



Figure similar

SIPLUS ET 200SP TM count 1x24V based on 6ES7138-6AA01-0BA0 with conformal coating, -40...+60 °C, counter module, 1 channel for 24 V incremental or pulse generator, 3 DI, 2 DQ suitable for BU type A0,

General information	
Product type designation	TM Count 1x24V
Firmware version	
<ul style="list-style-type: none"> FW update possible 	Yes
usable BaseUnits	BU type A0
Color code for module-specific color identification plate	CC00
Product function	
<ul style="list-style-type: none"> I&M data 	Yes; I&M0 to I&M3
<ul style="list-style-type: none"> Isochronous mode 	Yes
Supply voltage	
Load voltage L+	
<ul style="list-style-type: none"> Rated value (DC) 	24 V
<ul style="list-style-type: none"> permissible range, lower limit (DC) 	19.2 V
<ul style="list-style-type: none"> permissible range, upper limit (DC) 	28.8 V
<ul style="list-style-type: none"> Reverse polarity protection 	Yes
Input current	
Current consumption, max.	60 mA; without load
Encoder supply	
Number of outputs	1
24 V encoder supply	
<ul style="list-style-type: none"> 24 V 	Yes; L+ (-0.8 V)
<ul style="list-style-type: none"> Short-circuit protection 	Yes; electronic/thermal
<ul style="list-style-type: none"> Output current, max. 	300 mA
Power loss	
Power loss, typ.	1 W
Address area	
Address space per module	
<ul style="list-style-type: none"> Inputs 	16 byte; 4 bytes in Fast mode
<ul style="list-style-type: none"> Outputs 	12 byte; 4 bytes for Motion Control, 0 bytes for Fast mode
Digital inputs	
Number of digital inputs	3
Digital inputs, parameterizable	Yes
Input characteristic curve in accordance with IEC 61131, type 3	Yes
Digital input functions, parameterizable	
<ul style="list-style-type: none"> Gate start/stop 	Yes
<ul style="list-style-type: none"> Capture 	Yes
<ul style="list-style-type: none"> Synchronization 	Yes
<ul style="list-style-type: none"> Freely usable digital input 	Yes
<ul style="list-style-type: none"> Probe 	Yes

Input voltage	
<ul style="list-style-type: none"> • Rated value (DC) • for signal "0" • for signal "1" • permissible voltage at input, min. • permissible voltage at input, max. 	24 V -5 ... +5 V +11 to +30V -30 V; -5 V continuous, -30 V brief reverse polarity protection 30 V
Input current	
<ul style="list-style-type: none"> • for signal "1", typ. 	2.5 mA
Input delay (for rated value of input voltage)	
for standard inputs	
<ul style="list-style-type: none"> — parameterizable — at "0" to "1", min. — at "1" to "0", min. 	Yes; none / 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms 6 µs; for parameterization "none" 6 µs; for parameterization "none"
for technological functions	
<ul style="list-style-type: none"> — parameterizable 	Yes
Cable length	
<ul style="list-style-type: none"> • shielded, max. • unshielded, max. 	1 000 m 600 m
Digital outputs	
Type of digital output	Transistor
Number of digital outputs	2
Digital outputs, parameterizable	Yes
Short-circuit protection	Yes; electronic/thermal
<ul style="list-style-type: none"> • Response threshold, typ. 	1 A
Limitation of inductive shutdown voltage to	L+ (-53 V)
Controlling a digital input	Yes
Digital output functions, parameterizable	
<ul style="list-style-type: none"> • Switching tripped by comparison values • Freely usable digital output 	Yes Yes
Switching capacity of the outputs	
<ul style="list-style-type: none"> • with resistive load, max. • on lamp load, max. 	0.5 A; Per digital output 5 W
Load resistance range	
<ul style="list-style-type: none"> • lower limit • upper limit 	48 Ω 12 kΩ
Output voltage	
<ul style="list-style-type: none"> • for signal "1", min. 	23.2 V; L+ (-0.8 V)
Output current	
<ul style="list-style-type: none"> • for signal "1" rated value • for signal "1" permissible range, max. • for signal "1" minimum load current • for signal "0" residual current, max. 	0.5 A; Per digital output 0.6 A; Per digital output 2 mA 0.5 mA
Output delay with resistive load	
<ul style="list-style-type: none"> • "0" to "1", max. • "1" to "0", max. 	50 µs 50 µs
Switching frequency	
<ul style="list-style-type: none"> • with resistive load, max. • with inductive load, max. • on lamp load, max. 	10 kHz 0.5 Hz; Acc. to IEC 60947-5-1, DC-13; observe derating curve 10 Hz
Total current of the outputs	
<ul style="list-style-type: none"> • Current per module, max. 	1 A
Cable length	
<ul style="list-style-type: none"> • shielded, max. • unshielded, max. 	1 000 m 600 m
Encoder	
Connectable encoders	
<ul style="list-style-type: none"> • 2-wire sensor — permissible quiescent current (2-wire sensor), max. 	Yes 1.5 mA
Encoder signals, incremental encoder (asymmetrical)	
<ul style="list-style-type: none"> • Input voltage • Input frequency, max. 	24 V 200 kHz

