R 6094969
			250	-	-	P5-250/EA/SVB/N	280938	P5-250/V/SVB/N	280944	DMV-250/4/M4/P-R 6094970
			315	-	-	P5-315/EA/SVB/N	280952	P5-315/V/SVB/N	280958	-
			400	-	-	-	-	-	-	DMV-400/4/M4/P-R 6094971
3	1	0	20	T0-2-15679/11/SVB	207149	T0-2-15679/EA/SVB	081588	T0-2-15679/V/SVB	086334	-
3	1	1	25	P1-25/12/SVB/HI11	207297	P1-25/EA/SVB/HI11	091080	P1-25/V/SVB/HI11	095826	P1-25/M4/SVB/HI11 172767
			32	P1-32/12/SVB/HI11	207318	P1-32/EA/SVB/HI11	072567	P1-32/V/SVB/HI11	015145	P1-32/M4/SVB/HI11 172869
			63	P3-63/14/SVB/HI11	207348	P3-63/EA/SVB/HI11	019891	P3-63/V/SVB/HI11	024637	P3-63/M4/SVB/HI11 172788
			100	P3-100/15/SVB/HI11	207378	P3-100/EA/SVB/HI11	029383	P3-100/V/SVB/HI11	034129	P3-100/M4/SVB/HI11 172822
3 + N	1	1	20	T0-3-15680/11/SVB	207153	T0-3-15680/EA/SVB	038875	T0-3-15680/V/SVB	043621	-
			25	-	-	P1-25/EA/SVB/N/HI11	048367	P1-25/V/SVB/N/HI11	053113	P1-25/M4/SVB/N/HI11 172769
			32	T3-3-15680/12/SVB	207202	P1-32/EA/SVB/N/HI11	057859	P1-32/V/SVB/N/HI11	062605	P1-32/M4/SVB/N/HI11 172871
			63	P3-63/14/SVB/N/HI11	207350	P3-63/EA/SVB/N/HI11	067351	P3-63/V/SVB/N/HI11	072097	P3-63/M4/K2-PR/N/HI11 172816
			100	P3-100/15/SVB/N/HI11	207380	P3-100/EA/SVB/N/HI11	076843	P3-100/V/SVB/N/HI11	081589	P3-100/M4/K2-PR/N/HI11 172832
3	2	1	20	T0-3-15683/11/SVB	207157	T0-3-15683/EA/SVB	015571	T0-3-15683/V/SVB	015634	-
6	-	-	20	T0-3-8342/11/SVB	207159	T0-3-8342/EA/SVB	029382	T0-3-8342/V/SVB	034128	-
			32	T3-3-8342/12/SVB	207208	T3-3-8342/EA/SVB	071326	T3-3-8342/V/SVB	076072	-
			63	T5B-3-8342/14/SVB	207242	T5B-3-8342/EA/SVB	092308	T5B-3-8342/V/SVB	092300	-
			100	T5-3-8342/15/SVB	207279	T5-3-8342/EA/SVB	096383	T5-3-8342/V/SVB	096381	-

Molded-case switch (UL/CSA) as a main switch according to NFPA 79

3	-	-	30	-	P3-30/EA/SVB-MCS	237892	P3-30/V/SVB-MCS	237894	-
				-	P3-30/EA/SVB-SW-MCS¹⁾	237893	P3-30/V/SVB-SW-MCS	237895	-

Notes

¹⁾ With black handle

Enclosed switch-disconnectors with pre-mounted EMC shield plate



Electromagnetic compatibility (EMC) indicates that a device is able to function properly despite the presence of electromagnetic interference, and without causing any electromagnetic interference itself.

Due to the introduction of variable frequency drives, the use of three-phase motors is on the rise, which significantly increases electromagnetic interference (EMI).

If such interference cannot be prevented, the ideal preventive measure for complying with EMC specifications is to clamp the shielded cables (shielding) to a shielding plate.

We have expanded our proven CI-K portfolio with an EMC switch-disconnector series that comes with pre-mounted shielding plates. This new enclosed product range is available with rated currents from 20 A to 63 A and can be used for motor applications up to 30 kW (AC-23A) at a rated current of 415 V.

Features

- Proven and reliable Eaton switchgear
- Rugged and compact polycarbonate housing with IP65 degree of protection
- Cable terminals ensure safe and interference-free connection to the shielding plates
- Standard cable terminals for almost all cable cross-sections
- Wide range of auxiliary switch options to match any customer needs
- Red/yellow or black handle options, lockable

Complete devices

Max. Rated current	Rated operational power	Description	Part no.	Article no.
AC-23 A, 415 V				
20 A	5.5 kW	3-pole, red/yellow handle	T0-2-1/12H/MBS/SVB	182425
		3-pole, black handle	T0-2-1/12H/MBS/SVB-SW	182426
		3-pole + N, red/yellow handle	T0-2-8900/12H/MBS/SVB	182427
		3-pole + N, black handle	T0-2-8900/12H/MBS/SVB-SW	182428
		3-pole + 1 N/O, red/yellow handle	T0-2-15679/12H/MBS/SVB	182429
		3-pole + 1 N/O, black handle	T0-2-15679/12H/MBS/SVB-SW	182430
		3-pole + N + 1 N/O / 1 N/C, red/yellow handle	T0-3-15680/12H/MBS/SVB	182431
		3-pole + N + 1 N/O / 1 N/C, black handle	T0-3-15680/12H/MBS/SVB-SW	182432
		3-pole + 2 N/O / 1 N/C, red/yellow handle	T0-3-15683/12H/MBS/SVB	182433
		3-pole + 2 N/O / 1 N/C, black handle	T0-3-15683/12H/MBS/SVB-SW	182434
		6-pole + 1 N/O / 1 N/C, red/yellow handle	T0-4-15682/12H/MBS/SVB	182435
		6-pole + 1 N/O / 1 N/C, black handle	T0-4-15682/12H/MBS/SVB-SW	182436
25 A	11 kW	3-pole, red/yellow handle	P1-25/12H/MBS/SVB	182413
		3-pole, black handle	P1-25/12H/MBS/SVB-SW	182414
		3-pole + 1 N/O / 1 N/C, red/yellow handle	P1-25/12H/MBS/SVB-HI11	182415
		3-pole + 1 N/O / 1 N/C, black handle	P1-25/12H/MBS/SVB-SW/HI11	182416
32 A	15 kW	3-pole, red/yellow handle	P1-32/12H/MBS/SVB	182417
		3-pole, black handle	P1-32/12H/MBS/SVB-SW	182418
		3-pole + 1 N/O / 1 N/C, red/yellow handle	P1-32/12H/MBS/SVB/HI11	182419
		3-pole + 1 N/O / 1 N/C, black handle	P1-32/12H/MBS/SVB-SW/HI11	182420
63 A	30 kW	3-pole, red/yellow handle	P3-63/14/MBS/SVB	182421
		3-pole, black handle	P3-63/14/MBS/SVB-SW	182422
		3-pole + 1 N/O / 1 N/C, red/yellow handle	P3-63/14/MBS/SVB/HI11	182423
		3-pole + 1 N/O / 1 N/C, black handle	P3-63/14/MBS/SVB-SW/HI11	182424

Note: Emergency-stop switches must have a red handle and a type SVB yellow locking ring (in accordance with IEC/EN 60204 / VDE 0113); otherwise, a black handle must be used (devices ending in "SVB-SW").










Accessories












Description		
Empty enclosure with shield plate for T0-1	CI-K2H-T0-1-MBS	182408
Empty enclosure with shield plate for T0-2	CI-K2H-T0-2-MBS	182409
Empty enclosure with shield plate for T0-3, T0-4	CI-K2H-T0-4-MBS	182410
Empty enclosure with shield plate for T3-1, T3-2	CI-K2H-T3-2-MBS	182411
Empty enclosure with shield plate for T3-3, T3-4	CI-K2H-T3-4-MBS	182412
Metal shield plate for CI-K2	MBS-I2	290191
Metal shield plate for CI-K4	MBS-I4	118742

Cam switches, switch-disconnectors

On/off switches, changeover switches, reversing switches

Moeller series

Front-plate no.	Main-circuits/ poles								
		Flush-mounted	Center-mounted	Surface-mounted	For mounting in distribution boards	Rear-mounted			
		IP65 at the front Part no. Article no.	IP65 at the front Part no. Article no.	IP65 Part no. Article no.	IP30 at the front Part no. Article no.	IP65 at the front Part no. Article no.			
		N/O contact	N/C contact						
									
On/off switches									
 FS 908	1	-	-	T0-1-8200/E 067352	T0-1-8200/EZ 069725	T0-1-8200/I1 207074	T0-1-8200/IVS 074471	T0-1-8200/Z 076844	
	2	-	-	T0-1-102/E 088709	T0-1-102/EZ 091082	T0-1-102/I1 207061	T0-1-102/IVS 015147	T0-1-102/Z 095828	
	3	-	-	T0-2-1/E 024639	T0-2-1/EZ 027012	T0-2-1/I1 207081	T0-2-1/IVS 031758	T0-2-1/Z 036504	
	3	1	0	T0-2-15679/E 029387	T0-2-15679/EZ 031760	T0-2-15679/I1 207094	T0-2-15679/IVS 036506	T0-2-15679/Z 041252	
	3 + N	-	-	T0-2-8900/E 207398	T0-2-8900/EZ 207402	T0-2-8900/I1 207109	T0-2-8900/IVS 207403	T0-2-8900/Z 207407	
Changeover switches									
 FS 684	1	-	-	T0-1-8210/E 012742	T0-1-8210/EZ 048337	T0-1-8210/I1 207076	T0-1-8210/IVS 074440	T0-1-8210/Z 019862	
	2	-	-	T0-2-8211/E 022234	T0-2-8211/EZ 053083	T0-2-8211/I1 207102	T0-2-8211/IVS 076813	T0-2-8211/Z 029354	
	3	-	-	T0-3-8212/E 029353	T0-3-8212/EZ 057829	T0-3-8212/I1 207123	T0-3-8212/IVS 079186	T0-3-8212/Z 036473	
	4	-	-	T0-4-8213/E 031726	T0-4-8213/EZ 062575	T0-4-8213/I1 207136	T0-4-8213/IVS 081559	T0-4-8213/Z 043592	
 FS 943	1	-	-	T0-1-8220/E 031728	T0-1-8220/EZ 095799	T0-1-8220/I1 207078	T0-1-8220/IVS 055459	T0-1-8220/Z 086312	
	2	-	-	T0-2-8221/E 038847	T0-2-8221/EZ 010372	T0-2-8221/I1 207104	T0-2-8221/IVS 057832	T0-2-8221/Z 074450	
	3	-	-	T0-3-8222/E 048339	T0-3-8222/EZ 015118	T0-3-8222/I1 207124	T0-3-8222/IVS 060205	T0-3-8222/Z 088686	
	4	-	-	T0-4-8223/E 050712	T0-4-8223/EZ 019864	T0-4-8223/I1 207137	T0-4-8223/IVS 062578	T0-4-8223/Z 086315	
 FS 4011	1	-	-	T0-1-8214/E 019863	T0-1-8214/EZ 076815	T0-1-8214/I1 207077	T0-1-8214/IVS 045967	T0-1-8214/Z 050720	
	2	-	-	T0-2-8215/E 022236	T0-2-8215/EZ 081561	T0-2-8215/I1 207103	T0-2-8215/IVS 048340	T0-2-8215/Z 053093	
	3	-	-	T0-3-8216/E 024609	T0-3-8216/EZ 086307	T0-3-8216/I1 207434	T0-3-8216/IVS 050713	T0-3-8216/Z 055466	
Reversing switches									
 FS 684	3	-	-	T0-3-8401/E 091047	T0-3-8401/EZ 093420	T0-3-8401/I1 207132	T0-3-8401/IVS 098166	T0-3-8401/Z 010366	

