SIEMENS

Data sheet

6ES7212-1AE40-0XB0



SIMATIC S7-1200, CPU 1212C, compact CPU, DC/DC/DC, onboard I/O: 8 DI 24 V DC; 6 DO 24 V DC; 2 AI 0-10 V DC, Power supply: DC 20.4-28.8V DC, Program/data memory 75 KB

General information	
Product type designation	CPU 1212C DC/DC/DC
Firmware version	V4.5
Engineering with	1.0
Programming package	STEP 7 V17 or higher
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Load voltage L+	
Rated value (DC)	24 V
 permissible range, lower limit (DC) 	20.4 V
 permissible range, upper limit (DC) 	28.8 V
Input current	
Current consumption (rated value)	400 mA; CPU only
Current consumption, max.	1 200 mA; CPU with all expansion modules
Inrush current, max.	12 A; at 28.8 V DC
² t	0.5 A ² ·s
Output current	
for backplane bus (5 V DC), max.	1 000 mA; Max. 5 V DC for SM and CM
Encoder supply	
24 V encoder supply	
• 24 V	L+ minus 4 V DC min.
Power loss	
Power loss, typ.	9 W
Memory	
Work memory	
 integrated 	75 kbyte
• expandable	No
Load memory	
 integrated 	2 Mbyte
 Plug-in (SIMATIC Memory Card), max. 	with SIMATIC memory card
Backup	
present	Yes
 maintenance-free 	Yes
 without battery 	Yes

CPU processing times	
for bit operations, typ.	0.08 μs; / instruction
for word operations, typ.	 1.7 μs; / instruction
for floating point arithmetic, typ.	2.3 µs; / instruction
CPU-blocks	2.5 µ3,7 instruction
Number of blocks (total)	DBs, FCs, FBs, counters and timers. The maximum number of addressable blocks ranges from 1 to 65535. There is no restriction, the entire working memory can be used
OB	
Number, max.	Limited only by RAM for code
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	14 kbyte
Flag	
• Size, max.	4 kbyte; Size of bit memory address area
Local data	
 per priority class, max. 	16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2 to 26: 6 KB
Address area	
Process image	
 Inputs, adjustable 	1 kbyte
 Outputs, adjustable 	1 kbyte
Hardware configuration	
Number of modules per system, max.	3 comm. modules, 1 signal board, 2 signal modules
Time of day	
Clock	
 Hardware clock (real-time) 	Yes
Backup time	480 h; Typical
 Deviation per day, max. 	±60 s/month at 25 °C
Digital inputs	
Number of digital inputs	8; Integrated
of which inputs usable for technological functions	6; HSC (High Speed Counting)
Source/sink input	Yes
Number of simultaneously controllable inputs	100
all mounting positions	
— up to 40 °C, max.	8
Input voltage	
Rated value (DC)	24 V
• for signal "0"	5 V DC at 1 mA
• for signal "1"	15 V DC at 2.5 mA
Input delay (for rated value of input voltage)	
for standard inputs	
— parameterizable	0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable
— at "0" to "1", min.	in groups of four 0.2 ms
— at "0" to "1", max.	12.8 ms
for interrupt inputs	
— parameterizable	Yes
for technological functions	
— parameterizable	Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz
Cable length	
• shielded, max.	500 m; 50 m for technological functions
• unshielded, max.	300 m; for technological functions: No
Digital outputs	
Number of digital outputs	6
of which high-speed outputs	4; 100 kHz Pulse Train Output
Limitation of inductive shutdown voltage to	L+ (-48 V)
Switching capacity of the outputs	- (,
with resistive load, max.	0.5 A
 on lamp load, max. 	5 W

Output voltage	
	0.1 V: with 10 kOhm load
 for signal "0", max. for signal "1", min.	0.1 V; with 10 kOhm load 20 V
-	20 V
Output current	0.5.4
• for signal "1" rated value	0.5 A
for signal "0" residual current, max.	0.1 mA
Output delay with resistive load	4.00
• "0" to "1", max.	1 µs
• "1" to "0", max.	5 µs
Switching frequency	
• of the pulse outputs, with resistive load, max.	100 kHz
Relay outputs	•
Number of relay outputs	0
Cable length	
• shielded, max.	500 m
unshielded, max.	150 m
Analog inputs	
Number of analog inputs	2
Input ranges	
Voltage	Yes
Input ranges (rated values), voltages	
• 0 to +10 V	Yes
— Input resistance (0 to 10 V)	≥100k ohms
Cable length	
 shielded, max. 	100 m; twisted and shielded
Analog outputs	
Number of analog outputs	0
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
 Resolution with overrange (bit including sign), max. 	10 bit
Integration time, parameterizable	Yes
Conversion time (per channel)	625 µs
Encoder	
Connectable encoders	
2-wire sensor	Yes
1. Interface	
	DDOFINET
Interface type	PROFINET
Isolated	Yes
automatic detection of transmission rate	Yes
Autonegotiation	Yes
Autocrossing	Yes
