



SIMATIC ET 200eco PN, DIQ 16x 24 V DC/0.5 A/2 A, M12-L, 8x M12, double assignment, input type 3 (IEC 61131), sink input (PNP, sinking input), input delay 0.05..20 ms, source output (PNP, switching to P potential), substitute value output, channel diagnostics for: wire break at input, encoder power supply short-circuit, short-circuit at output, prioritized startup, MSI, MSO, MRP, S2 redundancy, I&M0...3, multi-fieldbus, PN IO, Ethernet IP, Modbus TCP, degree of protection IP67

General information	
HW functional status	FS01
Firmware version	V5.1.x
<ul style="list-style-type: none"> <li>FW update possible</li> </ul>	Yes
Vendor identification (VendorID)	002AH
Device identifier (DeviceID)	0306H
Manufacturer ID according to ODVA (VendorID)	04E3H
Device ID according to ODVA (Product code)	0FA8H
Product function	
<ul style="list-style-type: none"> <li>I&amp;M data</li> </ul>	Yes; I&M0 to I&M3
<ul style="list-style-type: none"> <li>Isochronous mode</li> </ul>	No
<ul style="list-style-type: none"> <li>Prioritized startup</li> </ul>	Yes
Engineering with	
<ul style="list-style-type: none"> <li>STEP 7 TIA Portal configurable/integrated from version</li> </ul>	STEP 7 V17 or higher with HSP 0363
<ul style="list-style-type: none"> <li>PROFINET from GSD version/GSD revision</li> </ul>	GSDML V2.3.x
<ul style="list-style-type: none"> <li>Multi Fieldbus Configuration Tool (MFCT)</li> </ul>	from V1.3 SP1
Operating mode	
<ul style="list-style-type: none"> <li>DI</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Counter</li> </ul>	No
<ul style="list-style-type: none"> <li>DQ</li> </ul>	Yes
<ul style="list-style-type: none"> <li>MSI</li> </ul>	Yes
<ul style="list-style-type: none"> <li>MSO</li> </ul>	Yes
Supply voltage	
power supply according to NEC Class 2 required	No
Load voltage 1L+	
<ul style="list-style-type: none"> <li>Rated value (DC)</li> </ul>	24 V
<ul style="list-style-type: none"> <li>permissible range, lower limit (DC)</li> </ul>	20.4 V
<ul style="list-style-type: none"> <li>permissible range, upper limit (DC)</li> </ul>	28.8 V
<ul style="list-style-type: none"> <li>Reverse polarity protection</li> </ul>	Yes; Against destruction; encoder power supply outputs applied with reversed polarity, loads pick up
Load voltage 2L+	
<ul style="list-style-type: none"> <li>Rated value (DC)</li> </ul>	24 V
<ul style="list-style-type: none"> <li>permissible range, lower limit (DC)</li> </ul>	20.4 V
<ul style="list-style-type: none"> <li>permissible range, upper limit (DC)</li> </ul>	28.8 V
<ul style="list-style-type: none"> <li>Reverse polarity protection</li> </ul>	Yes; against destruction
Input current	
Current consumption (rated value)	90 mA; without load
from load voltage 1L+ (unswitched voltage)	12 A; Maximum value
from load voltage 2L+, max.	12 A; Maximum value