						
		Flush-mounted	Center-mounted	Surface-mounted	For mounting in distribution boards	Rear-mounted
		IP65 at the front	IP65 at the front	IP65	IP30 at the front	IP65 at the front
Front-plate no.	Main circuits/ poles	Part no. Article no.	Part no. Article no.	Part no. Article no.	Part no. Article no.	Part no. Article no.
	1					
	2					
	3					
On/off switches						
	1	T0-1-15401/E 038854	T0-1-15401/EZ 041227	T0-1-15401/I1 207067	T0-1-15401/IVS 045973	T0-1-15401/Z 048346
FS 415	2	T0-1-15402/E 053092	T0-1-15402/EZ 055465	T0-1-15402/I1 207068	T0-1-15402/IVS 060211	T0-1-15402/Z 062584
	3	T0-2-15403/E 067330	T0-2-15403/EZ 069703	T0-2-15403/I1 207088	T0-2-15403/IVS 074449	T0-2-15403/Z 076822
Voltmeter selector switches						
	3 + N	T0-3-8007/E 095813	T0-3-8007/EZ 098186	T0-3-8007/I1 207120	T0-3-8007/IVS 012759	T0-3-8007/Z 015132
FS 1410759						
Ammeter selector switches						
	3	T0-3-8048/E 034116	T0-3-8048/EZ 036489	-	T0-3-8048/IVS 041235	T0-3-8048/Z 043608
FS 9440						
Step switches						
	1	T0-2-8231/E 012750	T0-2-8231/EZ 015123	T0-2-8231/I1 207106	T0-2-8231/IVS 019869	T0-2-8231/Z 022242
FS 606						
	1	T0-2-8241/E 050716	T0-2-8241/EZ 053089	T0-2-8241/I1 207107	T0-2-8241/IVS 057835	T0-2-8241/Z 062581
FS 420						
Changeover switches						
	1	T0-1-15431/E 019872	T0-1-15431/EZ 022245	T0-1-15431/I1 207070	T0-1-15431/IVS 026991	T0-1-15431/Z 029364
FS 1401	2	T0-2-15432/E 034110	T0-2-15432/EZ 036483	T0-2-15432/I1 207091	T0-2-15432/IVS 041229	T0-2-15432/Z 043602
	3	T0-3-15433/E 048348	T0-3-15433/EZ 050721	T0-3-15433/I1 207115	T0-3-15433/IVS 055467	T0-3-15433/Z 057840



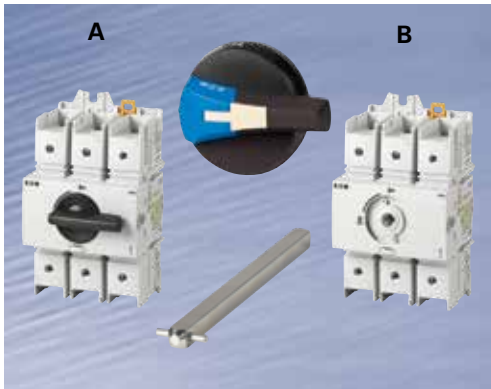
The compact, high-quality switch-disconnectors of the R9 series are tested and approved according to the stringent requirements of the UL 98 standard and offer extremely safe isolation. Versions with 30 A, 60 A and 100 A are available, with a short-circuit withstand rating of 100 kA. The switch-disconnectors of the R9 series have a small footprint and come with direct handles or handles that can be mounted on the control panel as required (including accessories) and thus offer a high degree of modularity and flexibility.

Key features

- Market-leading SCCR: 30 A / 60 A = 100 kA @ 480 V / 600 V 100 A = 100 kA @ 480 V, 25 kA @ 600 V
- Can be mounted on a mounting plate or DIN rail
- Direct handle or door- and side-handle with metal shaft extension
- Interlock and rotary handles with NEMA 4X rating
- Modular accessories that can be quickly mounted, including auxiliary contacts and switchable fourth pole

Benefits

- Modern UL 98 switches with an ultra-compact footprint
- The modular design and screwless accessory mounting system allow for easy installation
- Positive-break indication

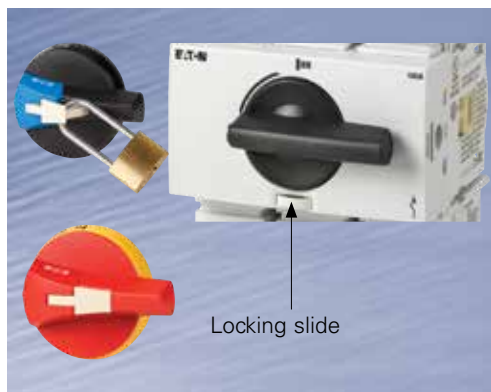


Modular design

The R9 switch-disconnectors offer a compact solution consisting of three different amperage ratings and a matching range of accessories for quick and easy installation.

A Switch-disconnector and handle combination for **direct operation**

B Combination of switch, shaft and external handle for **external operation** from the right or the front of the control panel.



Padlock for protection

Switch-disconnectors with external handles

The combination of external handle and metal shaft extension can be used for front or right-hand operation. If attached to a door, the interlock function prevents users from opening the enclosure while the switch is in the "ON" position. For personal safety and during maintenance work, the handles can be locked in the "OFF" position with up to three padlocks.

The door can be opened in the "ON" position if the locking function is unlocked by means of a tool (authorized persons only). The locking function will be restored once the door is closed again. Red/yellow and black handles are available, and thanks to their NEMA 4X rating, they provide excellent protection in harsh environments.

Direct-mount switch-disconnector

The direct-mount switch can be padlocked to protect operators and prevent accidental reactivation of the load.



Accessories

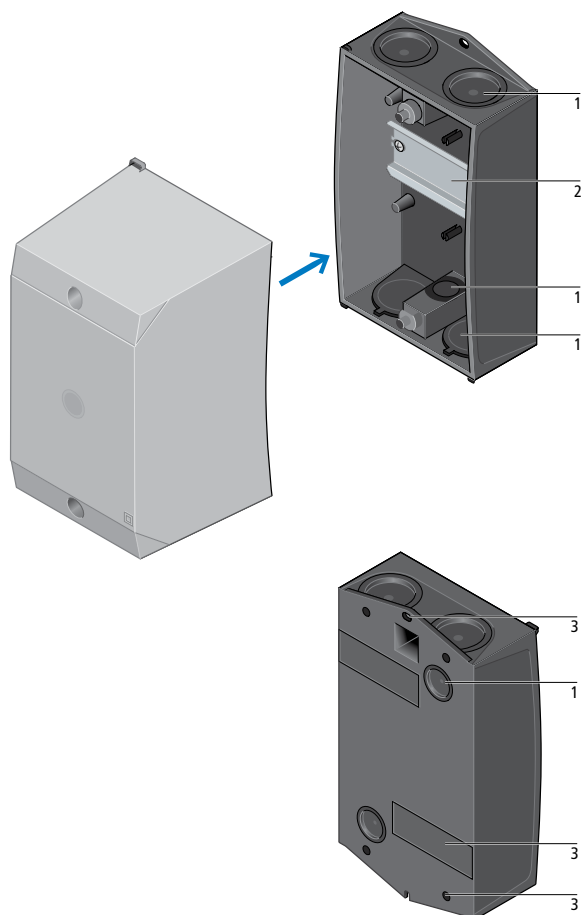
Quick-mount accessories for a wide range of options

The modular design of the R9 series ensures quick and easy installation, with a wide range of accessories. To manage different cabinet depths, metal shafts with three different lengths (up to 320 mm) are available as standard.


Time savings thanks to quick mounting option

A switchable fourth pole can be mounted on the left- or right-hand side without any tools. Furthermore, up to two auxiliary switch modules can be added on the left or right simply by plugging them into the switch, saving installers valuable time.

Matching terminal covers simply snap into place and protect users against contact with active components.

**Degree of protection: IP65**

- 1 Metric cable entries:
push-through diaphragm or hard knockouts
- 2 Mounting systems for basic enclosures:
mounting rail or mounting plate
- 3 Installation:
horizontal and vertical slots for wall mounting,
captive cover screws,
rubber feet to compensate for uneven walls
(in case of CI-K1 and CI-K2)

	Width mm	Height mm	Depth mm	Cable entry	Part no.	Article no.		
CI-K basic enclosures								
With mounting rail to IEC/EN 60715								
	80	120	95	Push-through cable entry diaphragm	CI-K1-95-TS	206881		
	100	160	100		CI-K2-100-TS	206882		
	100	160	145		CI-K2-145-TS	206883		
	80	120	95	Hard knockout version	CI-K1H-95-TS	105853		
	100	160	100		CI-K2H-100-TS	229304		
	100	160	145		CI-K2H-145-TS	229305		
	120	200	125		CI-K3-125-TS	206884		
	120	200	160		CI-K3-160-TS	206885		
	160	240	125		CI-K4-125-TS	206886		
	160	240	160		CI-K4-160-TS	206890		
	200	280	125		CI-K5-125-TS	206891		
	200	280	160		CI-K5-160-TS	206892		
	With adapter plate for small contactors with motor-protective relay							
	100	160	145		Push-through cable entry diaphragm	CI-K2-145-AD	207632	
100	160	145	Hard knockout version	CI-K2H-145-AD	229308			
With mounting plate								
100	160	100	Push-through cable entry diaphragm	CI-K2-100-M	206893			
100	160	145		CI-K2-145-M	206894			
100	160	100	Hard knockout version	CI-K2H-100-M	229306			
100	160	145		CI-K2H-145-M	229307			
120	200	125		CI-K3-125-M	206895			
120	200	160		CI-K3-160-M	206896			
160	240	125		CI-K4-125-M	206897			
160	240	160		CI-K4-160-M	206898			
200	280	125		CI-K5-125-M	206899			
200	280	160		CI-K5-160-M	206900			



Machine and system transformers – the right type of winding for every application



We offer a wide range of control transformers.

All our transformers are built and tested according to IEC/EN 61558.

Depending on the design, they can thus be used in accordance with the international IEC/EN 60204 assembly standard.

We also offer matching, ballast and performance transformers upon request.

In addition, we also offer a large selection of approved transformers for machine and system exports to North America.

Apart from voltage adjustment, transformers can also be used to change the network configuration.

Information for export to North America



Product standards

UL File No.
UL CCN
CSA File No.
CSA Class No.
NA certification
Suitable for
Max. voltage rating
Degree of protection

UL 506; UL5085-1; UL 5085-2; CSA-C22.2 No. 66;
CSA-C22.2 No. 66.1-06; CSA-C22.2 No. 66.2-06;
IEC/EN 61558-2-2; CE marking
E167225
XPTQ2, XPTQ8
UL report applies to both US and Canada
–
UL recognized, certified by UL for use in Canada
branch circuits
600 V AC
IEC: IP00, UL/CSA type: –



Get more information

Transformers: easy to use, powerful performance.

All Eaton transformers are designed to comply with insulation class B according to IEC 85 and IEC 216, which ensures a highly reliable operation temperature of 130° C. In addition, all our transformers come with IP00 degree of protection and have an ambient temperature of -25° to +40° C without

derating. A resin coating protects our transformers against corrosion, improves heat dissipation and also significantly reduces humming. For challenging applications, we also offer a special coating that provides additional protection against humidity and corrosion.

STN control transformers

Our single-purpose STN control transformers ensure reliable operating voltages for control and auxiliary circuits at all times.

Designed according to IEC/EN 61558-2-2, VDE 0570-2-, UL 5085-2 and CSA 22.2 No. 66, our STN control transformers are not only easy to commission and exceptionally reliable but also ensure maximum safety for machinery and systems.

STI, STZ, DTZ control, isolation and safety transformers

Our STI, STZ and DTZ control, isolation and safety transformers are tested and built in accordance with IEC/EN 61558-2-2/2-4/2-6, UL 5085-2 and CSA 22.2 No. 66.

Transformers reduce the effects of short-circuits and provide safe electrical isolation in the event of a fault.

Typical applications include, among others, control circuits, protective isolation, PELV (protective extra-low voltage) circuits and FELV (functional extra-low voltage) circuits.



Single-phase control, isolation and safety transformer



Three-phase control, isolation and safety transformer

UTI multi-winding transformers

Our multi-winding transformers are the most adaptable models in their class and come with extensive approvals, making them ideal for global use. Multi-winding transformers offer the perfect combination of control,

isolation and safety transformer in a single, adaptable device. Our transformers are tested and built according to IEC/EN 61558-2-2/2-4/2-6, UL 5085-2 and CSA 22.2 No. 66.

