



SIMATIC ET 200SP, TM timer DIDQ 10x 24V time-controlled digital inputs and outputs 4 DI, 6DO 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                                                |                          |
| • I&M data                                                      | Yes; I&M 0               |
| • Isochronous mode                                              | Yes                      |
| Engineering with                                                |                          |
| • STEP 7 TIA Portal configurable/integrated from version        | V13 Update 3             |
| • STEP 7 configurable/integrated from version                   | V5.5 SP3 / -             |
| 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                   |
| • Reverse polarity protection                                   | Yes; against destruction |
| Input current                                                   |                          |
| Current consumption, max.                                       | 50 mA; without load      |
| Encoder supply                                                  |                          |
| Number of outputs                                               | 1                        |
| 24 V encoder supply                                             |                          |
| • 24 V                                                          | Yes; L+ (-0.8 V)         |
| • Short-circuit protection                                      | Yes                      |
| • Output current, max.                                          | 500 mA; Observe derating |
| Power loss                                                      |                          |
| Power loss, typ.                                                | 1.5 W                    |
| Address area                                                    |                          |
| Address space per module                                        |                          |
| • Inputs                                                        | 26 byte                  |
| • Outputs                                                       | 32 byte                  |
| Hardware configuration                                          |                          |
| Automatic encoding                                              | Yes                      |
| • Mechanical coding element                                     | Yes                      |
| • Type of mechanical coding element                             | type B                   |
| Digital inputs                                                  |                          |
| Number of digital inputs                                        | 4                        |
| Digital inputs, parameterizable                                 | Yes                      |
| Input characteristic curve in accordance with IEC 61131, type 3 | Yes                      |
| Digital input functions, parameterizable                        |                          |

|                                                |                                                                 |
|------------------------------------------------|-----------------------------------------------------------------|
| • Digital input with time stamp                | Yes                                                             |
| — Number, max.                                 | 4                                                               |
| • Counter                                      | Yes                                                             |
| — Number, max.                                 | 3                                                               |
| • Counter for incremental encoder              | Yes                                                             |
| — Number, max.                                 | 1                                                               |
| • Digital input with oversampling              | Yes                                                             |
| — Number, max.                                 | 4                                                               |
| • HW enable for digital input                  | Yes                                                             |
| — Number, max.                                 | 1                                                               |
| • HW enable for digital output                 | Yes                                                             |
| — Number, max.                                 | 3                                                               |
| Input voltage                                  |                                                                 |
| • 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                                                            |
| Input current                                  |                                                                 |
| • for signal "1", typ.                         | 2.5 mA                                                          |
| Input delay (for rated value of input voltage) |                                                                 |
| • Minimum pulse width for program reactions    | 3 µs for parameterization "none"                                |
| for standard inputs                            |                                                                 |
| — parameterizable                              | Yes; none / 0.05 / 0.1 / 0.4 / 0.8 ms                           |
| Cable length                                   |                                                                 |
| • 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    |
| Digital outputs                                |                                                                 |
| 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                                                          |
| Digital output functions, parameterizable      |                                                                 |
| • Digital output with time stamp               | Yes                                                             |
| — Number, max.                                 | 6                                                               |
| • PWM output                                   | Yes                                                             |
| — Number, max.                                 | 6                                                               |
| • Digital output with oversampling             | Yes                                                             |
| — Number, max.                                 | 6                                                               |
| Switching capacity of the outputs              |                                                                 |
| • 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                                 |
| Load resistance range                          |                                                                 |
| • lower limit                                  | 48 Ω; 240 ohm with High Speed output                            |
| • upper limit                                  | 12 kΩ                                                           |
| Output voltage                                 |                                                                 |
| • Type of output voltage                       | DC                                                              |
| • for signal "0", max.                         | 1 V; With High Speed output                                     |
| • for signal "1", min.                         | 23.2 V; L+ (-0.8 V)                                             |
| Output current                                 |                                                                 |
| • for signal "1" rated value                   | 0.5 A; 0.1 A with High Speed output, observe derating           |
| • for signal "1" permissible range, max.       | 0.6 A; 0.12 A with High Speed output, observe derating          |
| • 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.                             | 1 µs; With High Speed output, 5 µs with Standard output         |

