SIEMENS

Data sheet



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	
● I&M data	Yes; I&M 0
Isochronous mode	Yes
Engineering with	
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+	
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; against destruction
Load voltage 2L+	
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; 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 payagests:	Voc
Digital inputs, parameterizable	Yes
Input characteristic curve in accordance with IEC 61131, type 3	Yes
Digital input functions, parameterizable	Voo
Digital input with time stamp	Yes
— Number, max.	8 Von
• Counter	Yes
— Number, max.	4
Counter for incremental encoder	Yes
— Number, max.	4
Digital input with oversampling	Yes
— Number, max.	8 Voa
HW enable for digital input	Yes
— Number, max.	4
HW enable for digital output	Yes
— Number, max.	4
Input voltage	DC
Type of input voltage Pated value (DC)	DC
Rated value (DC) for signal "0"	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. Input ourset.	30 V
Input current	2.5 m/s
• for signal "1", typ.	2.5 mA
Input delay (for rated value of input voltage)	Our françois de la constitución
Minimum pulse width for program reactions	3 μs for parameterization "none"
for standard inputs	V 1005 104 104 100
— 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	4 000 m. Depending an appear cable quality and rate of shares
• shielded, max.	1 000 m; Depending on sensor, cable quality and rate of change
	600 m; Depending on sensor, cable quality and rate of change
unshielded, max. Digital outputs	
Digital outputs	Tennistes
Digital outputs Type of digital output	Transistor
Digital outputs Type of digital output Number of digital outputs	16; max. depending on parameterization
Type of digital output Number of digital outputs • in groups of	16; max. depending on parameterization
Type of digital output Number of digital outputs • in groups of Current-sinking	16; max. depending on parameterization 8 Yes; With High Speed output
Type of digital output Number of digital outputs ● in groups of Current-sinking Current-sourcing	16; max. depending on parameterization 8 Yes; With High Speed output Yes
Type of digital output Number of digital outputs ● in groups of Current-sinking Current-sourcing Digital outputs, parameterizable	16; max. depending on parameterization 8 Yes; With High Speed output Yes Yes
Type of digital output Number of digital outputs • in groups of Current-sinking Current-sourcing Digital outputs, parameterizable Short-circuit protection	16; max. depending on parameterization 8 Yes; With High Speed output Yes Yes Yes; electronic/thermal
Type of digital output Number of digital outputs • in groups of Current-sinking Current-sourcing Digital outputs, parameterizable Short-circuit protection • Response threshold, typ.	16; max. depending on parameterization 8 Yes; With High Speed output Yes Yes Yes Yes Yes; electronic/thermal 1.7 A with Standard output, 0.5 A with High Speed output
Type of digital output Number of digital outputs ■ in groups of Current-sinking Current-sourcing Digital outputs, parameterizable Short-circuit protection ■ Response threshold, typ. Limitation of inductive shutdown voltage to	16; max. depending on parameterization 8 Yes; With High Speed output Yes Yes Yes Yes; electronic/thermal 1.7 A with Standard output, 0.5 A with High Speed output -0.8 V
Type of digital output Number of digital outputs • in groups of Current-sinking Current-sourcing Digital outputs, parameterizable Short-circuit protection • Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input	16; max. depending on parameterization 8 Yes; With High Speed output Yes Yes Yes Yes Yes; electronic/thermal 1.7 A with Standard output, 0.5 A with High Speed output
