



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 / IP69K

General information	
HW functional status	FS05
Firmware version	V5.1.x
• FW update possible	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	
• I&M data	Yes; I&M0 to I&M3
• Isochronous mode	No
• Prioritized startup	Yes
Engineering with	
• STEP 7 TIA Portal configurable/integrated from version	STEP 7 V17 or higher with HSP 0363
• PROFINET from GSD version/GSD revision	GSDML V2.3.x
• Multi Fieldbus Configuration Tool (MFCT)	from V1.3 SP1
Operating mode	
• DI	Yes
• Counter	No
• DQ	Yes
• MSI	Yes
• MSO	Yes
Supply voltage	
power supply according to NEC Class 2 required	No
Load voltage 1L+	
• 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; Against destruction; encoder power supply outputs applied with reversed polarity, loads pick up
Load voltage 2L+	
• 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; 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	

Number of outputs	8
24 V encoder supply	
• Short-circuit protection • Output current, max.	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	
• Inputs • Outputs	2 byte; + 4 bytes for QI information 2 byte
Hardware configuration	
Submodules	
• Number of configurable submodules, max.	2
Digital inputs	
Number of digital inputs	16; Parameterizable as DIQ
• in groups of	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	
• Rated value (DC) • for signal "0" • for signal "1"	24 V -3 to +5V +11 to +30V
Input current	
• for signal "1", typ.	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	
• unshielded, max.	30 m
Digital outputs	
Number of digital outputs	16; Parameterizable as DIQ
• in groups of	8; 2 load groups for 8 outputs each
Current-sourcing	Yes
output characteristic acc. to IEC 61131, type 0.5	Yes
output characteristic acc. to IEC 61131, type 2	Yes
Short-circuit protection	Yes; per channel, electronic
• Response threshold, typ.	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	
• with resistive load, max. • with inductive load, max. • on lamp load, max.	0.5 A / 2 A 0.5 A / 2 A 0.5 A: 5 W / 2 A 10 W
Load resistance range	
• lower limit • upper limit	0.5 A: 48 ohms / 2 A: 12 ohms 4 kΩ
Output voltage	
• for signal "1", min.	1L+ (-0.8 V) / 2L+ (-0.8 V)
Output current	
• for signal "1" rated value • for signal "1" permissible range, max. • for signal "0" residual current, max.	0.5 A / 2 A 0.5 A / 2 A 0.1 mA
Output delay with resistive load	
• "0" to "1", max. • "1" to "0", max.	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	

• for uprating	No
• for redundant control of a load	Yes
Switching frequency	
• with resistive load, max.	0.5 A: 100 Hz / 2 A: 40 Hz
• with inductive load, max.	0.5 Hz
• on lamp load, max.	1 Hz
Total current of the outputs	
• Current per group, max.	1L+: 2 A / 2L+: 6 A
• Current per module, max.	8 A
Cable length	
• unshielded, max.	30 m
Encoder	
Connectable encoders	
• 2-wire sensor	Yes
— permissible quiescent current (2-wire sensor), max.	1.5 mA
Interfaces	
Number of PROFINET interfaces	1
1. Interface	
Interface type	PROFINET with 100 Mbit/s full duplex (100BASE-TX)
Interface types	
• M12 port	Yes; 2x M12, 4-pin, D-coded
• Number of ports	2
• integrated switch	Yes
Protocols	
• PROFINET IO Device	Yes
• Open IE communication	Yes
Interface types	
M12 port	
• Autonegotiation	Yes
• Autocrossing	Yes
• Transmission rate, max.	100 Mbit/s
Protocols	
Supports protocol for PROFINET IO	Yes
PROFIsafe	No
EtherNet/IP	Yes
Modbus TCP	Yes
PROFINET IO Device	
Services	
— IRT	Yes; 250 µs to 4 ms in 125 µs frame
— Prioritized startup	Yes
— Shared device	Yes
— Number of IO Controllers with shared device, max.	2
Redundancy mode	
• PROFINET system redundancy (S2)	Yes
— on S7-1500R/H	Yes
— on S7-400H	Yes
• PROFINET system redundancy (R1)	No
• H-Sync forwarding	Yes
Media redundancy	
— MRP	Yes
EtherNet/IP	
Services	
— CIP Implicit Messaging	Yes
— CIP Explicit Messaging	Yes
— CIP Safety	No
— Shared device	Yes; 2x EtherNet/IP Scanner
— Number of scanners with shared device, max.	2
Updating times	
— Requested Packet Interval (RPI)	2 ms
Redundancy mode	

