## **SIEMENS**

## Data sheet

## 6ES7211-1HE40-0XB0

SIMATIC S7-1200, CPU 1211C, compact CPU, DC/DC/relay, onboard I/O: 6 DI 24 V DC; 4 DO relay 2A; 2 AI 0-10 V DC, Power supply: DC 20.4-28.8V DC, Program/data memory 50 KB



General information	
Product type designation	CPU 1211C DC/DC/relay
Firmware version	V4.2
Engineering with	
<ul> <li>Programming package</li> </ul>	STEP 7 V14 or higher
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Load voltage L+	
Rated value (DC)	24 V
<ul> <li>permissible range, lower limit (DC)</li> </ul>	20.4 V
• permissible range, upper limit (DC)	28.8 V
Input current	
Current consumption (rated value)	300 mA; CPU only
Current consumption, max.	900 mA; CPU with all expansion modules

Inrush current, max.	12 A; at 28.8 V DC
l²t	0.8 A <sup>2</sup> ·s
Output current	
for backplane bus (5 V DC), max.	750 mA; Max. 5 V DC for CM
Encoder cupply	
Encoder supply 24 V encoder supply	
• 24 V	L+ minus 4 V DC min.
Power loss	<b>A</b> W
Power loss, typ.	8 W
Memory	
Work memory	
• integrated	50 kbyte
• expandable	No
Load memory	
• integrated	1 Mbyte
<ul> <li>Plug-in (SIMATIC Memory Card), max.</li> </ul>	with SIMATIC memory card
Backup	
• present	Yes
maintenance-free	Yes
• without battery	Yes
CPU processing times	
for bit operations, typ.	0.08 μs; / instruction
for word operations, typ.	1.7 μs; / instruction
for floating point arithmetic, typ.	2.3 µs; / instruction
CPU-blocks	
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	Limited only by DAM for orde
• Number, max.	Limited only by RAM for code
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags),	10 kbyte
max.	
Flag	
• Number, max.	4 kbyte; Size of bit memory address area
Local data	
<ul> <li>per priority class, max.</li> </ul>	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
• Outputs, adjustable	1 kbyte
Hardware configuration Number of modules per system, max.	3 communication modules, 1 signal board
Time of day	
Clock	Nee
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	6; Integrated
<ul> <li>of which inputs usable for technological functions</li> </ul>	3; HSC (High Speed Counting)
Source/sink input	Yes
Number of simultaneously controllable inputs	
all mounting positions	
— up to 40 °C, max.	6
Input voltage	
<ul> <li>Rated value (DC)</li> </ul>	24 V
● for signal "0"	5 V DC at 1 mA
● for signal "1"	15 V DC at 2.5 mA
Input current	
<ul> <li>for signal "1", typ.</li> </ul>	4 mA; nominal
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 in 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, differential: 3 @ 80 kHz
Cable length	
• shielded, max.	500 m; 50 m for technological functions
• unshielded, max.	300 m; For technological functions: No
Digital outputs	
Number of digital outputs	4; 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 operating cycles, max.	mechanically 10 million, at rated load voltage 100 000
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
<ul> <li>Input resistance (0 to 10 V)</li> </ul>	≥100k ohms
Cable length	
<ul> <li>shielded, max.</li> </ul>	100 m; twisted and shielded
Analog outputs	
Number of analog outputs	0
Analog value generation for the inputs Integration and conversion time/resolution per channel	
	10 bit
<ul> <li>Resolution with overrange (bit including sign), max.</li> </ul>	
<ul> <li>Integration time, parameterizable</li> </ul>	Yes
	625 μs
<ul> <li>Conversion time (per channel)</li> </ul>	020 µ3
Encoder	
Connectable encoders	
• 2-wire sensor	Yes
1. Interface	
Interface type	PROFINET
Physics	Ethernet
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
<ul> <li>SIMATIC communication</li> </ul>	Yes
Open IE communication	Yes
Web server	Yes
Media redundancy	No
PROFINET IO Controller	
<ul> <li>Transmission rate, max.</li> </ul>	100 Mbit/s
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	No
— Open IE communication	Yes
— IRT	No
— MRP	No
— MRPD	No
— PROFlenergy	No
— Prioritized startup	Yes
- Number of IO devices with prioritized	16
startup, max.	
<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
— Number of IO Devices that can be	8
simultaneously activated/deactivated, max.	
— 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
— S7 routing	Yes
— Isochronous mode	No
— Open IE communication	Yes
— IRT	No
— MRP	No
— MRPD	No
— PROFlenergy	Yes
— Shared device	Yes
— Number of IO Controllers with shared	2
device, max.	

