



SIMATIC S7-1200, Digital I/O SM 1223, 16 DI/16 DO, 16 DI 24 V DC, Sink/Source, 16 DO, relay 2 A

| General information                                             |                                                                                               |
|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| Product type designation                                        | SM 1223, DI 16x24 V DC, DQ 16x relay                                                          |
| 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.                                 | 180 mA                                                                                        |
| Digital inputs                                                  |                                                                                               |
| • from load voltage L+ (without load), max.                     | 4 mA/input 11 mA/relay                                                                        |
| output voltage / header                                         |                                                                                               |
| supply voltage of the transmitters / header                     |                                                                                               |
| • present                                                       | Yes                                                                                           |
| Power loss                                                      |                                                                                               |
| Power loss, typ.                                                | 10 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                                   | 4                                                      |
| Short-circuit protection                         | No; to be provided externally                          |
| Switching capacity of the outputs                |                                                        |
| • with resistive load, max.                      | 2 A                                                    |
| • on lamp load, max.                             | 30 W with DC, 200 W with AC                            |
| Output voltage                                   |                                                        |
| • Rated value (DC)                               | 5 V DC to 30 V DC                                      |
| • Rated value (AC)                               | 5 V AC to 250 V AC                                     |
| Output current                                   |                                                        |
| • for signal "1" rated value                     | 2 A                                                    |
| • for signal "1" permissible range, max.         | 2 A                                                    |
| Output delay with resistive load                 |                                                        |
| • "0" to "1", max.                               | 10 ms                                                  |
| • "1" to "0", max.                               | 10 ms                                                  |
| Total current of the outputs (per group)         |                                                        |
| horizontal installation                          |                                                        |
| — up to 50 °C, max.                              | 8 A; Current per mass                                  |
| Relay outputs                                    |                                                        |
| • Number of relay outputs                        | 16                                                     |
| • Rated supply voltage of relay coil L+ (DC)     | 24 V                                                   |
| • Number of operating cycles, max.               | mechanically 10 million, at rated load voltage 100 000 |
| Switching capacity of contacts                   |                                                        |
| — with inductive load, max.                      | 2 A                                                    |
| — on lamp load, max.                             | 30 W with DC, 200 W with AC                            |
| — with resistive load, max.                      | 2 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                           | Relays                                                 |
| • between the channels, in groups of             | 4                                                      |
| • between the channels and backplane bus         | 1 500 V AC for 1 minute                                |
| <b>Permissible potential difference</b>          |                                                        |
| between different circuits                       | 750 V AC for 1 minute                                  |
| <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; Number of simultaneously activated outputs: 8 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 16 at 55 °C horizontal or 45 °C vertical |
| • 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 %                                                                                                                                                      |
| <b>connection method</b>                          |                                                                                                                                                           |
| required front connector                          | Yes                                                                                                                                                       |
| <b>Mechanics/material</b>                         |                                                                                                                                                           |
| Enclosure material (front)                        |                                                                                                                                                           |
| • Plastic                                         | Yes                                                                                                                                                       |
| <b>Dimensions</b>                                 |                                                                                                                                                           |
| Width                                             | 70 mm                                                                                                                                                     |
| Height                                            | 100 mm                                                                                                                                                    |
| Depth                                             | 75 mm                                                                                                                                                     |
| <b>Weights</b>                                    |                                                                                                                                                           |
| Weight, approx.                                   | 350 g                                                                                                                                                     |

**last modified:** 3/12/2024 