

SIMATIC ET 200SP, TM count 1x 24 V Counter module, 1 channel for 24 V incremental encoder or pulse encoder, 3 DI, 2 DQ Suitable for BU type A0, packing quantity: 1 unit,



| General information   |  |
|---|--|
| Product type designation  | TM Count 1x24V                                 |
| Firmware version  | V2.0   |
| <ul style="list-style-type: none"> <li>FW update possible</li> </ul>                                      | Yes  |
| usable BaseUnits  | BU type A0                                     |
| Color code for module-specific color identification plate   | CC00   |
| Product function  |  |
| <ul style="list-style-type: none"> <li>I&amp;M data</li> </ul>  | Yes; I&M0 to I&M3                              |
| Engineering with  |  |
| <ul style="list-style-type: none"> <li>STEP 7 TIA Portal configurable/integrated as of version</li> </ul> | STEP 7 V15 SP1 or higher                       |
| <ul style="list-style-type: none"> <li>STEP 7 configurable/integrated as of version</li> </ul>            | V5.6 and higher                                |
| <ul style="list-style-type: none"> <li>PROFIBUS as of GSD version/GSD revision</li> </ul>                 | One GSD file each, Revision 3 and 5 and higher |
| <ul style="list-style-type: none"> <li>PROFINET as of GSD version/GSD revision</li> </ul>                 | GSDML V2.34                                    |
| Supply voltage  |  |
| Load voltage L+   |  |
| <ul style="list-style-type: none"> <li>Rated value (DC)</li> </ul>  | 24 V   |

- permissible range, lower limit (DC) 19.2 V
- permissible range, upper limit (DC) 28.8 V
- Reverse polarity protection Yes

#### Input current

Current consumption, max. 60 mA; without load

#### Encoder supply

Number of outputs 1

#### 24 V encoder supply

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

#### Power loss

Power loss, typ. 1 W

#### Address area

##### Address space per module

- Inputs 16 byte; 4 bytes in Fast mode
- Outputs 12 byte; 4 bytes for Motion Control, 0 bytes for Fast mode

#### Digital inputs

Number of digital inputs 3

Digital inputs, parameterizable Yes

Input characteristic curve in accordance with IEC 61131, type 3 Yes

##### Digital input functions, parameterizable

- Gate start/stop Yes
- Capture Yes
- Synchronization Yes
- Freely usable digital input Yes
- Probe Yes

#### Input voltage

- 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

#### Input current

- for signal "1", typ. 2.5 mA

#### 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. 6 µs; for parameterization "none"

|   |  |
|---|--|
| — at "1" to "0", min.                       | 6 $\mu$ s; for parameterization "none"                       |
| for technological functions                 |  |
| — parameterizable                           | Yes  |
| Cable length                                |  |
| • shielded, max.                            | 1 000 m  |
| • unshielded, max.                          | 600 m  |
| Digital outputs                             |  |
| Type of digital output                      | Transistor   |
| Number of digital outputs                   | 2  |
| 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  |
| Digital output functions, parameterizable   |  |
| • Switching tripped by comparison values    | Yes  |
| • Freely usable digital output              | Yes  |
| Switching capacity of the outputs           |  |
| • with resistive load, max.                 | 0.5 A; Per digital output                                    |
| • on lamp load, max.                        | 5 W  |
| Load resistance range                       |  |
| • lower limit                               | 48 $\Omega$  |
| • upper limit                               | 12 k $\Omega$  |
| Output voltage                              |  |
| • for signal "1", min.                      | 23.2 V; L+ (-0.8 V)  |
| Output current                              |  |
| • 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   |
| Output delay with resistive load            |  |
| • "0" to "1", max.                          | 50 $\mu$ s   |
| • "1" to "0", max.                          | 50 $\mu$ s   |
| Switching frequency                         |  |
| • 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  |
| Total current of the outputs                |  |
| • Current per module, max.                  | 1 A  |
| Cable length                                |  |
| • shielded, max.                            | 1 000 m  |
| • unshielded, max.                          | 600 m  |