Supports protocol for PROFINET IO     Yes       PROFIBUS     Yes; CM 1243-5 required       AS-Interface     Yes; CM 1243-2 required       Protocols (Ethernet)     Yes       • TCP/IP     Yes       • DHCP     No       • SMMP     Yes       • DCP     Yes       • LLDP     Yes       • DCP     Yes       • LLDP     Yes       • DCP     Yes       • DLTP/IP     Yes       • DEP/IP     Yes       - Data length, max.     B kbyte       - several passive connections per port, supported     Yes       • UDP     Yes       - Data length, max.     B kbyte       • UDP     Yes       - Data length, max.     B kbyte       • UDP     Yes       - Data length, max.     B kbyte       • UDP     Yes       - Data length, max.     Yes       • UDP     Yes       • MODBUS     Yes       Scommunication     Yes       • User-defined websites     Yes       Communication functions     Yes       Storemunication     Yes       • as client     Yes       • user data per job, max.     See online help (S7 communication, user data size)       Number of connections	Protocols	
AS-Interface     Yes: CM 1243-2 required       Protocols (Ethernet)     Yes:       • TCP/IP     Yes       • DRCP     No       • SIMMP     Yes       • DCP     Yes       • DCP IP     Yes       • Data length, max.     8 kbyte       • ISO-on-TCP (RFC1006)     Yes       • Data length, max.     8 kbyte       • UDP     Yes       • Data length, max.     8 kbyte       • UDP     Yes       • Data length, max.     8 kbyte       • UDP     Yes       • Data length, max.     9 Kbyte       • UDP     Yes       • MODBUS     Yes       • Status/ontol     Yes       • Status/ontol     Yes       • Status/ontol     Yes       • Status/ontol variable     Yes       • Status/ontol variable     Yes       • Status/ontol variable     Yes       • Status/ontol variable     Yes       • Status/ontol variable <t< td=""><td>Supports protocol for PROFINET IO</td><td>Yes</td></t<>	Supports protocol for PROFINET IO	Yes
Protocols (Ethemet)         Ves           • TCP/IP         Yes           • DHCP         No           • DHCP         No           • DHCP         No           • Status/control variables         Yes           • DCP         Yes           • DCP         Yes           • DDP         Yes           • Data length, max.         8 kbyte           - several passive connections per port, supported         Yes           • ISO-on-TCP (RFC1006)         Yes           • Data length, max.         8 kbyte           - Data length, max.         1472 byte           • UDP         Yes           • User defined websites         Yes           • User defined websites         Yes           • User defined websites         Yes           • Status/contol         Yes           • Status/contol         Yes           • Status/contol         Yes           • Status/control var	PROFIBUS	Yes; CM 1243-5 required
• TCP/IPYes• DHCPNo• SIMMPYes• DCPYes• DLDPYes• DIDPYes• TCP/IPYes- Data length, max.8 kbyte- several passive connections per port, supportedYes• ISO-on-TCP (RFC1006)Yes- Data length, max.8 kbyte• UDPYes- Data length, max.8 kbyte• UDPYes- Data length, max.8 kbyte• UDPYes- Data length, max.9 kes• UDPYes- Data length, max.9 kes• USer-defined websitesYes- Status/controlYes- Status/controlYes- Status/control16: dynamically- Status/control variableYes- Status/control variableYes- VariablesInputs/outputs, memory bits, DBs, distributed i/Os, timers, counters- ForcingYes- ForcingYes- ForcingYes- ForcingYes- ForcingYes- ForcingYes- ForcingYes- ForcingYes- Forcing<	AS-Interface	Yes; CM 1243-2 required
• DHCPNo• SNMPYes• DCPYes• DCPYes• DCPYes• Den IE communicationYes• TCP/PYes• Data length, max.8 kbyte- several passive connections per port, supportedYes• ISC-on-TCP (RFC1006)Yes- Data length, max.8 kbyte• UDPYes- Data length, max.1472 byteVeb severYes• SupportedYes• Status/controlYes• Status/control variableYes• Status/control variableYes• VariablesInputs/outputs, memory bits, DBs, distributed i/Os, timers, countersForcingYes• ForcingYes• ForcingYes• ForcingYes• ForcingYes• ForcingYes• ForcingYes• ForcingYes• ForcingYes• For	Protocols (Ethernet)	
NMPYesDCPYesLLDPYesOpen IE communicationYes- Data length, max.8 kbyte- several passive connections per port, supportedYes- Data length, max.8 kbyte- several passive connections per port, supportedYes- Data length, max.8 kbyte- Data length, max.8 kbyte- Data length, max.8 kbyte- Data length, max.1472 byteVBDPYes- Data length, max.1472 byteVeb serverYes- Data length, max.Yes- SupportedYes- supportedInputs/outputs, memory bits, DBs, distributed I/Os, timers, course- Sutus/control variableYes- YariablesInputs/outputs, memory bits, DBs, distributed I/Os, timers, course- ForcingYes- Sta	• TCP/IP	Yes
DCP         Yes           Open IE communication         Yes           • TCP/IP         Yes           • Data length, max.         8 kbyle           - several passive connections per port, supported         Yes           • ISO-on-TCP (RFC1006)         Yes           - Data length, max.         8 kbyle           • UDP         Yes           - Data length, max.         8 kbyle           • UDP         Yes           - Data length, max.         8 kbyle           • UDP         Yes           - Data length, max.         8 kbyle           • UDP         Yes           - Data length, max.         9 kbyle           • UDP         Yes           - Data length, max.         Yes           - Data length, max.         Yes           • UBP         Yes           - Data length, max.         Yes           - Data length, max.         Yes           • User-defined websites         Yes           • User-defined websites         Yes           • User data port poh, max.         Yes           • sa server         Yes           • user data per joh, max.         See online help (S7 communication, user data size)           Number of con	• DHCP	No
