




Figure similar

SIMATIC S7-1500, TM count 2x 24 V counter module, 2 channels for 24 V incremental encoder or pulse encoder, 3 DI, 2 DQ per channel

| General information  |  |
|--|--|
| Product type designation   | TM Count 2x24V   |
| Firmware version   | V2.0   |
| <ul style="list-style-type: none"> <li>FW update possible</li> </ul>                                     | Yes  |
| Product function   |  |
| <ul style="list-style-type: none"> <li>I&amp;M data</li> </ul>   | Yes; I&M0 to I&M3  |
| <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> | V16 with HSP 0332 / V17  |
| <ul style="list-style-type: none"> <li>PROFIBUS from GSD version/GSD revision</li> </ul>                 | GSD Revision 5   |
| <ul style="list-style-type: none"> <li>PROFINET from GSD version/GSD revision</li> </ul>                 | V2.3 / -   |
| Installation type/mounting   |  |
| Rail mounting  | Yes; S7-1500 mounting rail   |
| 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  |
| Input current  |  |
| Current consumption, max.  | 75 mA; without load  |
| Encoder supply   |  |
| Number of outputs  | 1; A common 24V encoder supply for both channels                                 |
| 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>                                   | 1 A; total current of all encoders/channels                                      |
| Power  |  |
| Power available from the backplane bus   | 1.3 W  |
| Power loss   |  |
| Power loss, typ.   | 4 W  |
| Address area   |  |
| Address space per module   |  |
| <ul style="list-style-type: none"> <li>Inputs</li> </ul>   | 32 byte; 16 bytes per channel; 4 bytes for fast mode                             |
| <ul style="list-style-type: none"> <li>Outputs</li> </ul>  | 24 byte; 12 bytes per channel; 4 bytes for Motion Control, 0 bytes for fast mode |
| Digital inputs   |  |
| Number of digital inputs   | 6; 3 per channel   |
| Digital inputs, parameterizable  | Yes  |
| Input characteristic curve in accordance with IEC 61131, type 3  | Yes  |

|   |   |
|---|---|
| <b>Digital input functions, parameterizable</b>       |   |
| • Gate start/stop                                     | Yes   |
| • Capture   | Yes   |
| • Synchronization                                     | Yes   |
| • Freely usable digital input                         | Yes   |
| • Probe   | 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.                                 | 6 µs; for parameterization "none"                               |
| — at "1" to "0", min.                                 | 6 µs; for parameterization "none"                               |
| for technological functions                           |   |
| — parameterizable                                     | Yes   |
| <b>Cable length</b>                                   |   |
| • shielded, max.                                      | 1 000 m   |
| • unshielded, max.                                    | 600 m   |
| <b>Digital outputs</b>                                |   |
| Type of digital output                                | Transistor  |
| Number of digital outputs                             | 4; 2 per channel  |
| Digital outputs, parameterizable                      | Yes   |
| Short-circuit protection                              | Yes; electronic/thermal   |
| • Response threshold, typ.                            | 1 A   |
| Limitation of inductive shutdown voltage to           | L+ (-53 V)  |
| Controlling a digital input                           | Yes   |
| <b>Digital output functions, parameterizable</b>      |   |
| • Switching tripped by comparison values              | Yes   |
| • Freely usable digital output                        | Yes   |
| <b>Switching capacity of the outputs</b>              |   |
| • with resistive load, max.                           | 0.5 A; Per digital output                                       |
| • on lamp load, max.                                  | 5 W   |
| <b>Load resistance range</b>                          |   |
| • lower limit   | 48 Ω  |
| • upper limit   | 12 kΩ   |
| <b>Output voltage</b>                                 |   |
| • Type of output voltage                              | DC  |
| • for signal "1", min.                                | 23.2 V; L+ (-0.8 V)   |
| <b>Output current</b>                                 |   |
| • for signal "1" rated value                          | 0.5 A; Per digital output                                       |
| • for signal "1" permissible range, max.              | 0.6 A; Per digital output                                       |
| • for signal "1" minimum load current                 | 2 mA  |
| • for signal "0" residual current, max.               | 0.5 mA  |
| <b>Output delay with resistive load</b>               |   |
| • "0" to "1", max.                                    | 50 µs   |
| • "1" to "0", max.                                    | 50 µs   |
| <b>Switching frequency</b>                            |   |
| • with resistive load, max.                           | 10 kHz  |
| • with inductive load, max.                           | 0.5 Hz; Acc. to IEC 60947-5-1, DC-13; observe derating curve    |
| • on lamp load, max.                                  | 10 Hz   |
| <b>Total current of the outputs</b>                   |   |
| • Current per module, max.                            | 2 A   |
| <b>Cable length</b>                                   |   |
| • shielded, max.                                      | 1 000 m   |