— DLR (Device Level Ring)	No
Address area	
— Address space per module, max.	20 byte
— LargeForwardOpen (Class3)	No
Modbus TCP	
Services	
— 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
Address space per station	
— Address space per station, max.	20 byte
— Access-consistent address space	2 byte
Updating time	
— I/O request interval	2 ms
Connections	
— number of connections per device	12
Open IE communication	
• TCP/IP	Yes; (only EtherNet/IP or Modbus TCP)
• SNMP	Yes
• LLDP	Yes
• ARP	Yes
Interrupts/diagnostics/status information	
Substitute values connectable	Yes
Alarms	
• Diagnostic alarm	Yes; Parameterizable
• Maintenance interrupt	Yes; Parameterizable
• Hardware interrupt	Yes; Parameterizable
Diagnoses	
• 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
Diagnostics indication LED	
• 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 LEDs
• 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
Potential separation	
between the load voltages	Yes
between Ethernet and electronics	Yes
Potential separation channels	
• 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	
• 24 V DC circuits	707 V DC (type test)

• Test voltage for interface, rms value [Vrms]		1 500 V; According to IEEE 802.3	
Degree and class of protection			
IP degree of protection		IP65/67/69K	
Standards, approvals, certificates			
Suitable for safety-related tripping of standard modules		Yes; from FS01	
Ecological footprint			
• environmental product declaration		Yes	
Global warming potential			
— global warming potential, (total) [CO2 eq]		63 kg	
— global warming potential, (during production) [CO2 eq]		12.7 kg	
— global warming potential, (during operation) [CO2 eq]		52.8 kg	
— global warming potential, (after end of life cycle) [CO2 eq]		-2.65 kg	
Highest safety class achievable for safety-related tripping of standard modules			
• Performance level according to ISO 13849-1		PL d	
• Category according to ISO 13849-1		Cat. 3	
• SIL acc. to IEC 62061		SIL 2	
• remark on safety-oriented shutdown		https://support.industry.siemens.com/cs/de/en/view/39198632	
Use in hazardous areas			
• Explosion protection category for gas		ATEX, UKEX, IECEx, CCCEX for Zone 2	
• Explosion protection category for dust		ATEX, UKEX, IECEx, CCCEX for Zone 22	
product functions / security / header			
signed firmware update		Yes	
safely removing data		Yes	
Ambient conditions			
Ambient temperature during operation			
• min.		-40 °C	
• max.		60 °C	
Altitude during operation relating to sea level			
• Ambient air temperature-barometric pressure-altitude		Up to max. 5 000 m, at installation height > 2 000 m additional restrictions	
connection method			
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	
Classifications			
		Version	Classification
	eClass	14	27-24-26-04
	eClass	12	27-24-26-04
	eClass	9.1	27-24-26-04
	eClass	9	27-24-26-04
	eClass	8	27-24-26-04
	eClass	7.1	27-24-26-04
	eClass	6	27-24-26-04
	ETIM	9	EC001599
	ETIM	8	EC001599
	ETIM	7	EC001599
	IDEA	4	3566
	UNSPSC	15	32-15-17-05
Approvals / Certificates			
General Product Approval			For use in hazard-

					ous locations
Manufacturer Declaration					CCC-Ex
For use in hazardous locations			Marine / Shipping		
	Miscellaneous				
Marine / Shipping					Food, Pharmaceutical, Medical
	NK / Nippon Kaiji Kyokai		CCS (China Classification Society)		Confirmation
Environment	Industrial Communication				
	PROFINET				

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