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Data sheet 6ES7148-7JH00-0BB0

Siemens EcoTech

SIMATIC ET 200clean, CM 8x IO-Link + DIQ 4x 24 V DC, 8x M12, 4x port class A + 4x port class B, channel diagnostics, shared device with 2 controllers, MRP, S2 redundancy, I&M0...4, multi-fieldbus, PN IO, Ethernet IP, Modbus TCP, degree of protection IP69K



General information	
HW functional status	FS01
Firmware version	V1.1.x
● FW update possible	Yes
Vendor identification (VendorID)	002AH
Device identifier (DeviceID)	031AH
Manufacturer ID according to ODVA (VendorID)	04E3H
Device ID according to ODVA (Product code)	0FB9H
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 V19 or higher with HSP 0414
● PROFINET from GSD version/GSD revision	GSDML V2.4.x
● Multi Fieldbus Configuration Tool (MFCT)	V1.5.x
Operating mode	
● IO-Link	Yes
● DI	Yes
● 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
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; encoder power supply outputs applied with reversed polarity
Input current	

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Current consumption (rated value)	100 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; per channel, electronic
● Output current, max.	1 A; Per channel
Actuator supply	
Number of outputs	4
Short-circuit protection	Yes; per channel, electronic
Output current	
● Rated value	2 A; Per channel
Power loss	
Power loss, typ.	8 W
Address area	
Address space per module	
● Inputs	271 byte; + 8 bytes for QI information
● Outputs	257 byte
Hardware configuration	
Submodules	
● Number of configurable submodules, max.	10
Digital inputs	
Number of digital inputs	4; Parameterizable as DIQ
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 55 °C, max.	4
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	4; Parameterizable as DIQ
output type acc. to IEC 61131, type 0.5	Yes
Short-circuit protection	Yes; per channel, electronic
● Response threshold, typ.	1 A
Limitation of inductive shutdown voltage to	typ. 1L+ (-70 V)
Controlling a digital input	Yes
Switching capacity of the outputs	
● with resistive load, max.	0.5 A
● with inductive load, max.	0.5 A
● on lamp load, max.	5 W
Load resistance range	
● lower limit	48 Ω
● upper limit	4 kΩ
Output voltage	
● for signal "1", min.	1L+ (-0.8V)
Output current	
● for signal "1" rated value	0.5 A
● for signal "1" permissible range, max.	0.5 A

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● for signal "0" residual current, max.	0.1 mA
Output delay with resistive load	
● "0" to "1", max.	100 µs; at rated load
● "1" to "0", max.	100 µs; at rated load
Parallel switching of two outputs	
● for uprating	No
● for redundant control of a load	Yes
Switching frequency	
● with resistive load, max.	100 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
● Current per module, max.	2 A
Cable length	
● unshielded, max.	30 m
Encoder	
Connectable encoders	
● 2-wire sensor	Yes
— permissible quiescent current (2-wire sensor), max.	1.5 mA
IO-Link	
Number of ports	8
● of which simultaneously controllable	8
IO-Link protocol 1.0	Yes
IO-Link protocol 1.1	Yes
Transmission rate	4.8 kBaud (COM1); 38.4 kBaud (COM2), 230 kBaud (COM3)
Cycle time, min.	2 ms
Size of process data, input per port	33 byte
Size of process data, input per module	264 byte
Size of process data, output per port	32 byte
Size of process data, output per module	256 byte
Memory size for device parameter	2 kbyte; for each port
Master backup	possible with LIOLink_Master function block
Configuration without S7-PCT	Possible; autostart/manual function
Cable length unshielded, max.	20 m
Operating modes	
● IO-Link	Yes
● DI	Yes
● DQ	Yes; max. 100 mA
Connection of IO-Link devices	
● Port type A	Yes; via 3-core cable
● Port type B	Yes; additional device supply: max. 2 A per port, max. 6 A per module
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
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	

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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
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.	300 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.	300 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

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● 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
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	No
● between the channels and the power supply of the electronics	No
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	
Siemens Eco Profile (SEP)	Siemens EcoTech
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]	70.7 kg
— global warming potential, (during production) [CO2 eq]	12.5 kg
— global warming potential, (during operation) [CO2 eq]	58.8 kg
— global warming potential, (after end of life cycle) [CO2 eq]	-0.64 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
product functions / security / header	
signed firmware update	Yes
safely removing data	Yes
Ambient conditions	
Ambient temperature during operation	
● min.	-30 °C
● max.	55 °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, see manual for details
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
Mechanics/material	

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Material	housing: PBT; seal: MVQ (silicone); bushing / metal parts: 1.4404 (stainless steel)

Dimensions

Width	80 mm
Height	205 mm
Depth	54 mm

Weights

Weight, approx.	280 g

Classifications

	Version	Classification
eClass	14	27-24-26-08
eClass	12	27-24-26-08
eClass	9.1	27-24-26-08
eClass	9	27-24-26-08
eClass	8	27-24-26-08
eClass	7.1	27-24-26-08
eClass	6	27-24-26-08
ETIM	10	EC001604
ETIM	9	EC001604
ETIM	8	EC001604
ETIM	7	EC001604

Approvals / Certificates

General Product Approval

Miscellaneous

Maritime application

Maritime application

CCS (China Classification Society)

Food, Pharmaceutical, Medical

Miscellaneous

Special Test Certificate

Environment

Industrial Communication

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