	Single-phase transformers				Three-phase transformers
	STN	STZ	STI	UTI	DTZ
Control transformer	X	X	X	X	X
Isolation transformer	-	X	X	X	X
Safety transformer	-	X	X	X	X
Multi-winding transformer	-	-	-	X	-
Preferred voltages	X	-	X	-	-
Selectable voltages	X	X	-	-	X
Accessories*					
IP23 enclosures	-	X see p. 6/81	-	-	X see p. 6/81
Screen winding	-	X	-	-	X
Additional taps	-	X see p. 6/81	-	-	X see p. 6/81
Additional windings					
Secondary side	-	X	-	-	-
Primary side	-	Available on request	-	-	-
Approvals					
UL/CSA	X up to 4 kVA	X up to 4 kVA	X up to 4 kVA	X	X up to 6.3 kVA
DNV	Available on request	Available on request	Available on request	Available on request	Available on request

*Additional accessories available at Eaton.com/control-power-transformers



Single-phase control transformer



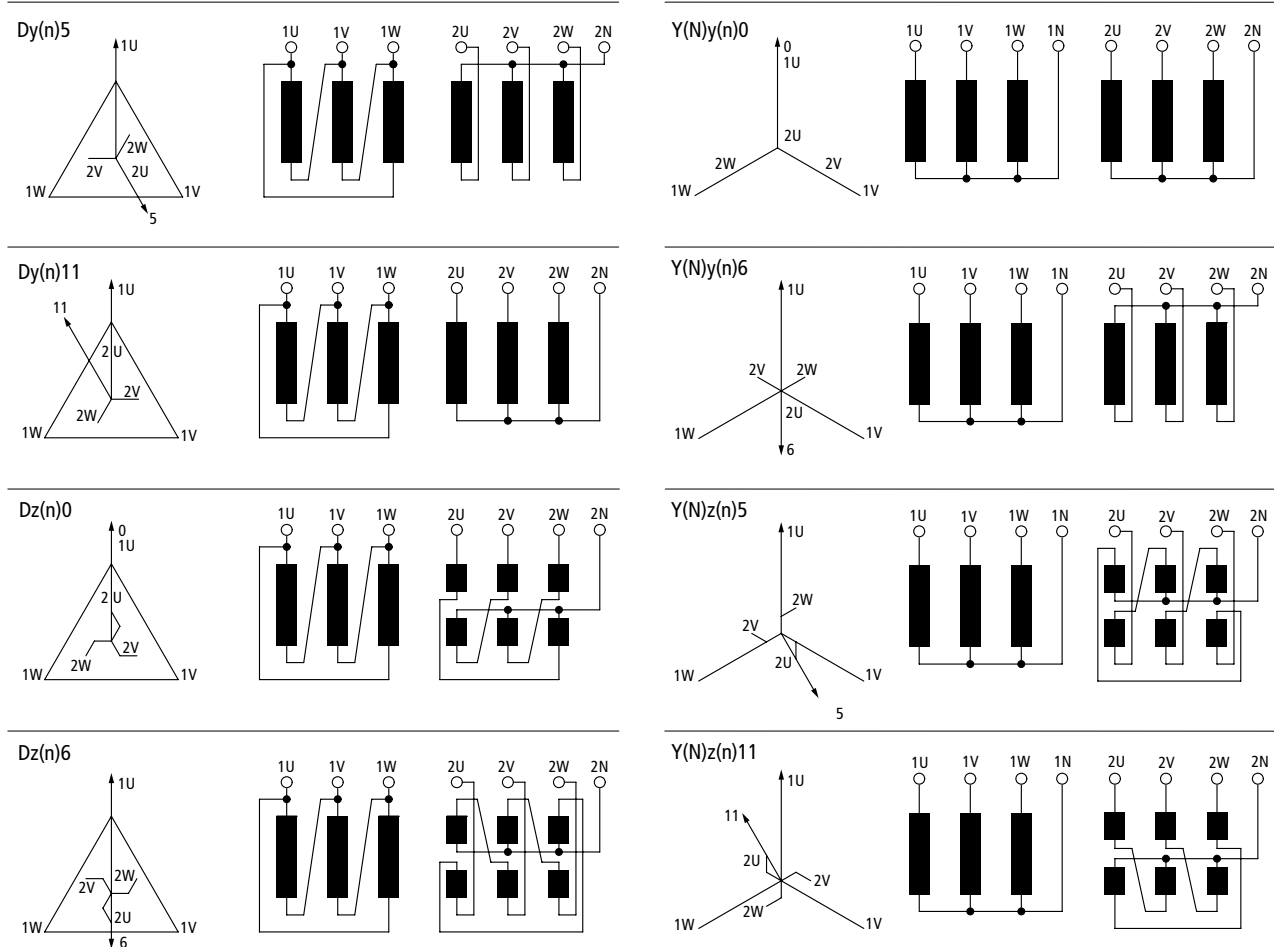
Single-phase multi-winding transformer

Common configurations of three-phase transformers

Different primary and secondary winding circuits (star, delta or zigzag) result in various combination options, in line with the

needs of the application at hand. These are divided into standardized configurations according to EN60076-1.

Additional switching groups on request



The accessible star point is made clear by an added n secondary (N primary) to the switching group. Standard circuit is Yy0.

Circuit of multi-winding transformers

①	③	②	③
U1-1.1 ○ 208	1.1-1.9/1.2-1.3	U2-2.1 ○ 115	2.1-2.4/2.3-2.2
230	1.1-1.8/1.2-1.4	2.3 ○ 230	2.3-2.4
380	1.3-1.0		
400	1.4-1.0		
415	1.3-1.9		
440	1.4-1.9		
460	1.4-1.8		
480	1.5-1.8		
500	1.6-1.8		
525	1.3-1.7		
550	1.4-1.7		
575	1.5-1.7		
600	1.6-1.7		

Determining the continuous rating


The size of the control transformer must be such that it keeps voltage drop within reliable limits even under unfavorable conditions.

The transformer size is calculated by adding the holding powers of all loads that are switched on simultaneously and then multiplying the result by 0.8. If the size of the loads is approximately the same, the cumulative inrush currents of all loads that are switched on at the same time must be added to the cumulative holding currents and the result multiplied by 0.8.


Determining the short-time rating

If large contactors need to be switched, the selection of the control transformer should be based on the short-time rating, which will reduce the required transformer power in most cases.

Care should be taken to ensure that the holding power does not exceed the continuous rating.

	Rated power	Short-time rating	Preferred voltage: 400/230 V		Preferred voltage: 400/24 V		Preferred voltage: 230/24 V	
	kVA	kVA	Part no.	Article no.	Part no.	Article no.	Part no.	Article no.
STN single-phase control transformers with preferred voltages								
	0.06	0.095	STN0,06(400/230)	204936	STN0,06(400/24)	204937	STN0,06(230/24)	204935
	0.1	0.16	STN0,1(400/230)	204942	STN0,1(400/24)	204943	STN0,1(230/24)	204941
	0.16	0.32	STN0,16(400/230)	204948	STN0,16(400/24)	204949	STN0,16(230/24)	204947
	0.2	0.38	STN0,2(400/230)	204977	STN0,2(400/24)	204978	STN0,2(230/24)	204976
	0.25	0.44	STN0,25(400/230)	204980	STN0,25(400/24)	221509	STN0,25(230/24)	221508
	0.315	0.6	STN0,315(400/230)	204982	STN0,315(400/24)	221511	STN0,315(230/24)	221510
	0.4	0.62	STN0,4(400/230)	204984	STN0,4(400/24)	221514	STN0,4(230/24)	221513
	0.5	0.88	STN0,5(400/230)	204986	STN0,5(400/24)	221516	STN0,5(230/24)	221515
	0.63	1.51	STN0,63(400/230)	204988	STN0,63(400/24)	221518	STN0,63(230/24)	221517
	0.8	2.25	STN0,8(400/230)	204990	STN0,8(400/24)	221520	STN0,8(230/24)	221519
	1	3.28	STN1,0(400/230)	204992	STN1,0(400/24)	221522	STN1,0(230/24)	221521
	1.3	4.8	STN1,3(400/230)	221523				
	1.6	3.98	STN1,6(400/230)	221524				
	2	5.75	STN2,0(400/230)	221525				
	2.5	7.24	STN2,5(400/230)	221526				
	3	8.36	STN3,0(400/230)	221527				
	4	12.2	STN4,0(400/230)	221528				

IEC/EN 61558-2-2
VDE 0570 Part 2-2
Rated input voltage
230 ± 5 % V,
400 ± 5 % V
Rated output voltage
24 V, 230 V

	Rated power	Short-time rating		
	kVA	kVA	Part no.	Article no.
STZ single-phase control transformers with preferred voltages				
	0.06	0.13	STZ0,06(*/*)	914761
	0.1	0.24	STZ0,1(*/*)	914762
	0.16	0.36	STZ0,16(*/*)	914763
	0.2	0.44	STZ0,2(*/*)	914764
	0.25	0.6	STZ0,25(*/*)	914765
	0.315	0.75	STZ0,315(*/*)	914766
	0.4	1.1	STZ0,4(*/*)	914767
	0.5	1.6	STZ0,5(*/*)	914768
	0.63	1.7	STZ0,63(*/*)	914769
	0.8	2	STZ0,8(*/*)	914770
	1	2.8 kW	STZ1,0(*/*)	914771
	1.3	3.7	STZ1,3(*/*)	914772
	1.6	5.5	STZ1,6(*/*)	914773
	2	7	STZ2,0(*/*)	914774
	2.5	9	STZ2,5(*/*)	914775
	3	11.5	STZ3,0(*/*)	914776
	4	15	STZ4,0(*/*)	914777
	5.3	13	STZ5,3(*/*)	201060
	8.3	21	STZ8,3(*/*)	201062
	13.3	34	STZ13,3(*/*)	201064

Ordering example

The following details must be added to the part number when ordering:

STZ0,06(*/*)

First place holder * = rated input voltage
Second place holder * = rated output voltage

- Desired type: STZ0,06
- Desired rated input voltage: 230 V
- Desired rated output voltage: 12 V

The correct part no. is


STZ0,06(230/12)

Caution:

If devices with preferred voltages of 400/230 V, 400/24 V, 230/230 V and 230/24 V are ordered and no additional options (such as screen winding) are specified, the STI version will be supplied.

Control, isolation and safety transformers

DTZ, STI



IEC/EN 61558-2-2/2-4/2-6
VDE 0570 Part 2-2,
Part 2-6 (safety transformers),
Part 2-4 (isolating transformers)
Rated input voltage 50 – 950 ± 5 % V,
Rated output voltage 18.5 – 1000 V

DTZ three-phase control, isolation and safety transformers

	Rated power	Short-time rating	Part no.	Article no.
	kVA	kVA		
	0.1	0.2	DTZ0,1(*/*)*	914799
	0.16	0.32	DTZ0,16(*/*)*	914800
	0.25	0.5	DTZ0,25(*/*)*	914801
	0.4	0.8	DTZ0,4(*/*)*	914802
	0.5	1	DTZ0,5(*/*)*	914803
	0.63	1.38	DTZ0,63(*/*)*	914804
	1	2.2	DTZ1,0(*/*)*	914805
	1.6	3.5	DTZ1,6(*/*)*	914806
	2	4.4	DTZ2,0(*/*)*	914807
	2.5	5.5	DTZ2,5(*/*)*	914808
	4	6.2	DTZ4,0(*/*)*	914809
	6.3	15.7	DTZ6,3(*/*)*	914810
	8	20	DTZ8,0(*/*)*	914811
	10	25	DTZ10(*/*)*	914812
	12.5	31	DTZ12,5(*/*)*	914813
	16	40	DTZ16(*/*)*	914814
	20	50	DTZ20(*/*)*	914815
	25	62	DTZ25(*/*)*	914816

Ordering example

The following details must be added to the part number when ordering:

DTZ0,1(*/*)

First place holder *= rated input voltage
 Second place holder *= rated output voltage

- Desired type: DTZ0,1

IEC/EN 61558-2-2/2-4/2-6
VDE 0570 Part 2-2,
Part 2-6 (safety transformers),
Part 2-4 (isolating transformers)
Rated input voltage 50 – 950 ± 5 % V,
Rated output voltage 18.5 – 1000 V

Ordering example

The following details must be added to the part number when ordering:

DTZ0,1(*/*)

First place holder * = rated input voltage
Second place holder * = rated output voltage

- Desired type: DTZ0,1
- Desired rated input voltage: 200 V
- Desired rated output voltage: 18.5 V

