

SIMATIC ET 200SP, TM count 1x 24V Counter module, 1 channel
for 24 V incremental or encoder, 3 DI, 2 DQ



General information	
Product type designation	TM Count 1x24V
Firmware version	V1.2
• FW update possible	Yes
usable BaseUnits	BU type A0
Product function	
• I&M data	Yes; I&M0 to I&M3
Engineering with	
• STEP 7 TIA Portal configurable/integrated as of version	V14 / V14 SP1
• STEP 7 configurable/integrated as of version	V5.5 SP3 / -
• PROFIBUS as of GSD version/GSD revision	GSD Revision 5
• PROFINET as of GSD version/GSD revision	GSDML V2.3
Installation type/mounting	
Rack mounting	Yes
Rail mounting	Yes
Supply voltage	
Load voltage L+	

• Rated value (DC) • permissible range, lower limit (DC) • permissible range, upper limit (DC) • Reverse polarity protection	24 V 19.2 V 28.8 V Yes
Input current	
Current consumption, max.	60 mA; without load
Encoder supply	
Number of outputs	1
24 V encoder supply	
• 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	
Occupied address area	
• Inputs • Outputs	16 byte; 4 bytes in Fast mode 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	
• Gate start/stop • Capture • Synchronization • Freely usable digital input	Yes Yes Yes Yes
Input voltage	
• Rated value (DC) • for signal "0" • for signal "1" • permissible voltage at input, min. • permissible voltage at input, max.	24 V -30 to +5V +11 to +30V -30 V 30 V
Input current	
• for signal "1", typ.	2.5 mA
Input delay (for rated value of input voltage)	
for standard inputs	
— parameterizable — at "0" to "1", min.	Yes; none / 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms 6 µs; for parameterization "none"

— at "1" to "0", min.	6 µs; for parameterization "none"
for counter/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	
• 2-wire sensor	Yes
— permissible quiescent current (2-wire sensor), max.	1.5 mA
Encoder signals, incremental encoder (asymmetrical)	
• Input voltage	24 V
• Input frequency, max.	200 kHz
• Counting frequency, max.	800 kHz; with quadruple evaluation
• Cable length, shielded, max.	600 m; depending on input frequency, encoder and cable quality; max. 50 m at 200 kHz
• Signal filter, parameterizable	Yes
• Incremental encoder with A/B tracks, 90° phase offset	Yes
• Incremental encoder with A/B tracks, 90° phase offset and zero track	Yes
• Pulse encoder	Yes
• Pulse encoder with direction	Yes
• Pulse encoder with one impulse signal per count direction	Yes
Encoder signal 24 V	
— permissible voltage at input, min.	-30 V
— permissible voltage at input, max.	30 V
Interface types	
• Input characteristic curve in accordance with IEC 61131, type 3	Yes
• Source/sink input	Yes
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes
Interrupts/diagnostics/status information	
Substitute values connectable	Yes; Parameterizable
Alarms	
• Diagnostic alarm	Yes
• Hardware interrupt	Yes
Diagnostic messages	
• Monitoring the supply voltage	Yes
• Wire-break	Yes
• Short-circuit	Yes
• A/B transition error at incremental encoder	Yes
• Group error	Yes
Diagnostics indication LED	

- | | |
|--|-------------------------|
| • Monitoring of the supply voltage (PWR-LED) | Yes; green PWR LED |
| • for module diagnostics | Yes; green/red DIAG LED |
| • Status indicator backward counting (green) | Yes |
| • Status indicator forward counting (green) | Yes |

Integrated Functions

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

Counting functions

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|--|-----|
| • 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

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

Position detection

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

Measuring functions

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

Measuring range

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|------------------------------------|---------|
| — Frequency measurement, min. | 0.04 Hz |
| — Frequency measurement, max. | 800 kHz |
| — Cycle duration measurement, min. | 1.25 µs |
| — 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)
Dimensions	
Width	15 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	45 g
last modified:	01/29/2018