<ul style="list-style-type: none"> Counting frequency, max. Cable length, shielded, max. 	800 kHz; with quadruple evaluation 600 m; depending on input frequency, encoder and cable quality; max. 50 m at 200 kHz
<ul style="list-style-type: none"> Signal filter, parameterizable Incremental encoder with A/B tracks, 90° phase offset Incremental encoder with A/B tracks, 90° phase offset and zero track pulse encoder pulse encoder with direction pulse encoder with one impulse signal per count direction 	Yes Yes Yes Yes Yes Yes
Interface types	
<ul style="list-style-type: none"> Source/sink input Input characteristic curve in accordance with IEC 61131, type 3 	Yes Yes
Interrupts/diagnostics/status information	
Substitute values connectable	Yes; Parameterizable
Alarms	
<ul style="list-style-type: none"> Diagnostic alarm Hardware interrupt 	Yes Yes
Diagnoses	
<ul style="list-style-type: none"> Monitoring the supply voltage Wire-break Short-circuit A/B transition error at incremental encoder Group error 	Yes Yes Yes Yes Yes
Diagnostics indication LED	
<ul style="list-style-type: none"> Monitoring of the supply voltage (PWR-LED) Channel status display for module diagnostics Status indicator forward counting (green) Status indicator backward counting (green) 	Yes; green PWR LED Yes; green LED Yes; green/red DIAG LED Yes Yes
Integrated Functions	
Counter	Yes
<ul style="list-style-type: none"> Number of counters Counting frequency, max. 	1 800 kHz; with quadruple evaluation
Fast mode	Yes
Counting functions	
<ul style="list-style-type: none"> Can be used with TO High_Speed_Counter Continuous counting Counter response parameterizable Hardware gate via digital input Software gate Event-controlled stop Synchronization via digital input Counting range, parameterizable 	Yes Yes Yes Yes Yes Yes Yes Yes
Comparator	
<ul style="list-style-type: none"> Number of comparators Direction dependency Can be changed from user program 	2 Yes Yes
Position detection	
<ul style="list-style-type: none"> Incremental acquisition Suitable for S7-1500 Motion Control 	Yes Yes
Measuring functions	
<ul style="list-style-type: none"> Measuring time, parameterizable Dynamic measurement period adjustment Number of thresholds, parameterizable 	Yes Yes 2
Measuring range	
<ul style="list-style-type: none"> Frequency measurement, min. Frequency measurement, max. Cycle duration measurement, min. Cycle duration measurement, max. 	0.04 Hz 800 kHz 1.25 µs 25 s

Accuracy	
— Frequency measurement	100 ppm; depending on measuring interval and signal evaluation
— Cycle duration measurement	100 ppm; depending on measuring interval and signal evaluation
— Velocity measurement	100 ppm; depending on measuring interval and signal evaluation
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes
Isolation	
Isolation tested with	707 V DC (type test)
Standards, approvals, certificates	
Suitable for safety functions	No
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	60 °C; = Tmax; +70 °C with configured empty slots to the left and right of the module
• vertical installation, min.	-40 °C; = Tmin (incl. condensation/frost)
• vertical installation, max.	50 °C; = Tmax
• ceiling installation, min.	-40 °C; = Tmin (incl. condensation/frost)
• ceiling installation, max.	50 °C; = Tmax
• floor installation, min.	-40 °C; = Tmin (incl. condensation/frost)
• floor installation, max.	50 °C; = Tmax
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance	
Coolants and lubricants	
— Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems	
— to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
— to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
— to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
— Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Use on ships/at sea	
— to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)
— to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
— to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
— Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)
Usage in industrial process technology	
— Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)
— Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark	
— Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection

- Military testing according to MIL-I-46058C, Amendment 7
- Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A

Yes; Discoloration of coating possible during service life
 Yes; Conformal coating, Class A

Decentralized operation

to SIMATIC S7-300	Yes
to SIMATIC S7-400	Yes
to SIMATIC S7-1200	Yes
to SIMATIC S7-1500	Yes
to standard PROFIBUS master	Yes
to standard PROFINET controller	Yes

Dimensions

Width	15 mm
Height	73 mm
Depth	58 mm

Weights

Weight, approx.	45 g
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last modified:

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