The correct part no. is


DTZ0,1(200/18,5)DY(N)5

Rated power	Short-time rating	Preferred voltage: 400/230 V		Preferred voltage: 400/24 V		Preferred voltage: 230/230 V		Preferred voltage: 230/24 V	
		Part no.	Article no.	Part no.	Article no.	Part no.	Article no.	Part no.	Article no.
kVA	kVA								

STI control, isolation and safety transformers


	0.06	0.13	STI0,06(400/230)	029975	STI0,06(400/24)	029971	STI0,06(230/230)	029968	STI0,06(230/24)	029977
	0.1	0.24	STI0,1(400/230)	046630	STI0,1(400/24)	046631	STI0,1(230/230)	029976	STI0,1(230/24)	046629
	0.16	0.36	STI0,16(400/230)	046633	STI0,16(400/24)	046634	STI0,16(230/230)	035247	STI0,16(230/24)	046632
	0.2	0.44	STI0,2(400/230)	046636	STI0,2(400/24)	046637	STI0,2(230/230)	035248	STI0,2(230/24)	046635
	0.25	0.6	STI0,25(400/230)	046638	STI0,25(400/24)	035249	STI0,25(230/230)	036400	STI0,25(230/24)	035262
	0.315	0.75	STI0,315(400/230)	046639	STI0,315(400/24)	035250	STI0,315(230/230)	040641	STI0,315(230/24)	036292
	0.4	1.1	STI0,4(400/230)	046640	STI0,4(400/24)	035251	STI0,4(230/230)	040642	STI0,4(230/24)	036393
	0.5	1.6	STI0,5(400/230)	046641	STI0,5(400/24)	035252	STI0,5(230/230)	040643	STI0,5(230/24)	036394
	0.63	1.7	STI0,63(400/230)	046883	STI0,63(400/24)	035253	STI0,63(230/230)	040644	STI0,63(230/24)	036395
	0.8	2	STI0,8(400/230)	046889	STI0,8(400/24)	035254	STI0,8(230/230)	046641	STI0,8(230/24)	036396
	1	2.8 kW	STI1,0(400/230)	046895	STI1,0(400/24)	035255	STI1,0(230/230)	026642	STI1,0(230/24)	036397
	1.3	3.7	STI1,3(400/230)	046918			STI1,3(230/230)	025256		
	1.6	5.5	STI1,6(400/230)	046952			STI1,6(230/230)	035257		
	2	7	STI2,0(400/230)	035258			STI2,0(230/230)	036398		
	2.5	9	STI2,5(400/230)	035259			STI2,5(230/230)	036399		
	3	11.5	STI3,0(400/230)	035260						
	4	15	STI4,0(400/230)	035261						

IEC/EN 61558-2-2/2-4/2-6
VDE 0570 Part 2-2, Part 2-6
(safety transformers), Part
2-4 (isolating transformers)
Rated input voltage
230 ± 5 % V, 400 ± 5 % V
Rated output voltage 24,
230 V

	Rated power kVA	Rated input vol- tage V	Rated output voltage V	Part no.	Article no.
Single-phase multi-winding transformers					
	0.1	208 - 600	2 x 115	UT10,1-115	206923
	0.2			UT10,2-115	206924
	0.315			UT10,315-115	206925
	0.5			UT10,5-115	206926
	0.63			UT10,63-115	206927
	0.8			UT10,8-115	206928
	1			UT11,0-115	206929
(Universal) control, isolation and safety transformers according to VDE 0550, IEC/EN 61558-2-2/2-4/2-6 VDE 0570 Part 2-2, Part 2-6 (safety transformers), Part 2-4 (isolating transformers)					

Accessories

Current range	For use with	Part. no. suffix	Notes
A		Article number if ordered together with base unit	
Additional taps			
If the rated input or output voltage deviates by more than $\pm 10\%$:			
• Ask about the size of the transformer			
• Indicate the power split in addition to the tap			
< 16	STZ	Primary side	Single-phase transformers
			+ZA16P(*) 931897
			Selecting the correct tap Ordering example for single-phase transformers: • Selected transformer: STZ0,25(400/24) • Required voltage of the additional tap: 22 V • The current for selecting the tap is calculated as follows: $I = S/U$ I = current S = apparent power U = tap voltage $I = 250/22 = 11.4 \text{ A} \rightarrow +ZA16$ The correct part-number suffix for the secondary-side tap is the following: +ZA16S(22) An additional tap on the primary side must be determined in the same way.
< 16	STZ	Secondary side	Single-phase transformers
			+ZA16S(*) 931895
			Selecting the correct tap Ordering example for three-phase transformers: • Selected transformer: DTZ0,25(400/24) • Required voltage of the additional tap: 22 V • The current for selecting the tap is calculated as follows: $I = S/(\sqrt{3} \times U)$ I = current S = apparent power U = tap voltage $I = 250/(\sqrt{3} \times 22) = 6.6 \text{ A} \rightarrow +DZA16$ The correct part-number suffix for the secondary-side tap is the following: +DZA16S(22) An additional tap on the primary side must be determined in the same way.
< 16	DTZ	Primary side	Three-phase transformers
			+DZA16P(*) 930200
< 16	DTZ	Secondary side	Three-phase transformers
			+DZA16S(*) 200406

	For use with	Part. no. suffix	Article no.	Notes
IP23 enclosures				
	STZ0,06 ... STZ0,16	+IP23/01	200618	These enclosures can be used with primary or secondary voltages > 110 V; smaller voltages available on request
	STZ0,2 ... STZ0,5	+IP23/02	200623	
	STZ0,63 ... STZ1,3	+IP23/03	200624	
	STZ1,6 ... STZ2,0	+IP23/04	226100	
	STZ5,3 ... STZ8,3	+IP23/05	200648	
	STZ13,3	+IP23/06	200649	
	STZ2,5 ... STZ4,0	+IP23/32A	200763	These enclosures can be used with primary or secondary voltages from 42 V to max. 1000 V including taps.
	DTZ1,0 ... DTZ2,0			
	DTZ0,1 ... DTZ0,16	+IP23/30	200706	
	DTZ0,25 ... DTZ0,63	+IP23/31	200753	
	DTZ2,5 ... DTZ6,3	+IP23/33	200754	
	DTZ8,0 ... DTZ25	+IP23/34	200755	



CS sheet-steel wall-mount enclosures – safe, reliable and efficient

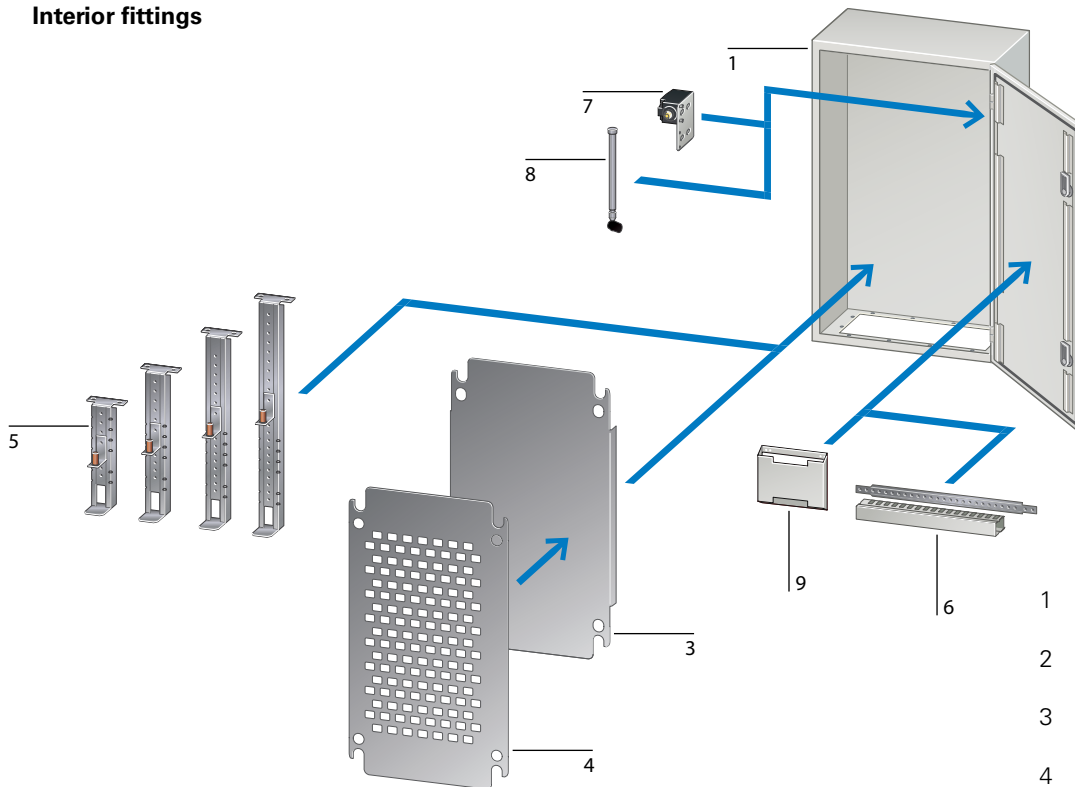


The second generation of our CS sheet steel enclosure series is characterized by maximum stability and can be used wherever special protection is required, be it effective protection against direct contact with active parts or protection of installed equipment against harmful external factors such as liquids. The high degree of protection (IP66, UL/CSA Types 1, 4, 12) provided by a continuous polyurethane foam gasket prevents water, oil and dirt from entering the enclosures. This makes the CS enclosure series ideal for sub-distribution boards in control systems in industrial and functional buildings as well as machine-building applications. The rugged sheet-steel enclosure meets the requirements of IEC/EN 62208 and is approved for use in switchgear and controlgear assemblies in accordance with IEC/EN 61439-2.



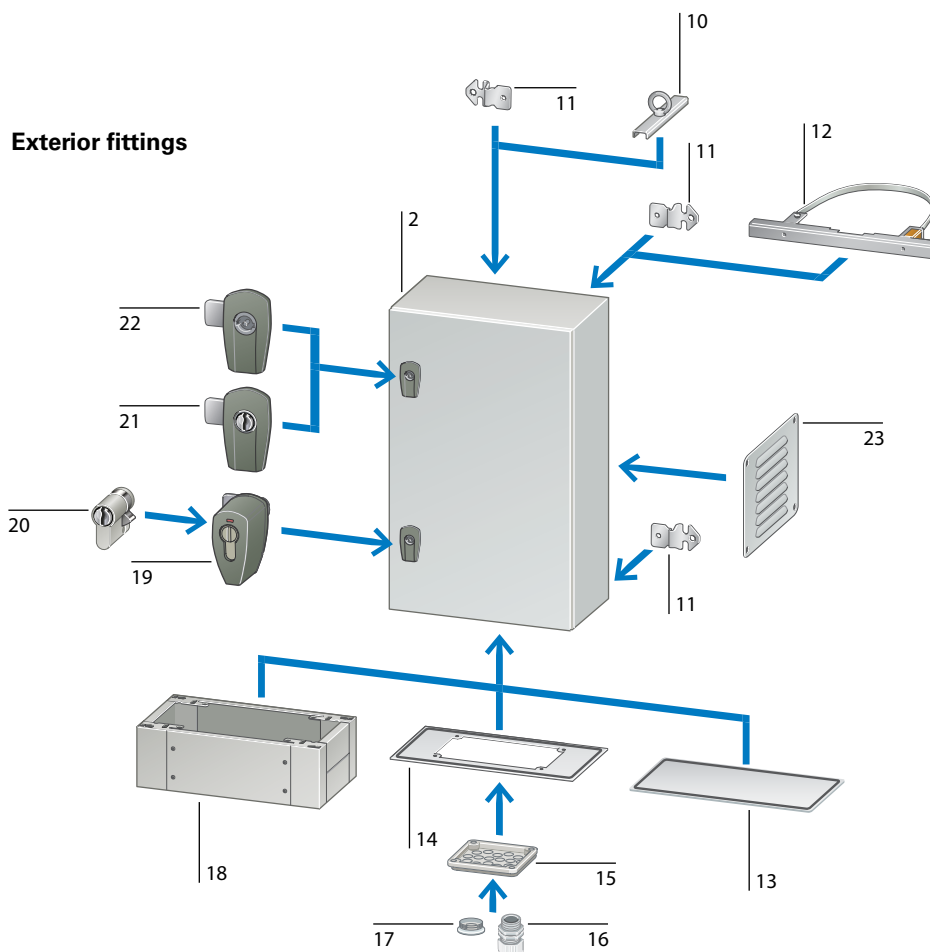
Get more information

Interior fittings



- 1 CSsheet steel wall-mount enclosure (interior fittings)
- 2 CS sheet steel wall-mount enclosure (exterior fittings)
- 3 Mounting plate, unperforated, galvanized
- 4 Mounting plate, perforated, galvanized, for cage nuts
- 5 Depth adjustment elements for mounting plates
- 6 Mounting bars for door rails and cable ducts
- 7 Universal brackets for door-contact switches and cable-conduit holders
- 8 Quick-change hinge pin
- 9 Circuit diagram pocket made from insulating material
- 10 Lift eye kit with rail bracket
- 11 Wall-mounting brackets
- 12 Pole attachment
- 13 Bottom plates without apertures
- 14 Bottom plates with apertures for F3A flanges
- 15 F3A flanges
- 16 Metric cable gland metric ventilation cable gland
- 17 Metric diaphragm grommet, cable grommet
- 18 Cable interconnect frame
- 19 Bolt for half-cylinder lock, with comfort rotary handle
- 20 Cylinder lock
- 21 Lock with insert and lock cylinder
- 22 Lock with insert and two-way key bit
- 23 Ventilation louver

