

I/O systems

SIMATIC ET 200 systems without control cabinet

SIMATIC ET 200clean

Overview



- Compact I/O devices in hygienic design for processing digital and IO-Link signals
- For connection to bus systems with Ethernet-based protocols PROFINET, EtherNet/IP, and Modbus TCP
- Very robust and chemically resistant plastic enclosure in hygienic design
- Cabinet-free installation in degree of protection IP65/67/69K with M12 connection system
- Trapezoidal enclosure shape of the I/O devices:
60/80 mm x 204 mm x 54 mm (W x H x D) with
8 x M12 for digital signals and IO-Link
- Ambient temperature range -30 °C to 55 °C
- Operation on high-availability S7-1500 R/H or S7-400H controllers possible
- Channel-specific diagnostics
- Identification and maintenance data
- Firmware update
- Security functions
- QR code identification link (ID-Link) for unambiguous identification of the product
- I/O device variants:
 - DI 16x 24 V DC, 8x M12
 - DIQ 16x 24 V DC/0.5 A, 8x M12
 - CM 8x IO-Link + DIQ 4x 24 V DC, 8x M12

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I/O devices > Digital I/O devices

Overview



Digital I/O devices in hygienic design for connecting sensors/actuators:

- 16 digital input signals with 8 x M12 connection
- 16 digital input/output signals 0.5 A with 8 x M12 connection

Ordering data

Article No.

Digital input modules

SIMATIC ET 200clean, DI 16x24 V DC

8x M12, dual assignment,
input type 3 (IEC 61131),
sinking input (PNP),
input delay 0.05..20 ms,
channel diagnostics for:
wire break at the input,
short-circuit encoder supply,
0.25 ms isochronous mode,
MSI, MRP, S2 redundancy,
I&M0...4, MultiFieldbus, PN IO,
Ethernet IP, Modbus TCP,
degree of protection IP69K

6ES7141-7BH00-0BB0

Digital input/output modules

SIMATIC ET 200clean, DIQ 16x 24 V DC/0.5 A

8x M12, dual assignment,
input type 3 (IEC 61131),
sinking input (PNP),
input delay 0.05..20 ms,
sourcing output (PNP),
substitute value output,
channel diagnostics for:
wire break at the input,
short-circuit encoder supply,
short-circuit at the output,
MSI, MSO, MRP, S2 redundancy,
I&M0...4, MultiFieldbus, PN IO,
Ethernet IP, Modbus TCP,
degree of protection IP69K

6ES7143-7BH00-0BB0

Technical specifications

Article number	6ES7141-7BH00-0BB0
	ET 200clean, DI 16x24VDC
General information	
Product function	
• Isochronous mode	Yes
• 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 or higher
Operating mode	
• DI	Yes
• Counter	No
• MSI	Yes
Supply voltage	
Load voltage 1L+	
• Rated value (DC)	24 V
• Reverse polarity protection	Yes; Against destruction; encoder power supply outputs applied with reversed polarity
Input current	
Current consumption (rated value)	85 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
Hardware configuration	
Submodules	
• Number of configurable submodules, max.	2

Article number	6ES7141-7BH00-0BB0
	ET 200clean, DI 16x24VDC
Digital inputs	
Number of digital inputs	16
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.	16
Input voltage	
• Rated value (DC)	24 V
• for signal "0"	-30 to +5 V
• 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
Encoder	
Connectable encoders	
• 2-wire sensor	Yes
- permissible quiescent current (2-wire sensor), max.	1.5 mA
Interfaces	
Number of PROFINET interfaces	1

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I/O devices > Digital I/O devices

Technical specifications

Article number	6ES7141-7BH00-0BB0 ET 200clean, DI 16x24VDC
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
Redundancy mode	
• PROFINET system redundancy (S2)	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

