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Data sheet 6ES7143-6BH00-0BB0

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
● IRT	Yes
● 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 V2.4.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

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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	Yes; Group-by-group for 2 channels, electronic
● Output current, max.	100 mA; per output
Power loss	
Power loss, typ.	9.7 W
Address area	
Address space per module	
● Inputs	2 byte; + 4 bytes for QI information
● Outputs	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
Sourcing/sinking 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)	24 V
● for signal "0"	-3 to +5V
● for signal "1"	+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 type acc. to IEC 61131, type 0.5	Yes
output type 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.	0.5 A / 2 A
● with inductive load, max.	0.5 A / 2 A
● on lamp load, max.	0.5 A: 5 W / 2 A 10 W
Load resistance range	
● lower limit	0.5 A: 48 ohms / 2 A: 12 ohms
● upper limit	4 kΩ
Output voltage	
● for signal "1", min.	1L+ (-0.8 V) / 2L+ (-0.8 V)
Output current	

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● for signal "1" rated value	0.5 A / 2 A
● for signal "1" permissible range, max.	0.5 A / 2 A
● for signal "0" residual current, max.	0.1 mA
Output delay with resistive load	
● "0" to "1", max.	0.5 A: 100 µs / 2 A: 150 µs; at rated load
● "1" to "0", max.	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	
Transmission procedure	100BASE-TX
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
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
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
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
— MRPD	No

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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

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● 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://www.modulplc.com/?s=6ES7143-6BH00-0BB0
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.	780 g

Classifications

	Version	Classification
eClass	16	27-24-26-04
eClass	14	27-24-26-04
eClass	12	27-24-26-04

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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	10	EC001599
ETIM	9	EC001599
ETIM	8	EC001599
ETIM	7	EC001599
IDEA	4	3566
UNSPSC	15	32-15-17-05

Approvals / Certificates

General Product Approval

Miscellaneous | Manufacturer Declaration

General Product Approval | For use in hazardous locations

China RoHS | CCC-Ex | Miscellaneous

For use in hazardous locations | Maritime application

CCC-Ex

Maritime application | other | Food, Pharmaceutical, Medical | Environment

CCS (China Classification Society) | KR (Korean Register of Shipping) | Confirmation

Environment | Industrial Communication

PROFINET

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