



SIMATIC S7-1200 G2, SM 1223 digital I/O, 16 DI / 16 DO, inputs: 16x DI 24 V DC, sourcing/sinking input, outputs: 16x DO, sourcing output, PNP 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                                                                                                                                                      |                                                                                               |
| Current consumption, typ.                                                                                                                                          | 45 mA                                                                                         |
| from backplane bus 5 V DC, max.                                                                                                                                    | 165 mA                                                                                        |
| Digital inputs                                                                                                                                                     |                                                                                               |
| <ul style="list-style-type: none"> <li>from load voltage L+ (without load), max.</li> </ul>                                                                        | 4.1 mA; per channel                                                                           |
| Power loss                                                                                                                                                         |                                                                                               |
| Power loss, typ.                                                                                                                                                   | 4.6 W                                                                                         |
| Digital inputs                                                                                                                                                     |                                                                                               |
| Number of digital inputs                                                                                                                                           | 16                                                                                            |
| <ul style="list-style-type: none"> <li>in groups of</li> </ul>                                                                                                     | 4                                                                                             |
| Sourcing/sinking input                                                                                                                                             | Yes                                                                                           |
| 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                                                                                                                                                      |                                                                                               |
| <ul style="list-style-type: none"> <li>Rated value (DC)</li> <li>for signal "0"</li> <li>for signal "1"</li> </ul>                                                 | 24 V<br>5 V DC or 0.5 mA<br>15 V DC at 2.5 mA                                                 |
| Input current                                                                                                                                                      |                                                                                               |
| <ul style="list-style-type: none"> <li>for signal "0", max. (permissible quiescent current)</li> <li>for signal "1", min.</li> <li>for signal "1", typ.</li> </ul> | 1 mA<br>2.5 mA<br>4.1 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                                | No                               |
| <b>Cable length</b>                              |                                  |
| • shielded, max.                                 | 500 m                            |
| • unshielded, max.                               | 300 m                            |
| <b>Digital outputs</b>                           |                                  |
| Number of digital outputs                        | 16                               |
| • in groups of                                   | 8                                |
| Short-circuit protection                         | No; to be provided externally    |
| Limitation of inductive shutdown voltage to      | typ. (L+) -40 V, 1 W dissipation |
| <b>Switching capacity of the outputs</b>         |                                  |
| • with resistive load, max.                      | 0.5 A                            |
| • on lamp load, max.                             | 5 W                              |
| <b>Output voltage</b>                            |                                  |
| • Rated value (DC)                               | 24 V                             |
| • for signal "0", max.                           | 0.1 V; with 10 kOhm load         |
| • for signal "1", min.                           | 20 V DC                          |
| <b>Output current</b>                            |                                  |
| • 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                            |
| <b>Output delay with resistive load</b>          |                                  |
| • "0" to "1", max.                               | 50 µs                            |
| • "1" to "0", max.                               | 200 µs                           |
| <b>Total current of the outputs (per group)</b>  |                                  |
| horizontal installation                          |                                  |
| — up to 50 °C, max.                              | 4 A; Current per mass            |
| <b>Relay outputs</b>                             |                                  |
| <b>Switching capacity of contacts</b>            |                                  |
| — with inductive load, max.                      | 0.5 A                            |
| — on lamp load, max.                             | 5 W                              |
| — with resistive load, max.                      | 0.5 A                            |
| <b>Cable length</b>                              |                                  |
| • shielded, max.                                 | 500 m                            |
| • unshielded, max.                               | 150 m                            |
| <b>Interrupts/diagnostics/status information</b> |                                  |
| Diagnostics function                             | Yes                              |
| <b>Alarms</b>                                    |                                  |
| • Diagnostic alarm                               | Yes                              |
| <b>Diagnoses</b>                                 |                                  |
| • Monitoring the supply voltage                  | Yes                              |
| <b>Diagnostics indication LED</b>                |                                  |
| • DIAG LED                                       | Yes                              |
| • for status of the inputs                       | Yes                              |
| • for status of the outputs                      | Yes                              |
| <b>Potential separation</b>                      |                                  |
| <b>Potential separation digital inputs</b>       |                                  |
| • between the channels, in groups of             | 4                                |
| • between the channels and backplane bus         | Yes; 707 V DC (type test)        |
| <b>Potential separation digital outputs</b>      |                                  |
| • between the channels, in groups of             | 8                                |
| • between the channels and backplane bus         | Yes; 707 V DC (type test)        |
| <b>Isolation</b>                                 |                                  |
| Isolation tested with                            | 707 V DC (type test)             |
| <b>Degree and class of protection</b>            |                                  |
| IP degree of protection                          | IP20                             |
| <b>Standards, approvals, certificates</b>        |                                  |
| CE mark                                          | Yes                              |
| CSA approval                                     | No                               |
| UL approval                                      | Yes                              |

