

SIMATIC S7-1500, DIGITAL OUTPUT MODULE DQ 16 X 230VAC / 2A ST; RELAY; 16 CHANNELS IN GROUPS OF 2, 4A PER GROUP; DIAGNOSIS; SUBSTITUTE VALUE



| General information                                       |                            |
|-----------------------------------------------------------|----------------------------|
| Product type designation                                  | DQ 16x230VAC/2A ST (relay) |
| HW functional status                                      | FS01                       |
| Firmware version                                          | V1.0.0                     |
| • FW update possible                                      | Yes                        |
| Product function                                          |                            |
| • I&M data                                                | Yes; I&M0 to I&M3          |
| Engineering with                                          |                            |
| • STEP 7 TIA Portal configurable/integrated as of version | V13 SP1 / -                |
| • STEP 7 configurable/integrated as of version            | V5.5 SP3 / -               |
| • PROFIBUS as of GSD version/GSD revision                 | V1.0 / V5.1                |
| • PROFINET as of GSD version/GSD revision                 | V2.3 / -                   |
| Operating mode                                            |                            |
| • DQ                                                      | Yes                        |
| • DQ with energy-saving function                          | No                         |
| • PWM                                                     | No                         |
| • Oversampling                                            | No                         |
| • MSO                                                     | Yes                        |

|                                              |                                                |
|----------------------------------------------|------------------------------------------------|
| <b>Supply voltage</b>                        |                                                |
| Rated value (DC)                             | 24 V                                           |
| permissible range, lower limit (DC)          | 20.4 V                                         |
| permissible range, upper limit (DC)          | 28.8 V                                         |
| Reverse polarity protection                  | Yes                                            |
| <b>Input current</b>                         |                                                |
| Current consumption, max.                    | 150 mA                                         |
| <b>Power</b>                                 |                                                |
| Power available from the backplane bus       | 0.8 W                                          |
| <b>Power loss</b>                            |                                                |
| Power loss, typ.                             | 5 W                                            |
| <b>Digital outputs</b>                       |                                                |
| Number of digital outputs                    | 16                                             |
| Current-sinking                              | Yes                                            |
| Current-sourcing                             | Yes                                            |
| Short-circuit protection                     | No                                             |
| Controlling a digital input                  | Yes                                            |
| <b>Switching capacity of the outputs</b>     |                                                |
| • on lamp load, max.                         | 50 W (230 V AC), 5 W (24 V DC)                 |
| <b>Output current</b>                        |                                                |
| • for signal "1" rated value                 | 2 A                                            |
| • for signal "1" permissible range, min.     | 10 mA; 10 V                                    |
| • for signal "1" permissible range, max.     | 2 A; thermal continuous current                |
| • for signal "0" residual current, max.      | 0 A                                            |
| <b>Parallel switching of two outputs</b>     |                                                |
| • for logic links                            | Yes                                            |
| • for uprating                               | No                                             |
| • for redundant control of a load            | Yes                                            |
| <b>Switching frequency</b>                   |                                                |
| • with resistive load, max.                  | 1 Hz                                           |
| • with inductive load, max.                  | 0.5 Hz                                         |
| • on lamp load, max.                         | 1 Hz                                           |
| <b>Total current of the outputs</b>          |                                                |
| • Current per channel, max.                  | 2 A; see additional description in the manual  |
| • Current per group, max.                    | 2 A; see additional description in the manual  |
| • Current per module, max.                   | 32 A; see additional description in the manual |
| <b>Relay outputs</b>                         |                                                |
| • Number of relay outputs                    | 16                                             |
| • Rated supply voltage of relay coil L+ (DC) | 24 V                                           |

