



SIMATIC ET 200SP HA, digital output module, DQ 16x24VDC/0.5A HA, suitable for terminal block, H1, M1, color code CC02, channel diagnostics

General information	
Product type designation	DQ 16x24VDC/0.5A HA
Firmware version	
<ul style="list-style-type: none"> <li>FW update possible</li> </ul>	Yes
Usable terminal block	TB type H1, M1 and N0
Color code for module-specific color identification plate	CC02
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>	V16
<ul style="list-style-type: none"> <li>PCS 7 configurable/integrated from version</li> </ul>	V9.0
<ul style="list-style-type: none"> <li>PROFINET from GSD version/GSD revision</li> </ul>	GSDML V2.3
Operating mode	
<ul style="list-style-type: none"> <li>DQ</li> </ul>	Yes
<ul style="list-style-type: none"> <li>DQ with energy-saving function</li> </ul>	No
<ul style="list-style-type: none"> <li>PWM</li> </ul>	No
<ul style="list-style-type: none"> <li>Oversampling</li> </ul>	No
<ul style="list-style-type: none"> <li>MSO</li> </ul>	No
Redundancy	
<ul style="list-style-type: none"> <li>Redundancy capability</li> </ul>	Yes; With TB type M1
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)	60 mA; without load
Current consumption, max.	70 mA; without load
Output voltage	
Rated value (DC)	24 V
Power loss	
Power loss, typ.	1.2 W; minimum - typ. specification not possible because load-dependent
Address area	
Address space per module	
<ul style="list-style-type: none"> <li>Address space per module, max.</li> </ul>	2 byte; + 2 bytes for QI information

Digital outputs	
Number of digital outputs	16
Current-sinking	No
Current-sourcing	Yes
Digital outputs, parameterizable	Yes
Short-circuit protection	Yes; Ensure sufficient low-resistance cable routing to the sensor/actuator in order to attain the response threshold. Depending on the cable cross-section used, there may be constraints regarding the usable length of cable.
<ul style="list-style-type: none"> <li>• Response threshold, typ.</li> </ul>	0.7 A to 1.3 A (for IO redundancy up to max 2.6 A)
Open-circuit detection	Yes; 0.7 mA test current for wire-break diagnostics; this value is doubled in the case of IO redundancy
Overload protection	Yes
Limitation of inductive shutdown voltage to	L+ -(37 to 41V)
Controlling a digital input	Yes
Switching capacity of the outputs	
<ul style="list-style-type: none"> <li>• with resistive load, max.</li> </ul>	0.5 A
<ul style="list-style-type: none"> <li>• on lamp load, max.</li> </ul>	5 W
Load resistance range	
<ul style="list-style-type: none"> <li>• lower limit</li> </ul>	48 Ω
<ul style="list-style-type: none"> <li>• upper limit</li> </ul>	12 kΩ
Output current	
<ul style="list-style-type: none"> <li>• for signal "1" rated value</li> </ul>	0.5 A
<ul style="list-style-type: none"> <li>• for signal "0" residual current, max.</li> </ul>	0.7 mA; Test current for wire-break diagnostics; this value is doubled in the case of IO redundancy
Output delay with resistive load	
<ul style="list-style-type: none"> <li>• "0" to "1", typ.</li> </ul>	50 μs
<ul style="list-style-type: none"> <li>• "1" to "0", typ.</li> </ul>	100 μs
Parallel switching of two outputs	
<ul style="list-style-type: none"> <li>• for uprating</li> </ul>	No
<ul style="list-style-type: none"> <li>• for redundant control of a load</li> </ul>	Yes
Switching frequency	
<ul style="list-style-type: none"> <li>• with resistive load, max.</li> </ul>	100 Hz
<ul style="list-style-type: none"> <li>• with inductive load, max.</li> </ul>	2 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>	0.5 A
<ul style="list-style-type: none"> <li>• Current per module, max.</li> </ul>	8 A
Total current of the outputs (per module)	
horizontal installation	
— up to 30 °C, max.	8 A
— up to 40 °C, max.	8 A
— up to 50 °C, max.	8 A
— up to 60 °C, max.	5.5 A
— up to 70 °C, max.	3 A
vertical installation	
— up to 30 °C, max.	8 A
— up to 40 °C, max.	6.33 A
— up to 50 °C, max.	4.67 A
— up to 60 °C, max.	3 A
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
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Substitute values connectable	Yes
Alarms	
<ul style="list-style-type: none"> <li>• Diagnostic alarm</li> </ul>	Yes
Diagnoses	

<ul style="list-style-type: none"> <li>Monitoring the supply voltage</li> <li>Wire-break</li> <li>Short-circuit to M</li> <li>Short-circuit to L+</li> <li>Group error</li> </ul>	Yes Yes; channel by channel Yes; channel by channel Yes; channel by channel Yes
<b>Diagnostics indication LED</b>	
<ul style="list-style-type: none"> <li>MAINT LED</li> <li>Monitoring of the supply voltage (PWR-LED)</li> <li>Channel status display</li> <li>for channel diagnostics</li> <li>for module diagnostics</li> </ul>	Yes; Yellow LED Yes; green PWR LED Yes; green LED Yes; red LED Yes; green/red DIAG LED
<b>Potential separation</b>	
<b>Potential separation channels</b>	
<ul style="list-style-type: none"> <li>between the channels</li> <li>between the channels and backplane bus</li> </ul>	No Yes
<b>Isolation</b>	
Isolation tested with	1 500 V DC/1 min, type test
<b>Ambient conditions</b>	
<b>Ambient temperature during operation</b>	
<ul style="list-style-type: none"> <li>horizontal installation, min.</li> <li>horizontal installation, max.</li> <li>vertical installation, min.</li> <li>vertical installation, max.</li> </ul>	-40 °C 70 °C -40 °C 60 °C
<b>Dimensions</b>	
Width	22.5 mm
Height	115 mm
Depth	138 mm
<b>Weights</b>	
Weight, approx.	137 g
<b>last modified:</b>	1/17/2021 