## **SIEMENS**

## **Data sheet**

6ES7215-1AF40-0XB0



SIMATIC S7-1200F, CPU 1215 FC, compact CPU, DC/DC/DC, 2 PROFINET ports, onboard I/O: 14 DI 24 V DC; 10 DO 24 V DC; 0.5A; 2 AI 0-10 V DC, 2 AO 0-20 mA DC, Power supply: DC 20.4-28.8V DC, Program/data memory 150 KB

Product type designation CPU 1215FC DC/DC/DC Firmware version V4.5 Engineering with  • Programming package STEP 7 V17 or higher  Supply vottage  Rated value (DC)  • 24 V DC  permissible range, lower limit (DC)  permissible range, upper limit (DC)  • 28.8 V  Reverse polarity protection Yes  Load voltage L+  • Rated value (DC)  • permissible range, upper limit (DC)  permissible range, upper limit (DC)  permissible range, upper limit (DC)  • perm	General information	
Engineering with  Programming package  STEP 7 V17 or higher  Supply voltage  Rated value (DC)  24 V DC  permissible range, lower limit (DC)  permissible range, upper limit (DC)  Reverse polarity protection  Load voltage L+  Rated value (DC)  permissible range, lower limit (DC)  permissible range, upper limit (DC)  permissible range, lower limit (DC)  permissible range, lower limit (DC)  permissible range, lower limit (DC)  permissible range, upper limit (DC)  permissible range, lower lim	Product type designation	CPU 1215FC DC/DC/DC
Programming package  Supply voltage  Rated value (DC)  • 24 V DC  permissible range, lower limit (DC)  permissible range, lower limit (DC)  Load voltage L+  • Rated value (DC)  • permissible range, lower limit (DC)  Permissible range, lower limit (DC)  • permissible range, upper limit (DC)  • permissible range, lower limit (DC)  • permissible range, lower limit (DC)  • permissible range, upper limit (DC)  • permissible range, upper limit (DC)  • permissible range, lower limit (DC)  • permissible range, upper limit (DC)	Firmware version	V4.5
Rated value (DC)  • 24 V DC  permissible range, lower limit (DC)  permissible range, upper limit (DC)  Reverse polarity protection  Pes  Load voltage L+  • Rated value (DC)  • permissible range, lower limit (DC)  permissible range, upper limit (DC)  • permissible range, lower limit (DC)  •	Engineering with	
Rated value (DC)  • 24 V DC  permissible range, lower limit (DC)  permissible range, upper limit (DC)  Reverse polarity protection  Load voltage L+  • Rated value (DC)  • permissible range, lower limit (DC)  permissible range, lower limit (DC)  • permissible range, upper limit (DC)  28.8 V  Input current  Current consumption (rated value)  Current consumption, max.  1 500 mA; CPU only  Current consumption, max.  1 500 mA; CPU with all expansion modules  Inrush current, max.  12 A; at 28.8 V DC  Pt  Output current  for backplane bus (5 V DC), max.  1 600 mA; Max. 5 V DC for SM and CM  Encoder supply  4 V encoder supply  • 24 V  L+ minus 4 V DC min.  Power loss  Power loss, typ.  12 W  Memory  Work memory  • integrated  • expandable  No  Load memory  • integrated  • Plug-in (SIMATIC Memory Card), max.  Backup  • present  • maintenance-free  Yes	Programming package	STEP 7 V17 or higher
Permissible range, lower limit (DC)     Permissible range, upper limit (DC)     Permissible range, upper limit (DC)     Permissible range, upper limit (DC)     Permissible range, lower limit (DC)     Permissible range, lower limit (DC)     Permissible range, lower limit (DC)     Permissible range, upper limit (DC)     Permissible range, lower limit (DC)     Permissible range, upper limit (DC)     P	Supply voltage	
permissible range, lower limit (DC) permissible range, upper limit (DC) Reverse polarity protection Yes  Load voltage L+  Reverse polarity protection Permissible range, lower limit (DC) permissible range, upper	Rated value (DC)	
permissible range, upper limit (DC)  Reverse polarity protection  Load voltage L+  Rated value (DC) permissible range, lower limit (DC) permissible range, upper limit (DC)  Revert consumption (rated value)  Current consumption (rated value) Current consumption, max. 1 500 mA; CPU only Current consumption, max. 1 2 A; at 28.8 V DC Pt Dutput current for backplane bus (5 V DC), max. 1 600 mA; Max. 5 V DC for SM and CM  Encoder supply 24 V encoder supply 24 V encoder supply Val V encoder supply Power loss Power loss, typ.  Memory Work memory integrated perpandable No  Load memory integrated Plug-in (SIMATIC Memory Card), max.  With SIMATIC memory card Present pr	• 24 V DC	Yes