Interface types	Vee
RJ 45 (Ethernet)	Yes
Number of ports	1
integrated switch	No
Protocols	
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
SIMATIC communication	Yes
Open IE communication	Yes; Optionally also encrypted
Web server	Yes
Media redundancy	No
PROFINET IO Controller	
 Transmission rate, max. 	100 Mbit/s
Services	
— PG/OP communication	Yes; encryption with TLS V1.3 pre-selected
— Isochronous mode	No
— IRT	No
— PROFlenergy	No

 Photolized statup Ves Number of IO devices with prioritized statup, 19 Number of connectable IO Devices, max. Number of connectable IO Devices, max. - Number of Connectable IO Devices for RT, max. - Advitch in line, mox. - Advitch in line, mox. - Advitch in line, mox. - Authors of Connectable IO Devices that can be simulaneously advited/deviced/used. - Updating time - Updating time - PROCP communication - PROCP communication - PROCP communication - PROCP communication - PROCP continuence with shared device. - Number of IO Controllers with shared device. - Noncord device - Ord PAP - Noncord device - Ord PAP - Market device <li< th=""><th></th><th></th></li<>		
max.	— Prioritized startup	Yes
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simultaneously activated/deactivated, max. - Updating time The minimum value of the update time also depends on the communication component set for PROFINET 10 networks and the quantity of the update time also depends on the communication component set for PROFINET 10 networks and the quantity of the update time also depends on the communication component set for PROFINET 10 networks and the quantity of the transmitter of 10 device Services - PC/OP communication - PCO/P communication - PROFINET 10 Device Yes - Shared device - Number of 10 Controllers with shared device, max. Protocols Supports protocol for PROFINET 10 Yes - Number of 10 Controllers with shared device, max. PROFIsate - Number of 10 Controllers with shared device, max. Protocols CPC UA Yes - Shared device - Yes - Supports protocol for PROFINET 10 Yes - CPC UA - Ves - Ves - CPC UA - Ves - CPC UA - Ves - Ves - CPC UA - Ves		
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communication component set for PROFINET IO 0 at the number of IO devices and the quantity of configured user data. PROFINET IO Device Services - PGIOP communication - IRT No - RT - RDOFInengry - Shared device - Number of IO Controllers with shared device, max. Protocols Supports protocol for PROFINET IO PROFILE Supports protocol for PROFINET IO SUMP - MRP - MRP - MRP - Data length, max. - State of PROFILE Supported Supported - Obta length, max. - State shows - Data length, max. - Number of slassions, max. - Number of slassions, max. - Number of slassions per session, max. - Number of slassions per session, max. - Number of slassions, max. - Number of slassions, max. - Number of slassions per session, m	-	The minimum value of the undate time also depends on the
PROFINET IC Device Services - PGOP communication Yes; encryption with TLS V1.3 pre-selected - Isochronous mode No - IRT No - PROFilenergy Yes - Started device Yes - Number of IO Controllers with shared device. 2 Protocols Yes Supports protocol for PROFINET IO Yes PROFIsate No PROFIsate No OPC UA Yes; OPC UA Server - Shartenace Yes; OPC UA Server - STORTING Yes - DROP Yes • DICP Yes • DICP Yes • DICP Yes • DICP Yes • DROP Yes • DICP Yes • DICP Yes • DICP Yes • MRP No - MRPD No - MRPD No - Stimutacion Yes • SToruling Yes Open IIE communication Yes • SToruling Yes • Data length, max. 8 kbyte • JOPP Yes • Data length, max. 4 kbyte • UDP Yes <td></td> <td></td>		
Services - FG/OP communication Yes; encryption with TLS V1.3 pre-selected - Isochronous mode No - IRT No - PROFOREnergy Yes - Shared device Yes - No Yes - Number of IO Controllers with shared device, max. 2 PROFIBUS Yes OPCIO Yes PROFIBUS Yes; CM 1243-5 (master) or CM 1242-5 (slave) required OPC LA Yes; CM 1243-2 (required PROFIBUS Yes; CM 1243-2 (required OPC LA Yes; CM 1243-2 required PROFIBUS Yes; CM 1243-2 (slave) required OPC LA Yes; CM 1243-2 required PROFIBUS Yes; CM 1243-2 required OPC LA Yes; CM 1243-2 required PROFIBUS Yes; CM 1243-2 required OPC LA Yes; CM 1243-2 required Protocols (Etheret) Yes • TCP/IP Yes • DCP Yes • LDP Yes Bedundary mode Yes Media redundary No - MKP - No SUBORT protocol for PROFIDE TOP Yes Open IE communication Yes		devices and the quantity of configured user data.
