

Siemens  
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Figure similar



SIMATIC S7-1500, digital output module DQ16x24 V DC/0.5A HF; 16 channels in groups of 8; 4 A per group; single-channel diagnostics; substitute value: switching cycle counter for connected actuators. the module supports the safety-oriented shutdown of load groups up to SIL2 according to EN IEC 62061:2021 and Category 3 / PL d according to EN ISO 13849-1:2015. front connector (screw terminals or push-in) to be ordered separately

| General information                                      |                                                     |
|----------------------------------------------------------|-----------------------------------------------------|
| Product type designation                                 | DQ 16x24VDC/0.5A HF                                 |
| HW functional status                                     | From FS02                                           |
| Firmware version                                         | V1.1.0                                              |
| • FW update possible                                     | Yes                                                 |
| Product function                                         |                                                     |
| • I&M data                                               | Yes; I&M0 to I&M3                                   |
| • Isochronous mode                                       | Yes                                                 |
| • Prioritized startup                                    | Yes                                                 |
| Engineering with                                         |                                                     |
| • STEP 7 TIA Portal configurable/integrated from version | V13 SP1 / -                                         |
| • STEP 7 configurable/integrated from version            | V5.5 SP3 / -                                        |
| • PROFIBUS from GSD version/GSD revision                 | V1.0 / V5.1                                         |
| • PROFINET from GSD version/GSD revision                 | V2.3 / -                                            |
| Operating mode                                           |                                                     |
| • DQ                                                     | Yes                                                 |
| • DQ with energy-saving function                         | No                                                  |
| • PWM                                                    | No                                                  |
| • Cam control (switching at comparison values)           | No                                                  |
| • Oversampling                                           | No                                                  |
| • MSO                                                    | Yes                                                 |
| • Integrated operating cycle counter                     | 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; through internal protection with 7 A per group |
| Input current                                            |                                                     |
| Current consumption, max.                                | 30 mA                                               |
| output voltage / header                                  |                                                     |
| Rated value (DC)                                         | 24 V                                                |
| Power                                                    |                                                     |
| Power available from the backplane bus                   | 1.1 W                                               |
| Power loss                                               |                                                     |
| Power loss, typ.                                         | 2 W                                                 |
| Digital outputs                                          |                                                     |

|                                              |                                                 |
|----------------------------------------------|-------------------------------------------------|
| Type of digital output                       | Transistor                                      |
| Number of digital outputs                    | 16                                              |
| Current-sourcing                             | Yes                                             |
| Digital outputs, parameterizable             | Yes                                             |
| Short-circuit protection                     | Yes; Clocked electronically                     |
| • Response threshold, typ.                   | 1 A                                             |
| Limitation of inductive shutdown voltage to  | L+ (-53 V)                                      |
| Controlling a digital input                  | Yes                                             |
| Switching capacity of the outputs            |                                                 |
| • with resistive load, max.                  | 0.5 A                                           |
| • on lamp load, max.                         | 5 W                                             |
| Load resistance range                        |                                                 |
| • lower limit                                | 48 $\Omega$                                     |
| • upper limit                                | 12 k $\Omega$                                   |
| Output voltage                               |                                                 |
| • for signal "1", min.                       | L+ (-0.8 V)                                     |
| Output current                               |                                                 |
| • for signal "1" rated value                 | 0.5 A                                           |
| • for signal "1" permissible range, max.     | 0.5 A                                           |
| • for signal "0" residual current, max.      | 0.5 mA                                          |
| Output delay with resistive load             |                                                 |
| • "0" to "1", max.                           | 100 $\mu$ s                                     |
| • "1" to "0", max.                           | 500 $\mu$ s                                     |
| Parallel switching of two outputs            |                                                 |
| • for logic links                            | Yes                                             |
| • for uprating                               | No                                              |
| • for redundant control of a load            | Yes                                             |
| Switching frequency                          |                                                 |
| • with resistive load, max.                  | 100 Hz                                          |
| • with inductive load, max.                  | 0.5 Hz; According to IEC 60947-5-1, DC-13       |
| • on lamp load, max.                         | 10 Hz                                           |
| Total current of the outputs                 |                                                 |
| • Current per channel, max.                  | 0.5 A; see additional description in the manual |
| • Current per group, max.                    | 4 A; see additional description in the manual   |
| • Current per module, max.                   | 8 A; see additional description in the manual   |
| Cable length                                 |                                                 |
| • shielded, max.                             | 1 000 m                                         |
| • unshielded, max.                           | 600 m                                           |
| Isochronous mode                             |                                                 |
| Execution and activation time (TCO), min.    | 70 $\mu$ s                                      |
| Bus cycle time (TDP), min.                   | 250 $\mu$ s                                     |
| Interrupts/diagnostics/status information    |                                                 |
| Diagnostics function                         | Yes                                             |
| Substitute values connectable                | Yes                                             |
| Alarms                                       |                                                 |
| • Diagnostic alarm                           | Yes                                             |
| • Maintenance interrupt                      | Yes                                             |
| Diagnoses                                    |                                                 |
| • Monitoring the supply voltage              | Yes                                             |
| • Wire-break                                 | Yes                                             |
| • Short-circuit                              | Yes                                             |
| • Group error                                | Yes                                             |
| Diagnostics indication LED                   |                                                 |
| • RUN LED                                    | Yes; green LED                                  |
| • ERROR LED                                  | Yes; red LED                                    |
| • MAINT LED                                  | Yes; Yellow LED                                 |
| • Monitoring of the supply voltage (PWR-LED) | Yes; green LED                                  |
| • Channel status display                     | Yes; green LED                                  |
| • for channel diagnostics                    | Yes; red LED                                    |
| • for module diagnostics                     | Yes; red LED                                    |