## Encoder

| Connectable encoders  |   |
|---|---|
| <ul style="list-style-type: none"> <li>• 2-wire sensor</li> <li>— permissible quiescent current (2-wire sensor), max.</li> </ul>  | <p>Yes</p> <p>1.5 mA</p>  |
| Encoder signals, incremental encoder (asymmetrical)   |   |
| <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>• Signal filter, parameterizable</li> <li>• Incremental encoder with A/B tracks, 90° phase offset</li> <li>• Incremental encoder with A/B tracks, 90° phase offset and zero track</li> <li>• Pulse encoder</li> <li>• Pulse encoder with direction</li> <li>• Pulse encoder with one impulse signal per count direction</li> </ul> | <p>24 V</p> <p>200 kHz</p> <p>800 kHz; with quadruple evaluation</p> <p>600 m; depending on input frequency, encoder and cable quality; max. 50 m at 200 kHz</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> |
| Encoder signal 24 V   |   |
| <ul style="list-style-type: none"> <li>— permissible voltage at input, min.</li> <li>— permissible voltage at input, max.</li> </ul>  | <p>-30 V; -5 V continuous, -30 V brief reverse polarity protection</p> <p>30 V</p>  |
| Interface types   |   |
| <ul style="list-style-type: none"> <li>• Source/sink input</li> <li>• Input characteristic curve in accordance with IEC 61131, type 3</li> </ul>  | <p>Yes</p> <p>Yes</p>   |
| Isochronous mode  |   |
| <p>Isochronous operation (application synchronized up to terminal)</p>  | <p>Yes</p>  |
| Interrupts/diagnostics/status information   |   |
| <p>Substitute values connectable</p>  | <p>Yes; Parameterizable</p>   |
| Alarms  |   |
| <ul style="list-style-type: none"> <li>• Diagnostic alarm</li> <li>• Hardware interrupt</li> </ul>  | <p>Yes</p> <p>Yes</p>   |
| Diagnostic messages   |   |
| <ul style="list-style-type: none"> <li>• Monitoring the supply voltage</li> <li>• Wire-break</li> <li>• Short-circuit</li> <li>• A/B transition error at incremental encoder</li> <li>• Group error</li> </ul>  | <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>  |
| Diagnostics indication LED  |   |

- Monitoring of the supply voltage (PWR-LED) Yes; Green PWR LED
- Channel status display Yes; Green LED
- for module diagnostics Yes; green/red DIAG LED
- Status indicator backward counting (green) Yes
- Status indicator forward counting (green) Yes

## Integrated Functions

|  |  |
|--|--|
| Number of counters                       | 1  |
| Counting frequency (counter) max.        | 800 kHz; with quadruple evaluation                             |
| Fast mode                                | Yes  |
| <b>Counting functions</b>                |  |
| • 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  |
| <b>Comparator</b>                        |  |
| — Number of comparators                  | 2  |
| — Direction dependency                   | Yes  |
| — Can be changed from user program       | Yes  |
| <b>Position detection</b>                |  |
| • Incremental acquisition                | Yes  |
| • Suitable for S7-1500 Motion Control    | Yes  |
| <b>Measuring functions</b>               |  |
| • 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 and backplane bus | Yes  |

## Isolation

Isolation tested with 707 V DC (type test)

## Ambient conditions

### Ambient temperature during operation

- horizontal installation, min. -30 °C
- horizontal installation, max. 60 °C
- vertical installation, min. -30 °C
- vertical installation, max. 50 °C
- ceiling installation, min. -30 °C
- ceiling installation, max. 50 °C
- floor installation, min. -30 °C
- floor installation, max. 50 °C

### Altitude during operation relating to sea level

- Installation altitude above sea level, max. 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual

## 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  | 15 mm |
| Height | 73 mm |
| Depth  | 58 mm |

## Weights

Weight, approx. 45 g

**last modified:** 11/13/2019