LLDP     Yes       Open IE communication     8 kbyte            - Data length, max.         8 kbyte            - several passive connections per port, supported         Yes            - soveral passive connections per port, supported         Yes            - Soo-n-TCP (RFC1006)         Yes            - Data length, max.         8 kbyte            - UDP         Yes            - Data length, max.         1472 byte           VUDP         Yes            - Data length, max.         1472 byte           Veb server         Yes            - UDP         Yes            - Supported         Yes            - UDP         Yes            - UDP         Yes            - Supported         Yes            - user data per job, max.         See online help (S7 communication, user data size)           Number of connections          - user data size)            - vorral          16; dynamically	• SNMP	Yes
Open IE communication           • TCP/IP         Yes           - Data length, max.         8 kbyte           - several passive connections per port, supported         Yes           • ISO-on-TCP (RFC1006)         Yes           - Data length, max.         8 kbyte           • UDP         Yes           - Data length, max.         8 kbyte           • UDP         Yes           - Data length, max.         1 472 byte           Web server         Yes           - Data length, max.         Yes           - Data length, max.         Yes           - Data length, max.         1472 byte           Web server         Yes           - Data length, max.         Yes           - Data length, max.         Yes           Supported         Yes           • User-defined websites         Yes           Further protocols         Yes           Sommunication functions         Yes           - supported         Yes           - as client         Yes           - as client         Yes           - overall         Sec online help (S7 communication, user data size)           Number of connections         Counters           - overall	• DCP	Yes
• TCP/IPYes- Data length, max.8 kbyte- several passive connections per port, supportedYes• ISO-on-TCP (RFC1006)Yes- Data length, max.8 kbyte• UDPYes- Data length, max.1472 byteWeb serverYes- Data length, max.Yes- StatusfootYes- User-defined websitesYes- sa clientYes- user data per job, max.See online help (S7 communication, user data size)Number of connectionsYes- overall16; dynamically- Status/control variableYes- VariablesInputs/outputs, memory bits, DBs, distributed I/Os, timers, counters- ForcingYes- PorcingYesDiagnostic bufferYes	• LLDP	Yes
<ul> <li>Data length, max.</li> <li>B kbyle</li> <li>Several passive connections per port, supported</li> <li>ISO-on-TCP (RFC1006)</li> <li>Yes</li> <li>ISO-on-TCP (RFC1006)</li> <li>Yes</li> <li>Data length, max.</li> <li>B kbyle</li> <li>UDP</li> <li>Yes</li> <li>Data length, max.</li> <li>B kbyle</li> <li>Ves</li> <li>- Data length, max.</li> <li>B kbyle</li> <li>Ves</li> <li>- Data length, max.</li> <li>Yes</li> <li>- Data length, max.</li> <li>Yes</li> <li>UDP</li> <li>Yes</li> <li>User-defined websites</li> <li>Yes</li> <li>Ves</li> </ul> Further protocols Further protocols Sommunication Sommunication Sommunication Secontine help (S7 communication, user data size) Number of connections Secontine help (S7 communication, user data size) Number of connections Status/control Status/control variable <ul> <li>Yes</li> <li>Status/control variable</li> <li>Variables</li> <li>Yes</li> <li>Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters</li> </ul> Forcing <ul> <li>Yes</li> <li>Forcing</li> <li>Yes</li> </ul>	Open IE communication	
several passive connections per port, supportedYes Jaca length, max.8 kbyte Data length, max.8 kbyte Data length, max.1472 byteWeb server Data length, max.Yes Status/controlYes Data length, max.See online help (S7 communication, user data size)Number of connectionsYes overall16; dynamically Data lengthYes Status/control variableYes YariablesInputs/outputs, memory bits, DBs, distributed I/Os, timers, countersForcingYes PorcingYesDiagnostic bufferYes	• TCP/IP	Yes
supported ISO-on-TCP (RFC1006) Yes Data length, max. 8 kbyte VDP Data length, max. 1472 byte Web server I JA72 byte Web server I Supported Ves Ves Further protocols Further protocols Further protocols Ves Communication functions S7 communication I Supported I Supported I Supported Ves Ves Ves Ves Ves Ves Ves Ves	— Data length, max.	8 kbyte
— Data length, max.         8 kbyte           — UDP         Yes           — Data length, max.         1472 byte           Web server         1472 byte           • supported         Yes           • supported         Yes           • USer-defined websites         Yes           Further protocols         Yes           • MODBUS         Yes           • MODBUS         Yes           • Stopported         Yes           • supported         Yes           • supported         Yes           • supported         Yes           • supported         Yes           • as server         Yes           • as server         Yes           • user data per job, max.         See online help (S7 communication, user data size)           Number of connections         Yes           • overall         16; dynamically           • overall         Yes           • Status/control variable         Yes           • Variables         Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters           Forcing         Yes           • Forcing         Yes		Yes
• UDPYes- Data length, max.1472 byteWeb server1472 byte• supportedYes• User-defined websitesYes• MODBUSYes• MODBUSYes• MODBUSYes• MODBUSYes• Communication functionsYes• supportedYes• supportedYes• as serverYes• as clientYes• User data per job, max.See online help (S7 communication, user data size)Number of connectionsSee online help (S7 communication, user data size)• overall16; dynamicallyTest commissioning functionsInputs/outputs, memory bits, DBs, distributed I/Os, timers, countersForcingYes• ForcingYes• ForcingYes• Diagnostic bufferYes	<ul> <li>ISO-on-TCP (RFC1006)</li> </ul>	Yes