Type of digital output Number of digital outputs • in groups of Current-sinking Current-sourcing Digital outputs, parameterizable Short-circuit protection • Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Digital output functions, parameterizable	16; max. depending on parameterization 8 Yes; With High Speed output Yes Yes Yes Yes; electronic/thermal 1.7 A with Standard output, 0.5 A with High Speed output -0.8 V Yes
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Digital outputs Type of digital output Number of digital outputs • in groups of Current-sinking Current-sourcing Digital outputs, parameterizable Short-circuit protection • Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Digital output functions, parameterizable • Digital output with time stamp — Number, max.	16; max. depending on parameterization 8 Yes; With High Speed output Yes Yes Yes Yes; electronic/thermal 1.7 A with Standard output, 0.5 A with High Speed output -0.8 V Yes Yes Yes
Type of digital output Number of digital outputs • in groups of Current-sinking Current-sourcing Digital outputs, parameterizable Short-circuit protection • Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Digital output functions, parameterizable • Digital output with time stamp — Number, max. • PWM output	16; max. depending on parameterization 8 Yes; With High Speed output Yes Yes Yes Yes; electronic/thermal 1.7 A with Standard output, 0.5 A with High Speed output -0.8 V Yes Yes
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Type of digital output Number of digital outputs • in groups of Current-sinking Current-sourcing Digital outputs, parameterizable Short-circuit protection • Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Digital output functions, parameterizable • Digital output with time stamp — Number, max. • PWM output — Number, max. • Digital output with oversampling — Number, max.	16; max. depending on parameterization 8 Yes; With High Speed output Yes Yes Yes; electronic/thermal 1.7 A with Standard output, 0.5 A with High Speed output -0.8 V Yes Yes 16 Yes
Type of digital output Number of digital outputs in groups of Current-sinking Current-sourcing Digital outputs, parameterizable Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Digital output functions, parameterizable Digital output with time stamp Number, max. PWM output Number, max. Digital output with oversampling Number, max. Switching capacity of the outputs	16; max. depending on parameterization 8 Yes; With High Speed output Yes Yes Yes; electronic/thermal 1.7 A with Standard output, 0.5 A with High Speed output -0.8 V Yes Yes 16 Yes 16 Yes 16 Yes 16
Type of digital output Number of digital outputs in groups of Current-sinking Current-sourcing Digital outputs, parameterizable Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Digital output functions, parameterizable Digital output with time stamp Number, max. PWM output Number, max. Digital output with oversampling Number, max. Switching capacity of the outputs with resistive load, max.	16; max. depending on parameterization 8 Yes; With High Speed output Yes Yes Yes; electronic/thermal 1.7 A with Standard output, 0.5 A with High Speed output -0.8 V Yes Yes 16 Yes 16 Yes 16 Yes 16 O.5 A; 0.1 A with High Speed output
Type of digital output Number of digital outputs in groups of Current-sinking Current-sourcing Digital outputs, parameterizable Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Digital output functions, parameterizable Digital output with time stamp Number, max. PWM output Number, max. Digital output with oversampling Number, max. Switching capacity of the outputs with resistive load, max. on lamp load, max.	16; max. depending on parameterization 8 Yes; With High Speed output Yes Yes Yes; electronic/thermal 1.7 A with Standard output, 0.5 A with High Speed output -0.8 V Yes Yes 16 Yes 16 Yes 16 Yes 16
