



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 Isochronous mode 	Yes; I&M 0 Yes
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) permissible range, lower limit (DC) permissible range, upper limit (DC) Reverse polarity protection 	24 V 19.2 V 28.8 V Yes; against destruction
Load voltage 2L+	
<ul style="list-style-type: none"> 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; 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	
<ul style="list-style-type: none"> 24 V Short-circuit protection Output current, max. 	Yes; L+ (-0.8 V) Yes 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	
<ul style="list-style-type: none"> Inputs Outputs 	44 byte 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	
• 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)	
• 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	
• shielded, max.	1 000 m; Depending on sensor, cable quality and rate of change
• unshielded, max.	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
• in groups of	8
Current-sinking	Yes; With High Speed output
Current-sourcing	Yes
Digital outputs, parameterizable	Yes
Short-circuit protection	Yes; electronic/thermal
• 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	
• Digital output with time stamp	Yes
— Number, max.	16
• PWM output	Yes
— Number, max.	16
• Digital output with oversampling	Yes
— Number, max.	16
Switching capacity of the outputs	
• with resistive load, max.	0.5 A; 0.1 A with High Speed output
• on lamp load, max.	5 W; 1 W with High Speed output
Load resistance range	
• lower limit	48 Ω; 240 ohm with High Speed output
• upper limit	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	
<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> Diagnostic alarm 	Yes
Diagnoses	
<ul style="list-style-type: none"> Monitoring the supply voltage Short-circuit 	Yes Yes
Diagnostics indication LED	
<ul style="list-style-type: none"> RUN LED ERROR LED MAINT LED Monitoring of the supply voltage (PWR-LED) Channel status display for channel diagnostics 	Yes; green LED Yes; red LED Yes; Yellow LED Yes; green LED Yes; green LED Yes; red LED

Integrated Functions	
Counter	Yes
<ul style="list-style-type: none"> Number of counters Counting frequency, max. 	4 200 kHz; with quadruple evaluation
Counting functions	
<ul style="list-style-type: none"> Continuous counting 	Yes
Position detection	
<ul style="list-style-type: none"> Incremental acquisition 	Yes
Potential separation	
Potential separation channels	
<ul style="list-style-type: none"> between the channels and backplane bus 	Yes
Isolation	
Isolation tested with	707 V DC (type test)
Ambient conditions	
Ambient temperature during operation	
<ul style="list-style-type: none"> horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. 	0 °C 60 °C 0 °C 40 °C; Observe derating
Altitude during operation relating to sea level	
<ul style="list-style-type: none"> 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 S7-1500	Yes
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	320 g
last modified:	9/20/2021 