Exterior fittings



Overview of technical advantages

① Gutter rail



② Continuous foam gasket



③ Sturdy enclosure design



④ Wall-mounting brackets



⑫ RAL 7035



⑤ Standardized locking system



⑥ PHZ-A comfort rotary handle



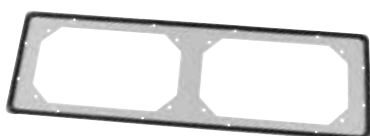
⑪ Mounting plate



⑦ Door rail



⑩ Flange plates



⑨ Quick-change hinge pin



⑧ Accessories



1 Gutter rail

The continuous polyurethane foam gasket ensures that the enclosure is tightly sealed. A gutter rail around the edges prevents the ingress of liquids such as water or oil and protects against dirt when the door is opened.

2 Continuous foam gasket

The high degree of protection (IP66) ensures full safety of the equipment inside the enclosure under almost all environmental conditions, thanks in part to the continuous polyurethane foam gasket.

3 Sturdy enclosure design

The sturdy enclosures are made from solid, high-quality sheet steel and provide effective protection against direct contact with active parts. The rear panel is equipped with 10 mm holes for wall mounting, while two M6 threaded weld studs on the inside can be used for protective earth connections. Thanks to the IK09 impact rating according to EN 62262, the cabinet interior is effectively protected against mechanical damage. Choose from a selection of 45 enclosure sizes ranging from 250 x 200 x 150 mm to 1200 x 1200 x 250 mm. Since the enclosure is designed so that it can be rotated by 180° when mounted, the cables can be inserted either from above or below.

4 Wall-mounting brackets

The innovative WFB-SET-CS wall mounting bracket also makes it possible to attach the control cabinet to any wall, both vertically and horizontally.

5 Standardized locking system

In addition, the new impact-resistant latches, which are made entirely of metal, provide even more safety.

6 PHZ-A comfort rotary handle

One of the highlights is the PHZ-A comfort rotary handle with lock position indicator, which can accommodate all standard half cylinder locks. Another noteworthy feature is the lock-position indicator, which makes it possible to see from the outside whether the cylinder is in the open or locked position. The PHZ-A can also be quickly retrofitted without having to remove the standard lock of the CS wall-mount enclosure, thereby avoiding the labor-intensive use of swing levers.

7 Door rail

The door rail comes with perforations at 25 mm intervals, which can be used to fasten DIN mounting rails or to fix conduits and cables. The precision-fit mounting bars for door rails enable the fastening of cable ducts without any drilling.

8 Accessories

The CS wall-mount enclosures offer maximum versatility, thanks to the useful range of accessories, including depth adjustment elements for adjusting the height of the mounting plate.

Included accessories:

- Mounting plate with fasteners
- Flange plate with fasteners
- Sealing plugs for closing the wall mounting holes
- Fasteners for protective earth connection
- 1 key

9 Quick-change hinge pin

The new quick-change hinge pins can be quickly replaced, as each metal pin can be easily removed without any tools, thereby preventing damage to the door gasket.

10 Flange plates

The large flange-plate apertures enable greater flexibility. Thanks to the foam gasket, the flange plates also eliminate the tedious and time-consuming process of gluing on foam rubber gaskets, thereby saving valuable time. Both the flange and mounting plates are integrated into the grounding system, which eliminates the need for an additional protective earth connection. As a special service, we also offer tailor-made solutions to meet specific customer requirements.

11 Mounting plate

The three-millimeter mounting plate is made from galvanized sheet steel and thus ensures safe installation of the switchgear and basic electromagnetic compatibility protection. The two-millimeter mounting plate for small enclosures, which can be inserted quickly and without jamming, enables safe installation of the switchgear as well as basic EMC protection.



12 RAL 7035

A powder-coated finish (textured surface) in RAL 7035 provides surface and corrosion protection both inside and out.



CS sheet-steel wall-mount enclosures

CS wall-mount enclosures

Moeller series

	Dimensions			Locks	Door rail	Flange plates		Mounting plates		Part no. Article no.
	Height mm	Width mm	Depth mm	Quantity	Quantity	Width mm	Depth mm	Height mm	Width mm	
Wall-mount enclosures with mounting plate										
Degree of protection: IP66 Continuous polyurethane foam gasket Impact resistance: IK09 to EN 62262 Sheet-steel mounting plate Bottom plate with foam gasket Single door; door stop on the right; door opening angle: 120° Quick-change door hinge pins Standardized locking system with sash fastener RAL 7035 powder-coated both inside and out										
	250	200	150	1	1	112	167	220	150	CS-2520/150 111646
	300	200	150	1	1	112	167	270	150	CS-32/150 111647
	300	300	150	1	2	112	232	270	250	CS-33/150 111648
	300	300	200	1	2	172	262	270	250	CS-33/200 111649
	300	400	200	1	2	172	332	270	350	CS-34/200 111680
	400	300	150	1	2	112	232	370	250	CS-43/150 111681
	400	300	200	1	2	172	262	370	250	CS-43/200 111682
	400	400	150	1	2	112	332	370	350	CS-44/150 111683
	400	400	200	1	2	172	332	370	350	CS-44/200 111684
	400	600	200	1	2	172	532	370	550	CS-46/200 111685
	400	600	250	1	2	172	532	370	550	CS-46/250 111686
	400	600	300	1	2	172	532	370	550	CS-46/300 111687
	500	400	150	2	2	112	332	470	350	CS-54/150 111688
	500	400	200	2	2	172	332	470	350	CS-54/200 111689
	500	400	250	2	2	172	332	470	350	CS-54/250 111690
	500	500	250	2	2	172	432	470	450	CS-55/250 111691
	600	400	150	2	2	112	332	570	350	CS-64/150 111692
	600	400	200	2	2	172	332	570	350	CS-64/200 111693
	600	400	250	2	2	172	332	570	350	CS-64/250 111694
	600	500	150	2	2	112	332	570	450	CS-65/150 111695
	600	500	200	2	2	172	432	570	450	CS-65/200 111696
	600	500	250	2	2	172	432	570	450	CS-65/250 111697
	600	600	200	2	2	172	532	570	550	CS-66/200 111698
	600	600	250	2	2	172	532	570	550	CS-66/250 111699
	600	600	300	2	2	172	532	570	550	CS-66/300 111700
	600	800	300	2	2	172	732	570	750	CS-68/300 111701
	700	500	200	2	2	172	432	670	450	CS-75/200 111702
	700	500	250	2	2	172	432	670	450	CS-75/250 111703
	800	400	200	2	2	172	332	770	350	CS-84/200 111704
	800	400	250	2	2	172	332	770	350	CS-84/250 111705







	Dimensions			Locks	Door rail	Flange plates		Mounting plates		Part no. Article no.
	Height mm	Width mm	Depth mm	Quantity	Quantity	Width mm	Depth mm	Height mm	Width mm	
Wall-mount enclosures with mounting plate										
	800	600	200	2	2	172	532	770	550	CS-86/200 111706
	800	600	250	2	2	172	532	770	550	CS-86/250 111707
	800	600	300	2	2	172	532	770	550	CS-86/300 111708
	800	800	200	2	2	172	732	770	750	CS-88/200 111709
	800	800	300	2	2	172	732	770	750	CS-88/300 111710
	800	1000	300	2	2	172	932	770	950	CS-810/300 111711
	1000	600	250	1 (3-point)	2	172	532	970	550	CS-106/250 111712
	1000	600	300	1 (3-point)	2	172	532	970	550	CS-106/300 111713
	1000	800	250	1 (3-point)	2	172	732	970	750	CS-108/250 111714
	1000	800	300	1 (3-point)	2	172	732	970	750	CS-108/300 111715
	1000	1000	300	1 (3-point)	2	172	932	970	950	CS-1010/300 111716
	1200	600	250	1 (3-point)	2	172	532	1170	550	CS-126/250 111717
	1200	800	300	1 (3-point)	2	172	732	1170	750	CS-128/300 111718
	1200	1000	300	1 (3-point)	2	172	932	1170	950	CS-1210/300 111719
	1200	1200	250	1 (3-point)	2	2 x 172	532	1170	1150	CS-1212/250 111720

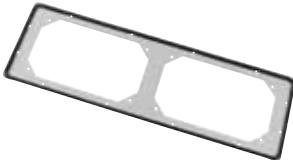

	For use with enclosures Width mm	Depth mm	Part no. Article no.
Mounting bars for door rails and cable ducts			
For mounting on vertical door rails For screwless mounting of KL... cable ducts; snaps onto the back of cable duct covers M6 fixing holes every 25 mm Galvanized sheet steel			
	300	-	MTR-D3-CS 140530
	400	-	MTR-D4-CS 140531
	500	-	MTR-D5-CS 140532
	600	-	MTR-D6-CS 140533
	800	-	MTR-D8-CS 140534
Depth adjustment elements			
Depth can be adjusted in 25 mm increments Galvanized sheet steel Includes fasteners			
	-	150	DAS-SET/150-CS 138656
	-	200	DAS-SET/200-CS 138657
	-	250	DAS-SET/250-CS 138658
	-	300	DAS-SET/300-CS 138659












