



SIMATIC S7-1500, TM PTO 4 interface module for stepper drives 4 channels pulse train output PTO: 24 V, RS-422, 5 V, 2 DI, 1 DQ 24 V DC per channel

General information	
Product type designation	TM PTO 4
Number of channels	4; Axes
Product function	
• I&M data	Yes; I&M0 to I&M3
• Isochronous mode	Yes
Engineering with	
• STEP 7 TIA Portal configurable/integrated from version	STEP 7 V19 or higher
• STEP 7 configurable/integrated from version	V5.5 SP3 with GSD file / -
• PROFINET from GSD version/GSD revision	GSDML V2.43
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.	70 mA; without load
Power	
Power consumption from the backplane bus	1.3 W
Power loss	
Power loss, typ.	4 W
Address area	
Address space per module	
• Inputs	72 byte; 18 per channel
• Outputs	40 byte; 10 per channel
Digital inputs	
Number of digital inputs	12; 3 per channel, of which 1 DIQ
Digital inputs, parameterizable	Yes
Input characteristic curve in accordance with IEC 61131, type 3	Yes
Digital input functions, parameterizable	
• Synchronization	Yes
• Probe	Yes
• Drive ready	Yes
Input voltage	
• Type of input voltage	DC
• Rated value (DC)	24 V

• for signal "0" • for signal "1" • permissible voltage at input, min. • permissible voltage at input, max.	-5 ... +5 V +11 to +30V -5 V 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. • unshielded, max.	1 000 m 600 m
Digital outputs	
Number of digital outputs	12; 3 per channel, of which 1 DIQ
Current-sinking	Yes; For DQn.0 and DQn.1 push-pull outputs
Current-sourcing	Yes
Digital outputs, parameterizable	Yes
Short-circuit protection	Yes; electronic/thermal
• Response threshold, typ.	0.2 A for DQn.0 and DQn.1, 0.9 A for DIQn.2
Controlling a digital input	Yes
Digital output functions, parameterizable	
• PTO (pulse train output) signal interface — 24 V asymmetrical — RS 422 symmetrical — TTL (5 V) asymmetrical • PTO (pulse train output) signal type — Pulse and direction — Count up, count down — Incremental encoder (A, B phase shift) — Incremental encoder (A, B phase shift, quadruple)	Yes Yes Yes Yes Yes Yes Yes
Switching capacity of the outputs	
• with resistive load, max.	0.1 A; 0.5 A for DIQn.2
Load resistance range	
• lower limit • upper limit	240 Ω; 48 ohms for DIQn.2 12 kΩ
Output voltage	
• Type of output voltage • for signal "1", min.	DC 23.2 V; L+ (-0.8 V), L+ (-1.3 V) for DIQn.2
Output current	
• for signal "1" rated value • for signal "1" permissible range, max. • for signal "1" minimum load current • for signal "0" residual current, max.	0.1 A; 0.5 A for DIQn.2 0.12 A; 0.6 A for DIQn.2 2 mA 0.5 mA
Output delay with resistive load	
• "0" to "1", typ. • "1" to "0", typ.	1 μs; 28 μs for DIQn.2 1 μs; 25 μs for DIQn.2
Switching frequency	
• with resistive load, max. • with inductive load, max. • For signal interface 24 V asymmetrical • For signal interface RS 422 symmetrical • For signal interface TTL (5 V) asymmetrical	1 kHz; For DIQn.2 0.5 Hz; According to IEC 60947-5-1, DC-13, for DIQn.2 200 kHz; With DQn.0 and DQn.1 1 MHz 200 kHz
Cable length	
• shielded, max.	600 m; 600 m for technological functions; depending on output frequency, load, and cable quality
Isochronous mode	
Bus cycle time (TDP), min.	250 μs; 375 μs if all 4 channels are used

Interrupts/diagnostics/status information			
Diagnostics function	Yes		
Alarms			
• Diagnostic alarm	Yes		
Diagnoses			
• Monitoring the supply voltage	Yes		
• Short-circuit	Yes; Thermal overload protection		
• Group error	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		
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)		
Security			
signed firmware update	Yes		
Ambient conditions			
Ambient temperature during operation			
• horizontal installation, min.	-30 °C		
• horizontal installation, max.	60 °C; Observe derating		
• vertical installation, min.	-30 °C		
• vertical installation, max.	40 °C; Observe derating		
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		
Absolute humidity			
• dew point, min.	-60 °C		
Decentralized operation			
to SIMATIC S7-300	Yes; Via control and feedback interface		
to SIMATIC S7-400	Yes; Via control and feedback interface		
to SIMATIC S7-1200	Yes		
to SIMATIC S7-1500	Yes		
to standard PROFINET controller	Yes; Via control and feedback interface		
Dimensions			
Width	35 mm		
Height	147 mm		
Depth	129 mm		
Weights			
Weight, approx.	300 g		
Classifications			
		Version	Classification
	eClass	14	27-24-22-05
	eClass	12	27-24-22-05
	eClass	9.1	27-24-22-05
	eClass	9	27-24-22-05
	eClass	8	27-24-22-05
	eClass	7.1	27-24-22-05
	eClass	6	27-24-22-05
	ETIM	10	EC001422

ETIM	9	EC001422
ETIM	8	EC001422
ETIM	7	EC001422

Approvals / Certificates

General Product Approval

[KC](#)



[Manufacturer Declaration](#)

[Miscellaneous](#)

[China RoHS](#)

General Product Approval	EMV	For use in hazardous locations
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[KC](#)



[CCC-Ex](#)

[FM](#)

For use in hazardous locations	Maritime application
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[Type Examination Certificate](#)

[Miscellaneous](#)



Maritime application



[NK / Nippon Kaiji Kyokai](#)



[CCS \(China Classification Society\)](#)



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