|                                                                                        |                                                                                                                                       |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <b>Potential separation</b>                                                            |                                                                                                                                       |
| Potential separation channels                                                          |                                                                                                                                       |
| • between the channels                                                                 | No                                                                                                                                    |
| • between the channels, in groups of                                                   | 8                                                                                                                                     |
| • between the channels and backplane bus                                               | Yes                                                                                                                                   |
| <b>Isolation</b>                                                                       |                                                                                                                                       |
| Isolation tested with                                                                  | 707 V DC (type test)                                                                                                                  |
| <b>Standards, approvals, certificates</b>                                              |                                                                                                                                       |
| Suitable for safety functions                                                          | No                                                                                                                                    |
| Suitable for safety-related tripping of standard modules                               | Yes; From FS02                                                                                                                        |
| <b>Ecological footprint</b>                                                            |                                                                                                                                       |
| • environmental product declaration                                                    | Yes                                                                                                                                   |
| <b>Global warming potential</b>                                                        |                                                                                                                                       |
| — global warming potential, (total) [CO2 eq]                                           | 43.8 kg                                                                                                                               |
| — global warming potential, (during production) [CO2 eq]                               | 9.5 kg                                                                                                                                |
| — global warming potential, (during operation) [CO2 eq]                                | 34.5 kg                                                                                                                               |
| — global warming potential, (after end of life cycle) [CO2 eq]                         | -0.231 kg                                                                                                                             |
| <b>Highest safety class achievable for safety-related tripping of standard modules</b> |                                                                                                                                       |
| • Performance level according to ISO 13849-1                                           | PL d                                                                                                                                  |
| • Category according to ISO 13849-1                                                    | Cat. 3                                                                                                                                |
| • SIL acc. to IEC 62061                                                                | SIL 2                                                                                                                                 |
| • remark on safety-oriented shutdown                                                   | <a href="https://support.industry.siemens.com/cs/de/en/view/39198632">https://support.industry.siemens.com/cs/de/en/view/39198632</a> |
| <b>product functions / security / header</b>                                           |                                                                                                                                       |
| signed firmware update                                                                 | No                                                                                                                                    |
| data integrity                                                                         | No                                                                                                                                    |
| <b>Ambient conditions</b>                                                              |                                                                                                                                       |
| Ambient temperature during operation                                                   |                                                                                                                                       |
| • horizontal installation, min.                                                        | -30 °C; From FS03                                                                                                                     |
| • horizontal installation, max.                                                        | 60 °C                                                                                                                                 |
| • vertical installation, min.                                                          | -30 °C; From FS03                                                                                                                     |
| • vertical installation, max.                                                          | 40 °C                                                                                                                                 |
| Altitude during operation relating to sea level                                        |                                                                                                                                       |
| • Installation altitude above sea level, max.                                          | 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual                                                                |
| <b>Dimensions</b>                                                                      |                                                                                                                                       |
| Width                                                                                  | 35 mm                                                                                                                                 |
| Height                                                                                 | 147 mm                                                                                                                                |
| Depth                                                                                  | 129 mm                                                                                                                                |
| <b>Weights</b>                                                                         |                                                                                                                                       |
| Weight, approx.                                                                        | 230 g                                                                                                                                 |

last modified: 10/9/2024 