

SIMATIC S7-1500, TM Timer DIDQ 16x 24 V time-controlled digital inputs and outputs max. 8 DI, 16 DQ of which max. 16 with time stamp, Count, PWM, oversampling



General information

Product type designation	TM Timer DIDQ 16x24V
Product function	
<ul style="list-style-type: none"> I&M data 	Yes; I&M 0
Engineering with	
<ul style="list-style-type: none"> STEP 7 TIA Portal configurable/integrated from version 	V13 Update 3

Installation type/mounting

Rail mounting	Yes; S7-1500 mounting rail
---------------	----------------------------

Supply voltage

Load voltage 1L+	
<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; against destruction
Load voltage 2L+	
<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

- permissible range, upper limit (DC) 28.8 V
- Reverse polarity protection Yes; against destruction

Input current

from load voltage 1L+ (without load), max.	40 mA; without load
from load voltage 2L+ (without load), max.	30 mA; without load

Encoder supply

Number of outputs	8; max. depending on parameterization
-------------------	---------------------------------------

24 V encoder supply

- 24 V Yes; L+ (-0.8 V)
- Short-circuit protection Yes
- Output current, max. 1.2 A; Total current of all encoders / channels, max. 0.5 A per output

Power

Power available from the backplane bus	1.3 W
--	-------

Power loss

Power loss, typ.	5 W
------------------	-----

Address area

Address space per module

- Inputs 44 byte
- Outputs 74 byte

Digital inputs

Number of digital inputs	8; max. depending on parameterization
• in groups of	8

Digital inputs, parameterizable	Yes
---------------------------------	-----

Input characteristic curve in accordance with IEC 61131, type 3	Yes
---	-----

Digital input functions, parameterizable

- Digital input with time stamp Yes
 - Number, max. 8
- Counter Yes
 - Number, max. 4
- Counter for incremental encoder Yes
 - Number, max. 4
- Digital input with oversampling Yes
 - Number, max. 8
- HW enable for digital input Yes
 - Number, max. 4
- HW enable for digital output Yes
 - Number, max. 4

Input voltage

<ul style="list-style-type: none"> • Type of input voltage • Rated value (DC) • for signal "0" • for signal "1" • permissible voltage at input, min. • permissible voltage at input, max. 	DC 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)	
<ul style="list-style-type: none"> • Minimum pulse width for program reactions 	3 µs for parameterization "none"
for standard inputs	
— parameterizable	Yes; none / 0.05 / 0.1 / 0.4 / 0.8 ms
— at "0" to "1", min.	4 µs; for parameterization "none"
— at "1" to "0", min.	4 µs; for parameterization "none"
Cable length	
<ul style="list-style-type: none"> • shielded, max. • unshielded, max. 	1 000 m; Depending on sensor, cable quality and rate of change 600 m; Depending on sensor, cable quality and rate of change
Digital outputs	
Type of digital output	Transistor
Number of digital outputs	16; max. depending on parameterization
<ul style="list-style-type: none"> • in groups of 	8
Current-sinking	Yes; With High Speed output
Current-sourcing	Yes
Digital outputs, parameterizable	Yes
Short-circuit protection	Yes; electronic/thermal
<ul style="list-style-type: none"> • Response threshold, typ. 	1.7 A with Standard output, 0.5 A with High Speed output
Limitation of inductive shutdown voltage to	-0.8 V
Controlling a digital input	Yes
Digital output functions, parameterizable	
<ul style="list-style-type: none"> • Digital output with time stamp — Number, max. • PWM output — Number, max. • Digital output with oversampling — Number, max. 	Yes 16 Yes 16 Yes 16
Switching capacity of the outputs	
<ul style="list-style-type: none"> • with resistive load, max. • on lamp load, max. 	0.5 A; 0.1 A with High Speed output 5 W; 1 W with High Speed output
Load resistance range	
<ul style="list-style-type: none"> • lower limit • upper limit 	48 Ω; 240 ohm with High Speed output 12 kΩ

Output voltage	
<ul style="list-style-type: none"> Type of output voltage for signal "0", max. for signal "1", min. 	DC 1 V; With High Speed output 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; 0.1 A with High Speed output, observe derating 0.6 A; 0.12 A with High Speed output, observe derating 2 mA 0.5 mA
Output delay with resistive load	
<ul style="list-style-type: none"> "0" to "1", max. "1" to "0", max. 	1 µs; With High Speed output, 5 µs with Standard output 1 µs; With High Speed output, 6 µs with Standard output
Switching frequency	
<ul style="list-style-type: none"> with resistive load, max. on lamp load, max. 	10 kHz 10 Hz
Total current of the outputs	
<ul style="list-style-type: none"> Current per group, max. Current per module, max. 	4 A 8 A; Observe derating
Cable length	
<ul style="list-style-type: none"> shielded, max. unshielded, max. 	1 000 m; Depending on load and cable quality 600 m; Depending on load and cable quality
Encoder	
Connectable encoders	
<ul style="list-style-type: none"> Incremental encoder (asymmetrical) 24 V initiator 2-wire sensor <ul style="list-style-type: none"> permissible quiescent current (2-wire sensor), max. 	Yes Yes 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. Incremental encoder with A/B tracks, 90° phase offset Pulse encoder 	24 V 50 kHz 200 kHz; with quadruple evaluation 600 m; Depending on input frequency, encoder and cable quality; max. 200 m at 50 kHz 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	

• Input characteristic curve in accordance with IEC 61131, type 3	Yes
Isochronous mode	
Bus cycle time (TDP), min.	250 µs
Jitter, max.	1 µs
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Substitute values connectable	Yes
Alarms	
• Diagnostic alarm	Yes
Diagnostic messages	
• Monitoring the supply voltage	Yes
• Short-circuit	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
Integrated Functions	
Number of counters	4
Counting frequency (counter) max.	200 kHz; with quadruple evaluation
Counting functions	
• Continuous counting	Yes
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes
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
• vertical installation, min.	0 °C
• vertical installation, max.	40 °C; Observe derating
Decentralized operation	
to SIMATIC S7-1500	Yes
Dimensions	

Width	35 mm
Height	147 mm
Depth	129 mm

Weights

Weight, approx.	320 g
last modified:	06/22/2020