



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

<ul style="list-style-type: none"> • in groups of 	8
Digital inputs, parameterizable	Yes
Input characteristic curve in accordance with IEC 61131, type 3	Yes
Digital input functions, parameterizable	
<ul style="list-style-type: none"> • Digital input with time stamp <ul style="list-style-type: none"> — Number, max. 	Yes 8
<ul style="list-style-type: none"> • Counter <ul style="list-style-type: none"> — Number, max. 	Yes 4
<ul style="list-style-type: none"> • Counter for incremental encoder <ul style="list-style-type: none"> — Number, max. 	Yes 4
<ul style="list-style-type: none"> • Digital input with oversampling <ul style="list-style-type: none"> — Number, max. 	Yes 8
<ul style="list-style-type: none"> • HW enable for digital input <ul style="list-style-type: none"> — Number, max. 	Yes 4
<ul style="list-style-type: none"> • HW enable for digital output <ul style="list-style-type: none"> — Number, max. 	Yes 4
Input voltage	
<ul style="list-style-type: none"> • Type of input voltage 	DC
<ul style="list-style-type: none"> • Rated value (DC) 	24 V
<ul style="list-style-type: none"> • for signal "0" 	-5 ... +5 V
<ul style="list-style-type: none"> • for signal "1" 	+11 to +30V
<ul style="list-style-type: none"> • permissible voltage at input, min. 	-30 V; -5 V continuous, -30 V brief reverse polarity protection
<ul style="list-style-type: none"> • permissible voltage at input, max. 	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	
<ul style="list-style-type: none"> — parameterizable 	Yes; none / 0.05 / 0.1 / 0.4 / 0.8 ms
<ul style="list-style-type: none"> — at "0" to "1", min. 	4 µs; for parameterization "none"
<ul style="list-style-type: none"> — at "1" to "0", min. 	4 µs; for parameterization "none"
Cable length	
<ul style="list-style-type: none"> • shielded, max. 	1 000 m; Depending on sensor, cable quality and rate of change
<ul style="list-style-type: none"> • 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
<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 <ul style="list-style-type: none"> — Number, max. 	Yes 16
<ul style="list-style-type: none"> • PWM output <ul style="list-style-type: none"> — Number, max. 	Yes 16
<ul style="list-style-type: none"> • Digital output with oversampling <ul style="list-style-type: none"> — Number, max. 	Yes 16
Switching capacity of the outputs	
<ul style="list-style-type: none"> • with resistive load, max. 	0.5 A; 0.1 A with High Speed output
<ul style="list-style-type: none"> • on lamp load, max. 	5 W; 1 W with High Speed output
Load resistance range	
<ul style="list-style-type: none"> • lower limit 	48 Ω; 240 ohm with High Speed output
<ul style="list-style-type: none"> • upper limit 	12 kΩ
Output voltage	
<ul style="list-style-type: none"> • Type of output voltage 	DC
<ul style="list-style-type: none"> • for signal "0", max. 	1 V; With High Speed output
<ul style="list-style-type: none"> • for signal "1", min. 	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
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. Jitter, max.	250 µs 1 µs
Interrupts/diagnostics/status information	
Diagnostics function Substitute values connectable	Yes 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 <ul style="list-style-type: none"> • Number of counters • Counting frequency, max. 	Yes 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	

• 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
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 S7-1500	Yes
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	320 g