

SIMATIC S7-1500, F digital output module, F-DQ 8x 24 V DC 2A  
PPM PROFIsafe; 35 mm width; up to PL E (ISO 13849-1)/ SIL3 (IEC 61508)



General information	
Product type designation	F-DQ 8x24VDC/2A PPM
Firmware version	
<ul style="list-style-type: none"> <li>FW update possible</li> </ul>	Yes
Product function	
<ul style="list-style-type: none"> <li>I&amp;M data</li> </ul>	Yes; I&M0 to I&M3
Engineering with	
<ul style="list-style-type: none"> <li>STEP 7 TIA Portal configurable/integrated from version</li> </ul>	V13 SP1 with HSP 0086
Operating mode	
<ul style="list-style-type: none"> <li>DQ</li> </ul>	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
Input current	
Current consumption (rated value)	110 mA; without load

Output voltage	
Rated value (DC)	24 V
Power	
Power available from the backplane bus	0.8 W
Power loss	
Power loss, typ.	11 W
Address area	
Address space per module	
<ul style="list-style-type: none"> <li>Address space per module, max.</li> </ul>	6 byte
Hardware configuration	
Automatic encoding	Yes
<ul style="list-style-type: none"> <li>Electronic coding element type F</li> </ul>	Yes
Digital outputs	
Number of digital outputs	8
Current-sinking	Yes
Current-sourcing	Yes
Short-circuit protection	Yes
Open-circuit detection	Yes
<ul style="list-style-type: none"> <li>Response threshold, typ.</li> </ul>	8 mA
Overload protection	Yes
<ul style="list-style-type: none"> <li>Response threshold, typ.</li> </ul>	2.9 A
Limitation of inductive shutdown voltage to	PM-switching: -24 V + (-47 V), PP-switching: -24 V
Switching capacity of the outputs	
<ul style="list-style-type: none"> <li>with resistive load, max.</li> </ul>	2 A
<ul style="list-style-type: none"> <li>on lamp load, max.</li> </ul>	10 W
Load resistance range	
<ul style="list-style-type: none"> <li>lower limit</li> </ul>	12 $\Omega$
<ul style="list-style-type: none"> <li>upper limit</li> </ul>	2 000 $\Omega$
Output voltage	
<ul style="list-style-type: none"> <li>for signal "1", min.</li> </ul>	24 V; L+ (-0.5 V)
Output current	
<ul style="list-style-type: none"> <li>for signal "1" rated value</li> </ul>	2 A
<ul style="list-style-type: none"> <li>for signal "0" residual current, max.</li> </ul>	0.5 mA; Current-sourcing, or current sourcing and sinking switches individually, current sinking: max. 1 mA
Switching frequency	
<ul style="list-style-type: none"> <li>with resistive load, max.</li> </ul>	30 Hz
<ul style="list-style-type: none"> <li>with inductive load, max.</li> </ul>	0.1 Hz
<ul style="list-style-type: none"> <li>on lamp load, max.</li> </ul>	10 Hz
Total current of the outputs	
<ul style="list-style-type: none"> <li>Current per channel, max.</li> </ul>	2 A

<b>Total current of the outputs (per module)</b>	
horizontal installation	
— up to 40 °C, max.	16 A
— up to 60 °C, max.	8 A
vertical installation	
— up to 40 °C, max.	8 A
<b>Cable length</b>	
• shielded, max.	1 000 m
• unshielded, max.	500 m
<b>Interrupts/diagnostics/status information</b>	
Diagnostics function	Yes
Substitute values connectable	No
<b>Alarms</b>	
• Diagnostic alarm	Yes
<b>Diagnoses</b>	
• Monitoring the supply voltage	Yes
• Wire-break	Yes
• Short-circuit	Yes
• Group error	Yes
<b>Diagnostics indication LED</b>	
• RUN LED	Yes; green LED
• ERROR LED	Yes; red LED
• Monitoring of the supply voltage (PWR-LED)	Yes
• 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 and backplane bus	Yes
<b>Isolation</b>	
Isolation tested with	707 V DC (type test)
<b>Standards, approvals, certificates</b>	
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	< 6.00E-05

— High demand/continuous mode: PFH in accordance with SIL3

< 2.00E-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. 300 g

**last modified:** 10/13/2020