- Data length, max.       1 472 byte         Web server       Yes         • supported       Yes         • User-defined websites       Yes         Further protocols       Yes         • MODBUS       Yes         Communication functions       Yes         S7 communication       Yes         • supported       Yes         • as server       Yes         • as client       Yes         • User data per job, max.       See online help (S7 communication, user data size)         Number of connections       See online help (S7 communication, user data size)         Number of connections       See online help (S7 communication, user data size)         Number of connections       See online help (S7 communication, user data size)         Number of connections       See online help (S7 communication, user data size)         Number of connections       See online help (S7 communication, user data size)         Status/control variable       Yes         • overall       16; dynamically         Status/control variable       Yes         • Variables       Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters         Forcing       Yes         • Forcing       Yes         Diagnostic buffer       Ye	— Data length, max.	8 kbyte
Web server         • supported       Yes         • User-defined websites       Yes         Further protocols       Yes         • MODBUS       Yes         Communication functions       Yes         S7 communication       Yes         • supported       Yes         • supported       Yes         • as server       Yes         • as client       Yes         • User data per job, max.       See online help (S7 communication, user data size)         Number of connections       See online help (S7 communication, user data size)         Number of connections       See online help (S7 communication, user data size)         Number of connections       See online help (S7 communication, user data size)         Ves       Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters         Forcing       Yes         • Diagnostic buffer       Yes	• UDP	Yes
• supported • User-defined websitesYesFurther protocolsYes• MODBUSYesCommunication functionsYesS7 communicationYes• supported • supported • as server • as client • User data per job, max.YesSee online help (S7 communication, user data size)Number of connectionsTest commissioning functions16; dynamicallyStatus/control • Status/control variable • VariablesYesForcing Diagnostic bufferYes	— Data length, max.	1 472 byte
• User-defined websites       Yes         Further protocols       Yes         • MODBUS       Yes         Communication functions       Yes         Communication functions       Yes         • supported       Yes         • as server       Yes         • as client       Yes         • User data per job, max.       See online help (S7 communication, user data size)         Number of connections       Yes         • overall       16; dynamically         Test commissioning functions       Yes         Status/control variable       Yes         • Variables       Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters         Forcing       Yes         Diagnostic buffer       Yes	Web server	
Further protocols         Further protocols         • MODBUS         Yes         Communication         • supported         • supported         • supported         • as server         • as client         • User data per job, max.         Vers         • overall         • overall         16; dynamically         Test commissioning functions         Status/control         • Status/control variable         • Variables         Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters         Forcing         • Forcing         Diagnostic buffer	supported	Yes
• MODBUS       Yes         Communication functions         \$7 communication       Yes         • supported       Yes         • as server       Yes         • as client       Yes         • User data per job, max.       See online help (S7 communication, user data size)         Number of connections       Yes         • overall       16; dynamically         Test commissioning functions         Status/control       Yes         • Status/control variable       Yes         • Variables       Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters         Forcing       Yes         Diagnostic buffer       Yes	<ul> <li>User-defined websites</li> </ul>	Yes
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       See online help (S7 communication, user data size)         Number of connections       16; dynamically         • overall       16; dynamically         Test commissioning functions       Yes         • Status/control       Yes         • Variables       Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters         Forcing       Yes         Diagnostic buffer       Yes	Further protocols	
S7 communication       Yes         • supported       Yes         • as server       Yes         • as client       Yes         • User data per job, max.       See online help (S7 communication, user data size)         Number of connections       See online help (S7 communication, user data size)         Number of connections       16; dynamically         • overall       16; dynamically         Test commissioning functions       Yes         Status/control       Yes         • Status/control variable       Yes         • Variables       Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters         Forcing       Yes         Diagnostic buffer       Yes	• MODBUS	Yes