Reverse polarity protection  Load voltage L+  • Rated value (DC) • permissible range, lower limit (DC) • permissible range, upper limit (DC) 28.8 V  Input current  Current consumption (rated value)  Current consumption, max. 1 500 mA; CPU only  Current consumption, max. 1 500 mA; CPU with all expansion modules  Inrush current, max. 1 2 A; at 28.8 V DC  It  Output current  for backplane bus (5 V DC), max. 1 600 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. 12 W  Memory  Work memory • integrated • expandable No  Load memory • integrated • present • Yes • maintenance-free  Yes	permissible range, lower limit (DC)	20.4 V
Load voltage L+  • Rated value (DC) • permissible range, lower limit (DC) • permissible range, upper limit (DC) • permissible range, upper limit (DC)  • permissible range, upper limit (DC)  • permissible range, upper limit (DC)  Input current  Current consumption (rated value)  Current consumption, max.  1 500 mA; CPU only  Current consumption, max.  1 2 00 mA; CPU with all expansion modules  Inrush current, max.  1 2 A; at 28.8 V DC  Pt  0 0.5 A²-s  Output current  for backplane bus (5 V DC), max.  1 600 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.  12 W  Memory  Work memory  • integrated • expandable No  Load memory  • integrated • Plug-in (SIMATIC Memory Card), max.  with SIMATIC memory card  Backup  • present • present • maintenance-free  Yes	permissible range, upper limit (DC)	28.8 V
■ Rated value (DC) ■ permissible range, lower limit (DC) ■ permissible range, upper limit (DC) ■ permissible range, upper limit (DC) ■ 28.8 V    Input current   Current consumption (rated value)   Current consumption, max.	Reverse polarity protection	Yes
• permissible range, lower limit (DC)     • permissible range, upper limit (DC)     • permissible range, upper limit (DC)     • permissible range, upper limit (DC)    28.8 V	Load voltage L+	
permissible range, upper limit (DC)  Input current  Current consumption (rated value)  Current consumption, max.  1 500 mA; CPU with all expansion modules  Inrush current, max.  12 A; at 28.8 V DC  It  Output current  for backplane bus (5 V DC), max.  Incoder supply  24 V encoder supply  24 V encoder supply  24 V encoder supply  24 V encoder supply  25 V Endough Incode	<ul> <li>Rated value (DC)</li> </ul>	24 V
Input current Current consumption (rated value)  Current consumption, max.  Inrush current, max.  It and at 28.8 V DC  If to 0.5 A2-s  Output current  for backplane bus (5 V DC), max.  Incoder supply  24 V encoder supply  24 V L+ minus 4 V DC min.  Power loss  Power loss, typ.  It w  Memory  Work memory  integrated  expandable  Load memory  integrated  Plug-in (SIMATIC Memory Card), max.  Backup  present  present  yes  500 mA; CPU with all expansion modules  1500 mA; OPU with all expansion modules  12 W at 28.8 V DC  12 W at 28.8 V DC  12 W at 28.8 V DC  1500 mA; Max. 5 V DC for SM and CM  Emoure  Leminus 4 V DC min.  Power loss  Power loss, typ.  12 W  Memory  Work memory  integrated  present  yes	<ul> <li>permissible range, lower limit (DC)</li> </ul>	20.4 V
Current consumption (rated value)  Current consumption, max.  Inrush current, max.  It is a current, max.  Inrush current, max.  It is a current  It is a curr	<ul> <li>permissible range, upper limit (DC)</li> </ul>	28.8 V
Current consumption, max.  Inrush current, max.  It and a separation of the separati	Input current	
Inrush current, max.  It 2 A; at 28.8 V DC  Output current  for backplane bus (5 V DC), max.  It 600 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.  It W  Memory  Work memory  • integrated • expandable  Load memory  • integrated • Plug-in (SIMATIC Memory Card), max.  Backup • present • present • present • maintenance-free  Yes	Current consumption (rated value)	500 mA; CPU only
Power loss   150 kbyte   150	Current consumption, max.	1 500 mA; CPU with all expansion modules
Output current  for backplane bus (5 V DC), max.  1 600 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.  12 W  Memory  Work memory  • integrated • expandable  No  Load memory  • integrated • Plug-in (SIMATIC Memory Card), max.  Backup  • present • present • maintenance-free  Yes	Inrush current, max.	12 A; at 28.8 V DC
for backplane bus (5 V DC), max.  1 600 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.  12 W  Memory  Work memory  • integrated • expandable  Load memory  • integrated • Plug-in (SIMATIC Memory Card), max.  Backup • present • present • maintenance-free  Yes	l²t	0.5 A <sup>2</sup> ·s
Encoder supply  24 V encoder supply  • 24 V  L+ minus 4 V DC min.  Power loss  Power loss, typ.  12 W  Memory  Work memory  • integrated • expandable  Load memory  • integrated • plug-in (SIMATIC Memory Card), max.  Backup • present • present • maintenance-free  Yes	Output current	
24 V encoder supply  • 24 V  L+ minus 4 V DC min.  Power loss  Power loss, typ.  12 W  Memory  Work memory  • integrated • expandable  Load memory  • integrated • Plug-in (SIMATIC Memory Card), max.  Backup • present • maintenance-free  Yes	for backplane bus (5 V DC), max.	1 600 mA; Max. 5 V DC for SM and CM
● 24 V L+ minus 4 V DC min.  Power loss  Power loss, typ. 12 W  Memory  Work memory  ● integrated 150 kbyte  ● expandable No  Load memory  ● integrated 4 Mbyte  ● plug-in (SIMATIC Memory Card), max. with SIMATIC memory card  Backup  ● present Yes  ● maintenance-free Yes	Encoder supply	
Power loss Power loss, typ.  12 W  Memory  Work memory  integrated  expandable  Load memory  integrated  fintegrated  Plug-in (SIMATIC Memory Card), max.  Backup  present  maintenance-free  Yes	24 V encoder supply	
Power loss, typ.  Memory  Work memory  integrated expandable  Load memory  integrated Plug-in (SIMATIC Memory Card), max.  Backup  present maintenance-free  150 kbyte No  4 Mbyte No  4 Mbyte With SIMATIC memory card  Yes	• 24 V	L+ minus 4 V DC min.
Memory  Work memory  integrated expandable  Load memory integrated Plug-in (SIMATIC Memory Card), max.  Backup  present maintenance-free  Yes	Power loss	
Work memory  integrated expandable No  Load memory integrated Plug-in (SIMATIC Memory Card), max.  Backup  present maintenance-free Yes	Power loss, typ.	12 W
<ul> <li>integrated</li> <li>expandable</li> <li>No</li> </ul> Load memory <ul> <li>integrated</li> <li>Plug-in (SIMATIC Memory Card), max.</li> <li>Backup</li> <li>present</li> <li>maintenance-free</li> </ul> Yes <ul> <li>Yes</li> </ul>	Memory	
<ul> <li>expandable</li> <li>Load memory</li> <li>integrated</li> <li>Plug-in (SIMATIC Memory Card), max.</li> <li>Backup</li> <li>present</li> <li>maintenance-free</li> <li>No</li> <li>4 Mbyte</li> <li>with SIMATIC memory card</li> <li>Yes</li> </ul>	Work memory	
Load memory  • integrated • Plug-in (SIMATIC Memory Card), max. with SIMATIC memory card  Backup  • present • maintenance-free  Yes	<ul><li>integrated</li></ul>	150 kbyte
<ul> <li>integrated</li> <li>Plug-in (SIMATIC Memory Card), max.</li> <li>Backup</li> <li>present</li> <li>maintenance-free</li> <li>Yes</li> <li>Yes</li> </ul>	expandable	No
<ul> <li>Plug-in (SIMATIC Memory Card), max.</li> <li>Backup</li> <li>present</li> <li>maintenance-free</li> <li>Yes</li> <li>Yes</li> </ul>	Load memory	
Backup	<ul><li>integrated</li></ul>	4 Mbyte
<ul> <li>present</li> <li>maintenance-free</li> <li>Yes</li> </ul>	<ul> <li>Plug-in (SIMATIC Memory Card), max.</li> </ul>	with SIMATIC memory card
• maintenance-free Yes	Backup	
	<ul><li>present</li></ul>	Yes
• without battery Yes	<ul> <li>maintenance-free</li> </ul>	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.	8 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	
<ul> <li>Inputs, adjustable</li> </ul>	1 kbyte
<ul> <li>Outputs, adjustable</li> </ul>	1 kbyte
Hardware configuration	
Number of modules per system, max.	3 comm. modules, 1 signal board, 8 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	14; Integrated
of which inputs usable for technological functions	6; HSC (High Speed Counting)
Source/sink input	Yes
Number of simultaneously controllable inputs	
all mounting positions	
— up to 40 °C, max.	14
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
A HON A MATERIAL TO	in groups of four
— at "0" to "1", min.	0.2 ms
— at "0" to "1", max.	12.8 ms
for interrupt inputs	N.
— parameterizable	Yes
for technological functions	0. 1 1 0.0 40011. 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
— parameterizable	Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz
Cable length	FOO my FO or factor backers in 15 or 15
• shielded, max.	500 m; 50 m for technological functions
• unshielded, max.	300 m; for technological functions: No
Digital outputs	
Number of digital outputs	10
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	0.5.4
with resistive load, max.	0.5 A
<ul><li>on lamp load, max.</li></ul>	5 W

Output voltage	
Output voltage	0.1 \/: with 10 kOhm load
• for signal "1", max.	0.1 V; with 10 kOhm load
• for signal "1", min.	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	
• "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	
<ul><li>shielded, max.</li></ul>	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	2
Output ranges, current	2
• 0 to 20 mA	Yes
Analog value generation for the inputs	165
Integration and conversion time/resolution per channel	40 1:4
Resolution with overrange (bit including sign), max.	10 bit
Integration time, parameterizable	Yes
Conversion time (per channel)	625 μs
Analog value generation for the outputs	
Integration and conversion time/resolution per channel	
<ul> <li>Resolution with overrange (bit including sign), max.</li> </ul>	10 bit
Encoder	
Connectable encoders	
• 2-wire sensor	Yes
1. Interface	
Interface type	PROFINET
Isolated	Yes
automatic detection of transmission rate	Yes
Autonegotiation	Yes
Autorossing	Yes
Interface types	100
	Yes
RJ 45 (Ethernet)     Number of ports	2
Number of ports     integrated switch	Yes
• integrated switch	1 55
Protocols  - PROFINET IO Controller	Voc
PROFINET IO Controller     PROFINET IO Dovice	Yes
PROFINET IO Device     NATIO appropriation	Yes
SIMATIC communication	Yes
Open IE communication	Yes; Optionally also encrypted
Web server	Yes
Web server     Media redundancy	
Web server	Yes

Sanvicas	
Services	Voca operation with TLC V/4 2 are selected
— PG/OP communication	Yes; encryption with TLS V1.3 pre-selected
— Isochronous mode	No
— IRT	No
— PROFlenergy	No
<ul><li>— Prioritized startup</li></ul>	Yes
<ul> <li>Number of IO devices with prioritized startup, max.</li> </ul>	16
<ul> <li>Number of connectable IO Devices, max.</li> </ul>	16
<ul> <li>Number of connectable IO Devices for RT,</li> </ul>	16
max.	
— of which in line, max.	16
<ul> <li>Activation/deactivation of IO Devices</li> </ul>	Yes
<ul> <li>Number of IO Devices that can be</li> </ul>	8
simultaneously activated/deactivated, max.	
<ul><li>Updating time</li></ul>	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	devices and the quantity of configured user data.
Services	
— PG/OP communication	Yes; encryption with TLS V1.3 pre-selected
— Isochronous mode	No
— ISOCITIONOUS Mode  — IRT	No
	Yes
PROFlenergy      Shared device	Yes
<ul> <li>Number of IO Controllers with shared device, max.</li> </ul>	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	
Protocols (Ethernet)	Yes; CM 1243-2 required
·	Voo
TCP/IP  DHCP	Yes
	No
• SNMP	Yes
• DCP	Yes
LLDP  Podundanay mada	Yes
Redundancy mode	
Media redundancy	Voc. on MPD redundancy manager and/or MPD allers
— MRP	Yes; as MRP redundancy manager and/or MRP client
— MRPD	No
SIMATIC communication	Voc
S7 routing  Open IF communication	Yes
Open IE communication	Voc
TCP/IP      Date langth may	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	V
• 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
<ul> <li>User authentication</li> </ul>	"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>	50
<ul><li>— Sampling interval, min.</li></ul>	100 ms
— Publishing interval, min.	200 ms
<ul> <li>Number of server methods, max.</li> </ul>	20
<ul> <li>Number of monitored items, 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, max.</li> </ul>	2 000
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	oce offinite field (or confinitumentalism, user data size)
• overall	PG Connections: 4 reserved / 4 max: HMI Connections: 12 reserved /
• Gyordii	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	
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	
<ul> <li>Potential separation digital inputs</li> </ul>	No
between the channels, in groups of	1
Potential separation digital outputs	
<ul> <li>Potential separation digital outputs</li> </ul>	Yes
<ul><li>between the channels</li></ul>	No
between the channels, in groups of	1
EMC	
Interference immunity against discharge of static electricity	
<ul> <li>Interference immunity against discharge of static electricity acc. to IEC 61000-4-2</li> </ul>	Yes

- Test voltage at contact discharge - Test voltage at contact discharge   Interference immunity to cable-borne interference   Interference immunity on supply lines acc. to IEC 61000-4-4   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 high-frequency radiation acc. to IEC 61000-4-5   Interference immunity against conducted variable disturbance induced by high-frequency fields   Ves
Interference immunity to cable-borne interference  Interference immunity on supply lines acc. to IEC 610004-4  Interference immunity and signal cables acc. to IEC 610004-4  Interference immunity against voltage surge  Interference immunity against voltage surge  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 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 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  Yes  Interference immunity against conducted variable disturbance induced by high-frequency fields  Yes  Frought for a field of the field of t
Interference immunity on supply lines acc. to IEC 61000-4-4 Interference immunity against voltage surge Interference immunity against tonducted variable disturbance induced by high-frequency fields Interference immunity against fligh-frequency radiation acc. to IEC 61000-4-5 Interference immunity against fligh-frequency radiation acc. to IEC 61000-4-6 Emission of radio interference acc. to EN 55 011 Limit class B, for use in residential areas Limit class B,
Interference immunity on signal cables acc. to IEC 61000-4-5  Interference immunity against voltage surge  Interference immunity against voltage surge  Interference immunity against conducted variable disturbance induced by high-frequency fields  Interference immunity against shigh-frequency radiation acc. to IEC 61000-4-6  Emission of radio interference acc. to EN 55 011  Limit class A, for use in industrial areas  Imit class B, for use in residential area
Interference immunity on supply lines acc. to IEC 61000-4-5  Interference immunity against conducted variable disturbance induced by high-frequency fields  Interference immunity against high-frequency radiation acc. to IEC 61000-4-6  Emission of radio interference acc. to EN 55 011  Imit class A, for use in industrial areas 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, approvals, certificates  CE mark Ves UL approval Yes GULus Yes FM approval Yes FM approval Yes RCM (formerly C-TICK) Yes KC approval Yes Highest safety class achievable in safety mode Performance level according to ISO 13849-1 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  min.  The max.  O ° C  ST ° 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 Por C vertical installation, min.  Horizontal installation, min.  Horizon
Interference immunity against conducted variable disturbance induced by high-frequency fields  Interference immunity against high-frequency radiation acc. to IEC 61000-4-6  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 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  Pegree and class of protection IP20  Standards, approvals, certificates CE mark Ves 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 SIL acc. to IEC 61508 SIL 3  Ambient conditions Free fail Field Height, max. Ambient temperature during operation  min.  min.  max.  55 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal installation, min.  horizontal installation, min.  horizontal installation, min.  horizontal installation, min.  vertical installation, min.  vertical installation, max.  45 °C  Ambient temperature during storage/transportation  min.  vertical installation, max.  45 °C  Ambient temperature during storage/transportation  min.  min.  vertical installation, max.  45 °C  Ambient temperature during storage/transportation  min.  min.  min.  40 °C  max.
Interference immunity against high-frequency radiation acc. to IEC 610004-6
radiation acc. to IEC 61000-4-6 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  Pegree and class of protection  IP degree of protection  IP20  Standards, approvals, certificates  CE mark  Ves UL approval  Ves UL approval  Yes FM approval  KC approval  Marine approval  Peferormance level according to ISO 13849-1  • SIL acc. to IEC 61508  Ambient conditions  Free fall  • Fall height, max.  Ambient temperature during operation  • min.  • horizontal installation, min.  • horizontal installation, max.  • vertical installation, max.  • min.  • max.   **Tes **Comparison**  Yes  Yes  Yes  Yes  Yes  Yes  PLe  • SIL 3  **Ambient conditions  Free fall  • horizontal installation, min.  • horizontal installation, max.  • vertical installation, max.  • vertical installation, max.  • vertical installation, max.  • vertical installation, max.  • wertical installation, max.  • min.
Limit class A, for use in industrial areas Limit class B, for use in residential areas Limit class B, for use in residential areas  Pegree and class of protection  IP degree of protection IP degree of protection  IP degree of protection  IP20  Standards, approvals, certificates  CE mark Ves UL approval Yes CULus FM approval Yes RCM (formerly C-TICK) KC approval Highest safety class achievable in safety mode Performance level according to ISO 13849-1 SIL acc. to IEC 61508 SIL 3  Ambient conditions  Free fall Fall height, max. Ambient temperature during operation  min. o °C horizontal installation, min. horizontal installation, min. horizontal installation, min. vertical installation, max.  Nemin.  -40 °C min40 °C
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  UL approval  Yes  CULus  FM approval  Yes  RCM (formerly C-TICK)  KC approval  Amine approval  Performance level according to ISO 13849-1  SIL acc. to IEC 61508  Ambient conditions  Free fall  Free fall  Fall height, max.  Ambient temperature during operation  min.  horizontal installation, min.  horizontal installation, min.  horizontal installation, min.  vertical installation, min.  vertical installation, max.  Ambient temperature during storage/transportation  win.  vertical installation, max.  45 °C  Ambient temperature during storage/transportation  win.  vertical installation, max.  45 °C  Ambient temperature during storage/transportation  win.  vertical installation, max.  45 °C  Ambient temperature during storage/transportation  min.  vertical installation, max.  vertical installation, max.  min.  -40 °C  min.  min.  -40 °C  min.  min.  -40 °C  min.  min.  -40 °C  min.  -40 °C  min.  -40 °C
the limits for Class B according to EN 55011    Degree and class of protection   IP20
IP degree of protection IP20  Standards, approvals, certificates  CE mark Yes UL approval Yes CULus Yes FM approval Yes RCM (formerly C-TICK) Yes Marine approval Yes Marine approval Yes Highest safety class achievable in safety mode  Performance level according to ISO 13849-1 SIL acc. to IEC 61508 SIL 3  Ambient conditions  Free fall  Fall height, max.  Ambient temperature during operation  min.  max.  0 °C 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 installation, min.  horizontal installation, max.  vertical installation, max.  vertical installation, min.  vertical installation, max.  Ambient temperature during storage/transportation  min.  vertical installation, max.  45 °C  Ambient temperature during storage/transportation  min.  vertical installation, max.  45 °C  min.  -40 °C  70 °C
Standards, approvals, certificates  CE mark  UL approval  CULus  Yes  CULus  Yes  RCM (formerly C-TICK)  KC approval  Marine approval  Performance level according to ISO 13849-1  SIL acc. to IEC 61508  Ambient conditions  Free fall  Fall height, max.  O.3 m; five times, in product package  Ambient temperature during operation  o min.  o "C  horizontal installation, min.  o "C  vertical installation, max.  standards, approval  Yes  Yes  PLe  SIL 3  Ambient temperature during operation  o "C  horizontal installation, min.  o "C  vertical installation, min.  o "C  vertical installation, min.  o "C  Ambient temperature during storage/transportation  o min.  o "C  Ambient temperature during storage/transportation  o min.  o "C  Ambient temperature during storage/transportation  o min.  o "C  -40 "C  -40 "C  -70 "C
CE mark  UL approval  Ves  CULus  Yes  FM approval  Yes  RCM (formerly C-TICK)  Yes  KC approval  Marine approval  Performance level according to ISO 13849-1  • SIL acc. to IEC 61508  Ambient conditions  Free fall  • Fall height, max.  Ambient temperature during operation  • min.  • max.  0 °C  • horizontal installation, min.  • horizontal installation, min.  • vertical installation, min.  • vertical installation, min.  • vertical installation, min.  • vertical installation, max.  Ambient temperature during storage/transportation  • min.  • vertical installation, max.  Ambient temperature during storage/transportation  • min.  • vertical installation, max.  • vertical installation, max.  Ambient temperature during storage/transportation  • min.  • vertical installation, max.  Ambient temperature during storage/transportation  • min.  • min.  • min.  • vertical installation, max.  Ambient temperature during storage/transportation  • min.
UL approval CULus FM approval FM approval PC (formerly C-TICK) Yes RCM (formerly C-TICK) Yes Marine approval Highest safety class achievable in safety mode Performance level according to ISO 13849-1 SIL acc. to IEC 61508 SIL 3  Ambient conditions Free fall PLe Fall height, max. 0.3 m; five times, in product package  Ambient temperature during operation min. O°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 installation, min. Norizontal installation, min. O°C Norizontal installation, min. O°C Norizontal installation, min. O°C Norizontal installation, min. O°C Norizontal installation, max. O°C Norizontal installation, max. O°C Norizontal installation, max. O°C Norizontal installation, max. O°C Norizontal installation, min. O°C Norizontal installation, min. O°C Norizontal installation, max. O°C Norizontal installation, max. O°C Norizontal installation, max. O°C Norizontal installation, max. O°C Norizontal installation, min. O°C
CULus  FM approval  FM approval  RCM (formerly C-TICK)  KC approval  Marine approval  Highest safety class achievable in safety mode  • Performance level according to ISO 13849-1  • SIL acc. to IEC 61508  Ambient conditions  Free fall  • Fall height, max.  • Pall height, max.  • o °C  • max.  • horizontal installation, min.  • horizontal installation, max.  • vertical installation, max.  • vertical installation, max.  • min.  • vertical installation, max.  • vertical installation, max.  • min.  • vertical installation, max.  • vertical installation, max.  • vertical installation, max.  • min.  • vertical installation, max.
CULus  FM approval  FM approval  RCM (formerly C-TICK)  KC approval  Araine approval  Performance level according to ISO 13849-1  SIL acc. to IEC 61508  Ambient conditions  Free fall  Fall height, max.  O.3 m; five times, in product package  Ambient temperature during operation  min.  max.  O°C  horizontal installation, min.  horizontal installation, max.  vertical installation, max.  vertical installation, max.  Ambient temperature during storage/transportation  o°C  horizontal installation, max.  vertical installation, max.  vertical installation, max.  o°C  Ambient temperature during storage/transportation  o°C
FM approval  RCM (formerly C-TICK)  Yes  KC approval  Yes  Marine approval  Performance level according to ISO 13849-1  • SIL acc. to IEC 61508  Ambient conditions  Free fall  • Fall height, max.  Ambient temperature during operation  • min.  • max.  • horizontal installation, min.  • horizontal installation, min.  • vertical installation, min.  • vertical installation, max.  Ambient temperature during storage/transportation  • min.  • vertical installation, max.  • vertical installation, max.  • vertical installation, max.  • min.  • m
RCM (formerly C-TICK)  KC approval  Marine approval  Highest safety class achievable in safety mode  Performance level according to ISO 13849-1  SIL acc. to IEC 61508  Ambient conditions  Free fall  Fall height, max.  Ambient temperature during operation  min.  max.  O °C  horizontal installation, min.  horizontal installation, min.  horizontal installation, min.  vertical installation, min.  vertical installation, min.  vertical installation, max.
Yes   Marine approval   Yes   Yes   Highest safety class achievable in safety mode   Performance level according to ISO 13849-1   SIL acc. to IEC 61508   SIL 3   SIL 3
Marine approval  Highest safety class achievable in safety mode  Performance level according to ISO 13849-1 SIL acc. to IEC 61508  Ambient conditions  Free fall Fall height, max.  0.3 m; five times, in product package  Ambient temperature during operation  min.  max.  0°C  horizontal installation, min. horizontal installation, min. horizontal installation, min. vertical installation, min. vertical installation, max.  Main acc.  Main acc.  Yes  PLe SIL 3  Ambient conditions  SIL 3  Ambient temperature during operation  0°C  horizontal operation  Nore horizontal installation, min.  O°C  vertical installation, max.  55°C  vertical installation, min.  O°C  vertical installation, min.  Vertical installation, max.  45°C  Ambient temperature during storage/transportation  min. min.  -40°C  max.  70°C
Highest safety class achievable in safety mode  Performance level according to ISO 13849-1 SIL acc. to IEC 61508 SIL 3  Ambient conditions  Free fall  Pall height, max.  O.3 m; five times, in product package  Ambient temperature during operation  or 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. horizontal installation, min. vertical installation, min. vertical installation, max. vertical installation, max.  vertical installation, max.  vertical installation, max.  vertical installation, max.  vertical installation, max.  vertical installation, max.  45°C  Ambient temperature during storage/transportation  min.  min.  -40°C  70°C
Performance level according to ISO 13849-1 SIL acc. to IEC 61508  SIL 3  Ambient conditions  Free fall  Fall height, max.  O.3 m; five times, in product package  Ambient temperature during operation  min.  max.  O °C  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.  horizontal installation, min.  horizontal installation, min.  vertical installation, min.  vertical installation, max.  vertical installation, max.  for C  Ambient temperature during storage/transportation  min.
SIL 3  Ambient conditions  Free fall  Fall height, max.  O.3 m; five times, in product package  Ambient temperature during operation  min.  max.  O°C  horizontal installation, min.  horizontal installation, min.  vertical installation, min.  vertical installation, min.  vertical installation, max.
Free fall  Fall height, max.  O.3 m; five times, in product package  Ambient temperature during operation  min.  max.  O °C  max.  S5°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.  horizontal installation, max.  vertical installation, min.  vertical installation, max.  vertical installation, max.  for a do °C  Ambient temperature during storage/transportation  min.  min.  -40 °C  70 °C
Free fall  Fall height, max.  O.3 m; five times, in product package  Ambient temperature during operation  min.  or 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.  or c  horizontal installation, max.  or vertical installation, min.  vertical installation, max.  vertical installation, max.  or c  Ambient temperature during storage/transportation  min.  -40 °C  70 °C
<ul> <li>Fall height, max.</li> <li>Ambient temperature during operation</li> <li>min.</li> <li>max.</li> <li>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 installation, min.</li> <li>horizontal installation, max.</li> <li>horizontal installation, min.</li> <li>vertical installation, min.</li> <li>vertical installation, max.</li> <li>vertical installation, max.</li> <li>vertical installation, max.</li> <li>min.</li> <li>40 °C</li> <li>max.</li> <li>min.</li> <li>m</li></ul>
Ambient temperature during operation  • min.  • max.  • max.  • horizontal installation, min.  • horizontal installation, min.  • vertical installation, max.  • vertical installation, max.  • vertical installation, max.  • wertical installation, max.  • vertical installation, max.
<ul> <li>min.</li> <li>max.</li> <li>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</li> <li>horizontal installation, min.</li> <li>horizontal installation, max.</li> <li>vertical installation, min.</li> <li>vertical installation, max.</li> <li>vertical installation, max.</li> <li>45 °C</li> </ul> Ambient temperature during storage/transportation <ul> <li>min.</li> <li>-40 °C</li> <li>max.</li> <li>70 °C</li> </ul>
adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical  • horizontal installation, min.  • horizontal installation, max.  • vertical installation, min.  • vertical installation, max.  45 °C  Ambient temperature during storage/transportation  • min.  • max.  -40 °C  70 °C
<ul> <li>horizontal installation, max.</li> <li>vertical installation, min.</li> <li>vertical installation, max.</li> <li>45 °C</li> </ul> Ambient temperature during storage/transportation <ul> <li>min.</li> <li>-40 °C</li> <li>max.</li> <li>70 °C</li> </ul>
<ul> <li>vertical installation, min.</li> <li>vertical installation, max.</li> <li>45 °C</li> </ul> Ambient temperature during storage/transportation <ul> <li>min.</li> <li>-40 °C</li> <li>max.</li> <li>70 °C</li> </ul>
<ul> <li>vertical installation, min.</li> <li>vertical installation, max.</li> <li>45 °C</li> </ul> Ambient temperature during storage/transportation <ul> <li>min.</li> <li>max.</li> </ul> -40 °C <ul> <li>max.</li> <li>70 °C</li> </ul>
<ul> <li>vertical installation, max.</li> <li>Ambient temperature during storage/transportation</li> <li>min.</li> <li>max.</li> <li>70 °C</li> </ul>
Ambient temperature during storage/transportation  • min.
<ul> <li>min.</li> <li>-40 °C</li> <li>max.</li> <li>70 °C</li> </ul>
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, min1 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
<ul> <li>Vibration resistance during operation acc. to IEC</li> <li>2 g (m/s²) wall mounting, 1 g (m/s²) DIN rail</li> <li>60068-2-6</li> </ul>
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
<ul> <li>Copy protection</li> </ul>	Yes
Block protection	Yes
Access protection	
<ul> <li>protection of confidential configuration data</li> </ul>	Yes
<ul> <li>Protection level: Write protection</li> </ul>	Yes
<ul> <li>Protection level: Read/write protection</li> </ul>	Yes
<ul> <li>Protection level: Complete protection</li> </ul>	Yes
programming / cycle time monitoring / header	
adjustable	Yes
Dimensions	
Width	130 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	500 g