Article number	6ES7141-7BH00-0BB0 ET 200clean, DI 16x24VDC
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
Isochronous mode	
Equidistance	Yes
shortest clock pulse	250 µs
max. cycle	4 ms
Interrupts/diagnostics/ status information	
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 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
• 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
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
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
Product functions / security	
signed firmware update	Yes
safely removing data	Yes

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Technical specifications

Article number	6ES7141-7BH00-0BB0 ET 200clean, DI 16x24VDC
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
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	
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.	260 g
Article number	6ES7143-7BH00-0BB0 ET 200clean, DIQ 16x24VDC/0,5A
General information	
Product function	
• 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 or higher
Operating mode	
• DI	Yes
• Counter	No
• DQ	Yes
• MSI	Yes
• MSO	Yes
Supply voltage	
Load voltage 1L+	
• Rated value (DC)	24 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
• Reverse polarity protection	Yes; Against destruction; encoder power supply outputs applied with reversed polarity, loads pick up
Input current	
Current consumption (rated value)	95 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

Article number	6ES7143-7BH00-0BB0 ET 200clean, DIQ 16x24VDC/0,5A
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 55 °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
Short-circuit protection	Yes; per channel, electronic
Limitation of inductive shutdown voltage to	typ. L+ (-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+ (-0.8 V) / 2L+ (-0.8 V)
Output current	
• for signal "1" rated value	0.5 A
• for signal "0" residual current, max.	0.1 mA
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.	4 A
• Current per module, max.	8 A

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Article number	6ES7143-7BH00-0BB0 ET 200clean, DIQ 16x24VDC/0,5A
Cable length • unshielded, max.	30 m
Encoder Connectable encoders • 2-wire sensor - permissible quiescent current (2-wire sensor), max.	Yes 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 • Number of ports • integrated switch	Yes; 2x M12, 4-pin, D-coded 2 Yes
Protocols • PROFINET IO Device • Open IE communication	Yes Yes
Interface types M12 port • Autonegotiation • Autocrossing • Transmission rate, max.	Yes Yes 100 Mbit/s
Protocols Supports protocol for PROFINET IO PROFIsafe EtherNet/IP Modbus TCP	Yes No Yes Yes
PROFINET IO Device Services - IRT - Prioritized startup - Shared device - Number of IO Controllers with shared device, max.	Yes; 250 µs to 4 ms in 125 µs frame Yes Yes 2
Redundancy mode • PROFINET system redundancy (S2) • PROFINET system redundancy (R1) • H-Sync forwarding	Yes No Yes
Media redundancy - MRP	Yes
EtherNet/IP Services - CIP Implicit Messaging - CIP Explicit Messaging - CIP Safety - Shared device - Number of scanners with shared device, max.	Yes Yes No Yes; 2x EtherNet/IP Scanner 2
Updating times - Requested Packet Interval (RPI)	2 ms
Redundancy mode - DLR (Device Level Ring)	No
Address area - Address space per module, max. - LargeForwardOpen (Class3)	20 byte No

Article number	6ES7143-7BH00-0BB0 ET 200clean, DIQ 16x24VDC/0,5A
Modbus TCP Services - read coils (code=1) - read discrete inputs (code=2) - Read Holding Registers (Code=3) - write single coil (code=5) - write multiple coils (code=15) - Write Multiple Registers (Code=16) - Parameter change by master - Modbus TCP Security Protocol	Yes Yes Yes Yes Yes Yes No No
Address space per station - Address space per station, max. - Access-consistent address space	20 byte 2 byte
Updating time - I/O request interval	2 ms
Connections - number of connections per device	12
Open IE communication • TCP/IP • SNMP • LLDP • ARP	Yes; (only EtherNet/IP or Modbus TCP) Yes Yes Yes
Interrupts/diagnostics/ status information Substitute values connectable	Yes
Alarms • Diagnostic alarm • Maintenance interrupt • Hardware interrupt	Yes; Parameterizable Yes; Parameterizable Yes; Parameterizable
Diagnoses • Diagnostic information readable • Monitoring the supply voltage - parameterizable • Wire-break • Short-circuit • Short-circuit encoder supply	Yes Yes Yes Yes; DI, input current < 0.3 mA, per channel Yes; Outputs to M and P; channel by channel Yes; Per channel group
Diagnostics indication LED • RUN LED • ERROR LED • MAINT LED • NS LED • MS LED • IO LED • Channel status display • for channel diagnostics • For load voltage monitoring • Connection display LINK TX/RX	Yes; green LED Yes; red LED Yes; Yellow LED Yes; green/red LED Yes; green/red LED Yes; red/green/yellow LEDs Yes; green LED Yes; red LED Yes; green LED Yes; green LED, only link
Potential separation between the load voltages between Ethernet and electronics	Yes Yes
Potential separation channels • between the channels • between the channels, in groups of • between the channels and the power supply of the electronics	Yes 8 8 channels are non-isolated and 8 channels are isolated from supply voltage 1L+