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| • unshielded, max.   | 600 m  |
| <b>Encoder</b>   |  |
| Connectable encoders   |  |
| • 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.  | 200 kHz  |
| • Counting frequency, max.   | 800 kHz; with quadruple evaluation   |
| • Cable length, shielded, max.   | 600 m; depending on input frequency, encoder and cable quality; max. 50 m at 200 kHz |
| • Signal filter, parameterizable                                       | Yes  |
| • Incremental encoder with A/B tracks, 90° phase offset                | Yes  |
| • Incremental encoder with A/B tracks, 90° phase offset and zero track | Yes  |
| • pulse encoder  | Yes  |
| • pulse encoder with direction   | Yes  |
| • pulse encoder with one impulse signal per count direction            | Yes  |
| Interface types  |  |
| • Source/sink input  | Yes  |
| • Input characteristic curve in accordance with IEC 61131, type 3      | Yes  |
| <b>Interrupts/diagnostics/status information</b>                       |  |
| Alarms   |  |
| • Diagnostic alarm   | Yes  |
| • Hardware interrupt   | Yes  |
| Diagnoses  |  |
| • Monitoring the supply voltage  | Yes  |
| • Wire-break   | Yes  |
| • Short-circuit  | Yes  |
| • A/B transition error at incremental encoder                          | Yes  |
| Diagnostics indication LED   |  |
| • RUN LED  | Yes; green LED   |
| • ERROR LED  | Yes; red LED   |
| • MAINT LED  | Yes; Yellow LED  |
| • Monitoring of the supply voltage (PWR-LED)                           | Yes; green LED   |
| • Channel status display   | Yes; green LED   |
| • for channel diagnostics  | Yes; red LED   |
| <b>Integrated Functions</b>  |  |
| Counter  |  |
| • Number of counters   | 2  |
| • Counting frequency, max.   | 800 kHz; with quadruple evaluation   |
| Fast mode  | Yes  |
| Counting functions   |  |
| • Can be used with TO High_Speed_Counter                               | Yes  |
| • Continuous counting  | Yes  |
| • Counter response parameterizable                                     | Yes  |
| • Hardware gate via digital input                                      | Yes  |
| • Software gate  | Yes  |
| • Event-controlled stop  | Yes  |
| • Synchronization via digital input                                    | Yes  |
| • Counting range, parameterizable                                      | Yes  |
| Comparator   |  |
| — Number of comparators  | 2; Per channel   |
| — Direction dependency   | Yes  |
| — Can be changed from user program                                     | Yes  |
| Position detection   |  |
| • Incremental acquisition  | Yes  |
| • Suitable for S7-1500 Motion Control                                  | Yes  |
| • suitable for SIMOTION  | Yes  |
| Measuring functions  |  |

|  |   |
|--|---|
| • Measuring time, parameterizable                      | Yes   |
| • Dynamic measurement period adjustment                | Yes   |
| • Number of thresholds, parameterizable                | 2   |
| <b>Measuring range</b>                                 |   |
| — Frequency measurement, min.                          | 0.04 Hz   |
| — Frequency measurement, max.                          | 800 kHz   |
| — Cycle duration measurement, min.                     | 1.25 $\mu$ s  |
| — Cycle duration measurement, max.                     | 25 s  |
| <b>Accuracy</b>  |   |
| — Frequency measurement                                | 100 ppm; depending on measuring interval and signal evaluation                                |
| — Cycle duration measurement                           | 100 ppm; depending on measuring interval and signal evaluation                                |
| — Velocity measurement                                 | 100 ppm; depending on measuring interval and signal evaluation                                |
| <b>Potential separation</b>                            |   |
| <b>Potential separation channels</b>                   |   |
| • between the channels                                 | No  |
| • between the channels and backplane bus               | Yes   |
| • Between the channels and load voltage L+             | No  |
| <b>Isolation</b>                                       |   |
| Isolation tested with                                  | 707 V DC (type test)  |
| <b>Ambient conditions</b>                              |   |
| <b>Ambient temperature during operation</b>            |   |
| • horizontal installation, min.                        | -30 °C  |
| • horizontal installation, max.                        | 60 °C; Please note derating for inductive loads   |
| • vertical installation, min.                          | -30 °C  |
| • vertical installation, max.                          | 40 °C; Please note derating for inductive loads   |
| <b>Altitude during operation relating to sea level</b> |   |
| • Installation altitude above sea level, max.          | 5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200MP 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  | 35 mm   |
| Height   | 147 mm  |
| Depth  | 129 mm  |
| <b>Weights</b>   |   |
| Weight, approx.  | 250 g   |
| <b>last modified:</b>                                  | 4/23/2021  |