S7 communication       Yes         • supported       Yes         • as server       Yes         • as client       Yes         • User data per job, max.       See online help (S7 communication, user data size)         Number of connections       See online help (S7 communication, user data size)         Number of connections       16; dynamically         • overall       16; dynamically         Test commissioning functions       Yes         Status/control       Yes         • Status/control variable       Yes         • Variables       Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters         Forcing       Yes         Diagnostic buffer       Yes	Communication functions	
• as serverYes• as clientYes• User data per job, max.See online help (S7 communication, user data size)Number of connections16; dynamically• overall16; dynamicallyTest commissioning functionsYesStatus/controlYes• Status/control variableYes• VariablesInputs/outputs, memory bits, DBs, distributed I/Os, timers, countersForcingYes• ForcingYes• ForcingYesDiagnostic bufferYes		
• as clientYes• User data per job, max.See online help (S7 communication, user data size)Number of connections16; dynamically• overall16; dynamicallyTest commissioning functionsStatus/controlStatus/controlYes• Status/control variableYes• VariablesInputs/outputs, memory bits, DBs, distributed I/Os, timers, countersForcingYes• ForcingYesDiagnostic bufferYes	supported	Yes
• User data per job, max.See online help (S7 communication, user data size)Number of connections16; dynamically• overall16; dynamicallyTest commissioning functionsStatus/controlYes• Status/control variableYes• VariablesInputs/outputs, memory bits, DBs, distributed I/Os, timers, countersForcingYes• ForcingYes• ForcingYes	• as server	Yes
Number of connections       16; dynamically         • overall       16; dynamically         Test commissioning functions         Status/control         • Status/control variable       Yes         • Variables       Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters         Forcing       Yes         • Forcing       Yes         • Forcing       Yes         • Forcing       Yes	● as client	Yes
• overall16; dynamicallyTest commissioning functionsStatus/controlYes• Status/control variableYes• VariablesInputs/outputs, memory bits, DBs, distributed I/Os, timers, countersForcingYes• ForcingYesDiagnostic bufferYes	<ul> <li>User data per job, max.</li> </ul>	See online help (S7 communication, user data size)
Test commissioning functions         Status/control         • Status/control variable       Yes         • Variables       Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters         Forcing       Yes         • Forcing       Yes         Diagnostic buffer       Yes	Number of connections	
Status/control       Yes         • Status/control variable       Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters         • Forcing       Yes         • Forcing       Yes         Diagnostic buffer       Yes	• overall	16; dynamically
Status/control       Yes         • Status/control variable       Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters         • Forcing       Yes         • Forcing       Yes         Diagnostic buffer       Yes	Test commissioning functions	
<ul> <li>Variables</li> <li>Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters</li> <li>Forcing</li> <li>Forcing</li> <li>Yes</li> <li>Diagnostic buffer</li> </ul>		
Forcing       • Forcing       Diagnostic buffer	Status/control variable	Yes
• Forcing Yes Diagnostic buffer	Variables	
Diagnostic buffer	Forcing	
	• Forcing	Yes
• present Ves	Diagnostic buffer	
• present	• present	Yes

Traces		
<ul> <li>Number of configurable Traces</li> </ul>	2	
<ul> <li>Memory size per trace, max.</li> </ul>	512 kbyte	
Interrupts/diagnostics/status information		
Diagnostics indication LED		
• RUN/STOP LED	Yes	
• ERROR LED	Yes	
MAINT LED	Yes	
Integrated Functions		
Number of counters	3	
Counting frequency (counter) max.	100 kHz	
Frequency measurement	Yes	
controlled positioning	Yes	
Number of position-controlled positioning axes, max.	8	
Number of positioning axes via pulse-direction interface	Up to 4 with SB 1222	
PID controller	Yes	
Number of alarm inputs	4	
Potential separation		
Potential separation digital inputs		
<ul> <li>Potential separation digital inputs</li> </ul>	500V AC for 1 minute	
<ul> <li>between the channels, in groups of</li> </ul>	1	
Potential separation digital outputs		
<ul> <li>Potential separation digital outputs</li> </ul>	Relays	
<ul> <li>between the channels</li> </ul>	No	
<ul> <li>between the channels, in groups of</li> </ul>	1	
EMC		
Interference immunity against discharge of static electric	city	
<ul> <li>Interference immunity against discharge of static electricity acc. to IEC 61000-4-2</li> </ul>	Yes	
— Test voltage at air discharge	8 kV	
— Test voltage at contact discharge	6 kV	
Interference immunity to cable-borne interference		
<ul> <li>Interference immunity on supply lines acc. to IEC 61000-4-4</li> </ul>	Yes	
<ul> <li>Interference immunity on signal cables acc. to IEC 61000-4-4</li> </ul>	Yes	
Interference immunity against voltage surge		
• on the supply lines acc. to IEC 61000-4-5	Yes	
Interference immunity against conducted variable disturbance induced by high-frequency fields		