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Type of digital output Number of digital outputs in groups of Current-sinking Current-sourcing Digital outputs, parameterizable Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Digital output functions, parameterizable Digital output with time stamp Number, max. PWM output Number, max. Digital output with oversampling Number, max. Switching capacity of the outputs with resistive load, max. load resistance range lower limit	16; max. depending on parameterization 8 Yes; With High Speed output Yes Yes Yes; electronic/thermal 1.7 A with Standard output, 0.5 A with High Speed output -0.8 V Yes Yes 16 Yes 16 Yes 16 Yes 17 Yes 18 Yes 19 Yes 19 Yes 10 Yes 10 Yes 11 Yes 11 Yes 11 Yes 11 Yes 12 Yes 13 Yes 14 Yes 15 Yes 16 Yes 16
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Type of digital output Number of digital outputs in groups of Current-sinking Current-sourcing Digital outputs, parameterizable Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Digital output functions, parameterizable Digital output with time stamp Number, max. PWM output Number, max. Digital output with oversampling Number, max. Switching capacity of the outputs with resistive load, max. on lamp load, max. Load resistance range lower limit upper limit Output voltage Type of output voltage	16; max. depending on parameterization 8 Yes; With High Speed output Yes Yes Yes Yes, electronic/thermal 1.7 A with Standard output, 0.5 A with High Speed output -0.8 V Yes Yes 16 Yes 16 Yes 16 Yes 17 Yes 18 Yes 19 Yes 19 Yes 10 Yes 10 Yes 11 Yes 11 Yes 11 Yes 11 Yes 12 Yes 15 Yes 16 Yes 16 Yes 16 Yes 16
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Output current	0.5 A. 0.4 A with High Casad autout above and are
• for signal "1" rated value	0.5 A; 0.1 A with High Speed output, observe derating
• for signal "1" permissible range, max.	0.6 A; 0.12 A with High Speed output, observe derating
• 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.	1 μs; With High Speed output, 5 μs with Standard output
• "1" to "0", max.	1 μs; With High Speed output, 6 μs with Standard output
Switching frequency	
with resistive load, max.	10 kHz
on lamp load, max.	10 Hz
Total current of the outputs	
 Current per group, max. 	4 A
Current per module, max.	8 A; Observe derating
Cable length	
• shielded, max.	1 000 m; depending on load and cable quality
unshielded, max.	600 m; depending on load and cable quality
Encoder	
Connectable encoders	
Incremental encoder (asymmetrical)	Yes
• 24 V initiator	Yes
• 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.	50 kHz
Counting frequency, max.	200 kHz; with quadruple evaluation
Cable length, shielded, max.	600 m; Depending on input frequency, encoder and cable quality; max. 200 m
• Subjectingth, Shielded, Max.	at 50 kHz
 Incremental encoder with A/B tracks, 90° phase offset 	Yes
• pulse encoder	Yes
Interface types	
Input characteristic curve in accordance with IEC 61131,	Yes
- input onaractoristic our ve in accordance with ille of 131,	
type 3	
type 3	250 µs
type 3 Isochronous mode	250 μs 1 μs
type 3 Isochronous mode Bus cycle time (TDP), min.	·
type 3 Isochronous mode Bus cycle time (TDP), min. Jitter, max.	·
type 3 Isochronous mode Bus cycle time (TDP), min. Jitter, max. Interrupts/diagnostics/status information	1 μs
type 3 Isochronous mode Bus cycle time (TDP), min. Jitter, max. Interrupts/diagnostics/status information Diagnostics function	1 μs Yes
type 3 Isochronous mode Bus cycle time (TDP), min. Jitter, max. Interrupts/diagnostics/status information Diagnostics function Substitute values connectable	1 μs Yes
type 3 Isochronous mode Bus cycle time (TDP), min. Jitter, max. Interrupts/diagnostics/status information Diagnostics function Substitute values connectable Alarms	1 μs Yes Yes
type 3 Isochronous mode Bus cycle time (TDP), min. Jitter, max. Interrupts/diagnostics/status information Diagnostics function Substitute values connectable Alarms • Diagnostic alarm Diagnoses	1 μs Yes Yes
