

SIMATIC S7-200 SMART, Digital input EM DI16, 16 DI, 24V DC, Sink/Source

| General information                                             |                                             |
|-----------------------------------------------------------------|---------------------------------------------|
| Product type designation                                        | SM DI16, 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                                                   |                                             |
| Current consumption, typ.                                       | 4 mA; Current for 24 V DC input per channel |
| Current consumption, max.                                       | 5 mA; Current for 30 V DC input per channel |
| from backplane bus 5 V DC, typ.                                 | 85 mA; For 5 V DC from CPU module           |
| from backplane bus 5 V DC, max.                                 | 105 mA; For 5 V DC from CPU module          |
| Digital inputs                                                  |                                             |
| Number of digital inputs                                        | 16                                          |
| • in groups of                                                  | 4                                           |
| Parallel switching of inputs                                    | 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 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                                    |
| • for signal "1"                                                | +15 to +30 V                                |
| Input current                                                   |                                             |
| • for signal "0", max. (permissible quiescent current)          | 1 mA                                        |
| • for signal "1", min.                                          | 2.5 mA                                      |
| • for signal "1", max.                                          | 5.5 mA                                      |
| • for signal "1", typ.                                          | 4 mA                                        |
| Input delay (for rated value of input voltage)                  |                                             |
| for standard inputs                                             |                                             |
| — at "0" to "1", max.                                           | 200 µs                                      |
| — at "1" to "0", max.                                           | 200 µs                                      |
| Cable length                                                    |                                             |
| • shielded, max.                                                | 500 m                                       |
| • unshielded, max.                                              | 300 m                                       |
| Digital outputs                                                 |                                             |
| Number of digital outputs                                       | 0                                           |
| Cable length                                                    |                                             |
| • shielded, max.                                                | 500 m                                       |
| • unshielded, max.                                              | 300 m                                       |
| Interrupts/diagnostics/status information                       |                                             |
| Diagnostics indication LED                                      |                                             |
| • for status of the inputs                                      | Yes                                         |
| Potential separation                                            |                                             |
| Potential separation digital inputs                             |                                             |
| • between the channels                                          | Yes; Optocoupler                            |