|                                                                   |                                                                                      |
|-------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| • "1" to "0", max.                                                | 1 µs; With High Speed output, 6 µs with Standard output                              |
| <b>Switching frequency</b>                                        |                                                                                      |
| • with resistive load, max.                                       | 10 kHz                                                                               |
| • on lamp load, max.                                              | 10 Hz                                                                                |
| <b>Total current of the outputs</b>                               |                                                                                      |
| • Current per module, max.                                        | 3.5 A; Observe derating                                                              |
| <b>Cable length</b>                                               |                                                                                      |
| • shielded, max.                                                  | 1 000 m; depending on load and cable quality                                         |
| • unshielded, max.                                                | 600 m; depending on load and cable quality                                           |
| <b>Encoder</b>                                                    |                                                                                      |
| <b>Connectable encoders</b>                                       |                                                                                      |
| • Incremental encoder (asymmetrical)                              | Yes                                                                                  |
| • 24 V initiator                                                  | Yes                                                                                  |
| • 2-wire sensor                                                   | Yes                                                                                  |
| — permissible quiescent current (2-wire sensor), max.             | 1.5 mA                                                                               |
| <b>Encoder signals, incremental encoder (asymmetrical)</b>        |                                                                                      |
| • Input voltage                                                   | 24 V                                                                                 |
| • Input frequency, max.                                           | 50 kHz                                                                               |
| • Counting frequency, max.                                        | 200 kHz; with quadruple evaluation                                                   |
| • Cable length, shielded, max.                                    | 600 m; Depending on input frequency, encoder and cable quality; max. 200 m at 50 kHz |
| • Incremental encoder with A/B tracks, 90° phase offset           | Yes                                                                                  |
| • pulse encoder                                                   | Yes                                                                                  |
| <b>Interface types</b>                                            |                                                                                      |
| • Input characteristic curve in accordance with IEC 61131, type 3 | Yes                                                                                  |
| <b>Interfaces</b>                                                 |                                                                                      |
| Number of RS 485 interfaces                                       | 0                                                                                    |
| <b>Isochronous mode</b>                                           |                                                                                      |
| Bus cycle time (TDP), min.                                        | 375 µs                                                                               |
| Jitter, max.                                                      | 1 µs                                                                                 |
| <b>Interrupts/diagnostics/status information</b>                  |                                                                                      |
| Diagnostics function                                              | Yes                                                                                  |
| Substitute values connectable                                     | Yes                                                                                  |
| <b>Alarms</b>                                                     |                                                                                      |
| • Diagnostic alarm                                                | Yes                                                                                  |
| <b>Diagnoses</b>                                                  |                                                                                      |
| • Monitoring the supply voltage                                   | Yes                                                                                  |
| • Short-circuit                                                   | Yes                                                                                  |
| <b>Diagnostics indication LED</b>                                 |                                                                                      |
| • Monitoring of the supply voltage (PWR-LED)                      | Yes; green PWR LED                                                                   |
| • Channel status display                                          | Yes                                                                                  |
| • for module diagnostics                                          | Yes; green/red DIAG LED                                                              |
| <b>Integrated Functions</b>                                       |                                                                                      |
| Counter                                                           | Yes                                                                                  |
| • Number of counters                                              | 3                                                                                    |
| • Counting frequency, max.                                        | 200 kHz; with quadruple evaluation                                                   |
| <b>Counting functions</b>                                         |                                                                                      |
| • Continuous counting                                             | Yes                                                                                  |
| <b>Potential separation</b>                                       |                                                                                      |
| <b>Potential separation channels</b>                              |                                                                                      |
| • 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>                                         |                                                                                      |
| <b>Ambient temperature during operation</b>                       |                                                                                      |
| • 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>Classifications</b>                          |                                                                                        |

|        | Version | Classification |
|--------|---------|----------------|
| eClass | 14      | 27-24-26-05    |
| eClass | 12      | 27-24-26-05    |
| eClass | 9.1     | 27-24-26-05    |
| eClass | 9       | 27-24-26-05    |
| eClass | 8       | 27-24-26-05    |
| eClass | 7.1     | 27-24-26-05    |
| eClass | 6       | 27-24-26-05    |
| ETIM   | 9       | EC001601       |
| ETIM   | 8       | EC001601       |
| ETIM   | 7       | EC001601       |
| IDEA   | 4       | 3567           |
| UNSPSC | 15      | 32-15-17-05    |

|                                 |
|---------------------------------|
| <b>Approvals / Certificates</b> |
| <b>General Product Approval</b> |



[Miscellaneous](#)

[Manufacturer Declaration](#)



|                                       |
|---------------------------------------|
| <b>For use in hazardous locations</b> |
|---------------------------------------|



[CCC-Ex](#)

[FM](#)



[Miscellaneous](#)

|                          |
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| <b>Marine / Shipping</b> |
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[NK / Nippon Kaiji Kyokai](#)



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| <b>Marine / Shipping</b> |
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[CCS \(China Classification Society\)](#)



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