



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                                   |
| Cable length                                                   |                                       |
| • shielded, max.                                               | 500 m                                 |
| • unshielded, max.                                             | 300 m                                 |
| Interrupts/diagnostics/status information                      |                                       |
| Alarms                                                         |                                       |
| • Diagnostic alarm                                             | Yes                                   |
| Diagnostics indication LED                                     |                                       |
| • for status of the inputs                                     | Yes                                   |
| Potential separation                                           |                                       |
| Potential separation digital inputs                            |                                       |
| • between the channels, in groups of                           | 4                                     |
| Degree and class of protection                                 |                                       |
| IP degree of protection                                        | IP20                                  |
| Standards, approvals, certificates                             |                                       |
| 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                                   |
| Ecological footprint                                           |                                       |
| • environmental product declaration                            | Yes                                   |
| Global warming potential                                       |                                       |
| — 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                             |
| Ambient conditions                                             |                                       |
| 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 %                                  |
| connection method                                              |                                       |
| required front connector                                       | Yes                                   |
| Mechanics/material                                             |                                       |
| Enclosure material (front)                                     |                                       |
| • Plastic                                                      | Yes                                   |
| Dimensions                                                     |                                       |
| Width                                                          | 45 mm                                 |
| Height                                                         | 100 mm                                |
| Depth                                                          | 75 mm                                 |
| Weights                                                        |                                       |
| Weight, approx.                                                | 210 g                                 |
| Classifications                                                |                                       |

|        | Version | Classification |
|--------|---------|----------------|
| 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   | 9       | EC001419       |
| ETIM   | 8       | EC001419       |
| ETIM   | 7       | EC001419       |
| IDEA   | 4       | 3566           |
| UNSPSC | 15      | 32-15-17-05    |

# Approvals / Certificates

## General Product Approval



[Manufacturer Declaration](#)

[Miscellaneous](#)



## EMV For use in hazardous locations



[EM](#)



## For use in hazardous locations Marine / Shipping

[CCC-Ex](#)



[NK / Nippon Kaiji Kyokai](#)



## Marine / Shipping Environment

[CCS \(China Classification Society\)](#)



last modified: 4/6/2025