	PROFINET IO Device	
- Isochronous mode No - IRT No - PROFlenergy Yes - Shared device Yes - Number of IO Controllers with shared device, max. 2 Protocols Yes Supports protocol for PROFINET IO Yes PROFIBUS Yes; CM 1243-2 (master) or CM 1242-5 (slave) required OPC UA Yes; CM 1243-2 (master) or CM 1242-5 (slave) required OPC UA Yes; CM 1243-2 (master) or CM 1242-5 (slave) required OPC UA Yes; CM 1243-2 required PROFIBUS Yes; CM 1243-2 required OPC UA Yes; CM 1243-2 required PROFIBUS Yes; CM 1243-2 required OPC UA Yes; CM 1243-2 required PROFIBUS Yes; CM 1243-2 required OPC UA Yes; CM 1243-2 required Protocols (Etherner) Yes; CM 1243-2 required • TCP/IP Yes • DCP Yes • LDP Yes • MRP No - MRP No - MRP No • TCP/IP Yes • Stanting on port, supported Yes • Suport Protocol (for protocol) Yes • Suport Protocol Yes • Data length, max. 4 Kotyte • Suport Protoco	Services	
IRTNo PROFienergyYes Shared deviceYes Number of ID Controllers with shared device, max.2Protocol	— PG/OP communication	Yes; encryption with TLS V1.3 pre-selected
	 — Isochronous mode 	No
Shared device Yes Number of IO Controllers with shared device, max. 2 Protocols 2 Supports protocol for PROFINET IO Yes PROFISIS Yes: OK 1243-5 (master) or CM 1242-5 (slave) required OPC UA Yes: OK 1243-5 (master) or CM 1242-5 (slave) required OPC UA Yes: OK 1243-2 (required OPC UA Yes: OK 1243-2 (required PROFISIS Yes: CM 1243-2 (required OPC UA Yes: OK 1243-2 (required AS-Interface Yes: CM 1243-2 (required Protocols (Eihernet) Yes • DHCP Yes • DHCP Yes • DHCP Yes • DRP No - MRP No • TCP/IP Yes • Data length, max. 8 kbyte • So routing Yes • Data length, max. 1472 byte • UDP Yes • Data length, max. 1472 byte • UDP Yes • Data length, max. 1472 byte • Web server Yes	— IRT	No
Number of IO Controllers with shared device, max. 2 Protocols Supports protocol for PROFINET IO Yes PROFIBUS Yes; CM 1243-5 (master) or CM 1242-5 (slave) required OPC UA Yes; OPC UA Server AS-Interface Yes; CM 1243-5 (master) or CM 1242-5 (slave) required OPC UA Yes; OPC UA Server AS-Interface Yes; CM 1243-2 required Protocols (Ethernet) Yes • DCPP Yes • DLOP No • SIMAP Yes • DLOP Yes • LDP Yes Redundancy mode Yes Melia redundancy Yes - MRP No SIMATIC communication • • ST routing Yes Open IE communication • • ST routing Yes • Data length, max. 8 kbyte • Jop roted Yes • Data length, max. 1472 byte Web server Yes • Data length, max. Yes • Data length, max. <td< td=""><td>— PROFlenergy</td><td>Yes</td></td<>	— PROFlenergy	Yes
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PROFIBUS Yes; CM 1243-5 (master) or CM 1242-5 (slave) required OPC UA Yes; OPC UA Server AS-Interface Yes; CM 1243-2 required Protocols (Ethernet) Yes; CM 1243-2 required • TCP/IP Yes • DHCP No • SIMMP Yes • DCP Yes • DCP Yes • LLDP Yes Redundancy mode Media redundancy	Supports protocol for PROFINET IO	Yes
OPC UA Yes; OPC UA Server AS-Interface Yes; CM 1243-2 required Protocols (Ethemet) • TCP/IP • TCP/IP Yes • DHCP No • SNMP Yes • DCP Yes • LLDP Yes • DCP Yes • LLDP Yes • Edundancy mode Yes Media redundancy - - MRP No - MRPD No SIMATIC communication - • S7 routing Yes Open IE communication - • Data length, max. 8 kbyte - Data length, max. 8 kbyte - Data length, max. 8 kbyte - Data length, max. 1472 byte Web server - • Supported Yes OPC UA Yes OPC UA Yes • DPC UA Yes • DPC UA Server Yes • DPC UA Server Yes; "Basic" license required • Application authentication 'Yes, data access (read, write, subscribe), method call, runtime license required • Aumber of subscriptions per session, max. 10	PROFIsafe	No
AS-Interface Yes; CM 1243-2 required Protocols (Ethernet) ************************************	PROFIBUS	Yes; CM 1243-5 (master) or CM 1242-5 (slave) required
Protocols (Ethernet) Yes • TCP/IP Yes • DHCP No • SIMMP Yes • DCP Yes • DCP Yes • LDP Yes Redundancy mode Yes Media redundancy - MRP No MRPD No SIMATIC communication - • S7 routing Yes Open IE communication - • TCP/IP Yes - Data length, max. 8 kbyte - several passive connections per port, supported Yes • ISO-on-TCP (RFC1006) Yes - Data length, max. 8 kbyte • UDP Yes - Data length, max. 8 kbyte • UDP Yes - Data length, max. 9 kbyte • UDP Yes • Data length, max. 9 kbyte • UDP Yes - Data length, max. 9 kbyte • UDP Yes • Supported Yes • Data length, max. 1472 byte	OPC UA	Yes; OPC UA Server
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• DHCPNo• SMMPYes• DCPYes• LLDPYesRedundancy mode	Protocols (Ethernet)	
• SNMP Yes • DCP Yes • LLDP Yes Redundancy mode	• TCP/IP	Yes
• DCP Yes • LLDP Yes Redundancy mode	• DHCP	No
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SIMATIC communication Yes Open IE communication • TCP/IP • TCP/IP Yes - Data length, max. 8 kbyte - several passive connections per port, supported Yes • ISO-on-TCP (RFC1006) Yes - Data length, max. 8 kbyte • UDP Yes - Data length, max. 1 472 byte Web server • USer-defined websites • Supported Yes • UDP Yes - Data length, max. 1 472 byte Web server • User-defined websites • Supported Yes • OPC UA Yes; "Basic" license required • OPC UA Yes; "Basic" license required • OPC UA Yes; data access (read, write, subscribe), method call, runtime license required • OPC UA Server Yes; data access (read, write, subscribe), method call, runtime license required - Application authentication Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256 - User authentication "anonymous" or by user name & password - Number of sessions, max. 10 - Number of subscriptions per session, max. 5 <td>— MRP</td> <td>No</td>	— MRP	No
• S7 routing Yes Open IE communication • TCP/IP • TCP/IP Yes - Data length, max. 8 kbyte - several passive connections per port, supported Yes • ISO-on-TCP (RFC1006) Yes - Data length, max. 8 kbyte • UDP Yes - Data length, max. 1472 byte Web server • • Supported Yes • UDP Yes - Data length, max. 1472 byte Web server • • Supported Yes • User-defined websites Yes • OPC UA • • OPC UA Yes; 'Basic" license required • OPC UA Yes; data access (read, write, subscribe), method call, runtime license required • OPC UA Server Yes; data access (read, write, subscribe), method call, runtime license required • OPC UA Server Yes; data access (read, write, subscribe), method call, runtime license required • OPC UA Server Yes; data access (read, write, subscribe), method call, runtime license required • OPC UA Server Yes; data access (read, write, subscribe), method call, runtime license required	— MRPD	No
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• TCP/IPYes- Data length, max.8 kbyte- several passive connections per port, supportedYes• ISO-on-TCP (RFC1006)Yes- Data length, max.8 kbyte• UDPYes- Data length, max.1472 byteWeb serverYes• SupportedYes• User-defined websitesYesOPC UAYes• Runtime license requiredYes; "Basic" license required• OPC UA ServerYes; data access (read, write, subscribe), method call, runtime license required- Application authentication"anonymous" or by user name & password- Number of sessions, max.10- Number of subscriptions per session, max.5		
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Data length, max.8 kbyteUDPYesData length, max.1 472 byteWeb server1 472 byte• supportedYes• User-defined websitesYesOPC UAVes; "Basic" license required• Runtime license requiredYes; "Basic" license required• OPC UA ServerYes; data access (read, write, subscribe), method call, runtime license required- Application authenticationAvailable security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256- User authentication"anonymous" or by user name & password- Number of sessions, max.10- Number of subscriptions per session, max.5	• ISO-on-TCP (RFC1006)	Yes
• UDPYes- Data length, max.1 472 byteWeb serverYes• supportedYes• User-defined websitesYesOPC UAYes; "Basic" license required• Runtime license requiredYes; "Basic" license required• OPC UA ServerYes; data access (read, write, subscribe), method call, runtime license required- Application authenticationAvailable security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256- User authentication"anonymous" or by user name & password- Number of sessions, max.10- Number of subscriptions per session, max.5		8 kbyte
Web server • supported Yes • User-defined websites Yes OPC UA Yes; "Basic" license required • Runtime license required Yes; "Basic" license required • OPC UA Server Yes; data access (read, write, subscribe), method call, runtime license required • OPC UA Server Yes; data access (read, write, subscribe), method call, runtime license required • Application authentication Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256 - User authentication "anonymous" or by user name & password - Number of sessions, max. 10 - Number of subscriptions per session, max. 5	-	
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· User-defined websites Yes OPC UA · • Runtime license required Yes; "Basic" license required • OPC UA Server Yes; data access (read, write, subscribe), method call, runtime license required • OPC UA Server Yes; data access (read, write, subscribe), method call, runtime license required - Application authentication Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256 - User authentication "anonymous" or by user name & password - Number of sessions, max. 10 - Number of subscriptions per session, max. 5		
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 Runtime license required OPC UA Server OPC UA Server Application authentication Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256 User authentication Number of sessions, max. Number of subscriptions per session, max. Salar 		Yes
 Runtime license required OPC UA Server OPC UA Server Application authentication Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256 User authentication Number of sessions, max. Number of subscriptions per session, max. Salar 		
• OPC UA ServerYes; data access (read, write, subscribe), method call, runtime license required- Application authenticationAvailable security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256- User authentication"anonymous" or by user name & password- Number of sessions, max.10- Number of subscriptions per session, max.5		Yes; "Basic" license required
required- Application authenticationAvailable security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256- User authentication"anonymous" or by user name & password- Number of sessions, max.10- Number of subscriptions per session, max.5		
Basic256Sha256 — User authentication "anonymous" or by user name & password — Number of sessions, max. 10 — Number of subscriptions per session, max. 5		
— User authentication"anonymous" or by user name & password— Number of sessions, max.10— Number of subscriptions per session, max.5	 Application authentication 	
— Number of sessions, max. 10 — Number of subscriptions per session, max. 5		
 Number of subscriptions per session, max. 5 		
	 — Number of sessions, max. 	10
— Sampling interval, min. 100 ms		
	— Sampling interval, min.	100 ms

— Publishing interval, min.	200 ms
 Number of server methods, max. 	20
 Number of monitored items, max. 	1 000
 Number of server interfaces, max. 	2
 Number of nodes for user-defined server 	2 000
interfaces, max.	
Further protocols	
MODBUS	Yes
communication functions / header	
S7 communication	
 supported 	Yes
• as server	Yes
as client	Yes
• User data per job, max.	See online help (S7 communication, user data size)
Number of connections	
• overall	PG Connections: 4 reserved / 4 max; HMI Connections: 12 reserved / 18 max; S7 Connections: 8 reserved / 14 max; Open User Connections: 8 reserved / 14 max; Web Connections: 2 reserved / 30 max; OPC UA Connections: 0 reserved / 10 max; Total Connections: 34 reserved / 64 max
Test commissioning functions	
Status/control	
Status/control variable	Yes
Variables	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
Forcing	
Forcing	Yes
Diagnostic buffer	
present	Yes
Traces	
 Number of configurable Traces 	2
 Memory size per trace, max. 	512 kbyte
Interrupts/diagnostics/status information	
Diagnostics indication LED	
RUN/STOP LED	Yes
ERROR LED	Yes
MAINT LED	Yes
Integrated Functions	
Frequency measurement	Yes
controlled positioning	Yes
Number of position-controlled positioning axes, max.	8
Number of positioning axes via pulse-direction interface	4; With integrated outputs
PID controller	Yes
Number of alarm inputs	4
Number of pulse outputs	4
Limit frequency (pulse)	100 kHz
Potential separation	
Potential separation digital inputs	
 Potential separation digital inputs 	No
 between the channels, in groups of 	1
Potential separation digital outputs	
 Potential separation digital outputs 	Yes
between the channels	No
 between the channels, in groups of 	1
EMC	
Interference immunity against discharge of static electricity	
 Interference immunity against discharge of static electricity acc. to IEC 61000-4-2 	Yes
— Test voltage at air discharge	8 kV
— Test voltage at contact discharge	6 kV
Interference immunity to cable-borne interference	
 Interference immunity on supply lines acc. to IEC 	Yes

61000 4 4	
61000-4-4	N/
 Interference immunity on signal cables acc. to IEC 61000-4-4 	Yes
Interference immunity against voltage surge	
Interference immunity on supply lines acc. to IEC	Yes
61000-4-5	
Interference immunity against conducted variable disturbanc	e induced by high-frequency fields
 Interference immunity against high-frequency 	Yes
radiation acc. to IEC 61000-4-6	
Emission of radio interference acc. to EN 55 011	
 Limit class A, for use in industrial areas 	Yes; Group 1
 Limit class B, for use in residential areas 	Yes; When appropriate measures are used to ensure compliance with the limits for Class B according to EN 55011
Degree and class of protection	
IP degree of protection	IP20
Standards, approvals, certificates	
CE mark	Yes
UL approval	Yes
cULus	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes
Marine approval	Yes
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	0.5 m, ive times, in product package
min.	-20 °C
• max.	60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical
 horizontal installation, min. 	-20 °C
 horizontal installation, max. 	60 °C
 vertical installation, min. 	-20 °C
vertical installation, max.	50 °C
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Air pressure acc. to IEC 60068-2-13	
 Operation, min. 	795 hPa
 Operation, max. 	1 080 hPa
 Storage/transport, min. 	660 hPa
 Storage/transport, max. 	1 080 hPa
Altitude during operation relating to sea level	
 Installation altitude, min. 	-1 000 m
 Installation altitude, max. 	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Relative humidity	
Operation, max.	95 %; no condensation
Vibrations	
 Vibration resistance during operation acc. to IEC 60068-2-6 	2 g (m/s ²) wall mounting, 1 g (m/s ²) DIN rail
 Operation, tested according to IEC 60068-2-6 	Yes
Shock testing • tested according to IEC 60068-2-27	Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value), duration 11 ms
Shock testing	Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak
Shock testing • tested according to IEC 60068-2-27	Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value), duration 11 ms
Shock testing • tested according to IEC 60068-2-27 Pollutant concentrations • SO2 at RH < 60% without condensation	Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak
Shock testing • tested according to IEC 60068-2-27 Pollutant concentrations • SO2 at RH < 60% without condensation configuration / header	Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value), duration 11 ms
Shock testing • tested according to IEC 60068-2-27 Pollutant concentrations • SO2 at RH < 60% without condensation configuration / header configuration / programming / header	Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value), duration 11 ms
Shock testing • tested according to IEC 60068-2-27 Pollutant concentrations • SO2 at RH < 60% without condensation configuration / header	Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value), duration 11 ms

FRD	Ver
— FBD	Yes
— SCL	Yes
Know-how protection	
 User program protection/password protection 	Yes
Copy protection	Yes
Block protection	Yes
Access protection	
 protection of confidential configuration data 	Yes
 Protection level: Write protection 	Yes
 Protection level: Read/write protection 	Yes
 Protection level: Complete protection 	Yes
programming / cycle time monitoring / header	
adjustable	Yes
Dimensions	
Width	90 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	370 g
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