Encoder supply	
24 V encoder supply	
<ul style="list-style-type: none"> <li>Short-circuit protection</li> <li>Output current, max.</li> </ul>	Yes; Group-by-group for 2 channels, electronic 100 mA; per output
Power loss	
Power loss, typ.	9.7 W
Address area	
Address space per module	
<ul style="list-style-type: none"> <li>Inputs</li> <li>Outputs</li> </ul>	2 byte; + 4 bytes for QI information 2 byte
Hardware configuration	
Submodules	
<ul style="list-style-type: none"> <li>Number of configurable submodules, max.</li> </ul>	2
Digital inputs	
Number of digital inputs	16; Parameterizable as DIQ
<ul style="list-style-type: none"> <li>in groups of</li> </ul>	8
Digital inputs, parameterizable	Yes
Source/sink input	P-reading
Input characteristic curve in accordance with IEC 61131, type 3	Yes
Number of simultaneously controllable inputs	
all mounting positions	
— up to 60 °C, max.	16
Input voltage	
<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
Input current	
<ul style="list-style-type: none"> <li>for signal "1", typ.</li> </ul>	2.4 mA
Input delay (for rated value of input voltage)	
for standard inputs	
— parameterizable	Yes; 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms
Cable length	
<ul style="list-style-type: none"> <li>unshielded, max.</li> </ul>	30 m
Digital outputs	
Number of digital outputs	16; Parameterizable as DIQ
<ul style="list-style-type: none"> <li>in groups of</li> </ul>	8; 2 load groups for 8 outputs each
Current-sourcing	Yes
Short-circuit protection	Yes; per channel, electronic
<ul style="list-style-type: none"> <li>Response threshold, typ.</li> </ul>	0.5 A: 1 A / 2 A: 3 A
Limitation of inductive shutdown voltage to	0.5 A: Type 1L+ (-70 V) / 2 A: Type (-18 V)
Controlling a digital input	Yes
Switching capacity of the outputs	
<ul style="list-style-type: none"> <li>with resistive load, max.</li> <li>with inductive load, max.</li> <li>on lamp load, max.</li> </ul>	0.5 A / 2 A 0.5 A / 2 A 0.5 A: 5 W / 2 A 10 W
Load resistance range	
<ul style="list-style-type: none"> <li>lower limit</li> <li>upper limit</li> </ul>	0.5 A: 48 ohms / 2 A: 12 ohms 4 kΩ
Output voltage	
<ul style="list-style-type: none"> <li>for signal "1", min.</li> </ul>	1L+ (-0.8 V) / 2L+ (-0.8 V)
Output current	
<ul style="list-style-type: none"> <li>for signal "1" rated value</li> <li>for signal "1" permissible range, max.</li> <li>for signal "0" residual current, max.</li> </ul>	0.5 A / 2 A 0.5 A / 2 A 0.1 mA
Output delay with resistive load	
<ul style="list-style-type: none"> <li>"0" to "1", max.</li> <li>"1" to "0", max.</li> </ul>	0.5 A: 100 μs / 2 A: 150 μs; at rated load 0.5 A: 150 μs / 2 A: 2.5 ms; at rated load
Parallel switching of two outputs	

<ul style="list-style-type: none"> <li>• for uprating</li> <li>• for redundant control of a load</li> </ul>	No Yes
<b>Switching frequency</b>	
<ul style="list-style-type: none"> <li>• with resistive load, max.</li> <li>• with inductive load, max.</li> <li>• on lamp load, max.</li> </ul>	0.5 A: 100 Hz / 2 A: 40 Hz 0.5 Hz 1 Hz
<b>Total current of the outputs</b>	
<ul style="list-style-type: none"> <li>• Current per group, max.</li> <li>• Current per module, max.</li> </ul>	1L+: 2 A / 2L+: 6 A 8 A
<b>Cable length</b>	
<ul style="list-style-type: none"> <li>• unshielded, max.</li> </ul>	30 m
<b>Encoder</b>	
<b>Connectable encoders</b>	
<ul style="list-style-type: none"> <li>• 2-wire sensor <ul style="list-style-type: none"> <li>— permissible quiescent current (2-wire sensor), max.</li> </ul> </li> </ul>	Yes 1.5 mA
<b>Interfaces</b>	
Number of PROFINET interfaces	1
<b>1. Interface</b>	
Interface type	PROFINET with 100 Mbit/s full duplex (100BASE-TX)
<b>Interface types</b>	
<ul style="list-style-type: none"> <li>• M12 port</li> <li>• Number of ports</li> <li>• integrated switch</li> </ul>	Yes; 2x M12, 4-pin, D-coded 2 Yes
<b>Protocols</b>	
<ul style="list-style-type: none"> <li>• PROFINET IO Device</li> <li>• Open IE communication</li> </ul>	Yes Yes
<b>Interface types</b>	
<b>M12 port</b>	
<ul style="list-style-type: none"> <li>• Autonegotiation</li> <li>• Autocrossing</li> <li>• Transmission rate, max.</li> </ul>	Yes Yes 100 Mbit/s
<b>Protocols</b>	
Supports protocol for PROFINET IO	Yes
PROFIsafe	No
EtherNet/IP	Yes
Modbus TCP	Yes
<b>PROFINET IO Device</b>	
<b>Services</b>	
<ul style="list-style-type: none"> <li>— IRT</li> <li>— Prioritized startup</li> <li>— Shared device</li> <li>— Number of IO Controllers with shared device, max.</li> </ul>	Yes; 250 µs to 4 ms in 125 µs frame Yes Yes 2
<b>Redundancy mode</b>	
<ul style="list-style-type: none"> <li>• PROFINET system redundancy (S2) <ul style="list-style-type: none"> <li>— on S7-1500R/H</li> <li>— on S7-400H</li> </ul> </li> <li>• Redundant PROFINET configuration (R1)</li> <li>• H-Sync forwarding</li> </ul>	Yes Yes Yes No Yes
<b>Media redundancy</b>	
<ul style="list-style-type: none"> <li>— MRP</li> </ul>	Yes
<b>EtherNet/IP</b>	
<b>Services</b>	
<ul style="list-style-type: none"> <li>— CIP Implicit Messaging</li> <li>— CIP Explicit Messaging</li> <li>— CIP Safety</li> <li>— Shared device</li> <li>— Number of scanners with shared device, max.</li> </ul>	Yes Yes No Yes; 2x EtherNet/IP Scanner 2
<b>Updating times</b>	

