



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 / header   |   |
| supply voltage of the transmitters / header                     |   |
| • 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                                   |
| <b>Cable length</b>  |                                       |
| • shielded, max.   | 500 m                                 |
| • unshielded, max.   | 300 m                                 |
| <b>Interrupts/diagnostics/status information</b>               |                                       |
| <b>Alarms</b>  |                                       |
| • Diagnostic alarm   | Yes                                   |
| <b>Diagnostics indication LED</b>                              |                                       |
| • for status of the inputs                                     | Yes                                   |
| <b>Potential separation</b>                                    |                                       |
| <b>Potential separation digital inputs</b>                     |                                       |
| • 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>Ecological footprint</b>                                    |                                       |
| • environmental product declaration                            | Yes                                   |
| <b>Global warming potential</b>                                |                                       |
| — global warming potential, (total) [CO2 eq]                   | 123 kg                                |
| — global warming potential, (during production) [CO2 eq]       | 12.1 kg                               |
| — global warming potential, (during operation) [CO2 eq]        | 111 kg                                |
| — global warming potential, (after end of life cycle) [CO2 eq] | -0.434 kg                             |
| <b>Ambient conditions</b>                                      |                                       |
| <b>Free fall</b>   |                                       |
| • Fall height, max.  | 0.3 m; five times, in product package |
| <b>Ambient temperature during operation</b>                    |                                       |
| • min.   | -20 °C                                |
| • max.   | 60 °C                                 |
| • permissible temperature change                               | 5°C to 55°C, 3°C / minute             |
| <b>Ambient temperature during storage/transportation</b>       |                                       |
| • min.   | -40 °C                                |
| • max.   | 70 °C                                 |
| <b>Air pressure acc. to IEC 60068-2-13</b>                     |                                       |
| • Storage/transport, min.                                      | 660 hPa                               |
| • Storage/transport, max.                                      | 1 080 hPa                             |
| <b>Relative humidity</b>                                       |                                       |
| • Operation at 25 °C without condensation, max.                | 95 %                                  |
| <b>connection method</b>                                       |                                       |
| required front connector                                       | Yes                                   |
| <b>Mechanics/material</b>                                      |                                       |
| <b>Enclosure material (front)</b>                              |                                       |
| • Plastic  | Yes                                   |
| <b>Dimensions</b>  |                                       |
| Width  | 45 mm                                 |
| Height   | 100 mm                                |
| Depth  | 75 mm                                 |
| <b>Weights</b>   |                                       |
| Weight, approx.  | 210 g                                 |

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