Emission of radio interference acc. to EN 55 011         • Limit class A, for use in industrial areas       Yes; Group 1         • Limit class B, for use in residential areas       Yes; When appropriate measures are used to ensure compliance with the limits for Class B according to EN 55011         Degree and class of protection       • Ves         Degree of protection acc. to EN 60529       • P20         Yes       Yes         Standards, approvals, certificates       Ves         CE mark       Yes         CUus       Yes         FM approval       Yes         RCM (formerly C-TICK)       Yes         KC approval       Yes         Arbient conditions       Yes         Free fall       • Path height, max.         • Fall height, max.       0.3 m; five times, in product package         Ambient temperature during operation       • Inin.         • rinin.       -20 °C         • horizontal installation, min.       -20 °C         • horizontal installation, max.       60 °C         • vertical installation, max.       50 °C         Ambient temperature during storage/transportation       • Initialization, max.         • nin.       -40 °C         • vertical installation, max.       50 °C         Arbient temperature duri	<ul> <li>Interference immunity against high-frequency radiation acc. to IEC 61000-4-6</li> </ul>	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 <b>Degree and class of protection</b> Yes           Degree of protection acc: to EN 80529         Yes           StandardS, approvals, certificates         Yes           CE mark         Yes           UL approval         Yes           CUIs         Yes           CH approval         Yes           CUIs         Yes           CH approval         Yes           CUIs         Yes           CH approval         Yes           CH approval         Yes           RCM (formerly C-TICK)         Yes           Marine approval         Yes           Arbitent conditions         Yes           Free fall         0.3 m, five times, in product package           Ambient temperature during operation	Emission of radio interference acc. to EN 55 011	
with the limits for Class B according to EN 56011           Degree and class of protection acc. to EN 60529           Degree of protection acc. to EN 60529           i P20         Yes           Standards, approvals, certificates         Yes           CE mark         Yes           UL approval         Yes           CUlus         Yes           CUlus         Yes           CUlus         Yes           CUlus         Yes           CUlus         Yes           CUlus         Yes           COM (formerly C-TICK)         Yes           Marine approval         Yes           Ambient conditions         Yes           Free fail         O3 m; five times, in product package           Ambient temperature during operation         O3 m; five times, in product package           Ambient temperature during operation         O3 m; five times, in product package           Ambient temperature during sorge/transport during operation         O3 m; five times, in product package           Ambient temperature during sorge/transport during operation         O3 m; five times, in product package           Ambient temperature during storge/transport during sorge/transport during du	<ul> <li>Limit class A, for use in industrial areas</li> </ul>	Yes; Group 1
Degree of protection acc. to EN 60529       Yes         • IP20       Yes         Standards, approvals, certificates       Yes         CE mark       Yes         UL approval       Yes         UL approval       Yes         CUus       Yes         FM approval       Yes         RCM (formerly C-TICK)       Yes         RCM (formerly C-TICK)       Yes         Marine approval       Yes         Ambient conditions       Yes         Free fall       0.3 m; five times, in product package         Ambient conditions       -         • Fall height, max.       0.3 m; five times, in product package         Ambient temperature during operation       -         • min.       -20 °C         • max.       60 °C         • horizontal installation, min.       -20 °C         • wertical installation, min.       -20 °C         • vertical installation, max.       60 °C         Ambient temperature during storage/transportation       -         • min.       -40 °C         • max.       70 °C         Ambient temperature during storage/transportation       -         • min.       -40 °C         • operation, max.       10	<ul> <li>Limit class B, for use in residential areas</li> </ul>	
• IP20       Yes         Standards, approvals, certificates       Yes         CE mark       Yes         UL approval       Yes         CULus       Yes         FM approval       Yes         RCM (formerly C-TICK)       Yes         KC approval       Yes         Ambient conditions       Yes         Free fall       Ves         • Pail height, max.       0.3 m; five times, in product package         Ambient temperature during operation       *0° C         • min.       -20 °C         • max.       60 °C         • horizontal installation, min.       -20 °C         • vertical installation, max.       60 °C         • vertical installation, max.       100 °C	Degree and class of protection	
Standards, approvals, certificates           CE mark         Yes           UL approval         Yes           cULus         Yes           FM approval         Yes           RCM (formerly C-TICK)         Yes           RCM (formerly C-TICK)         Yes           RCM (formerly C-TICK)         Yes           Ambient conditions         Yes           Free fall         Ves           Ambient conditions         Free fall           Free fall         0.3 m; five times, in product package           Ambient temperature during operation         ************************************	Degree of protection acc. to EN 60529	