— Requested Packet Interval (RPI)	2 ms
<b>Redundancy mode</b>	
— DLR (Device Level Ring)	No
<b>Address area</b>	
— Address space per module, max.	20 byte
— LargeForwardOpen (Class3)	No
<b>Modbus TCP</b>	
<b>Services</b>	
— read coils (code=1)	Yes
— read discrete inputs (code=2)	Yes
— Read Holding Registers (Code=3)	Yes
— write single coil (code=5)	Yes
— write multiple coils (code=15)	Yes
— Write Multiple Registers (Code=16)	Yes
— Parameter change by master	No
— Modbus TCP Security Protocol	No
<b>Address space per station</b>	
— Address space per station, max.	20 byte
— Access-consistent address space	2 byte
<b>Updating time</b>	
— I/O request interval	2 ms
<b>Connections</b>	
— Number of connections per slave	12
<b>Open IE communication</b>	
• TCP/IP	Yes; (only EtherNet/IP or Modbus TCP)
• SNMP	Yes
• LLDP	Yes
• ARP	Yes
<b>Interrupts/diagnostics/status information</b>	
Substitute values connectable	Yes
<b>Alarms</b>	
• Diagnostic alarm	Yes; Parameterizable
• Maintenance interrupt	Yes; Parameterizable
• Hardware interrupt	Yes; Parameterizable
<b>Diagnoses</b>	
• Diagnostic information readable	Yes
• Monitoring the supply voltage	Yes
— parameterizable	Yes
• Wire-break	Yes; DI, input current < 0.3 mA, per channel
• Short-circuit	Yes; Outputs to M and P; channel by channel
• Short-circuit encoder supply	Yes; Per channel group
<b>Diagnostics indication LED</b>	
• RUN LED	Yes; green LED
• ERROR LED	Yes; red LED
• MAINT LED	Yes; Yellow LED
• NS LED	Yes; green/red LED
• MS LED	Yes; green/red LED
• IO LED	Yes; red-green-yellow LED
• Channel status display	Yes; green LED
• for channel diagnostics	Yes; red LED
• For load voltage monitoring	Yes; green LED
• Connection display LINK TX/RX	Yes; green LED, only link
<b>Potential separation</b>	
between the load voltages	Yes
between Ethernet and electronics	Yes
<b>Potential separation channels</b>	
• between the channels	Yes
• between the channels, in groups of	8
• between the channels and the power supply of the electronics	8 channels are non-isolated and 8 channels are isolated from supply voltage 1L+

Isolation	
tested with	
<ul style="list-style-type: none"> <li>• 24 V DC circuits</li> <li>• Test voltage for interface, rms value [Vrms]</li> </ul>	707 V DC (type test) 1 500 V; According to IEEE 802.3
Degree and class of protection	
IP degree of protection	IP65/67
Standards, approvals, certificates	
Suitable for safety-related tripping of standard modules	Yes; From FS01
Highest safety class achievable for safety-related tripping of standard modules	
<ul style="list-style-type: none"> <li>• Performance level according to ISO 13849-1</li> <li>• Category according to ISO 13849-1</li> <li>• SIL acc. to IEC 62061</li> </ul>	PL d Cat. 3 SIL 2
Ambient conditions	
Ambient temperature during operation	
<ul style="list-style-type: none"> <li>• min.</li> <li>• max.</li> </ul>	-40 °C 60 °C
Altitude during operation relating to sea level	
<ul style="list-style-type: none"> <li>• Ambient air temperature-barometric pressure-altitude</li> </ul>	Up to max. 5 000 m, at installation height > 2 000 m additional restrictions
connection method / header	
Design of electrical connection	4/5-pin M12 circular connectors
Design of electrical connection for the inputs and outputs	M12, 5-pin, A-coded
Design of electrical connection for supply voltage	M12, 4-pin, L-coded
Dimensions	
Width	45 mm
Height	200 mm
Depth	48 mm
Weights	
Weight, approx.	780 g
<b>last modified:</b>	3/7/2022 