



SIMATIC ET 200SP, TM timer DIDQ 10x 24V time-controlled digital inputs and outputs 4 DI, 6DQ with time stamp Count, PWM, oversampling

General information	
Product type designation	TM Timer DIDQ 10x24V
HW functional status	From FS03
usable BaseUnits	BU type A0
Product function	
<ul style="list-style-type: none"> <li>I&amp;M data</li> </ul>	Yes; I&M 0
<ul style="list-style-type: none"> <li>Isochronous mode</li> </ul>	Yes
Engineering with	
<ul style="list-style-type: none"> <li>STEP 7 TIA Portal configurable/integrated from version</li> </ul>	V13 Update 3
<ul style="list-style-type: none"> <li>STEP 7 configurable/integrated from version</li> </ul>	V5.5 SP3 / -
Supply voltage	
Load voltage L+	
<ul style="list-style-type: none"> <li>Rated value (DC)</li> </ul>	24 V
<ul style="list-style-type: none"> <li>permissible range, lower limit (DC)</li> </ul>	19.2 V
<ul style="list-style-type: none"> <li>permissible range, upper limit (DC)</li> </ul>	28.8 V
<ul style="list-style-type: none"> <li>Reverse polarity protection</li> </ul>	Yes; against destruction
Input current	
Current consumption, max.	50 mA; without load
Encoder supply	
Number of outputs	1
24 V encoder supply	
<ul style="list-style-type: none"> <li>24 V</li> </ul>	Yes; L+ (-0.8 V)
<ul style="list-style-type: none"> <li>Short-circuit protection</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Output current, max.</li> </ul>	500 mA; Observe derating
Power loss	
Power loss, typ.	1.5 W
Address area	
Address space per module	
<ul style="list-style-type: none"> <li>Inputs</li> </ul>	26 byte
<ul style="list-style-type: none"> <li>Outputs</li> </ul>	32 byte
Hardware configuration	
Automatic encoding	
<ul style="list-style-type: none"> <li>Type of mechanical coding element</li> </ul>	type B
Digital inputs	
Number of digital inputs	4
Digital inputs, parameterizable	Yes

Input characteristic curve in accordance with IEC 61131, type 3	Yes
<b>Digital input functions, parameterizable</b>	
• Digital input with time stamp — Number, max.	Yes 4
• Counter — Number, max.	Yes 3
• Counter for incremental encoder — Number, max.	Yes 1
• Digital input with oversampling — Number, max.	Yes 4
• HW enable for digital input — Number, max.	Yes 1
• HW enable for digital output — Number, max.	Yes 3
<b>Input voltage</b>	
• 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
<b>Input current</b>	
• for signal "1", typ.	2.5 mA
<b>Input delay (for rated value of input voltage)</b>	
• Minimum pulse width for program reactions	3 µs for parameterization "none"
<b>for standard inputs</b>	
— parameterizable	Yes; none / 0.05 / 0.1 / 0.4 / 0.8 ms
— at "0" to "1", min.	4 µs
— at "1" to "0", min.	4 µs
<b>Cable length</b>	
• 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
<b>Digital outputs</b>	
Type of digital output	Transistor
Number of digital outputs	6
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
<b>Digital output functions, parameterizable</b>	
• Digital output with time stamp — Number, max.	Yes 6
• PWM output — Number, max.	Yes 6
• Digital output with oversampling — Number, max.	Yes 6
<b>Switching capacity of the outputs</b>	
• 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
<b>Load resistance range</b>	
• lower limit	48 Ω; 240 ohm with High Speed output
• upper limit	12 kΩ
<b>Output voltage</b>	
• Type of output voltage	DC
• for signal "0", max.	1 V; With High Speed output

