



SIMATIC ET 200SP, TM Pulse 2x24V PWM and pulse output 2 channels 2 A for proportional valves and DC motors

| General information                                       |  |
|---|--|
| Product type designation                                  | TM Pulse 2x24 V                                  |
| HW functional status                                      | From FS03  |
| Firmware version  | V1.0   |
| • FW update possible                                      | Yes  |
| usable BaseUnits  | BU type B1                                       |
| Color code for module-specific color identification plate | CC40   |
| Product function  |  |
| • I&M data  | Yes; I&M 0                                       |
| • Isochronous mode  | Yes  |
| Engineering with  |  |
| • STEP 7 TIA Portal configurable/integrated from version  | V13 SP1 + HSP                                    |
| • STEP 7 configurable/integrated from version             | V5.5 SP4 and higher                              |
| • PROFIBUS from GSD version/GSD revision                  | GSD Revision 5                                   |
| • PROFINET from GSD version/GSD revision                  | GSDML V2.31                                      |
| Supply voltage  |  |
| Rated value (DC)  | 24 V   |
| Load voltage L+   |  |
| • Rated value (DC)  | 24 V   |
| • permissible range, lower limit (DC)                     | 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                              |
| Encoder supply  |  |
| Number of outputs   | 2; A common 24V encoder supply for both channels |
| 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  |
| Address area  |  |
| Address space per module                                  |  |
| • Inputs  | 16 byte; 8 per channel                           |
| • Outputs   | 24 byte; 12 per channel                          |
| Hardware configuration                                    |  |
| Automatic encoding  | Yes  |
| • Mechanical coding element                               | Yes  |

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| • Type of mechanical coding element                             | type C   |
| <b>Digital inputs</b>   |  |
| Number of digital inputs  | 2; 1 per channel   |
| Digital inputs, parameterizable                                 | Yes  |
| Input characteristic curve in accordance with IEC 61131, type 3 | Yes  |
| <b>Digital input functions, parameterizable</b>                 |  |
| • Freely usable digital input                                   | Yes  |
| • HW enable for digital output                                  | Yes  |
| <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>           |  |
| 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"  |
| <b>Digital outputs</b>  |  |
| 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  |
| • Response threshold, typ.                                      | 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                                      | ±100 ppm ±0.5 µs with High Speed output, ±100 ppm ±9 µs with Standard output |
| minimum pulse duration  | 1.5 µs; With High Speed output, 10 µs with Standard output                   |
| <b>Digital output functions, parameterizable</b>                |  |
| • Freely usable digital output                                  | Yes  |
| • PWM output  | Yes  |
| — Number, max.  | 2; 1 per channel   |
| — Cycle duration, parameterizable                               | Yes; Max. 85 s   |
| — ON period, min.   | 0 %  |
| — ON period, max.   | 100 %  |
| — Resolution of the duty cycle                                  | 0.0036 %; For S7 analog format, min. 20 ns                                   |
| • Connection of a proportional valve                            | Yes  |
| • Dithering   | Yes  |
| — Frequency adjustable  | Yes  |
| — Amplitude adjustable  | Yes  |
| • Current measurement   | Yes  |
| • Current control   | Yes  |
| • Connection of a DC motor                                      | Yes  |
| • ON-delay  | Yes  |
| • OFF-delay   | Yes  |
| • Frequency output  | Yes  |
| • Pulse train   | Yes  |
| • Pulse output  | Yes  |
| <b>Switching capacity of the outputs</b>                        |  |
| • with resistive load, max.                                     | 2 A  |
| • on lamp load, max.  | 10 W; 1 W with High Speed output   |
| <b>Load resistance range</b>                                    |  |
| • lower limit   | 12 Ω; 240 ohm with High Speed output   |
| • upper limit   | 12 kΩ  |

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| <b>Output voltage</b>  |  |
| <ul style="list-style-type: none"> <li>Type of output voltage</li> <li>for signal "0", max.</li> <li>for signal "1", min.</li> </ul>   | DC<br>1 V<br>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 µs; With High Speed output, 4.5 µs with Standard output<br>0.8 µs; With High Speed output, 9 µs with Standard output<br>0 µs; With High Speed output, 4.5 µs with Standard output<br>0.8 µs; With High Speed output, 9 µs 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<br>100 kHz; With High Speed output, 10 kHz with standard output<br>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<br>4 A<br>4 A  |
| <b>Isochronous mode</b>  |  |
| Bus cycle time (TDP), min.   | 250 µs; with 1 channel configuration, 375 µs with 2 channel configuration  |
| Jitter, max.   | 1 µs; typically ±  |
| <b>Interrupts/diagnostics/status information</b>   |  |
| Diagnostics function   | Yes  |
| Substitute values connectable  | Yes; Parameterizable   |
| <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<br>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<br>Yes<br>Yes; green/red DIAG LED   |
| <b>Integrated Functions</b>  |  |
| Counter  | No   |
| <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<br>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>  |  |
| <b>Ambient temperature during operation</b>  |  |
| <ul style="list-style-type: none"> <li>horizontal installation, min.</li> <li>horizontal installation, max.</li> <li>vertical installation, min.</li> <li>vertical installation, max.</li> </ul> | -30 °C<br>60 °C; Observe derating<br>-30 °C<br>50 °C; Observe derating   |
| <b>Altitude during operation relating to sea level</b>   |  |
| <ul style="list-style-type: none"> <li>Installation altitude above sea level, max.</li> </ul>  | 5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual   |
| <b>Decentralized operation</b>   |  |
| 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   |
| <b>Dimensions</b>               |       |
| Width                           | 20 mm |
| Height                          | 73 mm |
| Depth                           | 58 mm |
| <b>Weights</b>                  |       |
| Weight, approx.                 | 50 g  |

**last modified:** 5/22/2024 