

SIMATIC ET 200SP, TM PULSE 2X24V PWM AND PULSE  
OUTPUT 2 CHANNELS 2 A FOR VALVES AND DC MOTORS



General information	
Product type designation	TM Pulse 2x24 V
Firmware version	V1.0
<ul style="list-style-type: none"> <li>FW update possible</li> </ul>	Yes
usable BaseUnits	BU type B1
Color code for module-specific color identification plate	CC40
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 configurable/integrated as of version</li> </ul>	V5.5 SP4 and higher
<ul style="list-style-type: none"> <li>PROFIBUS as of GSD version/GSD revision</li> </ul>	GSD Revision 5
<ul style="list-style-type: none"> <li>PROFINET as of GSD version/GSD revision</li> </ul>	GSDML V2.31
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

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

### Input current

Current consumption, max.	70 mA; without load
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### Encoder supply

Number of outputs	2; A common 24V encoder supply for both channels
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### 24 V encoder supply

• 24 V	Yes; L+ (-0.8 V)
• Short-circuit protection	Yes; per module, electronic
• Output current, max.	300 mA

### Power loss

Power loss, typ.	1.7 W
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### Address area

#### Occupied address area

• Inputs	16 byte; 8 per channel
• Outputs	24 byte; 12 per channel

### Digital inputs

Number of digital inputs	2; 1 per channel
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Digital inputs, parameterizable	Yes
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Input characteristic curve in accordance with IEC 61131, type 3	Yes
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#### Digital input functions, parameterizable

• Freely usable digital input	Yes
• HW enable for digital output	Yes

### Input voltage

• Type of input voltage	DC
• Rated value (DC)	24 V
• for signal "0"	-30 to +5V
• for signal "1"	+11 to +30V
• permissible voltage at input, min.	-30 V
• permissible voltage at input, max.	30 V

### Input current

• for signal "1", typ.	2.5 mA
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### Input delay (for rated value of input voltage)

for standard inputs	
— parameterizable	Yes; none / 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms
— at "0" to "1", min.	4 µs; for parameterization "none"
— at "1" to "0", min.	4 µs; for parameterization "none"

### Digital outputs

Type of digital output	P- and M-switching
Number of digital outputs	2; 1 per channel
Current-sinking	Yes
Current-sourcing	Yes
Digital outputs, parameterizable	Yes
Short-circuit protection	Yes; electronic/thermal
<ul style="list-style-type: none"> <li>• Response threshold, typ.</li> </ul>	6.8 A with Standard output, 2 A with High Speed output
Limitation of inductive shutdown voltage to	-0.8 V
Controlling a digital input	Yes
Accuracy of pulse duration	$\pm 100$ ppm $\pm 0.5$ $\mu$ s with High Speed output, $\pm 100$ ppm $\pm 9$ $\mu$ s with Standard output
minimum pulse duration	1.5 $\mu$ s; With High Speed output, 10 $\mu$ s with Standard output
<b>Digital output functions, parameterizable</b>	
<ul style="list-style-type: none"> <li>• Freely usable digital output</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• PWM output <ul style="list-style-type: none"> <li>— Number, max.</li> <li>— Cycle duration, parameterizable</li> <li>— ON period, min.</li> <li>— ON period, max.</li> <li>— Resolution of the duty cycle</li> </ul> </li> </ul>	Yes Yes 2; 1 per channel Yes; Max. 85 s 0 % 100 % 0.0036 %; For S7 analog format, min. 20 ns
<ul style="list-style-type: none"> <li>• Connection of a proportional valve</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Dithering <ul style="list-style-type: none"> <li>— Frequency adjustable</li> <li>— Amplitude adjustable</li> </ul> </li> </ul>	Yes Yes Yes
<ul style="list-style-type: none"> <li>• Current measurement</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Current control</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Connection of a DC motor</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• ON-delay</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• OFF-delay</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Frequency output</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Pulse train</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Pulse output</li> </ul>	Yes
<b>Switching capacity of the outputs</b>	
<ul style="list-style-type: none"> <li>• with resistive load, max.</li> </ul>	2 A
<ul style="list-style-type: none"> <li>• on lamp load, max.</li> </ul>	10 W; 1 W with High Speed output
<b>Load resistance range</b>	
<ul style="list-style-type: none"> <li>• lower limit</li> </ul>	12 $\Omega$ ; 240 ohm with High Speed output
<ul style="list-style-type: none"> <li>• upper limit</li> </ul>	12 k $\Omega$
<b>Output voltage</b>	
<ul style="list-style-type: none"> <li>• Type of output voltage</li> </ul>	DC
<ul style="list-style-type: none"> <li>• for signal "0", max.</li> </ul>	1 V
<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> </ul>	2 A; 0.1 A with High Speed output, observe derating
<b>Output delay with resistive load</b>	
<ul style="list-style-type: none"> <li>"0" to "1", typ.</li> <li>"0" to "1", max.</li> <li>"1" to "0", typ.</li> <li>"1" to "0", max.</li> </ul>	0 $\mu$ s; With High Speed output, 4.5 $\mu$ s with Standard output 0.8 $\mu$ s; With High Speed output, 9 $\mu$ s with Standard output 0 $\mu$ s; With High Speed output, 4.5 $\mu$ s with Standard output 0.8 $\mu$ s; With High Speed output, 9 $\mu$ s with Standard output
<b>Parallel switching of two outputs</b>	
<ul style="list-style-type: none"> <li>for uprating</li> </ul>	Yes
<b>Switching frequency</b>	
<ul style="list-style-type: none"> <li>with resistive load, max.</li> <li>with inductive load, max.</li> <li>on lamp load, max.</li> </ul>	100 kHz; With High Speed output, 10 kHz with standard output 100 kHz; With High Speed output, 10 kHz with standard output 10 Hz
<b>Total current of the outputs</b>	
<ul style="list-style-type: none"> <li>Current per channel, max.</li> <li>Current per group, max.</li> <li>Current per module, max.</li> </ul>	2 A 4 A 4 A
<b>Isochronous mode</b>	
Isochronous operation (application synchronized up to terminal)	Yes
Bus cycle time (TDP), min.	250 $\mu$ s; with 1 channel configuration, 375 $\mu$ s with 2 channel configuration
Jitter, max.	1 $\mu$ s; typically $\pm$
<b>Interrupts/diagnostics/status information</b>	
Diagnostics	Yes
Substitute values connectable	Yes; Parameterizable
<b>Alarms</b>	
<ul style="list-style-type: none"> <li>Diagnostic alarm</li> </ul>	Yes
<b>Diagnostic messages</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>Potential separation</b>	
<b>Potential separation channels</b>	
<ul style="list-style-type: none"> <li>between the channels</li> <li>between the channels and backplane bus</li> </ul>	No Yes
<b>Permissible potential difference</b>	
between different circuits	75 V DC/60 V AC (base isolation)

## Isolation

Isolation tested with 707 V DC (type test)

## Ambient conditions

Ambient temperature during operation

- horizontal installation, max. 60 °C; Observe derating
- vertical installation, max. 50 °C; Observe derating

## Decentralized operation

to SIMATIC S7-300 Yes

to SIMATIC S7-400 Yes

to SIMATIC S7-1200 Yes

to SIMATIC S7-1500 Yes

to standard PROFIBUS master Yes

to standard PROFINET controller Yes

## Dimensions

Width 20 mm

## Weights

Weight, approx. 50 g

**last modified:** 20.05.2016