

*** Spare part *** SIMATIC ET 200SP, TM count 1x 24 V counter module, 1-channel for 24 V incremental encoder or encoder, 3 DI, 2 DQ



General information	
Product type designation	TM Count 1x24V
Firmware version	V1.3
<ul style="list-style-type: none"> FW update possible 	Yes
usable BaseUnits	BU type A0
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
Engineering with	
<ul style="list-style-type: none"> STEP 7 TIA Portal configurable/integrated from version 	V13 (FW V1.0), V14 (V1.2), V15 (FW V1.3) / V13 (FW V1.0), V14 SP1 (V1.2)
<ul style="list-style-type: none"> STEP 7 configurable/integrated from version 	As of V5.5 SP3, only up to FW V1.2
<ul style="list-style-type: none"> PROFIBUS from GSD version/GSD revision 	GSD Revision 5
<ul style="list-style-type: none"> PROFINET from GSD version/GSD revision 	GSDML V2.3
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) • Reverse polarity protection 	28.8 V 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 • Short-circuit protection • Output current, max. 	Yes; L+ (-0.8 V) Yes; electronic/thermal 300 mA
Power loss	
Power loss, typ.	1 W
Address area	
Address space per module	
<ul style="list-style-type: none"> • Inputs • Outputs 	16 byte; 4 bytes in Fast mode 12 byte; 4 bytes for Motion Control, 0 bytes for Fast mode
Hardware configuration	
Automatic encoding	
<ul style="list-style-type: none"> • Type of mechanical coding element 	type B
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 • Capture • Synchronization • Freely usable digital input 	Yes Yes Yes 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	
— parameterizable	Yes; none / 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms

— at "0" to "1", min.	6 µs; for parameterization "none"
— at "1" to "0", min.	6 µs; for parameterization "none"
for technological functions	
— parameterizable	Yes
Cable length	
• shielded, max.	1 000 m
• unshielded, max.	600 m
Digital outputs	
Type of digital output	Transistor
Number of digital outputs	2
Digital outputs, parameterizable	Yes
Short-circuit protection	Yes; electronic/thermal
• Response threshold, typ.	1 A
Limitation of inductive shutdown voltage to	L+ (-33 V)
Controlling a digital input	Yes
Digital output functions, parameterizable	
• Switching tripped by comparison values	Yes
• Freely usable digital output	Yes
Switching capacity of the outputs	
• with resistive load, max.	0.5 A; Per digital output
• on lamp load, max.	5 W
Load resistance range	
• lower limit	48 Ω
• upper limit	12 kΩ
Output voltage	
• for signal "1", min.	23.2 V; L+ (-0.8 V)
Output current	
• for signal "1" rated value	0.5 A; Per digital output
• for signal "1" permissible range, max.	0.6 A; Per digital output
• for signal "1" minimum load current	2 mA
• for signal "0" residual current, max.	0.5 mA
Output delay with resistive load	
• "0" to "1", max.	50 µs
• "1" to "0", max.	50 µs
Switching frequency	
• with resistive load, max.	10 kHz
• with inductive load, max.	0.5 Hz; Acc. to IEC 60947-5-1, DC-13; observe derating curve
• on lamp load, max.	10 Hz
Total current of the outputs	
• Current per module, max.	1 A
Cable length	
• shielded, max.	1 000 m

- unshielded, max.

600 m

Encoder

Connectable encoders	
<ul style="list-style-type: none"> • 2-wire sensor <ul style="list-style-type: none"> — 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. • Counting frequency, max. • Cable length, shielded, max. • 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 	24 V 200 kHz 800 kHz; with quadruple evaluation 600 m; depending on input frequency, encoder and cable quality; max. 50 m at 200 kHz Yes Yes Yes Yes Yes Yes Yes
Encoder signal 24 V	
<ul style="list-style-type: none"> — permissible voltage at input, min. — permissible voltage at input, max. 	-30 V 30 V
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 	Yes; green PWR LED Yes; green LED

- for module diagnostics Yes; green/red DIAG LED
- Status indicator forward counting (green) Yes
- Status indicator backward counting (green) Yes

Integrated Functions

Number of counters	1
Counting frequency (counter) max.	800 kHz; with quadruple evaluation
Fast mode	Yes; FW V1.2 or higher

Counting functions

- Can be used with TO High_Speed_Counter Yes
- Continuous counting Yes
- Counter response parameterizable Yes
- Hardware gate via digital input Yes
- Software gate Yes
- Event-controlled stop Yes
- Synchronization via digital input Yes
- Counting range, parameterizable Yes

Comparator

- Number of comparators 2
- Direction dependency Yes
- Can be changed from user program Yes

Position detection

- Incremental acquisition Yes
- Suitable for S7-1500 Motion Control Yes

Measuring functions

- Measuring time, parameterizable Yes
- Dynamic measurement period adjustment Yes
- Number of thresholds, parameterizable 2

Measuring range

- Frequency measurement, min. 0.04 Hz
- Frequency measurement, max. 800 kHz
- Cycle duration measurement, min. 1.25 μ s
- Cycle duration measurement, max. 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)
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Ambient conditions

Ambient temperature during operation	
• horizontal installation, min.	-30 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	-30 °C
• vertical installation, max.	50 °C

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: 08/28/2020