CS sheet-steel wall-mount enclosures

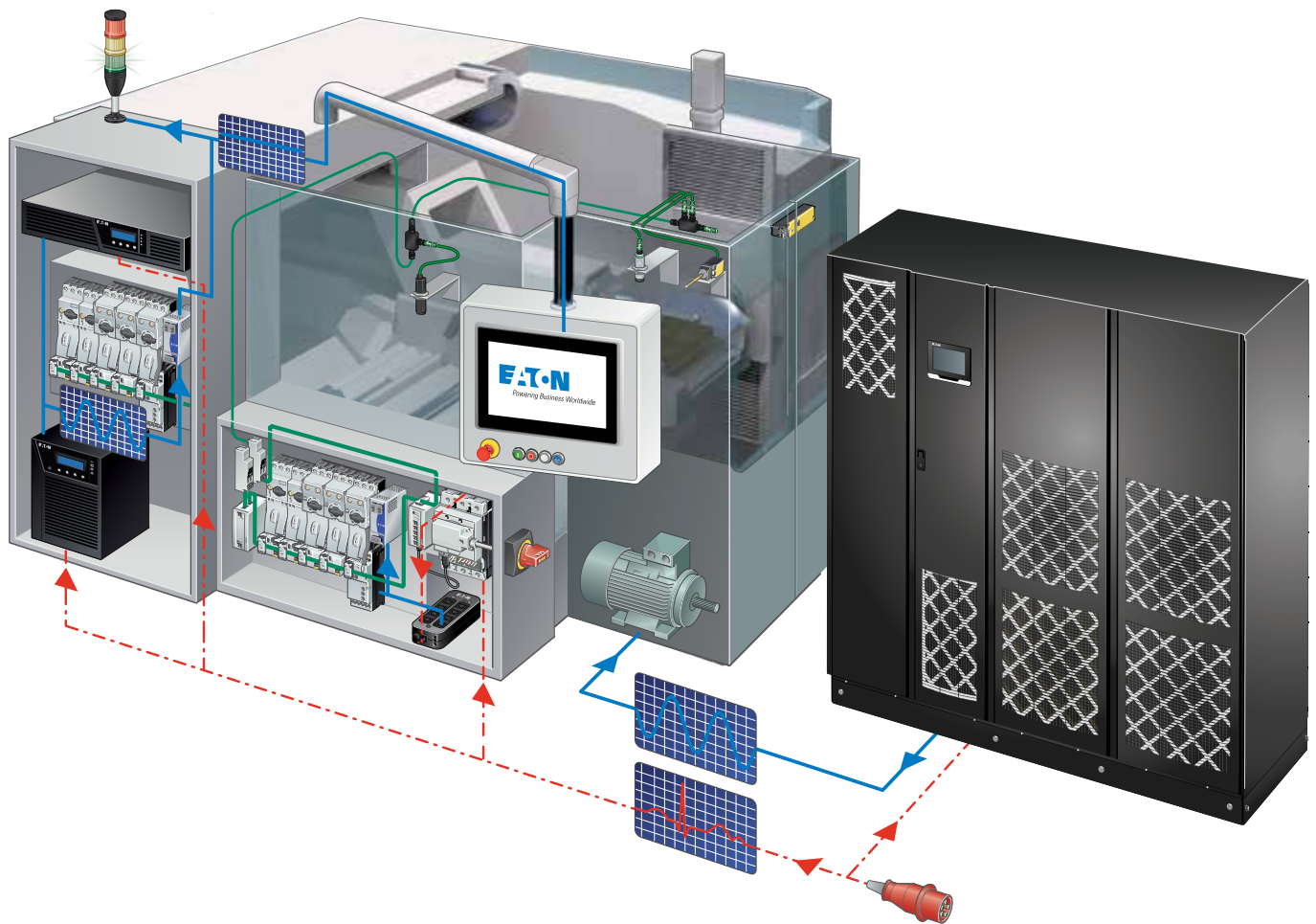
Accessories for exterior fitting

Moeller series

Description		Part no. Article no.
Wall-mounting bracket kit For mounting the enclosure on a wall For vertical or horizontal mounting Galvanized sheet steel, 3 mm thick Each kit contains four wall-mounting brackets including fasteners and an IP66 gasket		
		WFB-SET-CS 112639
Comfort rotary handles Rotary handle that can accommodate all standardized cylinder locks Complete kit With integrated lock-position indicator Suitable for all LC-... universal locks Handle made from high-grade, impact-resistant pressure-cast zinc For standardized 22.5 x 20.4 mm door cutouts Dusty grey RAL 7037, powder-coated		
		PHZ-A-COMP 133105
		PHZ-A-ADD-ON 133106
Cylinder locks for comfort rotary handles For use with comfort rotary and toggle handles Lock cylinder to DIN 18252 and DIN EN 1303 10/30-cylinder lock with nickel-silver tumblers Lock bit with eight adjustable positions, five pin pairs		
		PHZ-E10/30-GS 138574
		PHZ-E10/30-VS 138575
Spare key for half-cylinder locks PHZ-E...-GS half-cylinder locks		
		KEY-E10/30-GS 138576

For use with enclosures			Flange apertures	Part no.	Article no.
Width	Depth	Quantity			
mm	mm				
Bottom plates with flange apertures					
For F3A flanges					
Can also be used as a top plate by turning the enclosure by 180°					
Not suitable for CS-.../150 enclosures					
Material: sheet steel					
Surface finish: RAL 7035 powder-coated					
	300	-	1	AFP-3-CS	112914
	400	-	1	AFP-4-CS	112915
	500	-	1	AFP-5-CS	112916
	600	-	2	AFP-6-CS	112917
	800	-	3	AFP-8-CS	112918
	1000	-	3	AFP-10-CS	112919
	1200	-	2 x 2	AFP-12-CS	112920
Cable marshalling bases					
Height: 200 mm					
Sheet steel, RAL 7035 powder-coated					
With removable front and side panels					
Includes fasteners					
	600	250	-	PLI-6/250-200-CS	140472
	600	300	-	PLI-6/300-200-CS	140473
	800	250	-	PLI-8/250-200-CS	140474
	800	300	-	PLI-8/300-200-CS	140475
	1000	300	-	PLI-10/300-200-CS	140476
	1200	250	-	PLI-12/250-200-CS	140477

	Material	Description	Cable entry	Part no.	Article no.
Flanges					
	Insulating material	Blind flange without knock-outs	-	F3A-2K-0	EP-501496
	Insulating material	Membrane flange (push-through cable entry)	44 cables Ø 3-14mm 4 cables Ø 3-21mm 2 cables Ø 3-30mm	F3A-2K-D30/3	EP-501497
	Insulating material	Membrane flange (push-through cable entry)	7 cables Ø 3-20mm 4 cables Ø 3-32mm 3 cables Ø 3-50mm	F3A-2K-D50/3	EP-501498
	Insulating material	Membrane flange (push-through cable entry)	9 cables Ø 3-20mm 1 cables Ø 3-40mm 2 cables Ø 3-70mm	F3A-2K-D70/3	EP-501499
	Insulating material	Blind flange with knock-outs	24 cable glands M16 13 cable glands M20	F3A-2K-M20/16	EP-501500
	Insulating material	Blind flange with knock-outs	4 cable glands M16 6 cable glands M25/16 8 cable glands M32/20	F3A-2K-M32/16	EP-501501
	Insulating material	Blind flange with knock-outs	2 cable glands M20 8 cable glands M25/16 4 cable glands M32/20 1 cable gland M50/32	F3A-2K-M50/16-1	EP-501502
	Insulating material	Blind flange with knock-outs	2 cable glands M16 12 cable glands M20 2 cable glands M40/25 2 cable glands M50/32	F3A-2K-M50/16-2	EP-501503
	Sheet steel	Blind flange	-	F3A-XP	113426
	Sheet steel	Blind flange with knock-outs	9 cable glands M20 2 cable glands M40/32 2 cable glands M50/40	F3A-XP-M50/40	187862
	Sheet steel	Blind flange with knock-outs	10 cable glands M16 12 cable glands M20	F3A-XP-M20/16	187863



Using UPS systems to increase machine availability



Performance software supports the intelligent monitoring, management and soft shutdown of distributed UPSs.

Visit www.eaton.com/intelligentpower to watch our demo videos and download the software.

For most companies in the manufacturing sector, maintaining the availability of machinery and equipment is a top priority. Downtime, data loss and the need to reset machines and systems represent a significant cost in terms of both time and money.

To mitigate these issues, we offer safety and monitoring systems that prevent and counteract power interruptions and power failures.

Particularly in view of the increasing use of green power and the associated reduction in power quality, safety and monitoring systems are required to bridge power fluctuations and power failures and automatically take emergency measures.

The purpose of these systems is to shorten start-up and process runtimes while reducing energy consumption and increasing efficiency.



Eaton UPS systems ensure comprehensive protection at all times

Ensuring the reliability of production processes

- Preventing downtime
- Reducing start-up times

Protecting employees

- Maintaining the functionality of safety functions and circuit breakers
- Increasing operational machine safety

Protection of machines

- Protecting sensitive electronic components from power outages and "dirty" power

Protection of products

- Maintaining the functionality of cooling and refrigeration systems until the back-up power comes on

Environmental protection

- Increasing machine effectiveness and energy savings
- Due to growth in the use of renewable energy sources, the power grid is expected to become less stable. Our UPS systems "clean" and secure the voltage and bridge periods of power outage. This is our contribution to making your power grid more stable and environmentally friendly.


Protection of buildings

- Maintaining the functionality of safety-related measures such as process monitoring in biogas plants or the monitoring buildings.

Data protection







- Preventing data loss due to power failures
- Lower operating costs -> higher economic efficiency

For more information about our high-quality power technology products, visit www.eaton.eu/powerquality.

Type of power quality issue	Solution	Topology	Product details	
Power outage	Series 3 single-phase UPSs	Offline	<ul style="list-style-type: none">• Cost-effective• Compact design• Plug with protective contact (SCHUKO)• Replaceable batteries• 500 – 1600 VA	
Voltage dip				
Overvoltage peaks				
Undervoltage (voltage drop)	Series 5 single-phase UPSs	Line interactive	<ul style="list-style-type: none">• Highly compact design• Graphic LCD display• Energy consumption metering• Up to 99 % efficiency• Replaceable batteries• 500 – 3000 VA	
Overvoltage				
Electrical interference	Series 9 single- and three-phase UPSs	Online	<ul style="list-style-type: none">• Maximum voltage protection• Multi-language graphic display• Remote monitoring• 700 VA–1200 kVA	
Frequency instability				
Peaks caused by switching operations				
Harmonic distortion (harmonics)				




Uninterruptible power supplies (UPSs)


Single-phase UPSs

	UPS rating	UPS rating	Inputconnection	Output connections	Article no.
	VA	W	Type	Quantity / type	
Eaton 5P line-interactive UPS					
Connectivity: USB, serial port, slot for optional management cards					
Remote power off, remote on/off					
Output contacts: three optocouplers					
	650	420	IEC320 10 A	4 x IEC320 10 A	5P650I
	850	600		6 x IEC320 10 A	5P850I
	1150	770		8 x IEC320 10 A	5P1150I
	1550	1100			5P650IR
	650	420	IEC320 10 A	4 x IEC320 10 A	5P650IR
	850	600			5P850IR
	1150	770		6 x IEC320 10 A	5P1150IR
	1550	1100			5P1550IR
Eaton 5PX line-interactive UPS					
Connectivity: USB, serial port, slot for optional management card (network management card included with 5PX3000iRTN)					
Remote power off, remote on/off					
Output contacts: three optocouplers					
	1500	1350	IEC320 10 A	8 x IEC320 10 A	5PX1500IRT
	2200	1980	IEC320 16 A	8 x IEC320 10 A, 1 x IEC320 16 A	5PX2200IRT
	3000	2700			5PX3000IRTN
	3000	2700	IEC320 16 A	8 x IEC320 10 A, 1 x IEC320 16 A	5PX3000IRT3U
Eaton 9SX Online double conversion UPS					
Connectivity: USB, serial port, slot for optional management cards					
Remote power off, remote on/off					
Output contacts: two optocouplers, one relay					
One programmable input contact (DB9)					
	700	630	IEC320 10 A	6 x IEC320 10 A	9SX700I
	1000	900			9SX1000I
	1500	1350			9SX1500I
	2000	1800	IEC320 16 A	8 x IEC320 10 A, 1 x IEC320 16 A	9SX2000I
	3000	2700			9SX3000I
	5000	4500			9SX5KI
	6000	5400	Hard-wired	Hard-wired	9SX6KI
	1000	900	IEC320 10 A	6 x IEC320 10 A	9SX1000IR
	1500	1350			9SX1500IR
	2000	1800		8 x IEC320 10 A, 1 x IEC320 16 A	9SX2000IR
	3000	2700	IEC320 16 A		9SX3000IR

Uninterruptible power supplies (UPSs)



Single-phase UPSs, three-phase UPSs

	UPS rating	UPS rating	Input connection	Output connections	Article no.
	VA	W	Type	Quantity / type	
Eaton 9PX online double-conversion UPS					
Connectivity: USB, serial port, slot for optional management cards Remote power off, remote on/off Output contacts: four relays Maintenance bypass switch					
1:1 topology					
	1000	1000	IEC 320 10A	8 x IEC320 10 A	9PX1000IRT2U
	1500	1500			9PX1500IRT2U
	2200	2200	IEC 320 16A	8 x IEC320 10 A, 2 x IEC320 16 A	9PX2200IRT3U
	3000	3000			9PX3000IRT3U
	5000	4500	Hard-wired	3 x IEC320 10 A, 2 x IEC320 16 A, hard-wired	9PX5KIBP
	6000	5400			9PX6KIBP
1:1 topology					
	8000	7200	Hard-wired	4 x IEC320 16 A, hard-wired	9PX8KIBP
	11000	10000			9PX11KIBP
3:1 topology					
	6000	5400	Hard-wired	4 x IEC320 16 A, hard-wired	9PX6KIBP31
	8000	7200			9PX8KIBP31
	11000	10000			9PX11KIBP31

