

Siemens  
EcoTech



SIMATIC ET 200eco PN, AI 6x U/I + AIQ 2x U/I, M12-L, 8x M12, 16-bit resolution, channel diagnostics for wire break and short-circuit, shared device with 2 controllers, 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	FS02
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)	0FABH
Product function	
<ul style="list-style-type: none"> <li>I&amp;M data</li> <li>Isochronous mode</li> <li>IRT</li> <li>Prioritized startup</li> </ul>	Yes; I&M0 to I&M3 No Yes Yes
Engineering with	
<ul style="list-style-type: none"> <li>STEP 7 TIA Portal configurable/integrated from version</li> <li>PROFINET from GSD version/GSD revision</li> <li>Multi Fieldbus Configuration Tool (MFCT)</li> </ul>	STEP 7 V18 or higher with HSP 0391 GSDML V2.4.x V1.5 or higher
Operating mode	
<ul style="list-style-type: none"> <li>MSI</li> <li>MSO</li> </ul>	Yes Yes
CIR - Configuration in RUN	
Calibration possible in RUN	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> <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
Input current	
Current consumption (rated value)	110 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	

<ul style="list-style-type: none"> <li>• Short-circuit protection</li> <li>• Output current, max.</li> </ul>	Yes; per channel, electronic 0.5 A; total current for encoder and actuator supply: 2 A
<b>Actuator supply</b>	
Number of outputs	2
Short-circuit protection	Yes; per channel, electronic
<b>Output current</b>	
<ul style="list-style-type: none"> <li>• Rated value</li> </ul>	0.5 A; total current for encoder and actuator supply: 2 A
<b>Power loss</b>	
Power loss, typ.	6.9 W
<b>Address area</b>	
Address space per module	
<ul style="list-style-type: none"> <li>• Inputs</li> <li>• Outputs</li> </ul>	16 byte; + 2 bytes for QI information 4 byte
<b>Hardware configuration</b>	
Submodules	
<ul style="list-style-type: none"> <li>• Number of configurable submodules, max.</li> </ul>	2
<b>Analog inputs</b>	
Number of analog inputs	8; 6 AI fixed, 2 AIQ can be parameterized
<ul style="list-style-type: none"> <li>• For current measurement</li> <li>• For voltage measurement</li> </ul>	8 8
permissible input voltage for voltage input (destruction limit), max.	30 V
permissible input current for current input (destruction limit), max.	protective shutoff as of 32 mA (typical)
Cycle time (all channels), min.	sum of the basic conversion times
<b>Input ranges (rated values), voltages</b>	
<ul style="list-style-type: none"> <li>• 0 to +10 V               <ul style="list-style-type: none"> <li>— Input resistance (0 to 10 V)</li> </ul> </li> <li>• 1 V to 5 V               <ul style="list-style-type: none"> <li>— Input resistance (1 V to 5 V)</li> </ul> </li> <li>• -10 V to +10 V               <ul style="list-style-type: none"> <li>— Input resistance (-10 V to +10 V)</li> </ul> </li> </ul>	Yes 100 k $\Omega$ Yes 100 k $\Omega$ Yes 100 k $\Omega$
<b>Input ranges (rated values), currents</b>	
<ul style="list-style-type: none"> <li>• 0 to 20 mA               <ul style="list-style-type: none"> <li>— Input resistance (0 to 20 mA)</li> </ul> </li> <li>• -20 mA to +20 mA               <ul style="list-style-type: none"> <li>— Input resistance (-20 mA to +20 mA)</li> </ul> </li> <li>• 4 mA to 20 mA               <ul style="list-style-type: none"> <li>— Input resistance (4 mA to 20 mA)</li> </ul> </li> </ul>	Yes; 17 V for 2-wire transformers 75 $\Omega$ Yes; 17 V for 2-wire transformers 75 $\Omega$ Yes; 17 V for 2-wire transformers 75 $\Omega$
<b>Cable length</b>	
<ul style="list-style-type: none"> <li>• shielded, max.</li> </ul>	30 m
<b>Analog outputs</b>	
Number of analog outputs	2; AIQ can be parameterized
Voltage output, short-circuit protection	Yes
Voltage output, short-circuit current, max.	40 mA
Current output, no-load voltage, max.	19 V
Cycle time (all channels) max.	1 ms
<b>Output ranges, voltage</b>	
<ul style="list-style-type: none"> <li>• 0 to 10 V</li> <li>• 1 V to 5 V</li> <li>• -10 V to +10 V</li> </ul>	Yes Yes Yes
<b>Output ranges, current</b>	
<ul style="list-style-type: none"> <li>• 0 to 20 mA</li> <li>• -20 mA to +20 mA</li> <li>• 4 mA to 20 mA</li> </ul>	Yes Yes Yes
<b>Connection of actuators</b>	
<ul style="list-style-type: none"> <li>• for voltage output two-wire connection</li> <li>• for voltage output four-wire connection</li> <li>• for current output two-wire connection</li> </ul>	Yes Yes Yes