|                                                               |                                                                                           |         |                |
|---------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------|----------------|
| cULus                                                         | Yes                                                                                       |         |                |
| FM approval                                                   | No                                                                                        |         |                |
| RCM (formerly C-TICK)                                         | Yes                                                                                       |         |                |
| KC approval                                                   | Yes                                                                                       |         |                |
| Marine approval                                               | No                                                                                        |         |                |
| Ambient conditions                                            |                                                                                           |         |                |
| Free fall                                                     |                                                                                           |         |                |
| • Fall height, max.                                           | 0.3 m; five times, in product package                                                     |         |                |
| Ambient temperature during operation                          |                                                                                           |         |                |
| • horizontal installation, min.                               | -20 °C                                                                                    |         |                |
| • horizontal installation, max.                               | 60 °C; at max. voltages and max. specification                                            |         |                |
| • vertical installation, min.                                 | -20 °C                                                                                    |         |                |
| • vertical installation, max.                                 | 50 °C; at max. voltages and max. specification                                            |         |                |
| • 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                           |                                                                                           |         |                |
| • Operation, min.                                             | 540 hPa                                                                                   |         |                |
| • Operation, max.                                             | 1 140 hPa                                                                                 |         |                |
| • Storage/transport, min.                                     | 540 hPa                                                                                   |         |                |
| • Storage/transport, max.                                     | 1 140 hPa                                                                                 |         |                |
| Altitude during operation relating to sea level               |                                                                                           |         |                |
| • Installation altitude, min.                                 | -1 000 m                                                                                  |         |                |
| • Installation altitude, max.                                 | 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual                    |         |                |
| Relative humidity                                             |                                                                                           |         |                |
| • Operation at 25 °C without condensation, max.               | 95 %                                                                                      |         |                |
| Vibrations                                                    |                                                                                           |         |                |
| • Vibration resistance during operation acc. to IEC 60068-2-6 | 3.5 mm from 5 - 8.4 Hz, 1g from 8.4 - 150 Hz                                              |         |                |
| • Operation, tested according to IEC 60068-2-6                | Yes                                                                                       |         |                |
| Shock testing                                                 |                                                                                           |         |                |
| • tested according to IEC 60068-2-27                          | Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value), duration 11 ms |         |                |
| Pollutant concentrations                                      |                                                                                           |         |                |
| • SO2 at RH < 60% without condensation                        | SO2: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60 % condensation-free                               |         |                |
| Connection method                                             |                                                                                           |         |                |
| required front connector                                      | No                                                                                        |         |                |
| Mechanics/material                                            |                                                                                           |         |                |
| Enclosure material (front)                                    |                                                                                           |         |                |
| • Plastic                                                     | Yes                                                                                       |         |                |
| Dimensions                                                    |                                                                                           |         |                |
| Width                                                         | 50 mm                                                                                     |         |                |
| Height                                                        | 125 mm                                                                                    |         |                |
| Depth                                                         | 100 mm                                                                                    |         |                |
| Weights                                                       |                                                                                           |         |                |
| Weight, approx.                                               | 262 g                                                                                     |         |                |
| Classifications                                               |                                                                                           |         |                |
|                                                               |                                                                                           | Version | Classification |
|                                                               | eClass                                                                                    | 16      | 27-24-22-04    |
|                                                               | eClass                                                                                    | 14      | 27-24-22-04    |
|                                                               | eClass                                                                                    | 12      | 27-24-22-04    |
|                                                               | eClass                                                                                    | 9.1     | 27-24-22-04    |
|                                                               | eClass                                                                                    | 9       | 27-24-22-04    |
|                                                               | eClass                                                                                    | 8       | 27-24-22-04    |
|                                                               | eClass                                                                                    | 7.1     | 27-24-22-04    |
|                                                               | eClass                                                                                    | 6       | 27-24-22-04    |

|      |    |          |
|------|----|----------|
| ETIM | 10 | EC001419 |
| ETIM | 9  | EC001419 |
| ETIM | 8  | EC001419 |
| ETIM | 7  | EC001419 |

Approvals / Certificates

General Product Approval

[Miscellaneous](#)



[China RoHS](#)



| EMV                                                                               | For use in hazardous locations                                                    | Environment            |                            |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------|----------------------------|
|  |  | <a href="#">CCC-Ex</a> | <a href="#">China RoHS</a> |

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