Wiring	UPS rating		Part no.		Article no.
Input phases	Output phases	kVA	kW		
Eaton 93PX online UPS, 15-20 kVA					
Installation options: rack mounted or standalone Accessories: Battery Module (EBM), Maintenance Bypass Module (MBP), Parallel Module					
	1 or 3	1 or 3	15	15	93PX15KIPM
	1 or 3	1 or 3	15	15	93PX20KIPM
					93PX 15kW
					93PX 20kW

Uninterruptible power supplies (UPSs)

Single-phase UPSs

	UPS rating	UPS rating	Maintenance bypass switch	Input switch	With integrated batteries	Battery breaker	Type	Article no.
	kVA	kW						
Eaton 93E online UPS, 15-18 kVA								
	15	13.5	✓	✓	-	✓	93E 15 kVA	93E15KMBSB
			✓	✓	✓	✓	93E 15 kVA 1 x 9 Ah	93E15KMBSBI
			✓	✓	✓	✓	93E 15 kVA 2 x 9 Ah	93E15KMBSBI
	20	18	✓	✓	-	✓	93E 20 kVA	93E20KMBSB
			✓	✓	✓	✓	93E 20 kVA 2 x 9 Ah	93E20KMBSBI
	30	27	✓	✓	-	✓	93E 30 kVA	93E30KMBSB
			✓	✓	✓	✓	93E 30 kVA 3 x 9 Ah	93E30KMBSBI
	40	36	✓	✓	-	✓	93E 40 kVA	93E40KMBSB
			✓	✓	✓	✓	93E 40 kVA 4 x 9 Ah	93E40KMBSBI
	60	54	✓	✓	-	-	93E 60 kVA	93E60KMBSN
	80	72	✓	✓	-	-	93E 80 kVA	93E80KMBSN
Eaton 93E G2 online UPS, 100-200 kVA								
	100	90	-	-	-	-	93E G2 100 kVA	93E100K-G2
	100	90	✓	✓	-	-	93E G2 100kVA MBS	93E100KMBS-G2
	120	108	-	-	-	-	93E G2 120kVA	93E120K-G2
	120	108	✓	✓	-	-	93E G2 120kVA MBS	93E120KMBS-G2
	160	144	-	-	-	-	93E G2 160kVA	93E160K-G2
	200	180	-	-	-	-	93E G2 200kVA	93E200K-G2

Uninterruptible power supplies (UPSs)

Three-phase UPSs


Eaton 91PS & 93PS online UPS, 8-40 kVA



Input connections		UPS rating		Integrated batteries	Type	Article no.
Input phases	Output phases	kVA	kW	Quantity (blocks or strings), capacity		
1 or 3	1	8	8	0	91PS-8(10)-0-MBS	91PS8MBS
1 or 3	1	8	8	1 x 9 Ah	91PS-8(10)-1x9Ah-MBS	91PS8MBSI
1 or 3	1	10	10	0	91PS-10(10)-0-MBS	91PS10MBS
1 or 3	1	10	10	1 x 9 Ah	91PS-10(10)-1x9Ah-MBS	91PS10MBSI
3	1	15	15	0	91PS-15(15)-15-0-MBS-6	BG51A0306A01100000
3	1	15	15	1 x 9 Ah	91PS-15(15)-15-1x9Ah-MBS-6	BG51AA306A01100000
3	1	15	15	2 x 9 Ah	91PS-15(15)-15-2x9Ah-MBS-6	BG51AB306A01100000
3	1	20	20	0	91PS-20(30)-30-0-MBS-6	BK02A0306A01100000
3	1	20	20	2 x 9 Ah	91PS-20(30)-30-2x9Ah-MBS-6	BK02AB306A01100000
3	1	20	20	3 x 9 Ah	91PS-20(30)-30-3x9Ah-MBS-6	BK02AC306A01100000
3	1	20	20	4 x 9 Ah	91PS-20(30)-30-4x9Ah-MBS-6	BK02AD306A01100000
3	1	30	30	0	91PS-30(30)-30-0-MBS-6	BK03A0306A01100000
3	1	30	30	3 x 9 Ah	91PS-30(30)-30-3x9Ah-MBS-6	BK03AC306A01100000
3	1	30	30	4 x 9 Ah	91PS-30(30)-30-4x9Ah-MBS-6	BK03AD306A01100000
3	3	8	8	0	93PS-8(10)-0-MBS	93PS8MBS
3	3	8	8	1 x 9 Ah	93PS-8(10)-1x9Ah-MBS	93PS8MBSI
3	3	10	10	0	93PS-10(10)-0-MBS	93PS10MBS
3	3	10	10	1 x 9 Ah	93PS-10(10)-1x9Ah-MBS	93PS10MBSI
3	3	15	15	0	93PS-15(20)-15-0-MBS-6	BA51A0306A01100000
3	3	15	15	1 x 9 Ah	93PS-15(20)-15-1x9Ah-MBS-6	BA51AA306A01100000
3	3	15	15	2 x 9 Ah	93PS-15(20)-15-2x9Ah-MBS-6	BA51AB306A01100000
3	3	20	20	0	93PS-20(20)-20-0-MBS-6	BA02A0306A01100000
3	3	20	20	2 x 9 Ah	93PS-20(20)-20-2x9Ah-MBS-6	BA02AB306A01100000
3	3	30	30	0	93PS-30(40)-30-0-MBS-6	BD03A0306A01100000
3	3	30	30	3 x 9 Ah	93PS-30(40)-30-3x9Ah-MBS-6	BD03AC306A01100000
3	3	30	30	4 x 9 Ah	93PS-30(40)-30-4x9Ah-MBS-6	BD03AD306A01100000
3	3	40	40	0	93PS-40(40)-40-0-MBS-6	BD04A0306A01100000
3	3	40	40	3 x 9 Ah	93PS-40(40)-40-3x9Ah-MBS-6	BD04AC306A01100000
3	3	40	40	4 x 9 Ah	93PS-40(40)-40-4x9Ah-MBS-6	BD04AD306A01100000


	UPS rating	UPS rating	Maintenance bypass switch	Battery breaker	Type	Article no.
	kVA	kW				
Eaton 93PM G2 online UPS, 50-360 kVA	50	50	✓	✓	93PM-G2-50(200)-BB-MBS-6	GA20A2736A03100000
	60	54	✓	✓	93PM-G2-60(240)-BB-MBS-6	GB24A2736A03100000
	100	100	✓	✓	93PM-G2-100(200)-BB-MBS-6	GA20A2736A03200000
	120	108	✓	✓	93PM-G2-120(240)-BB-MBS-6	GB24A2736A03200000
	150	150	✓	✓	93PM-G2-150(200)-BB-MBS-6	GA20A2736A03300000
	180	162	✓	✓	93PM-G2-180(240)-BB-MBS-6	GB24A2736A03300000
	200	200	✓	✓	93PM-G2-200(200)-BB-MBS-6	GA20A2736A03400000
	240	216	✓	✓	93PM-G2-240(240)-BB-MBS-6	GB24A2736A03400000
	250	250	-	✓	93PM-G2-250(300)-BB-6	GC30A2636A03500000
	300	300	-	✓	93PM-G2-300(300)-BB-6	GC30A2636A03600000
	300	270	-	✓	93PM-G2-300(360)-BB-6	GD36A2636A03500000
	360	324	-	✓	93PM-G2-360(360)-BB-6	GD36A2636A03600000



	UPS rating	UPS rating				Type	Article no.	
	kVA	kW	Maintenance bypass switch	Input switch	With integrated batteries	Battery breaker		
Eaton 93PM online UPS, 30-500 kVA								
	30	30	-	✓	-	✓	93PM-30(50)-IS-BB-0-6	AA03AA206A03000000
	30	30	-	✓	✓	✓	93PM-30(50)-IS-BB-6x9Ah-6	AA03A8206A03000000
	30	30	✓	✓	-	✓	93PM-30(50)-IS-BB-0-MBS-6	AA03AA306A03000000
	30	30	✓	✓	✓	✓	93PM-30(50)-IS-BB-6x9Ah-MBS-6	AA03A8306A03000000
	40	40	-	✓	-	✓	93PM-40(50)-IS-BB-0-6	AA04AA206A03000000
	40	40	-	✓	✓	✓	93PM-40(50)-IS-BB-6x9Ah-6	AA04A8206A03000000
	40	40	✓	✓	-	✓	93PM-40(50)-IS-BB-0-MBS-6	AA04AA306A03000000
	40	40	✓	✓	✓	✓	93PM-40(50)-IS-BB-6x9Ah-MBS-6	AA04A8306A03000000
	50	50	-	✓	-	✓	93PM-50(50)-IS-BB-0-6	AA05AA206A03000000
	50	50	-	✓	✓	✓	93PM-50(50)-IS-BB-6x9Ah-6	AA05A8206A03000000
	50	50	✓	✓	✓	✓	93PM-50(50)-IS-BB-0-MBS-6	AA05AA306A03000000
	50	50	✓	✓	-	✓	93PM-50(50)-IS-BB-6x9Ah-MBS-6	AA05A8306A03000000
	60	60	-	✓	-	✓	93PM-60(60)-IS-BB-0-6	AA06AA206A03002000
	60	60	-	✓	✓	✓	93PM-60(60)-IS-BB-6x9Ah-6	AA06A8206A03002000
	60	60	✓	✓	✓	✓	93PM-60(60)-IS-BB-0-MBS-6	AA06AA306A03002000
	60	60	✓	✓	-	✓	93PM-60(60)-IS-BB-6x9Ah-MBS-6	AA06A8306A03002000
	80	80	-	-	-	-	93PM-80(100)-6	AE08A0206A03000000
	80	80	✓	✓	-	-	93PM-80(100)-IS-MBS-6	AE08A0306A03000000
	80	80	-	✓	-	✓	93PM-80(100)-IS-BB-6	AE08AA206A03000000
	80	80	✓	✓	-	✓	93PM-80(100)-IS-BB-MBS-6	AE08AA306A03000000
	100	100	-	-	-	-	93PM-100(100)-6	AE10A0206A03000000
	100	100	✓	✓	-	-	93PM-100(100)-IS-MBS-6	AE10A0306A03000000
	100	100	-	✓	-	✓	93PM-100(100)-IS-BB-6	AE10AA206A03000000
	100	100	✓	✓	-	✓	93PM-100(100)-IS-BB-MBS-6	AE10AA306A03000000
	100	100	-	-	-	-	93PM-100(400)-0	D010A0200A03000000
	120	120	-	-	-	-	93PM-120(150)-6	AL12A0206A03000000
	120	120	✓	✓	-	-	93PM-120(150)-IS-MBS-6	AL12A0306A03000000
	120	120	-	✓	-	✓	93PM-120(150)-IS-BB-6	AL12AA206A03000000
	120	120	✓	✓	-	✓	93PM-120(150)-IS-BB-MBS-6	AL12AA306A03000000
	150	150	-	-	-	-	93PM-150(150)-6	AL15A0206A03000000
	150	150	✓	✓	-	-	93PM-150(150)-IS-MBS-6	AL15A0306A03000000
	150	150	-	✓	-	✓	93PM-150(150)-IS-BB-6	AL15AA206A03000000
	150	150	✓	✓	-	✓	93PM-150(150)-IS-BB-MBS-6	AL15AA306A03000000
	150	150	-	-	-	-	93PM-150(400)-0	D115A0200A03000000
	160	160	-	-	-	-	93PM-160(200)-6	AV16A0206A03000000
	200	200	-	-	-	-	93PM-200(200)-6	AV20A0206A03000000
	200	200	-	-	-	-	93PM-200(400)-0	D220A0200A03000000
	250	250	-	-	-	-	93PM-250(400)-0	D325A0200A03000000
	300	300	-	-	-	-	93PM-300(400)-0	D430A0200A03000000
	350	350	-	-	-	-	93PM-350(400)-0	D535A0200A03000000
	400	400	-	-	-	-	93PM-400(400)-0	D640A0200A03000000
	450	427	-	-	-	-	93PM-450(500)-0	D645A0200A03001000
	500	450	-	-	-	-	93PM-500(500)-0	D650A0200A03002000

Uninterruptible power supplies (UPSs)

Three-phase UPSs

	UPS rating	UPS rating	Maintenance bypass switch	Input switch	With integrated batteries	Battery breaker	Type	Article no.
	kVA	kW						
Eaton 93PM online UPS, 30-500 kVA								
Power Xpert 9395P online UPS, 250-1200 kVA								
	300	275	-	-	-	-	9395P-300(300)	FA3030621002000000
	300	275	✓	-	-	-	9395P-300(300)-MBS	FA30306B1002000000
	600	550	-	-	-	-	9395P-600(600)	FC6030621002001000
	750	750	-	-	-	-	9395P-750(900)	FE7530621001002000
	900	825	-	-	-	-	9395P-900(900)	FE9030621001002000
	1000	1000	-	-	-	-	9395P-1000(1200)	FH1030621001003000
	1200	1100	-	-	-	-	9395P-1200(1200)	FH1230621001003000



Global export of machines and systems

The European machine building sector is heavily export-oriented. Even companies that are not yet exporting their machines therefore need to be prepared. Eaton offers switchgear and protective devices that cover all essential approvals and certifications for machine building and system engineering. In most countries, these approvals are the only prerequisite for successful export, as components are uniformly evaluated and processed in accordance with the established IEC guidelines, which are the global standard. The European CE marking serves as a passport for exports, and not only within Europe.