type 3 Isochronous mode Bus cycle time (TDP), min. Jitter, max. Interrupts/diagnostics/status information Diagnostics function Substitute values connectable Alarms • Diagnostic alarm	1 μs Yes Yes Yes
type 3 Isochronous mode Bus cycle time (TDP), min. Jitter, max. Interrupts/diagnostics/status information Diagnostics function Substitute values connectable Alarms • Diagnostic alarm Diagnoses • Monitoring the supply voltage • Short-circuit	1 μs Yes Yes Yes Yes
type 3 Isochronous mode Bus cycle time (TDP), min. Jitter, max. Interrupts/diagnostics/status information Diagnostics function Substitute values connectable Alarms • Diagnostic alarm Diagnoses • Monitoring the supply voltage • Short-circuit Diagnostics indication LED	1 μs Yes Yes Yes Yes Yes
type 3 Isochronous mode Bus cycle time (TDP), min. Jitter, max. Interrupts/diagnostics/status information Diagnostics function Substitute values connectable Alarms • Diagnostic alarm Diagnoses • Monitoring the supply voltage • Short-circuit Diagnostics indication LED • RUN LED	1 μs Yes Yes Yes Yes Yes Yes Yes Y
type 3 Isochronous mode Bus cycle time (TDP), min. Jitter, max. Interrupts/diagnostics/status information Diagnostics function Substitute values connectable Alarms • Diagnostic alarm Diagnoses • Monitoring the supply voltage • Short-circuit Diagnostics indication LED • RUN LED • ERROR LED	1 μs Yes Yes Yes Yes Yes Yes Yes; green LED Yes; red LED
type 3 Isochronous mode Bus cycle time (TDP), min. Jitter, max. Interrupts/diagnostics/status information Diagnostics function Substitute values connectable Alarms • Diagnostic alarm Diagnoses • Monitoring the supply voltage • Short-circuit Diagnostics indication LED • RUN LED • ERROR LED • MAINT LED	Yes Yes Yes Yes Yes Yes Yes Yes; green LED Yes; red LED Yes; Yellow LED
type 3 Isochronous mode Bus cycle time (TDP), min. Jitter, max. Interrupts/diagnostics/status information Diagnostics function Substitute values connectable Alarms • Diagnostic alarm Diagnoses • Monitoring the supply voltage • Short-circuit Diagnostics indication LED • RUN LED • ERROR LED • MAINT LED • Monitoring of the supply voltage (PWR-LED)	Yes Yes Yes Yes Yes Yes Yes Yes; green LED Yes; red LED Yes; Yellow LED Yes; green LED
type 3 Isochronous mode Bus cycle time (TDP), min. Jitter, max. Interrupts/diagnostics/status information Diagnostics function Substitute values connectable Alarms Diagnostic alarm Diagnoses Monitoring the supply voltage Short-circuit Diagnostics indication LED RUN LED ERROR LED MAINT LED Monitoring of the supply voltage (PWR-LED) Channel status display	Yes Yes Yes Yes Yes Yes Yes Yes; green LED Yes; red LED Yes; Yellow LED Yes; green LED Yes; green LED Yes; green LED
type 3 Isochronous mode Bus cycle time (TDP), min. Jitter, max. Interrupts/diagnostics/status information Diagnostics function Substitute values connectable Alarms Diagnostic alarm Diagnoses Monitoring the supply voltage Short-circuit Diagnostics indication LED RUN LED ERROR LED MAINT LED Monitoring of the supply voltage (PWR-LED) Channel status display for channel diagnostics	Yes Yes Yes Yes Yes Yes Yes Yes; green LED Yes; red LED Yes; Yellow LED Yes; green LED
type 3 Isochronous mode Bus cycle time (TDP), min. Jitter, max. Interrupts/diagnostics/status information Diagnostics function Substitute values connectable Alarms • Diagnostic alarm Diagnoses • Monitoring the supply voltage • Short-circuit Diagnostics indication LED • RUN LED • ERROR LED • MAINT LED • Monitoring of the supply voltage (PWR-LED) • Channel status display • for channel diagnostics Integrated Functions	Yes Yes Yes Yes Yes Yes Yes; green LED Yes; red LED Yes; Yellow LED Yes; green LED
type 3 Isochronous mode Bus cycle time (TDP), min. Jitter, max. Interrupts/diagnostics/status information Diagnostics function Substitute values connectable Alarms • Diagnostic alarm Diagnoses • Monitoring the supply voltage • Short-circuit Diagnostics indication LED • RUN LED • ERROR LED • MAINT LED • Monitoring of the supply voltage (PWR-LED) • Channel status display • for channel diagnostics Integrated Functions Counter	Yes Yes Yes Yes Yes Yes Yes; green LED Yes; red LED Yes; Yellow LED Yes; green LED Yes; red LED