<ul style="list-style-type: none"> <li>for signal "1", min.</li> </ul>	23.2 V; L+ (-0.8 V)
<b>Output current</b>	
<ul style="list-style-type: none"> <li>for signal "1" rated value</li> <li>for signal "1" permissible range, max.</li> <li>for signal "1" minimum load current</li> <li>for signal "0" residual current, max.</li> </ul>	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
<b>Output delay with resistive load</b>	
<ul style="list-style-type: none"> <li>"0" to "1", max.</li> <li>"1" to "0", max.</li> </ul>	1 µs; With High Speed output, 5 µs with Standard output 1 µs; With High Speed output, 6 µs with Standard output
<b>Switching frequency</b>	
<ul style="list-style-type: none"> <li>with resistive load, max.</li> <li>on lamp load, max.</li> </ul>	10 kHz 10 Hz
<b>Total current of the outputs</b>	
<ul style="list-style-type: none"> <li>Current per module, max.</li> </ul>	3.5 A; Observe derating
<b>Cable length</b>	
<ul style="list-style-type: none"> <li>shielded, max.</li> <li>unshielded, max.</li> </ul>	1 000 m; depending on load and cable quality 600 m; depending on load and cable quality
<b>Encoder</b>	
<b>Connectable encoders</b>	
<ul style="list-style-type: none"> <li>Incremental encoder (asymmetrical)</li> <li>24 V initiator</li> <li>2-wire sensor               <ul style="list-style-type: none"> <li>permissible quiescent current (2-wire sensor), max.</li> </ul> </li> </ul>	Yes Yes Yes 1.5 mA
<b>Encoder signals, incremental encoder (asymmetrical)</b>	
<ul style="list-style-type: none"> <li>Input voltage</li> <li>Input frequency, max.</li> <li>Counting frequency, max.</li> <li>Cable length, shielded, max.</li> <li>Incremental encoder with A/B tracks, 90° phase offset</li> <li>pulse encoder</li> </ul>	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
<b>Encoder signal 24 V</b>	
<ul style="list-style-type: none"> <li>permissible voltage at input, min.</li> <li>permissible voltage at input, max.</li> </ul>	-30 V 30 V
<b>Interface types</b>	
<ul style="list-style-type: none"> <li>Input characteristic curve in accordance with IEC 61131, type 3</li> </ul>	Yes
<b>Isochronous mode</b>	
<ul style="list-style-type: none"> <li>Bus cycle time (TDP), min.</li> <li>Jitter, max.</li> </ul>	375 µs 1 µs
<b>Interrupts/diagnostics/status information</b>	
<ul style="list-style-type: none"> <li>Diagnostics function</li> <li>Substitute values connectable</li> </ul>	Yes Yes
<b>Alarms</b>	
<ul style="list-style-type: none"> <li>Diagnostic alarm</li> </ul>	Yes
<b>Diagnoses</b>	
<ul style="list-style-type: none"> <li>Monitoring the supply voltage</li> <li>Short-circuit</li> </ul>	Yes Yes
<b>Diagnostics indication LED</b>	
<ul style="list-style-type: none"> <li>Monitoring of the supply voltage (PWR-LED)</li> <li>Channel status display</li> <li>for module diagnostics</li> </ul>	Yes; green PWR LED Yes Yes; green/red DIAG LED
<b>Integrated Functions</b>	
<ul style="list-style-type: none"> <li>Counter               <ul style="list-style-type: none"> <li>Number of counters</li> <li>Counting frequency, max.</li> </ul> </li> </ul>	Yes 3 200 kHz; with quadruple evaluation
<b>Counting functions</b>	

• Continuous counting	Yes
<b>Potential separation</b>	
Potential separation channels	
• between the channels and backplane bus	Yes
<b>Isolation</b>	
Isolation tested with	707 V DC (type test)
<b>Standards, approvals, certificates</b>	
Suitable for safety functions	No
<b>Ambient conditions</b>	
Ambient temperature during operation	
• horizontal installation, min.	-30 °C
• horizontal installation, max.	60 °C; Observe derating
• vertical installation, min.	-30 °C
• vertical installation, max.	50 °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 200SP system manual
<b>Decentralized operation</b>	
to SIMATIC S7-1500	Yes
<b>Dimensions</b>	
Width	15 mm
Height	73 mm
Depth	58 mm
<b>Weights</b>	
Weight, approx.	45 g
<b>last modified:</b>	3/2/2021 