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I/O devices > Digital I/O devices

Technical specifications

Article number	6ES7143-7BH00-0BB0 ET 200clean, DIQ 16x24VDC/0,5A
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
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
Product functions / security	
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

Article number	6ES7143-7BH00-0BB0 ET 200clean, DIQ 16x24VDC/0,5A
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	
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.	260 g

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I/O devices > IO-Link master

Overview



IO-Link master in hygienic design for connecting sensors/actuators:

- 4x port Class A and 4x port Class B, as well as additionally 4 digital input/output signals 0.5 A with 8xM12 connection

Ordering data

Article No.

**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,
MultiFieldbus, PN IO,
Ethernet IP, Modbus TCP,
degree of protection IP69K

6ES7148-7JH00-0BB0

Technical specifications

Article number	6ES7148-7JH00-0BB0 ET 200clean, CM 8x IO-Link
General information	
Product function	
• Isochronous mode	No
• 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	
Load voltage 1L+	
• Rated value (DC)	24 V
• Reverse polarity protection	Yes; against destruction
Load voltage 2L+	
• Rated value (DC)	24 V
• Reverse polarity protection	Yes; Against destruction; encoder power supply outputs applied with reversed polarity

Article number	6ES7148-7JH00-0BB0 ET 200clean, CM 8x IO-Link
Input current	
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
Actuator supply	
Number of outputs	4
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
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 "0" residual current, max.	0.1 mA
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

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I/O devices > IO-Link master

Overview

Article number	6ES7148-7JH00-0BB0 ET 200clean, CM 8x IO-Link
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
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

Article number	6ES7148-7JH00-0BB0 ET 200clean, CM 8x IO-Link
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
• 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

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I/O devices > IO-Link master

Overview

Article number	6ES7148-7JH00-0BB0 ET 200clean, CM 8x IO-Link
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
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

Article number	6ES7148-7JH00-0BB0 ET 200clean, CM 8x IO-Link
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
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
Product functions / security	
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	
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

I/O systems

SIMATIC ET 200 systems without control cabinet
SIMATIC ET 200clean

Accessories

Overview

For use in systems with increased hygienic requirements, specific mounting accessories are available.

Material transitions and contact surfaces of the accessories are provided with a hygienic seal that prevents the accumulation of dirt, bacteria and other microorganisms when installed.

Sealing cap

Sealing cap M12 in hygienic design and with degree of protection IP69K, for sealing open M12 sockets of the ET 200clean I/O devices.

Fixing screw

Fixing screw M5x50mm as stainless steel version, for mounting the ET 200clean I/O devices on conductive surfaces.

Ordering data

Article No.

Sealing cap M12 for ET 200clean Plastic version, hygienic seal, for degree of protection IP69K, 10 units per packing unit	6ES7194-7JA00-0AA0
Fixing screw M5x50mm for ET 200clean Stainless steel version, hygienic seal, 10 units per packing unit	6ES7194-7MA00-0AA0