



SIMATIC S7-1200, Digital input SM 1221, 16 DI, 24 V DC, Sink/Source

| General information                                             |                        |
|-----------------------------------------------------------------|------------------------|
| Product type designation                                        | SM 1221, DI 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.                                 | 130 mA                 |
| Digital inputs                                                  |                        |
| • from load voltage L+ (without load), max.                     | 4 mA; per channel      |
| Output voltage                                                  |                        |
| Power supply to the transmitters                                |                        |
| • present                                                       | Yes                    |
| Power loss                                                      |                        |
| Power loss, typ.                                                | 2.5 W                  |
| Digital inputs                                                  |                        |
| Number of digital inputs                                        | 16                     |
| • in groups of                                                  | 4                      |
| 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                                                   |                        |
| • 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>Interrupts/diagnostics/status information</b>                                              |                                                                                               |
| Alarms                                                                                        |                                                                                               |
| • Diagnostic alarm                                                                            | Yes                                                                                           |
| Diagnostics indication LED                                                                    |                                                                                               |
| • for status of the inputs                                                                    | Yes                                                                                           |
| <b>Potential separation</b>                                                                   |                                                                                               |
| Potential separation digital inputs                                                           |                                                                                               |
| • between the channels, in groups of                                                          | 4                                                                                             |
| <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                                                                                         |
| • 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                                                                                         | 45 mm                                                                                         |
| Height                                                                                        | 100 mm                                                                                        |
| Depth                                                                                         | 75 mm                                                                                         |
| <b>Weights</b>                                                                                |                                                                                               |
| Weight, approx.                                                                               | 210 g                                                                                         |
| <b>last modified:</b>                                                                         |                                                                                               |
| 2/26/2021  |                                                                                               |