<ul style="list-style-type: none"> <li>• for current output four-wire connection</li> </ul>	Yes
<b>Load impedance (in rated range of output)</b>	
<ul style="list-style-type: none"> <li>• with voltage outputs, min.</li> </ul>	1 kΩ
<ul style="list-style-type: none"> <li>• with voltage outputs, capacitive load, max.</li> </ul>	1 μF
<ul style="list-style-type: none"> <li>• with current outputs, max.</li> </ul>	600 Ω
<ul style="list-style-type: none"> <li>• with current outputs, inductive load, max.</li> </ul>	1 mH
<b>Destruction limits against externally applied voltages and currents</b>	
<ul style="list-style-type: none"> <li>• Voltages at the outputs towards MANA</li> </ul>	30 V; to reference potential 1M
<b>Cable length</b>	
<ul style="list-style-type: none"> <li>• shielded, max.</li> </ul>	30 m
<b>Analog value generation for the inputs</b>	
Analog value display	SIMATIC S7 format
Measurement principle	integrating
<b>Integration and conversion time/resolution per channel</b>	
<ul style="list-style-type: none"> <li>• Resolution with overrange (bit including sign), max.</li> </ul>	16 bit
<ul style="list-style-type: none"> <li>• Integration time, parameterizable</li> </ul>	Yes; channel by channel
<ul style="list-style-type: none"> <li>• Integration time (ms)</li> </ul>	0.84 / 16.7 (50) / 20 (60) / 60 (180)
<ul style="list-style-type: none"> <li>• Basic conversion time, including integration time (ms)</li> </ul>	4.50 / 21.5 (54) / 24 (64) / 64 (184)
<ul style="list-style-type: none"> <li>• Interference voltage suppression for interference frequency f1 in Hz</li> </ul>	none / 60 / 50 / 16.7
<b>Smoothing of measured values</b>	
<ul style="list-style-type: none"> <li>• parameterizable</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Step: None</li> </ul>	Yes; 1x cycle time
<ul style="list-style-type: none"> <li>• Step: low</li> </ul>	Yes; 4x cycle time
<ul style="list-style-type: none"> <li>• Step: Medium</li> </ul>	Yes; 16x cycle time
<ul style="list-style-type: none"> <li>• Step: High</li> </ul>	Yes; 32x cycle time
<b>Analog value generation for the outputs</b>	
<b>Integration and conversion time/resolution per channel</b>	
<ul style="list-style-type: none"> <li>• Resolution with overrange (bit including sign), max.</li> </ul>	16 bit
<b>Settling time</b>	
<ul style="list-style-type: none"> <li>• for resistive load</li> </ul>	1 ms
<ul style="list-style-type: none"> <li>• for capacitive load</li> </ul>	1 ms
<ul style="list-style-type: none"> <li>• for inductive load</li> </ul>	1 ms
<b>Encoder</b>	
<b>Connection of signal encoders</b>	
<ul style="list-style-type: none"> <li>• for voltage measurement</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• for current measurement as 2-wire transducer</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• for current measurement as 4-wire transducer</li> </ul>	Yes
<b>Errors/accuracies</b>	
Linearity error (relative to input range), (+/-)	0.01 %
Temperature error (relative to input range), (+/-)	0.006 %/K
Crosstalk between the inputs, max.	-70 dB
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.008 %
Output ripple (relative to output range, bandwidth 0 to 50 kHz), (+/-)	0.02 %
Linearity error (relative to output range), (+/-)	0.02 %
Temperature error (relative to output range), (+/-)	0.002 %/K
Crosstalk between the outputs, max.	-70 dB
Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)	0.008 %
<b>Operational error limit in overall temperature range</b>	
<ul style="list-style-type: none"> <li>• Voltage, relative to input range, (+/-)</li> </ul>	0.15 %
<ul style="list-style-type: none"> <li>• Current, relative to input range, (+/-)</li> </ul>	0.2 %
<ul style="list-style-type: none"> <li>• Voltage, relative to output range, (+/-)</li> </ul>	0.1 %
<ul style="list-style-type: none"> <li>• Current, relative to output range, (+/-)</li> </ul>	0.15 %
<b>Basic error limit (operational limit at 25 °C)</b>	
<ul style="list-style-type: none"> <li>• Voltage, relative to input range, (+/-)</li> </ul>	0.1 %
<ul style="list-style-type: none"> <li>• Current, relative to input range, (+/-)</li> </ul>	0.1 %
<ul style="list-style-type: none"> <li>• Voltage, relative to output range, (+/-)</li> </ul>	0.08 %

