# SIEMENS

SIMATIC S7-1500, F digital input module, F-DI 16x 24 V DC PROFIsafe; 35 mm width; up to PL E (ISO 13849-1)/ SIL 3 (IEC 61508)

| General information | |
|---|---|
| Product type designation | F-DI 16x24VDC |
| Firmware version | |
| ● FW update possible | Yes |
| Product function | |
| ● I&M data | Yes; I&M0 to I&M3 |
| Engineering with | |
| ● STEP 7 TIA Portal configurable/integrated from version | V13 SP1 with HSP 0086 |
| Operating mode | |
| ● DI | Yes |
| **Supply voltage** | |
| Rated value (DC) | 24 V |
| permissible range, lower limit (DC) | 19.2 V |
| permissible range, upper limit (DC) | 28.8 V |
| Reverse polarity protection | Yes |
| power supply according to NEC Class 2 required | No |
| **Input current** | |
| Current consumption (rated value) | 50 mA; without load |
| Current consumption, max. | 60 mA; without load |
| **Encoder supply** | |
| Number of outputs | 4 |
| Short-circuit protection | Yes; Electronic (response threshold 0.7 A to 1.8 A) |
| 24 V encoder supply | |
| ● 24 V | Yes; min. L+ (-1.5 V) |
| ● Short-circuit protection | Yes |
| ● Output current, max. | 300 mA; Max. 100 mA when mounted vertically |
| **Power** | |
| Power available from the backplane bus | 0.9 W |
| **Power loss** | |
| Power loss, typ. | 4.6 W |
| **Address area** | |
| Address space per module | |
| ● Inputs | 9 byte; S7-300/400F CPU, 8 byte |
| ● Outputs | 5 byte; S7-300/400F CPU, 4 byte |
| **Hardware configuration** | |
| Automatic encoding | Yes |
| ● Electronic coding element type F | Yes |
| **Digital inputs** | |
| Number of digital inputs | 16 |

| | |
|---|---|
| Source/sink input | Yes; P-reading |
| Input characteristic curve in accordance with IEC 61131, type 1 | Yes |
| **Input voltage** | |
| ● Rated value (DC) | 24 V |
| ● for signal "0" | -30 to +5 V |
| ● for signal "1" | +15 to +30 V |
| **Input current** | |
| ● for signal "1", typ. | 3.7 mA |
| **Input delay (for rated value of input voltage)** | |
| for standard inputs | |
| — parameterizable | Yes |
| — at "0" to "1", min. | 0.4 ms |
| — at "0" to "1", max. | 20 ms |
| — at "1" to "0", min. | 0.4 ms |
| — at "1" to "0", max. | 20 ms |
| **Cable length** | |
| ● shielded, max. | 1 000 m |
| ● unshielded, max. | 500 m |

## Interrupts/diagnostics/status information

| | |
|---|---|
| Diagnostics function | Yes |
| **Alarms** | |
| ● Diagnostic alarm | Yes |
| ● Hardware interrupt | No |
| **Diagnoses** | |
| ● Monitoring the supply voltage | Yes |
| ● Wire-break | No |
| ● Short-circuit | Yes |
| ● Group error | Yes |
| **Diagnostics indication LED** | |
| ● RUN LED | Yes; green LED |
| ● ERROR LED | Yes; red LED |
| ● Channel status display | Yes; green LED |
| ● for channel diagnostics | Yes; red LED |
| ● for module diagnostics | Yes; red LED |

## Potential separation

| | |
|---|---|
| **Potential separation channels** | |
| ● between the channels and backplane bus | Yes |

## Isolation

| | |
|---|---|
| Isolation tested with | 707 V DC (type test) |

## Standards, approvals, certificates

| | |
|---|---|
| Suitable for safety functions | Yes |
| **Highest safety class achievable in safety mode** | |
| ● Performance level according to ISO 13849-1 | PLe |
| ● SIL acc. to IEC 61508 | SIL 3 |
| Probability of failure (for service life of 20 years and repair time of 100 hours) | |
| — Low demand mode: PFDavg in accordance with SIL3 | < 5.00E-05 |
| — High demand/continuous mode: PFH in accordance with SIL3 | < 1.00E-09 1/h |

## Ambient conditions

| | |
|---|---|
| **Ambient temperature during operation** | |
| ● horizontal installation, min. | 0 °C |
| ● horizontal installation, max. | 60 °C |
| ● vertical installation, min. | 0 °C |
| ● vertical installation, max. | 40 °C |

## Dimensions

| | |
|---|---|
| Width | 35 mm |
| Height | 147 mm |
| Depth | 129 mm |

## Weights

| | |
|---|---|
| Weight, approx. | 280 g |
| **last modified:** | 10/7/2021 |

4/6/2023