Devices that are suitable for global use

Most switchgear and protective devices from Eaton's Moeller series are suitable for global use. The standard versions of these devices come with all the necessary approvals and certifications. These universal devices can thus be used around the world.

Including our

- pilot devices, position switches
- contactors and various time and special relays
- motor-protective circuit breakers and relays
- electronic components and systems.

Eaton offers IEC circuit breakers and switch-disconnectors, which can be used in the vast majority of countries around the world, as well as NA circuit breakers with almost the same dimensions and accessories for the North American market. This simplifies the selection of equipment, given that the technical data can vary considerably due to the different North American standards.

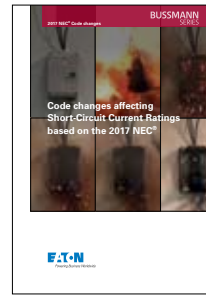


Get more information

The standards for electrical products and their applications are not internationally harmonized.

The most significant deviations from the IEC standards are found in North America, i.e. in the U.S.A. and Canada. Many newcomers to the export business are initially surprised by the different opinions and solutions that prevail in different countries.


For example, for export to North America, special components are sometimes required, such as dedicated handles for main switches that can only be actuated by deliberately operating an additional handle when the control cabinet door is open. Likewise, European motor-protective circuit breakers are only accepted in combination with an upstream protective device (such as a UL248 fuse) or with increased air and creepage distances at the input terminals. Eaton is your expert partner for all matters related to export.



Notes on the changes to the 2020 NEC and 2017 NEC

This publication covers all major "chapters," "articles" and "parts" of the NEC 2020. Each code section is labeled "REVISION" or "NEW," followed by an explanation of its significance and references to the relevant NEC sections, with information about what to look out for in order to determine if a machine is code-compliant, including a detailed explanation of the standard where necessary.

Accurate information is an important key to success

 Isoliertstoffgehäuse obenventil offen, HxBxT=236x150mm, NA-Ausführung Typ C22-125-NA Art.-Nr. 60224	
Lieferprogramm	
Grundfunktion	Isoliertstoffgehäuse C für Normterme
Produktfunktion	Leuchthäuser
Einzelteil/Komponente	Vorwiderstände für Normterme
Schutzart	IP20
Beschreibung	an allen 4 Seiten mit ablenkbaren glatten Flanschen bestückt
Ausführung Detail	Einzelteil
Überflächeneigenschaften	schwarz
Abmessungen	
Breite	236 mm
Höhe	150 mm
Tiefe	150 mm
Einbaufarbe	schwarz
Ausführung Unterseite	Schweißnaht mit glatten Flanschen
Ausführung Unterseite	Schweißnaht mit ablenkbaren glatten Flanschen
Approbationen	
Product Standards	UL 508A, CSA C22.2 No.94, IEC/EN60529, CE marking
UL File No.	E54120, E337418
UL Category Control No.	NITW
CSA File No.	27130
CSA Class No.	3211-07
North America Certification	UL listed, CSA certified
Specially designed for North America	Yes
Suitable for	Industrial Control Panels
Current Limiting Circuit-Breaker	No
Degree of Protection	IEC: IP20; UL/CSA Types 1, 12, 13, 4X, indoor only
Allgemeines	
Normen und Bestimmungen	IEC 60529, IEC 60947-1, IEC 60947-2, IEC 60947-3, IEC 60947-4, IEC 60947-5, IEC 60947-6, IEC 60947-7, IEC 60947-8, IEC 60947-9, IEC 60947-10, IEC 60947-11, IEC 60947-12, IEC 60947-13, IEC 60947-14, IEC 60947-15, IEC 60947-16, IEC 60947-17, IEC 60947-18, IEC 60947-19, IEC 60947-20, IEC 60947-21, IEC 60947-22, IEC 60947-23, IEC 60947-24, IEC 60947-25, IEC 60947-26, IEC 60947-27, IEC 60947-28, IEC 60947-29, IEC 60947-30, IEC 60947-31, IEC 60947-32, IEC 60947-33, IEC 60947-34, IEC 60947-35, IEC 60947-36, IEC 60947-37, IEC 60947-38, IEC 60947-39, IEC 60947-40, IEC 60947-41, IEC 60947-42, IEC 60947-43, IEC 60947-44, IEC 60947-45, IEC 60947-46, IEC 60947-47, IEC 60947-48, IEC 60947-49, IEC 60947-50, IEC 60947-51, IEC 60947-52, IEC 60947-53, IEC 60947-54, IEC 60947-55, IEC 60947-56, IEC 60947-57, IEC 60947-58, IEC 60947-59, IEC 60947-60, IEC 60947-61, IEC 60947-62, IEC 60947-63, IEC 60947-64, IEC 60947-65, IEC 60947-66, IEC 60947-67, IEC 60947-68, IEC 60947-69, IEC 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Comprehensive services for your machine control system

Powering business: For Eaton, this promise is about more than providing reliable products and technologies. By means of expert advice and specialized services, we aim to provide you with engineering solutions that are perfectly tailored to your specifications, enabling us to act as one-stop shop for your success.

Engineering services for your machine control system

From the initial idea to the implementation of the application – Eaton supports you with expert advice at every step along the path to the development of your machine. In conjunction with the expertise of our Lean Solution Partners, the innovative Eaton products will give you a decisive competitive advantage when it comes to technological leadership.

Eaton supports you in selecting the right products, advises you on the electrical and hydraulic design of your machines and assists you with the implementation and commissioning of your applications and programs. The combination of these services with Eaton components ensures that the resulting solution will be precisely tailored to your needs.

Solutions for successful export to North America

Our long-standing business partnership with the SAE Schaltanlagenbau Erfurt, a certified manufacturer of control cabinets for use in North America, enables us to offer our customers solutions that are fully equipped for export to the U.S. and Canada. In addition to offering products and control cabinets manufactured in accordance with UL508A and NFPA79, the partnership between Eaton and SAE also extends to expert seminars to support the successful export of electrical machinery and equipment to North America.



Value Added Services (VAS) – your partner for a more profitable business



Our Value Added Services team can help you achieve the following business goals:

- Optimization of procurement and ordering processes
- Improved product assembly and configuration
- Optimization of design processes
- Lower total costs
- Integrated solutions from a single source
- Positive impact on energy savings

How can we create added value for you?
Contact us at VAS-EMEA@eaton.com

Warehouse/Kitting

Our warehouse services can support you in implementing a lean strategy. We can offer a variety of options that will help you optimize your inbound processed and facilitate dock to stock operations. Eaton's VAS can also apply customized labels/barcodes and ship all ordered items in customer-specific packages, including Kanban containers.

Kitting services streamlines production flows and processes, avoids unnecessary procedures and reduces packaging. All the required items can be ordered using the same part number and come in a single package.



Parameter settings

Eaton's VAS can support you in setting specific parameters for a number of product categories, including drives, the control relay range easyE4, HMI touch panels, xComfort devices and inverters. We do project base upgrades, downgrades, and also xComfort device capturing for dedicated installations. The VAS Team can thus help you to reduce the time needed to set up a PLC, for example, by delivering the product together with pre-installed software and the corresponding user manual. Thanks to the pre-installed software and drivers, the PLC can then be quickly commissioned.

Component assembly

To reduce the time required for installing combinations of devices, VAS offers a plug-and-play solution. The Value Added Services Team can pre-assemble products for you and mount them on DIN rails, mounting plates or even using third-party components. In addition, the items can also be pre-wired using either conventional cables or our innovative SmartWire-DT system.



Pre-assembled/Kitted cabinet

Our warehouse services can support the panel builders in our Late Point Definition Center. Our specialized operators prepare the cabinet frames meeting local market requirements. This service allows the panel builder to be focused on the installation of the electrical components. The pre-assembled cabinets can be either linked to specific articles, recommended for recurring business (called "fixed Bill of Material"), or made to order for specific projects ("flexible Bill of Material").

A third option includes the delivery of all cabinet components ordered under a single article code and shipped on a single pallet. This optimizes the through-put time and ensures a proactive order management - allowing the panel builder to concentrate fully on its core activity.

How to find the right contact person



At Eaton, we believe that building and maintaining strong relationships with our customers is something that deserves our undivided attention.

This is why you can rest assured knowing that you will be able to count on us for every project from the very start. To find out whom to contact for your needs, please visit our website:

In just a few steps, we will get you the contact information for the person or team in charge of support for your specific industry in your region.

To find the right contact person anywhere in the world, visit:

→ Eaton.com/EatonCare

Questions regarding uninterrupted power supplies (UPS)?

Our Technical Service staff will be more than glad to assist you if you are experiencing any difficulties with an Eaton UPS, DC power supply system, or any other Power Quality product.

Our Technical Support staff is there to answer any questions you may have regarding our products.

To find the right contact person anywhere in the world, please visit Eaton.com/contacts

Eatons After Sales Service

Eaton is known for its unparalleled after-sales support for all low-voltage switchgear, switchgear systems, and services.

For more detailed information, as well as to view our terms and conditions, please visit Eaton.com/aftersales

Europe, Middle East, Africa 24/7 Hotline

For immediate support please call +49 (0) 180 5 223822* (24/7). You will receive competent and fast, round the clock assistance, with unplanned machine and system stand stills, system malfunctions and device failures.

Helpdesk

Eaton specialists: +49 (0) 228 602 3640 (Monday – Friday from 08:00 – 16:00 CET) or contact your local Eaton representative.

We offer extensive support from commissioning to application queries as well as in the area of fault analysis, which can also include remote diagnostics.

We can also offer you an individual consulting service contract which is tailor-made to suit your requirements. If you would like to communicate your service queries in writing, please use the following e-mail address:

AfterSalesEGBonn@eaton.com

Do you have any questions about our filtration solutions

Please contact the European headquarters of the Filtration Division and you will be put through to the appropriate contact person.

Customer Service:

Eaton Technologies GmbH
Auf der Heide 2
53947 Nettersheim
Germany

Tel.: +49 2486 809-0

Fax: +49 2486 809 800

info-filtraton@eaton.com



We make what matters work.*

* At Eaton, we believe that power is a fundamental part of just about everything people do. That's why we're dedicated to helping our customers find new ways to manage electrical, hydraulic and mechanical power more efficiently, safely and sustainably. To improve people's lives, the communities where we live and work, and the planet our future generations depend upon. Because this is what really matters. And we're here to make sure it works.

To learn more go to:

Eaton.com/whatmatters



Powering Business Worldwide

We make what matters work.

Eaton is an intelligent power management company dedicated to protecting the environment and improving the quality of life for people everywhere. We make products for the data center, utility, industrial, commercial, machine building, residential, aerospace and mobility markets. We are guided by our commitment to do business right, to operate sustainably and to help our customers manage power - today and well into the future. By capitalizing on the global growth trends of electrification and digitalization, we're accelerating the planet's transition to renewable energy sources, helping to solve the world's most urgent power management challenges, and building a more sustainable society for people today and generations to come.

Eaton was founded in 1911 and has been listed on the New York Stock Exchange for more than a century. We reported revenues of \$23.2 billion in 2023 and serve customers in more than 160 countries. For more information, visit www.eaton.com. Follow us on LinkedIn.

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