|                                                                                                                      |                                               |
|----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| <ul style="list-style-type: none"> <li>• Current consumption of relays (coil current of all relays), max.</li> </ul> | 150 mA                                        |
| <ul style="list-style-type: none"> <li>• external protection for relay outputs</li> </ul>                            | Miniature circuit breaker B10 / B16           |
| <ul style="list-style-type: none"> <li>• Contact connection (internal)</li> </ul>                                    | No                                            |
| <ul style="list-style-type: none"> <li>• Size of motor starters according to NEMA, max.</li> </ul>                   | 5                                             |
| <ul style="list-style-type: none"> <li>• Number of operating cycles, max.</li> </ul>                                 | see additional description in the manual      |
| <ul style="list-style-type: none"> <li>• Relay approved acc. to UL 508</li> </ul>                                    | No                                            |
| Switching capacity of contacts                                                                                       |                                               |
| — with inductive load, max.                                                                                          | 2 A; see additional description in the manual |
| — with resistive load, max.                                                                                          | 2 A; see additional description in the manual |
| Cable length                                                                                                         |                                               |
| <ul style="list-style-type: none"> <li>• shielded, max.</li> </ul>                                                   | 1 000 m                                       |
| <ul style="list-style-type: none"> <li>• unshielded, max.</li> </ul>                                                 | 600 m                                         |
| Isochronous mode                                                                                                     |                                               |
| Isochronous operation (application synchronized up to terminal)                                                      | No                                            |
| Interrupts/diagnostics/status information                                                                            |                                               |
| Diagnostics function                                                                                                 | Yes                                           |
| Substitute values connectable                                                                                        | Yes                                           |
| Alarms                                                                                                               |                                               |
| <ul style="list-style-type: none"> <li>• Diagnostic alarm</li> </ul>                                                 | Yes                                           |
| Diagnostic messages                                                                                                  |                                               |
| <ul style="list-style-type: none"> <li>• Monitoring the supply voltage</li> </ul>                                    | Yes                                           |
| <ul style="list-style-type: none"> <li>• Wire-break</li> </ul>                                                       | No                                            |
| <ul style="list-style-type: none"> <li>• Short-circuit</li> </ul>                                                    | No                                            |
| Diagnostics indication LED                                                                                           |                                               |
| <ul style="list-style-type: none"> <li>• RUN LED</li> </ul>                                                          | Yes; Green LED                                |
| <ul style="list-style-type: none"> <li>• ERROR LED</li> </ul>                                                        | Yes; Red LED                                  |
| <ul style="list-style-type: none"> <li>• Monitoring of the supply voltage (PWR-LED)</li> </ul>                       | Yes; Green LED                                |
| <ul style="list-style-type: none"> <li>• Channel status display</li> </ul>                                           | Yes; Green LED                                |
| <ul style="list-style-type: none"> <li>• for channel diagnostics</li> </ul>                                          | No                                            |
| <ul style="list-style-type: none"> <li>• for module diagnostics</li> </ul>                                           | Yes; Red LED                                  |
| Potential separation                                                                                                 |                                               |
| Potential separation channels                                                                                        |                                               |
| <ul style="list-style-type: none"> <li>• between the channels</li> </ul>                                             | No                                            |
| <ul style="list-style-type: none"> <li>• between the channels, in groups of</li> </ul>                               | 2                                             |
| <ul style="list-style-type: none"> <li>• between the channels and backplane bus</li> </ul>                           | Yes                                           |
| <ul style="list-style-type: none"> <li>• Between the channels and load voltage L+</li> </ul>                         | Yes                                           |
| Permissible potential difference                                                                                     |                                               |

|                            |                                                                                                                                             |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| between different circuits | 250 V AC between the channels and the supply voltage L+; 250 V AC between the channels and the backplane bus; 500 V AC between the channels |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|

## 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 |

## Decentralized operation

|                     |     |
|---------------------|-----|
| Prioritized startup | Yes |
|---------------------|-----|

## Dimensions

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

## Weights

|                 |       |
|-----------------|-------|
| Weight, approx. | 350 g |
|-----------------|-------|

**last modified:** 08/16/2016