



SIMATIC S7-1200, Digital I/O SM 1223, 16 DI/16 DO, 16 DI 24 V DC, Sink/Source, 16 DO, transistor 0.5 A

| General information                                             |                                                                                               |
|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| Product type designation                                        | SM 1223, DI 16x24 V DC, DQ 16x24 V DC                                                         |
| Supply voltage                                                  |                                                                                               |
| Rated value (DC)                                                | 24 V                                                                                          |
| permissible range, lower limit (DC)                             | 20.4 V                                                                                        |
| permissible range, upper limit (DC)                             | 28.8 V                                                                                        |
| Input current                                                   |                                                                                               |
| from backplane bus 5 V DC, max.                                 | 185 mA                                                                                        |
| Digital inputs                                                  |                                                                                               |
| • from load voltage L+ (without load), max.                     | 4 mA; per channel                                                                             |
| output voltage / header                                         |                                                                                               |
| supply voltage of the transmitters / header                     |                                                                                               |
| • present                                                       | Yes                                                                                           |
| Power loss                                                      |                                                                                               |
| Power loss, typ.                                                | 4.5 W                                                                                         |
| Digital inputs                                                  |                                                                                               |
| Number of digital inputs                                        | 16                                                                                            |
| • in groups of                                                  | 2                                                                                             |
| Input characteristic curve in accordance with IEC 61131, type 1 | Yes                                                                                           |
| Number of simultaneously controllable inputs                    |                                                                                               |
| all mounting positions                                          |                                                                                               |
| — up to 40 °C, max.                                             | 16                                                                                            |
| horizontal installation                                         |                                                                                               |
| — up to 40 °C, max.                                             | 16                                                                                            |
| — up to 50 °C, max.                                             | 16                                                                                            |
| vertical installation                                           |                                                                                               |
| — up to 40 °C, max.                                             | 16                                                                                            |
| Input voltage                                                   |                                                                                               |
| • Type of input voltage                                         | DC                                                                                            |
| • Rated value (DC)                                              | 24 V                                                                                          |
| • for signal "0"                                                | 5 V DC at 1 mA                                                                                |
| • for signal "1"                                                | 15 V DC at 2.5 mA                                                                             |
| Input current                                                   |                                                                                               |
| • for signal "0", max. (permissible quiescent current)          | 1 mA                                                                                          |
| • for signal "1", min.                                          | 2.5 mA                                                                                        |
| • for signal "1", typ.                                          | 4 mA                                                                                          |
| Input delay (for rated value of input voltage)                  |                                                                                               |
| for standard inputs                                             |                                                                                               |
| — parameterizable                                               | Yes; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four |

|                                                  |                               |
|--------------------------------------------------|-------------------------------|
| for interrupt inputs                             |                               |
| — parameterizable                                | Yes                           |
| Cable length                                     |                               |
| • shielded, max.                                 | 500 m                         |
| • unshielded, max.                               | 300 m                         |
| <b>Digital outputs</b>                           |                               |
| Number of digital outputs                        | 16                            |
| • in groups of                                   | 1                             |
| Short-circuit protection                         | No; to be provided externally |
| Limitation of inductive shutdown voltage to      | L+ (-48 V)                    |
| Switching capacity of the outputs                |                               |
| • with resistive load, max.                      | 0.5 A                         |
| • on lamp load, max.                             | 5 W                           |
| Output voltage                                   |                               |
| • Rated value (DC)                               | 24 V                          |
| • for signal "0", max.                           | 0.1 V; with 10 kOhm load      |
| • for signal "1", min.                           | 20 V DC                       |
| Output current                                   |                               |
| • for signal "1" rated value                     | 0.5 A                         |
| • for signal "1" permissible range, max.         | 0.5 A                         |
| • for signal "0" residual current, max.          | 10 µA                         |
| Output delay with resistive load                 |                               |
| • "0" to "1", max.                               | 50 µs                         |
| • "1" to "0", max.                               | 200 µs                        |
| Total current of the outputs (per group)         |                               |
| horizontal installation                          |                               |
| — up to 50 °C, max.                              | 8 A; Current per mass         |
| Relay outputs                                    |                               |
| Switching capacity of contacts                   |                               |
| — with inductive load, max.                      | 0.5 A                         |
| — on lamp load, max.                             | 5 W                           |
| — with resistive load, max.                      | 0.5 A                         |
| Cable length                                     |                               |
| • shielded, max.                                 | 500 m                         |
| • unshielded, max.                               | 150 m                         |
| <b>Interrupts/diagnostics/status information</b> |                               |
| Alarms                                           |                               |
| • Diagnostic alarm                               | Yes                           |
| Diagnostics indication LED                       |                               |
| • for status of the inputs                       | Yes                           |
| • for status of the outputs                      | Yes                           |
| <b>Potential separation</b>                      |                               |
| Potential separation digital inputs              |                               |
| • between the channels, in groups of             | 2                             |
| Potential separation digital outputs             |                               |
| • between the channels, in groups of             | 1                             |
| • between the channels and backplane bus         | 500 V AC                      |
| <b>Degree and class of protection</b>            |                               |
| IP degree of protection                          | IP20                          |
| <b>Standards, approvals, certificates</b>        |                               |
| CE mark                                          | Yes                           |
| CSA approval                                     | Yes                           |
| UL approval                                      | Yes                           |
| cULus                                            | Yes                           |
| FM approval                                      | Yes                           |
| RCM (formerly C-TICK)                            | Yes                           |
| KC approval                                      | Yes                           |
| Marine approval                                  | Yes                           |
| <b>Ambient conditions</b>                        |                               |
| Free fall                                        |                               |

|                                                   |                                                                                               |
|---------------------------------------------------|-----------------------------------------------------------------------------------------------|
| • Fall height, max.                               | 0.3 m; five times, in product package                                                         |
| Ambient temperature during operation              |                                                                                               |
| • min.                                            | -20 °C                                                                                        |
| • max.                                            | 60 °C                                                                                         |
| • horizontal installation, min.                   | -20 °C                                                                                        |
| • horizontal installation, max.                   | 60 °C                                                                                         |
| • vertical installation, min.                     | -20 °C                                                                                        |
| • vertical installation, max.                     | 50 °C                                                                                         |
| • permissible temperature change                  | 5°C to 55°C, 3°C / minute                                                                     |
| Ambient temperature during storage/transportation |                                                                                               |
| • min.                                            | -40 °C                                                                                        |
| • max.                                            | 70 °C                                                                                         |
| Air pressure acc. to IEC 60068-2-13               |                                                                                               |
| • Storage/transport, min.                         | 660 hPa                                                                                       |
| • Storage/transport, max.                         | 1 080 hPa                                                                                     |
| Relative humidity                                 |                                                                                               |
| • Operation at 25 °C without condensation, max.   | 95 %                                                                                          |
| connection method                                 |                                                                                               |
| required front connector                          | Yes                                                                                           |
| Mechanics/material                                |                                                                                               |
| Enclosure material (front)                        |                                                                                               |
| • Plastic                                         | Yes                                                                                           |
| Dimensions                                        |                                                                                               |
| Width                                             | 70 mm                                                                                         |
| Height                                            | 100 mm                                                                                        |
| Depth                                             | 75 mm                                                                                         |
| Weights                                           |                                                                                               |
| Weight, approx.                                   | 310 g                                                                                         |
| last modified:                                    | 3/12/2024  |