|                                                                                                      |                                                                                                                                                                     |
|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| • between the channels, in groups of                                                                 | 4                                                                                                                                                                   |
| <b>Isolation</b>                                                                                     |                                                                                                                                                                     |
| Isolation tested with                                                                                | 1 500 V AC for 1 minute                                                                                                                                             |
| <b>EMC</b>                                                                                           |                                                                                                                                                                     |
| <b>Interference immunity against discharge of static electricity</b>                                 |                                                                                                                                                                     |
| • Interference immunity against discharge of static electricity acc. to IEC 61000-4-2                | Yes; ±4 kV contact discharge (to IEC 801-2/IEC 1000-4-2; ESD), ±8 kV air discharge (to IEC 801-2/IEC 1000-4-2; ESD)                                                 |
| — Test voltage at air discharge                                                                      | 8 kV                                                                                                                                                                |
| — Test voltage at contact discharge                                                                  | 4 kV                                                                                                                                                                |
| <b>Interference immunity against high-frequency electromagnetic fields</b>                           |                                                                                                                                                                     |
| • Interference immunity against high-frequency radiation acc. to IEC 61000-4-3                       | Yes; 10 V/m, 80 to 1 000 MHz (to IEC 61000-4-3); 10 V/m, 900 MHz, 1.89 GHz, 50% ED (to IEC 61000-4-3)                                                               |
| — Frequency range of the RF radiation                                                                | 80 to 1000 MHz, 10 V/m, 1.4 to 2.0 GHz, 3 V/m, 2.0 to 2.7 GHz, 1 V/m                                                                                                |
| <b>Interference immunity to cable-borne interference</b>                                             |                                                                                                                                                                     |
| • Interference immunity on supply lines acc. to IEC 61000-4-4                                        | Yes; ±2 kV acc. to IEC 61000-4-4, burst; surge measurements with additional protective elements                                                                     |
| • Interference immunity on signal cables acc. to IEC 61000-4-4                                       | Yes; ±2 kV acc. to IEC 61000-4-4, Burst                                                                                                                             |
| <b>Interference immunity against voltage surge</b>                                                   |                                                                                                                                                                     |
| • Interference immunity on supply lines acc. to IEC 61000-4-5                                        | Yes; Surge measurements with additional protection elements: ±1 kV (to IEC 61000-4-5; µs pulse / line to line); ±2 kV (to IEC 61000-4-5; µs pulse / line to ground) |
| • asymmetric interference                                                                            | ±2 kV acc. to IEC 61000-4-5, surge asymmetric                                                                                                                       |
| — Test voltage on supply cables                                                                      | 2 kV                                                                                                                                                                |
| — Test voltage on signal cables >30m                                                                 | 2 kV                                                                                                                                                                |
| <b>Interference immunity against conducted variable disturbance induced by high-frequency fields</b> |                                                                                                                                                                     |
| • Interference immunity against high frequency current feed acc. to IEC 61000-4-6                    | Yes; 10 V, 150 kHz to 80 MHz (to IEC 61000-4-6)                                                                                                                     |
| • Interference immunity against high-frequency radiation acc. to IEC 61000-4-6                       | Yes; 10 V/m, with 80% amplitude modulation at 1 kHz, 10 kHz to 80 MHz (acc. to IEC 61000-4-6)                                                                       |
| — Test voltage at 80% amplitude modulation with 1kHz in the range 9 kHz to 80 MHz                    | 10 V                                                                                                                                                                |
| <b>Emission of radio interference acc. to EN 55 011</b>                                              |                                                                                                                                                                     |
| • Emission of radio interference                                                                     | Interference emission to EN 50081-2, testing to EN 55011, Class A, Group 1                                                                                          |
| • Limit class A, for use in industrial areas                                                         | Yes; EN 61000-6-4, interference emission: Intended for use in industrial areas.                                                                                     |
| <b>Degree and class of protection</b>                                                                |                                                                                                                                                                     |
| IP degree of protection                                                                              | IP20                                                                                                                                                                |
| <b>Standards, approvals, certificates</b>                                                            |                                                                                                                                                                     |
| CE mark                                                                                              | Yes; CE marking / EC Declaration of Conformity                                                                                                                      |
| <b>Ambient conditions</b>                                                                            |                                                                                                                                                                     |
| <b>Free fall</b>                                                                                     |                                                                                                                                                                     |
| • Fall height, max.                                                                                  | 0.3 m                                                                                                                                                               |
| <b>Ambient temperature during operation</b>                                                          |                                                                                                                                                                     |
| • min.                                                                                               | 0 °C                                                                                                                                                                |
| • max.                                                                                               | 55 °C                                                                                                                                                               |
| • horizontal installation, min.                                                                      | 0 °C                                                                                                                                                                |
| • horizontal installation, max.                                                                      | 55 °C                                                                                                                                                               |
| • vertical installation, min.                                                                        | 0 °C                                                                                                                                                                |
| • vertical installation, max.                                                                        | 45 °C                                                                                                                                                               |
| <b>Ambient temperature during storage/transportation</b>                                             |                                                                                                                                                                     |
| • min.                                                                                               | -40 °C                                                                                                                                                              |
| • max.                                                                                               | 70 °C                                                                                                                                                               |
| <b>Relative humidity</b>                                                                             |                                                                                                                                                                     |
| • Operation at 25 °C without condensation, max.                                                      | 95 %                                                                                                                                                                |
| <b>Dimensions</b>                                                                                    |                                                                                                                                                                     |
| Width                                                                                                | 45 mm                                                                                                                                                               |
| Height                                                                                               | 100 mm                                                                                                                                                              |
| Depth                                                                                                | 81 mm                                                                                                                                                               |
| <b>Weights</b>                                                                                       |                                                                                                                                                                     |
| Weight, approx.                                                                                      | 176 g                                                                                                                                                               |

last modified:

3/12/2024 