CE mark       Yes         UL approval       Yes         CULus       Yes         FM approval       Yes         RCM (formerly C-TICK)       Yes         Marine approval       Yes         Ambient conditions       Yes         Ambient conditions       Yes         Ambient temperature during operation       *         • Fall height, max.       0.3 m; five times, in product package         Ambient temperature during operation       *         • min.       -20 °C         • horizontal installation, min.       -20 °C         • horizontal installation, min.       -20 °C         • horizontal installation, min.       -20 °C         • vertical installation, max.       60 °C         • vertical installation, max.       50 °C         Ambient temperature during storage/transportation       *         • wertical installation, max.       50 °C         Ambient temperature during storage/transportation       *         • min.       -40 °C         • max.       70 °C         Ärit pressure acc. to IEC 60068-2-13       *         • Operation, min.       795 hPa         • Operation, max.       1080 hPa         • Storage/transport, max.       1080	• IP20	Yes
UL approval         Yes           cULus         Yes           FM approval         Yes           RCM (formerly C-TICK)         Yes           RCM approval         Yes           Marine approval         Yes           Marine approval         Yes           Ambient conditions         Yes           Free fall	Standards, approvals, certificates	
cULus         Yes           FM approval         Yes           FM approval         Yes           RCM (formerly C-TICK)         Yes           Marine approval         Yes           Marine approval         Yes           Amine the approval         Yes           • Fee fall         0.3 m; five times, in product package           Amine themperature during operation         • O'C           • horizontal installation, min.         -20 °C           • vertical installation, max.         50 °C           Ambient temperature during storage/transportation         • O'C           • min.         -20 °C           • writical installation, min.         -20 °C           • Ambient temperature during storage/transportation         • O'C           • min.         -40 °C           • max.         70 °C </td <td>CE mark</td> <td>Yes</td>	CE mark	Yes
FM approval       Yes         RCM (formerly C-TICK)       Yes         KC approval       Yes         Marine approval       Yes         Ambient conditions       Yes         Ambient conditions       Yes         Ambient conditions       ************************************	UL approval	Yes
RCM (formerly C-TICK)       Yes         KC approval       Yes         Marine approval       Yes         Ambient conditions       Yes         Free fall       0.3 m; five times, in product package         Ambient temperature during operation       -20 °C         • max.       60 °C         • horizontal installation, min.       -20 °C         • horizontal installation, max.       60 °C         • vertical installation, max.       60 °C         • vertical installation, max.       50 °C         Ambient temperature during storage/transportation       -20 °C         • min.       -20 °C         • vertical installation, max.       50 °C         Ambient temperature during storage/transportation       -20 °C         • min.       -20 °C         • vertical installation, max.       50 °C         Ambient temperature during storage/transportation       -20 °C         • or C       -20 °C         • or C       -20 °C         • vertical installation, max.       50 °C         Ambient temperature during storage/transportation       -20 °C         • Operation, min.       -40 °C         • Operation, max.       1080 hPa         • Operation, max.       1080 hPa	cULus	Yes
KC approval       Yes         Marine approval       Yes         Ambient conditions       Free fall         • Fall height, max.       0.3 m; five times, in product package         Ambient temperature during operation       •         • min.       -20 °C         • max.       60 °C         • horizontal installation, min.       -20 °C         • horizontal installation, max.       60 °C         • vertical installation, max.       60 °C         • vertical installation, max.       50 °C         Ambient temperature during storage/transportation       -20 °C         • min.       -20 °C         • wertical installation, max.       50 °C         Ambient temperature during storage/transportation       -20 °C         • min.       -20 °C         • min.       -20 °C         • or C       -         Ambient temperature during storage/transportation       -         • min.       -40 °C         • max.       70 °C         Air pressure act. to IEC 60068-2-13       -         • Operation, max.       1080 hPa         • Storage/transport, min.       660 hPa         • Storage/transport, max.       1080 hPa         Altitude during operation relating to	FM approval	Yes
Marine approval         Yes           Ambient conditions         Free fall           • Fall height, max.         0.3 m; five times, in product package           Ambient temperature during operation         ************************************		
Ambient conditions         Free fall         • Fall height, max.       0.3 m; five times, in product package         Ambient temperature during operation         • min.       -20 °C         • max.       60 °C         • horizontal installation, min.       -20 °C         • horizontal installation, max.       60 °C         • vertical installation, max.       60 °C         • vertical installation, max.       50 °C         Ambient temperature during storage/transportation       -20 °C         • min.       -20 °C         • vertical installation, max.       50 °C         Ambient temperature during storage/transportation       -0 °C         • min.       -40 °C         • max.       70 °C         Air pressure acc. to IEC 60068-2-13       -0         • Operation, min.       1080 hPa         • Operation, max.       1080 hPa         • Storage/transport, max.       1080 hPa         • Installation altitude, min.       -1 000 m         • Installation altitude, max.       2 000 m         Relative humidity       -0 Operation, max.		