type 3 Isochronous mode Bus cycle time (TDP), min. Jitter, max. Interrupts/diagnostics/status information Diagnostics function Substitute values connectable Alarms • Diagnostic alarm Diagnoses • Monitoring the supply voltage • Short-circuit Diagnostics indication LED • RUN LED • ERROR LED • MAINT LED • Monitoring of the supply voltage (PWR-LED) • Channel status display • for channel diagnostics Integrated Functions Counter • Number of counters	Yes Yes Yes Yes Yes Yes Yes; green LED Yes; red LED Yes; green LED Yes; red LED
Isochronous mode Bus cycle time (TDP), min. Jitter, max. Interrupts/diagnostics/status information Diagnostics function Substitute values connectable Alarms Diagnostic alarm Diagnoses Monitoring the supply voltage Short-circuit Diagnostics indication LED RUN LED ERROR LED MAINT LED Monitoring of the supply voltage (PWR-LED) Channel status display for channel diagnostics Integrated Functions Counter Number of counters Counting frequency, max.	Yes Yes Yes Yes Yes Yes Yes; green LED Yes; red LED Yes; Yellow LED Yes; green LED Yes; red LED
Isochronous mode Bus cycle time (TDP), min. Jitter, max. Interrupts/diagnostics/status information Diagnostics function Substitute values connectable Alarms Diagnoses Monitoring the supply voltage Short-circuit Diagnostics indication LED RUN LED ERROR LED MAINT LED Monitoring of the supply voltage (PWR-LED) Channel status display for channel diagnostics Integrated Functions Counter Number of counters Counting frequency, max. Counting functions	Yes Yes Yes Yes Yes Yes Yes Yes; green LED Yes; red LED Yes; Yellow LED Yes; green LED Yes; green LED Yes; green LED Yes; green LED Yes; ted LED Yes; with quadruple evaluation
Isochronous mode Bus cycle time (TDP), min. Jitter, max. Interrupts/diagnostics/status information Diagnostics function Substitute values connectable Alarms Diagnoses Monitoring the supply voltage Short-circuit Diagnostics indication LED RUN LED RROR LED MAINT LED Monitoring of the supply voltage (PWR-LED) Channel status display for channel diagnostics Integrated Functions Counter Number of counters Counting frequency, max. Counting functions Continuous counting	Yes Yes Yes Yes Yes Yes Yes; green LED Yes; red LED Yes; green LED Yes; red LED
Isochronous mode Bus cycle time (TDP), min. Jitter, max. Interrupts/diagnostics/status information Diagnostics function Substitute values connectable Alarms • Diagnostic alarm Diagnoses • Monitoring the supply voltage • Short-circuit Diagnostics indication LED • RUN LED • ERROR LED • MAINT LED • Monitoring of the supply voltage (PWR-LED) • Channel status display • for channel diagnostics Integrated Functions Counter • Number of counters • Counting frequency, max. Counting functions • Continuous counting Position detection	Yes Yes Yes Yes Yes Yes; green LED Yes; red LED Yes; Yellow LED Yes; green LED Yes; green LED Yes; green LED Yes; green LED Yes; with quadruple evaluation Yes
Isochronous mode Bus cycle time (TDP), min. Jitter, max. Interrupts/diagnostics/status information Diagnostics function Substitute values connectable Alarms Diagnoses Monitoring the supply voltage Short-circuit Diagnostics indication LED RUN LED RROR LED MAINT LED Monitoring of the supply voltage (PWR-LED) Channel status display for channel diagnostics Integrated Functions Counter Number of counters Counting frequency, max. Counting functions Continuous counting	Yes Yes Yes Yes Yes Yes Yes Yes; green LED Yes; red LED Yes; Yellow LED Yes; green LED Yes; green LED Yes; green LED Yes; green LED Yes; ted LED Yes; with quadruple evaluation



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	

last modified:



