## SIEMENS

## Data sheet

## 6ES7212-1HF40-0XB0

	SIMATIC S7-1200, CPU 1212FC, compact CPU, DC/DC/relay, onboard I/O: 8 DI 24 V DC; 6 DO relay 2 A; 2 AI 0-10 V DC, power supply: DC 20.4-28.8 V DC, program/data memory 150 KB
General information	
Product type designation	CPU 1212FC DC/DC/relay
Firmware version	V4.6
Engineering with	
Programming package	STEP 7 V18 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
Load voltage L+	20.0 V
Rated value (DC)	24 V
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Input current	20.0 V
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
l²t	0.8 A <sup>2</sup> ·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	150 kbyte
Load memory	
integrated	2 Mbyte
<ul> <li>Plug-in (SIMATIC Memory Card), max.</li> </ul>	with SIMATIC memory card
Backup	
• present	Yes
maintenance-free	Yes
<ul> <li>without battery</li> </ul>	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	
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

• per priority class, max.         16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2 to 26: 6           Address area         Process image           • Inputs, adjustable         1 kbyte           • Outputs, adjustable         1 kbyte           Hardware configuration         1 kbyte           Number of modules per system, max.         3 comm. modules, 1 signal board, 2 signal modules           Time of day         1	KB
Address area         Process image         • Inputs, adjustable       1 kbyte         • Outputs, adjustable       1 kbyte         • Outputs, adjustable       1 kbyte         Hardware configuration       3 comm. modules, 1 signal board, 2 signal modules	
Inputs, adjustable     Outputs, adjustable     Outputs, adjustable     I kbyte	
Inputs, adjustable     Outputs, adjustable     Outputs, adjustable     I kbyte     I kbyte     I kbyte     Ikbyte     I kbyte     I kbyte     I kbyte     I kbyte	
Hardware configuration         Number of modules per system, max.         3 comm. modules, 1 signal board, 2 signal modules	
Number of modules per system, max.         3 comm. modules, 1 signal board, 2 signal modules	
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 4; HSC (High Speed Counting)	
Source/sink input Yes	
Number of simultaneously controllable inputs	
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 i	า
groups of four	
— at "0" to "1", min. 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
Cable length	
<ul> <li>shielded, max.</li> <li>unshielded, max.</li> <li>unshielded, max.</li> <li>300 m; for technological functions: No</li> </ul>	
Digital outputs	
Number of digital outputs     6; Relays	
Switching capacity of the outputs	
with resistive load, max.     2 A	
on lamp load, max. 30 W with DC, 200 W with AC	
Output delay with resistive load	
• "0" to "1", max. 10 ms; max.	
• "1" to "0", max. 10 ms; max.	
Relay outputs	
Number of relay outputs     6     Number of energine surface mark	
Number of operating cycles, max.     mechanically 10 million, at rated load voltage 100 000	
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	

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Analog outputs	
Number of analog outputs	0
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
<ul> <li>Resolution with overrange (bit including sign), max.</li> </ul>	10 bit
Integration time, parameterizable	Yes
Conversion time (per channel)	625 µs
Encoder	
Connectable encoders	
2-wire sensor	Yes
1. Interface	
Interface type	PROFINET
Isolated	Yes
automatic detection of transmission rate	Yes
Autonegotiation	Yes
Autocrossing	Yes
Interface types	
Number of ports	1
<ul> <li>integrated switch</li> </ul>	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
— Prioritized startup	Yes
- Number of IO devices with prioritized startup, max.	16
— Number of connectable IO Devices, max.	16
— Number of connectable IO Devices for RT, max.	16
— of which in line, max.	16
Activation/deactivation of IO Devices	Yes
<ul> <li>— Number of IO Devices that can be simultaneously activated/deactivated, max.</li> </ul>	8
— Updating time	The minimum value of the update time also depends on the communication component set for PROFINET IO, on the number of IO devices and the quantity of configured user data.
PROFINET IO Device	
Services	
— PG/OP communication	Yes; encryption with TLS V1.3 pre-selected
— Isochronous mode	No
— IRT	No
— PROFlenergy	Yes
— Shared device	Yes
- Number of IO Controllers with shared device, max.	2
Protocols	
Supports protocol for PROFINET IO	Yes
PROFIsafe	Yes
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)	
• TCP/IP	Yes
• DHCP	No

• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Redundancy mode	
Media redundancy	
— MRP	No
— MRPD	No
Open IE communication	
• TCP/IP	Yes
— Data length, max.	8 kbyte
• ISO-on-TCP (RFC1006)	Yes
— Data length, max.	8 kbyte
• UDP	Yes
— Data length, max.	1 472 byte
Web server	
supported	Yes
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
<ul> <li>Application authentication</li> </ul>	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
— User authentication	"anonymous" or by user name & password
<ul> <li>Number of sessions, max.</li> </ul>	10
<ul> <li>Number of subscriptions per session, max.</li> </ul>	5
— Sampling interval, min.	100 ms
— Publishing interval, min.	200 ms
<ul> <li>— Number of server methods, max.</li> </ul>	20
<ul> <li>Number of monitored items, recommended max.</li> </ul>	1 000
<ul> <li>— Number of server interfaces, max.</li> </ul>	2
<ul> <li>Number of nodes for user-defined server interfaces,</li> </ul>	2 000
max.	
Further protocols  • MODBUS	Yes
communication functions / header	
S7 communication	
	Yes
• supported	Yes
• as server	Yes
• as client	
User data per job, max.     Number of connections	See online help (S7 communication, user data size)
	DC Connections: A recorded (A many LIMI Connections: 40 recorded (40 many
• 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, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters
Forcing	
Forcing	Yes; peripheral inputs/outputs (without fail-safe)
Diagnostic buffer	
• present	Yes
Traces	
<ul> <li>Number of configurable Traces</li> </ul>	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

Frequency measurement         Yes           Conclused positioning         Yes           Number of positioning acces up public direction interface         Up to 4 with S6 1222           Philosoft of seminony acces up public direction interface         Yes           Reventer of accel inners acces up public direction interface         Yes           Potential separation digital direction         500V AC for 1 minute           Potential separation digital direction         500V AC for 1 minute           Potential separation digital direction         500V AC for 1 minute           Potential separation digital direction         800V AC for 1 minute           Potential separation digital direction         No           Potential separation digital direction         Yes           Potential separation digital direction         Yes           Potential separation digital direction         Yes           Potential separation digital direction         Yes <td< th=""><th>Integrated Functions</th><th></th></td<>	Integrated Functions	
continuind positioning axes in a pulse direction interface         8           Number of position controlled positioning axes in a pulse direction interface         9           PID controller         Yes           Winnber of positioning axes in a pulse direction interface         Yes           Winnber of positioning axes in a pulse direction interface         Yes           Winnber of positioning axes in a pulse direction interface         Yes           Price main pulse         4           Potential separation digital pulse         500V AC for 1 minute           • between the channels in groups of         1           Price mains a separation digital dipulse         Relays           • between the channels in groups of         2           Interference immunity aparted discharge of static alectronic of static separation digital dipulse         Relays           • between the channels in groups of end to the channels in groups of end to the channels in groups of to the channels in groups of to the channels in groups of the channel interference         Yes           • Interference immunity on apply lines acc. to IEC 61000-4         Yes         Yes           • Interference immunity aparted condical discraption distribution discraption distribution discraption distribution discraption distribution distri		Yes
Number of position-controlled positioning areas, max.         8           Number of positioning areas is pulse-direction interface         Up to 4 with SB 1222           Pib controller         Yes           Number of positioning areas, is pulse-direction interface         500 VAC for 1 minute           Protectial separation cigal inputs         500 VAC for 1 minute           • Fortential separation cigal inputs         500 VAC for 1 minute           • Fortential separation cigal inputs         500 VAC for 1 minute           • Extense the channels, in groups of         1           • Extense the channels, in groups of         2           #Oriential separation cigal in diptal optiques         8 kV           • Extense the channels, in groups of static         Yes           • Interformers immuny to spark discharge of static         8 kV           • Interformers immuny to signal cables are, to EC 6 1000- 4 with offerenze immuny to signal cables are, to EC 6 1000- 4 with offerenze immuny to signal cables are, to EC 6 1000- 4 with offerenze immuny to signal cables are, to EC 6 1000- 4 with offerenze immuny spark discharge interferenze         Yes           • Interformers immuny to signal cables are, to EC 6 1000- 4 with offerenze immuny to signal cables are, to EC 6 1000- 4 with offerenze immuny spark discharge interferenze         Yes           • Interformers immuny to signal cables are, to EC 6 1000- 4 with offerenze immuny spark discharge interferenze         Yes           • Int		
Number of positioning axes via pulse-direction interface         Up to 4 with SB 1222           PID controller         Yes           Number of admin inputs         4           Potential sequention digital inputs         500V AC for 1 minute           • Potential sequention digital inputs         500V AC for 1 minute           • Educement ine channes, ing orugos of         1           • Potential sequention digital inputs         500V AC for 1 minute           • Educement ine channes, ing orugos of         2           • Educement ine channes, ing orugos of         2           • Interference immunity against discharge of static electricity         * Interference immunity against discharge of static electricity           • Interference immunity on supply lines ace: to EC 6 1000- 4         4           • Interference immunity on supply lines ace: to EC 6 1000- 4         Yes           • Interference immunity against conducted variable disturbance induced by high-frequency fields         Yes           • Interference immunity against conducted variable disturbance induced by high-frequency fields         Yes           • Interference immunity against conducted variable disturbance induced by high-frequency fields         Yes           • Interference immunity against conducted variable disturbance induced by high-frequency fields         Yes           • Interference immunity against conducted variable disturbance induced by high-frequency fields <td>· · · ·</td> <td></td>	· · · ·	
PIC controller     Yes       Protectional segmention digital inputs     4       Potential segmention digital inputs     500V AC for 1 minute       • Protectial segmention digital inputs     1       • Potential segmention digital outputs     Rolays       • Extreme the channels     No       • Extreme the channels     Rolays       • Interference immunity gathet discharge of static electricity     • Interference immunity and discharge of static electricity       • Interference immunity on supply lines acc. to IEC 81000-4     Yes       • Interference immunity on supply lines acc. to IEC 81000-4     Yes       • Interference immunity on supply lines acc. to IEC 81000-4     Yes       • Interference immunity against conducter variable distributions intuited by high frequency fields     Yes       • Interference immunity against conducter variable distributionse intuited on interference acc. to IEC 8101     Yes       • Interference immunity against conducter variable distributionse intuited on interference acc. to IEC 8101     Yes       • Interference immunity against conducter variable distributionse intuited on interference acc. to IEC 8101     Yes       • Interference immunity against conducter variable distributionse intuited by high frequency fields     Yes		
Number of atem injude         4           Potential separation digital injusts         500 AG for 1 minute           • Potential separation digital injusts         500 AG for 1 minute           • Potential separation digital injusts         500 AG for 1 minute           • Potential separation digital injusts         700 AG for 1 minute           • Potential separation digital injusts         700 AG for 1 minute           • Potential separation digital injusts         700 AG for 1 minute           • Potential separation digital injusts         700 AG for 1 minute           • Potential separation digital injusts         700 AG for 1 minute           • Potential separation digital injusts         700 AG for 1 minute           • Potential separation digital injusts         700 AG for 1 minute           • Interference immunity against discharge of static alienticity         81 V           • Interference immunity on supply lines ac: to IEC 61000-4         44           • Interference immunity on supply lines ac: to IEC 61000-4         Ves           • Interference immunity against tright-frequency fields         Yes           • Interference immunity against tright-foreuron tright frequency fields         Yes (Forup 1           • Interference immunity against tright-foreuron tright frequency fields         Yes (Forup 1           • Interference immunity against trigh-foreuron tright frequency fields <t< td=""><td></td><td>•</td></t<>		•
Potential separation         Events           Potential separation digital inputs         500V AC for 1 minute           • Detretial separation digital inputs         1           • Detretial separation digital inputs         No           • Ediverse the channels, in groups of         2           • Environment to channels, in groups of static alectricity         1           • Interference immunity spacial discharge of static alectricity         8/V           • Interference immunity to asapti discharge of static alectricity         8/V           • Interference immunity on supply lines act. to IEC 61000-44         Yes           • Interference immunity on supply lines act. to IEC 61000-44         Yes           • Interference immunity on supply lines act. to IEC 61000-44         Yes           • Interference immunity against conducted variable distribution interference         Yes           • Interference immunity against conducted variable distribution interference         Yes           • Interference immunity against conducted variable distribution interference         Yes           • Interference immunity against conducted variable distribution interference         Yes           • Interference immunity a		
Potential separation digital inputs     50/V AC for 1 minute <ul> <li>Potential separation digital inputs</li> <li>Edivers in the channels in groups of</li> <li>Potential separation digital outputs</li> <li>Relays</li> <li>Potential separation digital outputs</li> <li>Potential separation digital discharge of static electricity</li> <li>Potential metal static discharge of static electricity</li></ul>		
• Potential separation digital inputs     SOV AC for 1 minute       • between the channels, in groups of     1       • Potential separation digital outputs     Relays       • between the channels, in groups of     2       • Interference immunity against discharge of static     8 kV       • Interference immunity against discharge of static     8 kV       • Test voltage at a discharge     8 kV       • Test voltage at a discharge     8 kV       • Test voltage at a discharge     8 kV       • Interference immunity against uotidge auge     8 kV       • Interference immunity on supply lines acc. to EC 6 1000-     Yes       • Interference immunity on supply lines acc. to EC 6 1000-     Yes       • Interference immunity on supply lines acc. to EC 6 1000-     Yes       • Interference immunity on supply lines acc. to EC 6 1000-     Yes       • Interference immunity on supply lines acc. to EC 6 1000-     Yes       • Interference immunity on supply lines acc. to EC 6 1000-     Yes       • Interference immunity against conducted variable disturbance intervet test     Yes       • Unit dass A, for use in industrial areas     Yes       • Unit dass A for use in industrial areas     Yes       • CS mark     Yes       • CB mark     Yes       • CB mark     Yes       • CB mark     Yes       • CA mark     Yes<		
- belaven he channels, or groups of elevant in digital outputs        Relays       - Potential separation digital outputs       - Potential separation digital outputs       - betaven the channels, in groups of 2       - Enter the channels, in groups of 2       - Enter the channels, in groups of 3       - 2       - Test voltage at at discharge of state       - Test voltage at at discharge of state       - Test voltage at at discharge of state       - Test voltage at at discharge       - Test voltage at thest voltage at at di		500V AC for 1 minute
Potential separation digital outputs     Relays          • Delvemal separation digital outputs      Relays           • Delvemal separation digital outputs      No           • between the channels      No           • Delvemal the channels      No           • between the channels      No           • Interference immunity against discharge of static       electronity e.c. bit C 91000-42-4       electronity e.c. bit C 91000-44           - Test voltage at an discharge       electronity e.c. bit C 91000-44           electronity e.c. bit C 91000 </td <td></td> <td></td>		
Priorial segaration digital outputs     Relays       No     2       ENV     Priorial segaration digital outputs       Interference immunity against discharge of static electricity     Vision of the segaration of the segaration of static electricity       Interference immunity against discharge of static electricity     Yes       - Test voltage at an discharge     8 kV       - Test voltage at an discharge     9 kV       - Test voltage at an discharge     9 kV       - Test voltage at an discharge     Yes       - Test voltage at constant discharge     Yes       - Test voltage at constant discharge     Yes       - Test voltage at constant of schore interference     Yes       - Test voltage at constant of schore interference     Yes       - Interference immunity against tomb-frequency radiation acces to EC 6 1000-4     Yes       - Interference immunity against tomb-frequency radiation acces to EC 6 1000-4     Yes       - Unit class B. for use in interference acc. to EC 6 1000-4     Yes       - Unit class B. for use in interference acce     Yes (Sroup 1       - Unit class B. for use in residential arces     Yes (Sroup 1       - Unit class B. for use in residential arces     Yes       Distraterds.		
between the channels, in groups of 2  Excern  Excern Excern  Exce		Relays
between the channels, in groups of      EVC  EVC  EVC  EVC  EVC  EVC  EVC		
EXC         Visit           Interference immunity against discharge of static electricity act: to EC 6100-4-2         Yes		
Interference immunity against discharge of static electricity acto IE C6 6100-4-2         Yes           — Test voltage at air discharge         8 kV           — Interference immunity capita-borne interference         Yes           — Interference immunity on supply lines acc. to IEC 6 1000- 4-4         Yes           — Interference immunity on supply lines acc. to IEC 6 1000- 4-4         Yes           — Interference immunity against conducted variable disturtance induced by high-frequency fields         Yes           — Interference immunity against high-frequency radiation acc to IEC 61000-4-6         Yes           — Limit class A, for use in industrial areas         Yes; Group 1           — Limit class A, for use in industrial areas         Yes           — Erission of radio Interference acc. to EK 56 011         Yes           — Limit class A, for use in industrial areas         Yes; Group 1           — Limit class A, for use in industrial areas         Yes           Ge mark         Yes           Quipproval         Yes           — Coll as a of protection         IP dogrea of protection           IP dogrea of protection <td></td> <td>-</td>		-
• Interference immunity against discharge       9 kiV         - Test voltage at air discharge       8 kV         - Interference immunity against control discharge       9 kV         • Interference immunity against control discharge       Yes         - Interference immunity against conducted variable disturbance induced by high-frequency fields       1         • Interference immunity against conducted variable disturbance induced by high-frequency fields       1         • Interference immunity against conducted variable disturbance induced by high-frequency fields       1         • Interference immunity against conducted variable disturbance induced by high-frequency fields       1         • Interference immunity against conducted variable disturbance induced by high-frequency fields       1         • Interference immunity against conducted variable disturbance induced by high-frequency fields       1         • Interference immunity against conducted variable disturbance induced by high-frequency fields       1         • Interference immunity against conducted variable disturbance induced by high-frequency fields       1         • Interference immunity against conducted variable disturbance variable in variable in variable in variab		
- Test voltage at contact discharge 6 kV Interference immunity to sable-borne interference Interference immunity to sable-borne interference 4.4  • Interference immunity on signal cables acc. to IEC 61000- 4.4  Interference immunity on supply lines acc. to IEC 61000- 4.4  • Interference immunity against voltage surge • Interference immunity against high-frequency radiation acc. to IEC 61000- 4.5  Emission of radio interference acc. to IB 56 011 • Unit class A, for use in industrial areas • Yes; Group 1 • Limit class A, for use in residential areas • Yes; Group 1 • Limit class B, for use in residential areas • Yes; Group 1 • Limit class B, for use in residential areas • Yes; Group 1 • Limit class B, for use in residential areas • Yes; Group 1 • Limit class B, for use in residential areas • Yes; Group 1 • Limit class B, for use in residential areas • Yes; Group 1 • Limit class B, for use in residential areas • Yes • Degree and class of protection • IP20 Etamated, approval • Limit class B, for use in residential areas • Yes • U. approval • Yes • Ves • Ves • U. approval • Yes • Ves • V	Interference immunity against discharge of static	Yes
- Test voltage at contact discharge 6 kV Interference immunity to sabil-borne interference Interference immunity to sabil-borne interference 4.4  • Interference immunity on signal cables acc. to IEC 61000. 4.4  Interference immunity on supply lines acc. to IEC 61000. 4.4  • Interference immunity on supply lines acc. to IEC 61000. 4.5  Interference immunity against voltage surge • Interference immunity against hiph-frequency radiaton acc. to IEC 61000. 4.5  Emission of radio interference acc, to B5 011 • Unit class A, for use in industrial areas • Yes; Group 1 • Limit class A, for use in industrial areas • Yes; When appropriate measures are used to ensure compliance with the limits for Class B according to EN 55011  Pogree and class of protection U approval • CE mark • Ves UL approval • Yes • Preference involution • Yes • ROM (formerly C-TICK) • Yes • Preference involution • Yes • Preference involution • Ves • Preference involution • Interference involution • Situ acc. to IEC 6103 • Yes • Preference involution • Yes • Preference involu	-	8 kV
Interference immunity to cable-borne interference         Yes           4         Interference immunity on supply lines acc. to IEC 61000- 44         Yes           • Interference immunity against ublage surge         Yes           • Interference immunity against ublagh-frequency radiation         Yes           • Interference immunity against ublagh-frequency radiation         Yes           • 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         IP20           Standards, approval.         Yes           CE mark         Yes           UL approval.         Yes           CUlus         Yes           RCM (formerly C-TICK)         Yes           KC approval         Yes           • Performance level according to ISO 13840-1         PLe           • SiL acc. to IEC 61508         SiL 3           Ambient conditions<	<b>o o</b>	
• Interference Immunity on supply lines acc. to IEC 61000- 44       Yes         • Interference Immunity against voltage surge       Yes         • Interference Immunity on supply lines acc. to IEC 61000- 45       Yes         • Interference Immunity against voltage surge       Yes         • Interference Immunity against voltage surge       Yes         • Interference Immunity against conducted variable disturbance induced by high-frequency fields       Yes         • Interference Immunity against high-frequency radiation act: to IEC 61000-4-6       Yes         • Limit class A. for use in Industrial areas       Yes; Group 1         • Limit class A. for use in Industrial areas       Yes; Group 1         • Limit class A. for use in Industrial areas       Yes; Group 1         • Limit class A. for use in Industrial areas       Yes; Group 1         • Limit class A. for use in Industrial areas       Yes; Group 1         • Limit class A. for use in Industrial areas       Yes; Group 1         • Edgree of protection       IP20         Standards, approvals, certificates       Yes         • CE mark       Yes         • UL approval       Yes         ROM (tormerly C-TICK)       Yes         • Performance level according to ISO 13849-1       PLe         • SiL acc. to IEC 61508       SiL 3         Amtione approval </td <td></td> <td></td>		
4.4         Interference immunity against voltage surge         • Interference immunity against conducted variable disturbance induced by high-frequency fields         • Interference immunity against conducted variable disturbance induced by high-frequency fields         • Interference immunity against conducted variable disturbance induced by high-frequency fields         • Interference immunity against bigh-frequency radiation acc. to IEC 61000-4-6         Emission of radio interference acc. to EN 55 011         • Limit class A, for use in industria areas       Yes; Group 1         • Limit class A, for use in residential areas       Yes; Group 1         • Limit class A, for use in residential areas       Yes; Group 1         • Limit class A of protection       IP20         Standards, approvals, cortificates       Yes         CE mark       Yes         U.a approval       Yes         cluss       Yes         FM approval       Yes         CRM (formerly C-TICK)       Yes         RA approval       Yes         • Find approval       Yes         • Performance level according to ISO 13849-1       PLe         • Sill acc. to IEC 61508       Sill 3         Ambient conditions       0 °C         Free fail       0 °C         • Inin.       0 °C	Interference immunity on supply lines acc. to IEC 61000-	Yes
• Interference immunity against conducted variable disturbance induced by high-frequency fields                 • Interference immunity against high-frequency radiation             acc. to IEC 61000-4.6          Yes                Emission of radio interference acc. to EN 55 011          Yes                • Limit class A, for use in industrial areas          Yes; Group 1                 • Limit class A, for use in industrial 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          IP20                 IP degree of protection          IP20                 CE mark             (Cluss             porovals, certificates          Yes                 C2E mark             UL approval             (Yes          Yes                 C4Lus             Sprovals             defined according to ISO 13849-1          Yes                 Marine approval          Yes                 Performance level according to ISO 13849-1          Yes                 Ambient conditions               Sill                 Free fail               0.3 m; five times, in product package		Yes
4.5       Interference immunity against conducted variable disturbance induced by high-frequency fields         • Interference immunity against high-frequency radiation acc. to IEC 61000-45       Yes         Emission of radio interference acc. to EN 55 011       • Limit class A, for use in industrial areas         • Limit class B, for use in industrial areas       Yes; Group 1         • Limit class G protection       IP20         Standards, approvals, certificates       CE mark         CE mark       Yes         UL approval       Yes         cUlus       Yes         FM approval       Yes         RCM (formerly C-TICK)       Yes         Marine approval       Yes         Highest safety class achievable in safety mode       • Lease         • Ere fail       • each off solds         Silu acc. to IEC 61508       Silu 3         Antibient conditions       Free fail         • ere formance level according to ISO 1349-1       PLe         • Silu acc. to IEC 61508       Silu 3         Antibient temperature during operation       0 °C         • inin.       0 °C         • max.       0 °C forizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical installation, min. <td< td=""><td>Interference immunity against voltage surge</td><td></td></td<>	Interference immunity against voltage surge	
<ul></ul>		Yes
ac. to EC 6 1000-4-6 Emission of radio interference acc. to EN 55 011 • Limit class A, for use in industrial areas • Limit class B, for use in residential areas • Limit class B, for use in residential areas • Limit class of protection IP degree of protection IP degree of protection IP degree of protection Ves CE mark UL approval cettificates CE mark Ves UL approval • CE mark UL approval • CE mark Ves • CLus • Yes • CLUS • CLUS	Interference immunity against conducted variable disturbance indu	ced by high-frequency fields
• Limit class A, for use in industrial areas       Yes; Group 1         • Limit class B, for use in residential areas       Yes; Group 1         Degree and class of protection       IP20         Standards, approvals, certificates       E         CE mark       Yes         UL approval       Yes         cULus       Yes         FM approval       Yes         cULus       Yes         RCM (formerly C-TICK)       Yes         KC approval       Yes         Marine approval       Yes         Highest safety class achievable in safety mode       Performance level according to ISO 13849-1         PLe       Sill accore to 1508         Ambient conditions       Sill 3         Ambient conditions       0.3 m; five times, in product package         Ambient temperature during operation       0 °C         • horizontal installation, min.       0 °C         • horizontal installation		Yes
• 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         IP degree of protection       IP20         Standards, approvals, certificates       Yes         CE mark       Yes         UL approval       Yes         cUlus       Yes         FM approval       Yes         RCM (formerly C-TICK)       Yes         KC approval       Yes         Marine approval       Yes         Highest safety class achievable in safety mode       •         • Performance level according to ISO 13849-1       PLe         • SIL acc. to IEC 61508       SIL 3         Ambient conditions       Free fall         • Ambient temperature during operation       0 °C         • min.       0 °C         • max.       55 °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 installation, min.         • horizontal installation, min.       0 °C         • horizontal installation, min.       0 °C         • vertical installation, min.       0 °C         • vertical installation, max.       45 °C	Emission of radio interference acc. to EN 55 011	
for Class B according to EN 55011         Degree and class of protection         IP degree of protection         Standards, approvals, certificates         CE mark         QL approvals, certificates         CE mark         QL approval         QL approval         Yes         CULUS         FM approval         Yes         RCM (formerly C-TICK)         Yes         Marine approval         Yes         Highest safety class achievable in safety mode         Performance level according to ISO 13849-1         PLe         SIL acc. to IEC 61508         Other colspan="2">Colspan="2">SIL acc. to IEC 61508         Image: Colspan="	<ul> <li>Limit class A, for use in industrial areas</li> </ul>	Yes; Group 1
IP degree of protection       IP20         Standards, approvals, certificates	Limit class B, for use in residential areas	
Standards, approvals, certificates         CE mark       Yes         UL approval       Yes         cULus       Yes         FM approval       Yes         RCM (formerly C-TICK)       Yes         RCM (formerly C-TICK)       Yes         Marine approval       Yes         Marine approval       Yes         Highest safety class achievable in safety mode       Yes         • Performance level according to ISO 13849-1       PLe         • SIL acc. to IEC 61508       SIL 3         Ambient conditions       Free fail         • Frail height, max.       0.3 m; five times, in product package         Ambient temperature during operation       or C         • min.       0 °C         • min.       0 °C         • horizontal installation, min.       0 °C         • horizontal installation, min.       0 °C         • vertical installation, max.       55 °C         • vertical installation, max.       55 °C         • vertical installation, max.       45 °C         Ambient temperature during storage/transportation <td>Degree and class of protection</td> <td></td>	Degree and class of protection	
CE mark       Yes         UL approval       Yes         cULus       Yes         FM approval       Yes         RCM (formerly C-TICK)       Yes         KC approval       Yes         Marine approval       Yes         Highest safety class achievable in safety mode       Yes         • Performance level according to ISO 13849-1       PLe         • SIL acc. to IEC 61508       SIL 3         Ambient conditions       SIL 3         Free fail       •         • Fail height, max.       0.3 m; five times, in product package         Ambient temperature during operation       •         • min.       0 °C         • max.       55 °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.       0 °C         • horizontal installation, max.       55 °C         • vertical installation, min.       0 °C         • vertical installation, max.       45 °C         • vertical installation, max.       45 °C	IP degree of protection	IP20
UL approval       Yes         UL approval       Yes         EM approval       Yes         FM approval       Yes         RCM (formerly C-TICK)       Yes         KC approval       Yes         Marine approval       Yes         Marine approval       Yes         Highest safety class achievable in safety mode       Yes         • Performance level according to ISO 13849-1       PLe         • SIL acc. to IEC 61508       SIL 3         Ambient conditions       Free fail         • Fail height, max.       0.3 m; five times, in product package         Ambient temperature during operation       0 °C         • min.       0 °C         • max.       55 °C; Number of simultaneously activated inputs 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.       0 °C         • horizontal installation, min.       0 °C         • vertical installation, max.       45 °C         Ambient temperature during storage/transportation       °C	Standards, approvals, certificates	
cULus       Yes         FM approval       Yes         RCM (formerly C-TICK)       Yes         RCM (formerly C-TICK)       Yes         KC approval       Yes         Marine approval       Yes         Highest safety class achievable in safety mode       Yes         • Performance level according to ISO 13849-1       PLe         • SIL acc. to IEC 61508       SIL 3         Ambient conditions       SIL 3         Free fall       0 °C         • Fall height, max.       0.3 m; five times, in product package         Ambient temperature during operation       0 °C         • min.       0 °C         • max.       55 °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 installation, min.         • horizontal installation, min.       0 °C         • vertical installation, min.       0 °C         • vertical installation, max.       45 °C         Ambient temperature during storage/transportation       45 °C	CE mark	Yes
FM approval       Yes         RCM (formerly C-TICK)       Yes         RCM (formerly C-TICK)       Yes         KC approval       Yes         Marine approval       Yes         Marine approval       Yes         Highest safety class achievable in safety mode       •         • Performance level according to ISO 13849-1       PLe         • SiL acc. to IEC 61508       SiL 3         Ambient conditions       SiL 3         Free fall       •         • Fall height, max.       0.3 m; five times, in product package         Ambient temperature during operation       •         • min.       0 °C         • max.       55 °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.       0 °C         • horizontal installation, min.       0 °C         • vertical installation, min.       0 °C         • vertical installation, max.       55 °C         • vertical installation, max.       45 °C         • vertical installation, max.       45 °C	UL approval	Yes
RCM (formerly C-TICK)       Yes         KC approval       Yes         Marine approval       Yes         Highest safety class achievable in safety mode       Yes         • Performance level according to ISO 13849-1       PLe         • SIL acc. to IEC 61508       SIL 3         Ambient conditions       SIL 3         Free fall       0.3 m; five times, in product package         • Fall height, max.       0.3 m; five times, in product package         Ambient temperature during operation       0 °C         • min.       0 °C         • max.       55 °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 installation, min.         • horizontal installation, min.       0 °C         • vertical installation, min.       0 °C         • vertical installation, max.       55 °C         • vertical installation, max.       45 °C         Ambient temperature during storage/transportation       45 °C		Yes
KC approval       Yes         Marine approval       Yes         Highest safety class achievable in safety mode       Performance level according to ISO 13849-1         • Performance level according to ISO 13849-1       PLe         • SIL acc. to IEC 61508       SIL 3         Ambient conditions       Free fall         • Fall height, max.       0.3 m; five times, in product package         Ambient temperature during operation       0 °C         • min.       55 °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.       0 °C         • horizontal installation, min.       0 °C         • vertical installation, min.       0 °C         • vertical installation, max.       45 °C         • vertical installation, max.       45 °C		
Marine approval       Yes         Highest safety class achievable in safety mode       Performance level according to ISO 13849-1       PLe         • SIL acc. to IEC 61508       SIL 3         Ambient conditions       SIL 3         Free fall       0.3 m; five times, in product package         • Fall height, max.       0.3 m; five times, in product package         Ambient temperature during operation       0 °C         • max.       0 °C         • max.       55 °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.       0 °C         • horizontal installation, min.       0 °C         • vertical installation, min.       0 °C         • vertical installation, max.       55 °C         • vertical installation, max.       55 °C         • vertical installation, max.       45 °C         • vertical installation, max.       45 °C		
Highest safety class achievable in safety mode         • Performance level according to ISO 13849-1       PLe         • SIL acc. to IEC 61508       SIL 3         Ambient conditions       Image: Sile accident according to ISO 13849-1         Free fall       0.3 m; five times, in product package         Ambient temperature during operation       0 °C         • max.       0 °C         • max.       55 °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.       0 °C         • horizontal installation, min.       0 °C         • vertical installation, min.       0 °C         • vertical installation, max.       55 °C         • vertical installation, min.       0 °C         • vertical installation, min.       0 °C         • vertical installation, max.       55 °C         • vertical installation, min.       0 °C         • vertical installation, min.       0 °C         • vertical installation, min.       0 °C         • vertical installation, max.       45 °C         • Ambient temperature during storage/transportation       45 °C		
• Performance level according to ISO 13849-1       PLe         • SIL acc. to IEC 61508       SIL 3         Ambient conditions       •         Free fall       0.3 m; five times, in product package         Ambient temperature during operation       • °C         • min.       0 °C         • max.       55 °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.       0 °C         • horizontal installation, max.       55 °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.       0 °C         • vertical installation, max.       55 °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.       0 °C         • vertical installation, max.       45 °C         • vertical installation, max.       45 °C         • vertical installation, max.       45 °C		Yes
• SIL acc. to IEC 61508       SIL 3         Ambient conditions       Free fall         • Fall height, max.       0.3 m; five times, in product package         Ambient temperature during operation       0 °C         • min.       0 °C         • max.       55 °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.       0 °C         • horizontal installation, max.       55 °C         • vertical installation, max.       0 °C         • vertical installation, max.       55 °C         • vertical installation, max.       55 °C         • vertical installation, max.       55 °C         • vertical installation, max.       45 °C         • Ambient temperature during storage/transportation       45 °C		
Ambient conditions         Free fall         • Fall height, max.       0.3 m; five times, in product package         Ambient temperature during operation         • min.       0 °C         • max.       55 °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.       0 °C         • horizontal installation, max.       55 °C         • vertical installation, min.       0 °C         • vertical installation, max.       55 °C         • vertical installation, min.       0 °C         • vertical installation, max.       45 °C         Ambient temperature during storage/transportation       45 °C	<sup>o</sup>	
Free fall       0.3 m; five times, in product package         Ambient temperature during operation       0 °C         • min.       0 °C         • max.       55 °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.       0 °C         • horizontal installation, max.       55 °C         • vertical installation, min.       0 °C         • vertical installation, max.       55 °C         • vertical installation, min.       0 °C         • vertical installation, max.       45 °C         • Ambient temperature during storage/transportation       45 °C		SIL 3
• Fall height, max.       0.3 m; five times, in product package         Ambient temperature during operation         • min.       0 °C         • max.       55 °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.       0 °C         • horizontal installation, max.       55 °C         • vertical installation, min.       0 °C         • vertical installation, max.       55 °C         • vertical installation, max.       55 °C         • vertical installation, max.       45 °C         Ambient temperature during storage/transportation       45 °C		
Ambient temperature during operation       0 °C         • min.       0 °C         • max.       55 °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.       0 °C         • horizontal installation, max.       55 °C         • vertical installation, min.       0 °C         • vertical installation, max.       55 °C         • vertical installation, max.       60 °C         • vertical installation, max.       55 °C         • vertical installation, max.       45 °C         • Ambient temperature during storage/transportation       45 °C		
• min.       0 °C         • max.       55 °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.       0 °C         • horizontal installation, max.       55 °C         • vertical installation, min.       0 °C         • vertical installation, max.       55 °C         • vertical installation, max.       0 °C         • vertical installation, max.       45 °C         • Vertical installation, max.       45 °C		U.3 m; five times, in product package
<ul> <li>max.</li> <li>b max.</li> <li>c max.</li> <lic li="" max.<=""> <li>c max.</li></lic></ul>		0.00
points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C         • horizontal installation, min.       0 °C         • vertical installation, max.       55 °C         • vertical installation, min.       0 °C         • vertical installation, min.       0 °C         • vertical installation, min.       0 °C         • vertical installation, max.       45 °C         • Vertical installation, max.       45 °C		
<ul> <li>horizontal installation, max.</li> <li>vertical installation, min.</li> <li>vertical installation, max.</li> <li>vertical installation, max.</li> <li>45 °C</li> <li>Ambient temperature during storage/transportation</li> </ul>	• max.	points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C
vertical installation, min.     0 °C     vertical installation, max.     45 °C Ambient temperature during storage/transportation	<ul> <li>horizontal installation, min.</li> </ul>	0 °C
vertical installation, max. 45 °C Ambient temperature during storage/transportation	<ul> <li>horizontal installation, max.</li> </ul>	55 °C
Ambient temperature during storage/transportation	• vertical installation, min.	0 °C
	• vertical installation, max.	45 °C
• min40 °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	5 000 m, Restrictions for installation antitudes > 2 000 m, see manual
· · · · · · · · · · · · · · · · · · ·	05 % : no condensation
Operation, max. Vibrations	95 %; no condensation
	$2 = (m/s^2)$ well mounting $4 = (m/s^2)$ DIM soil
<ul> <li>Vibration resistance during operation acc. to IEC 60068- 2-6</li> </ul>	2 g (m/s <sup>2</sup> ) wall mounting, 1 g (m/s <sup>2</sup> ) 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
Pollutant concentrations	
<ul> <li>SO2 at RH &lt; 60% without condensation</li> </ul>	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
configuration / header	
configuration / programming / header	
Programming language	
— LAD	Yes; incl. failsafe
— FBD	Yes; incl. failsafe
— SCL	Yes
Know-how protection	
<ul> <li>User program protection/password protection</li> </ul>	Yes
Copy protection	Yes
Block protection	Yes
Access protection	
Protection level: Write protection	Yes
<ul> <li>Protection level: Read/write protection</li> </ul>	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.	385 g
last modified	2/42/2024

last modified:

3/12/2024 🖸