

SIMATIC ET 200AL, DIQ 16x24 V DC/0.5 A, 8xM12, Degree of protection IP67



General information	
Product type designation	DIQ 16x24VDC/0.5A
HW functional status	FS03
Firmware version	V1.2.x
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 as of version</li> </ul>	STEP 7 V14 or higher
<ul style="list-style-type: none"> <li>STEP 7 configurable/integrated as of version</li> </ul>	V5.5 SP4 Hotfix 7 or higher
<ul style="list-style-type: none"> <li>PROFIBUS as of GSD version/GSD revision</li> </ul>	GSD as of Revision 5
<ul style="list-style-type: none"> <li>PROFINET as of GSD version/GSD revision</li> </ul>	GSDML V2.3.1
Operating mode	
<ul style="list-style-type: none"> <li>DI</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Counter</li> </ul>	Yes
<ul style="list-style-type: none"> <li>DQ</li> </ul>	Yes
Supply voltage	
Load voltage 1L+	

<ul style="list-style-type: none"> <li>• Rated value (DC)</li> <li>• permissible range, lower limit (DC)</li> <li>• permissible range, upper limit (DC)</li> <li>• Reverse polarity protection</li> </ul>	24 V 20.4 V 28.8 V Yes; Against destruction; encoder power supply outputs applied with reversed polarity, loads pick up
<b>Load voltage 2L+</b>	
<ul style="list-style-type: none"> <li>• Rated value (DC)</li> <li>• permissible range, lower limit (DC)</li> <li>• permissible range, upper limit (DC)</li> <li>• Reverse polarity protection</li> </ul>	24 V 20.4 V 28.8 V Yes; Against destruction; encoder power supply outputs applied with reversed polarity, loads pick up
<b>Input current</b>	
Current consumption (rated value)	75 mA; without load
from load voltage 1L+ (unswitched voltage)	4 A; Maximum value
from load voltage 2L+, max.	4 A; Maximum value
<b>Encoder supply</b>	
Number of outputs	8
<b>24 V encoder supply</b>	
<ul style="list-style-type: none"> <li>• Short-circuit protection</li> <li>• Output current, max.</li> </ul>	Yes; Per load voltage, electronic 1.4 A; Total current of all encoders, max. 0.7 A per load voltage
<b>Power loss</b>	
Power loss, typ.	4 W
<b>Digital inputs</b>	
Number of digital inputs	16; Parameterizable as DIQ
Input characteristic curve in accordance with IEC 61131, type 3	Yes
<b>Number of simultaneously controllable inputs</b>	
all mounting positions	
— up to 55 °C, max.	16
<b>Digital input functions, parameterizable</b>	
<ul style="list-style-type: none"> <li>• Freely usable digital input</li> <li>• Counter</li> <li>— Number, max.</li> <li>— Counting frequency, max.</li> <li>— Counting width</li> <li>— Counting direction up/down</li> </ul>	Yes Yes 4 2 kHz 32 bit; Incl. sign Yes
<b>Input voltage</b>	
<ul style="list-style-type: none"> <li>• Rated value (DC)</li> <li>• for signal "0"</li> <li>• for signal "1"</li> </ul>	24 V -3 to +5V +11 to +30V
<b>Input current</b>	

• for signal "1", typ.	3 mA
<b>Input delay (for rated value of input voltage)</b>	
for standard inputs	
— parameterizable	Yes
— at "0" to "1", min.	0.05 ms; 1.6 ms for channels 8 through 15
— at "0" to "1", max.	20 ms
— at "1" to "0", min.	0.05 ms; 1.6 ms for channels 8 through 15
— at "1" to "0", max.	20 ms
for technological functions	
— parameterizable	Yes
<b>Cable length</b>	
• unshielded, max.	30 m
<b>Digital outputs</b>	
Number of digital outputs	16; Parameterizable as DIQ
• in groups of	8; 2 load groups for 8 outputs each
Short-circuit protection	Yes; per channel, electronic
• Response threshold, typ.	0.7 A
Limitation of inductive shutdown voltage to	L+ (-53 V)
<b>Digital output functions, parameterizable</b>	
• Switching tripped by comparison values	Yes
• Freely usable digital output	Yes
<b>Switching capacity of the outputs</b>	
• on lamp load, max.	5 W
<b>Load resistance range</b>	
• lower limit	48 Ω
• upper limit	4 kΩ
<b>Output voltage</b>	
• for signal "1", min.	L+ (-0.8 V)
<b>Output current</b>	
• for signal "1" rated value	0.5 A
• for signal "0" residual current, max.	0.5 mA
<b>Switching frequency</b>	
• with resistive load, max.	100 Hz
• with inductive load, max.	0.5 Hz
• on lamp load, max.	1 Hz
<b>Total current of the outputs</b>	
• Current per group, max.	4 A
<b>Cable length</b>	
• unshielded, max.	30 m
<b>Encoder</b>	
Connectable encoders	

<ul style="list-style-type: none"> <li>• 2-wire sensor</li> <li>— permissible quiescent current (2-wire sensor), max.</li> </ul>	<p>Yes</p> <p>1.5 mA</p>
--	--------------------------

### Interrupts/diagnostics/status information

Substitute values connectable	Yes; channel by channel, parameterizable
<b>Alarms</b>	
<ul style="list-style-type: none"> <li>• Diagnostic alarm</li> </ul>	Yes; Parameterizable
<b>Diagnostic messages</b>	
<ul style="list-style-type: none"> <li>• Short-circuit</li> </ul>	Yes; Outputs to M; encoder supply to M; module by module
<b>Diagnostics indication LED</b>	
<ul style="list-style-type: none"> <li>• Channel status display</li> <li>• for module diagnostics</li> <li>• For load voltage monitoring</li> </ul>	<p>Yes; green LED</p> <p>Yes; green/red LED</p> <p>Yes; green LED</p>

### Potential separation

between the load voltages	Yes
<b>Potential separation channels</b>	
<ul style="list-style-type: none"> <li>• between the channels, in groups of</li> <li>• between the channels and backplane bus</li> <li>• between the channels and the power supply of the electronics</li> </ul>	<p>8</p> <p>Yes</p> <p>No; 8 channels are non-isolated and 8 channels are isolated from supply voltage 1L+</p>

### Isolation

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

### Degree and class of protection

IP degree of protection	IP65/67
-------------------------	---------

### Ambient conditions

<b>Ambient temperature during operation</b>	
<ul style="list-style-type: none"> <li>• min.</li> <li>• max.</li> </ul>	<p>-30 °C</p> <p>55 °C</p>

### Connection method

Design of electrical connection for the inputs and outputs	M12, 5-pole
Design of electrical connection for supply voltage	M8, 4-pole
<b>ET-Connection</b>	
<ul style="list-style-type: none"> <li>• ET-Connection</li> </ul>	M8, 4-pin, shielded

### Dimensions

Width	45 mm
Height	159 mm
Depth	40 mm

### Weights

Weight, approx.	195 g
-----------------	-------

last modified:

02/24/2020