



*** spare part *** SIMATIC S7-1500, TM count 2x24 V counter module, 2 channels for 24 V incremental encoder or incremental position encoder 3 DI, 2 DQ per channel

General information	
Product type designation	TM Count 2x24V
Firmware version	V1.3
• FW update possible	Yes
Product function	
• I&M data	Yes; I&M0 to I&M3
• Isochronous mode	Yes
Engineering with	
• STEP 7 TIA Portal configurable/integrated from version	V12 (FW V1.0) ... V15 (FW V1.3)/V12 (FW V1.0), V13 (FW V1.1)
• PROFIBUS from GSD version/GSD revision	GSD Revision 5
• PROFINET from GSD version/GSD revision	V2.3 / -
Installation type/mounting	
Rail mounting	Yes; S7-1500 mounting rail
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
• permissible range, lower limit (DC)	19.2 V
• permissible range, upper limit (DC)	28.8 V
• Reverse polarity protection	Yes
Input current	
Current consumption, max.	75 mA; without load
Encoder supply	
Number of outputs	1; A common 24V encoder supply for both channels
24 V encoder supply	
• 24 V	Yes; L+ (-0.8 V)
• Short-circuit protection	Yes
• Output current, max.	1 A; total current of all encoders/channels
Power	
Power consumption from the backplane bus	1.3 W
Power loss	
Power loss, typ.	4 W
Address area	
Address space per module	
• Inputs	16 byte; Per channel
• Outputs	12 byte; per channel; 4 bytes for Motion Control
Digital inputs	
Number of digital inputs	6; 3 per channel
Digital inputs, parameterizable	Yes
Input characteristic curve in accordance with IEC 61131, type 3	Yes
Digital input functions, parameterizable	

• Gate start/stop	Yes
• Capture	Yes
• Synchronization	Yes
• Freely usable digital input	Yes
Input voltage	
• Type of input voltage	DC
• Rated value (DC)	24 V
• for signal "0"	-5 ... +5 V
• for signal "1"	+11 to +30V
• permissible voltage at input, min.	-30 V; -5 V continuous, -30 V brief reverse polarity protection
• permissible voltage at input, max.	30 V
Input current	
• 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
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	4; 2 per channel
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	
• Type of output voltage	DC
• 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.	2 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
Interface types	
• Source/sink input	Yes
• Input characteristic curve in accordance with IEC 61131, type 3	Yes
Isochronous mode	
Filtering and processing time (TCI), min.	130 µs
Bus cycle time (TDP), min.	250 µs
Interrupts/diagnostics/status information	
Alarms	
• Diagnostic alarm	Yes
• Hardware interrupt	Yes
Diagnoses	
• Monitoring the supply voltage	Yes
• Wire-break	Yes
• Short-circuit	Yes
• A/B transition error at incremental encoder	Yes
Diagnostics indication LED	
• RUN LED	Yes; green LED
• ERROR LED	Yes; red LED
• MAINT LED	Yes; Yellow LED
• Monitoring of the supply voltage (PWR-LED)	Yes; green LED
• Channel status display	Yes; green LED
• for channel diagnostics	Yes; red LED
• Status indicator forward counting (green)	Yes
• Status indicator backward counting (green)	Yes
Integrated Functions	
Counter	
• Number of counters	2
• Counting frequency, max.	800 kHz; with quadruple evaluation
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; Per channel
— 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 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	No																																							
• between the channels and backplane bus	Yes																																							
• Between the channels and load voltage L+	No																																							
Isolation																																								
Isolation tested with	707 V DC (type test)																																							
Ambient conditions																																								
Ambient temperature during operation																																								
• horizontal installation, min.	0 °C																																							
• horizontal installation, max.	60 °C; Please note derating for inductive loads																																							
• vertical installation, min.	0 °C																																							
• vertical installation, max.	40 °C; Please note derating for inductive loads																																							
Altitude during operation relating to sea level																																								
• Installation altitude above sea level, max.	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200MP system manual																																							
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; FW V1.1 and higher																																							
to standard PROFINET controller	Yes																																							
Dimensions																																								
Width	35 mm																																							
Height	147 mm																																							
Depth	129 mm																																							
Weights																																								
Weight, approx.	250 g																																							
Classifications																																								
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[Miscellaneous](#)

[Manufacturer Declaration](#)



[KC](#)

General Product Approval

For use in hazardous locations



[FM](#)



[FM](#)

[CCC-Ex](#)

For use in hazardous locations

Maritime application



[Type Examination Certificate](#)



[Miscellaneous](#)



Maritime application



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Maritime application



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