• Current, relative to output range, (+/-)	0.1 %
Interference voltage suppression for $f = n \times (f_1 \pm 0.5 \%)$ , $f_1 =$ interference frequency	
• Series mode interference (peak value of interference < rated value of input range), min.	100 dB; at basic conversion time 4.5 / 21.5 / 24 / 64 ms: 46 dB
<b>Interfaces</b>	
Transmission procedure	100BASE-TX
Number of PROFINET interfaces	1
<b>1. Interface</b>	
Interface type	PROFINET with 100 Mbit/s full duplex (100BASE-TX)
<b>Interface types</b>	
• M12 port	Yes; 2x M12, 4-pin, D-coded
• Number of ports	2
• integrated switch	Yes
<b>Protocols</b>	
• PROFINET IO Device	Yes
• Open IE communication	Yes
<b>PROFINET IO Device</b>	
<b>Services</b>	
— IRT	Yes; 250 $\mu$ s to 4 ms in 125 $\mu$ s frame
— Prioritized startup	Yes
— Shared device	Yes
— Number of IO Controllers with shared device, max.	2
<b>Interface types</b>	
<b>M12 port</b>	
• Autonegotiation	Yes
• Autocrossing	Yes
• Transmission rate, max.	100 Mbit/s
<b>Protocols</b>	
Supports protocol for PROFINET IO	Yes
PROFIsafe	No
EtherNet/IP	Yes
Modbus TCP	Yes
<b>Redundancy mode</b>	
• PROFINET system redundancy (S2)	Yes
— on S7-1500R/H	Yes
— on S7-400H	Yes
• PROFINET system redundancy (R1)	No
• H-Sync forwarding	Yes
<b>Media redundancy</b>	
— MRP	Yes
— MRPD	No
<b>EtherNet/IP</b>	
<b>Services</b>	
— 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
<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.	48 byte; of which 44 bytes for inputs and 4 bytes for outputs
— 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.	48 byte; of which 44 bytes for inputs and 4 bytes for outputs
— Access-consistent address space	2 byte
<b>Updating time</b>	
— I/O request interval	2 ms
<b>Connections</b>	
— number of connections per device	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; channel by channel, parameterizable
<b>Alarms</b>	
• Diagnostic alarm	Yes; Parameterizable
• Maintenance interrupt	Yes; Parameterizable
• Limit value alarm	Yes; two upper and two lower limit values in each case
<b>Diagnoses</b>	
• Diagnostic information readable	Yes
• Monitoring the supply voltage	Yes
— parameterizable	Yes
• Wire break	Yes; at 4 mA to 20 mA and 1 V to 5 V
• Short-circuit	Yes; encoder and actuator supply module to ground, for output type voltage; channel by channel
• Overflow/Underflow	Yes
<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 LEDs
• Channel status display	Yes; green LED
• for channel diagnostics	Yes; red 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	No
• between the channels and the power supply of the electronics	No
<b>Permissible potential difference</b>	
Between the inputs and MANA (UCM)	AC 10 Vpp to reference potential 1M
<b>Isolation</b>	
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
<b>Degree and class of protection</b>	
IP degree of protection	IP65/67/69K
<b>Standards, approvals, certificates</b>	
Suitable for safety-related tripping of standard modules	Yes; from FS01

**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

**Security**

- 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. 795 g

**Classifications**

	Version	Classification
eClass	14	27-24-26-01
eClass	12	27-24-26-01
eClass	9.1	27-24-26-01
eClass	9	27-24-26-01
eClass	8	27-24-26-01
eClass	7.1	27-24-26-01
eClass	6	27-24-26-01
ETIM	10	EC001596
ETIM	9	EC001596
ETIM	8	EC001596
ETIM	7	EC001596

**Approvals / Certificates**

**General Product Approval**



[Miscellaneous](#)



**General Product Approval For use in hazardous locations**

[China RoHS](#)

[CCC-Ex](#)



[Miscellaneous](#)

[CCC-Ex](#)

**Maritime application**



[NK / Nippon Kaiji Kyokai](#)



Maritime application	other	Food, Pharmaceutical, Medical	Environment
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[CCS \(China Classification Society\)](#)

[KR \(Korean Register of Shipping\)](#)



[Confirmation](#)

Siemens EcoTech



Industrial Communication

[PROFINET](#)

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