Free fall         • Fall height, max.       0.3 m; five times, in product package         Ambient temperature during operation         • min.       -20 °C         • max.       60 °C         • horizontal installation, min.       -20 °C         • horizontal installation, max.       60 °C         • vertical installation, max.       60 °C         • vertical installation, max.       60 °C         • vertical installation, max.       50 °C         Ambient temperature during storage/transportation       -20 °C         • min.       -20 °C         • max.       50 °C         Ambient temperature during storage/transportation       -20 °C         • max.       70 °C         Air pressure acc. to IEC 60068-2-13       -40 °C         • 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       -1 000 m         • Installation altitude, max.       2 000 m         Relative humidity       -200 °C %; no condensation	Marine approval	Yes
• Fall height, max.       0.3 m; five times, in product package         Ambient temperature during operation         • min.       -20 °C         • max.       60 °C         • horizontal installation, min.       -20 °C         • horizontal installation, max.       60 °C         • vertical installation, max.       50 °C         Ambient temperature during storage/transportation       -20 °C         • min.       -40 °C         • max.       70 °C         Arr pressure acc. to IEC 60068-2-13       -40 °C         • Operation, min.       795 hPa         • Operation, max.       1080 hPa         • Storage/transport, min.       660 hPa         • Storage/transport, max.       1080 hPa         • Altitude during operation relating to sea level       -1000 m         • Installation altitude, min.       -1 000 m         • Installation altitude, max.       2 000 m         Relative humidity       -0 Operation, max.		
Ambient temperature during operation         • min.       -20 °C         • max.       60 °C         • horizontal installation, min.       -20 °C         • horizontal installation, max.       60 °C         • vertical installation, max.       60 °C         • vertical installation, max.       50 °C         Ambient temperature during storage/transportation       -20 °C         • vertical installation, max.       50 °C         Ambient temperature during storage/transportation       -40 °C         • max.       70 °C         Arr pressure acc. to IEC 60068-2-13       -40 °C         • Operation, min.       -40 °C         • Operation, max.       1080 hPa         • Storage/transport, min.       660 hPa         • Storage/transport, max.       1080 hPa         • Altitude during operation relating to sea level       -1 000 m         • Installation altitude, min.       -1 000 m         • Installation altitude, max.       2 000 m         Relative humidity       -0 0peration, max.	Free fall	
• min20 °C• max.60 °C• horizontal installation, min20 °C• horizontal installation, max.60 °C• vertical installation, min20 °C• vertical installation, max.50 °C• vertical installation, max.50 °C• vertical installation, max.50 °C• vertical installation, max.70 °C• min40 °C• max.70 °C• Mir 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.2 000 mRelative humidity• Operation, max.95 %; no condensation	-	0.3 m; five times, in product package
max.60 °C• max.60 °C• horizontal installation, min20 °C• horizontal installation, max.60 °C• vertical installation, max20 °C• vertical installation, max.50 °C• vertical installation, max.50 °C• vertical installation, max.60 °C• vertical installation, max.70 °C• min40 °C• max.70 °C• max.70 °C• Operation, min.795 hPa• Operation, min.660 hPa• Operation, max.1080 hPa• Storage/transport, max.1080 hPa• Storage/transport, max.1080 hPa• Installation altitude, min1 000 m• Installation altitude, max.2 000 m• Relative humidity-1 000 m• Operation, max.95 %; no condensation	Ambient temperature during operation	
Notice• horizontal installation, min20 °C• horizontal installation, max.60 °C• vertical installation, max20 °C• vertical installation, max.50 °CAmbient temperature during storage/transportation-• min40 °C• max.70 °CAir pressure acc. to IEC 60068-2-13-• Operation, min.795 hPa• Operation, min.1080 hPa• Storage/transport, min.660 hPa• Storage/transport, max.1080 hPa• Storage/transport, max.1080 hPa• Installation altitude, min1 000 m• Installation altitude, max.2 000 m	● min.	
• horizontal installation, max.60 °C• vertical installation, min20 °C• vertical installation, max.50 °CAmbient temperature during storage/transportation-40 °C• min40 °C• max.70 °CAir pressure acc. to IEC 60068-2-13-1080 hPa• Operation, min.660 hPa• Operation, max.660 hPa• Storage/transport, max.1080 hPa• Storage/transport, max.1080 hPa• Installation altitude, min1 000 m• Installation altitude, max.2000 m	• max.	
• vertical installation, min20 °C• vertical installation, max.50 °CAmbient temperature during storage/transportation-40 °C• min40 °C• max.70 °CAir pressure acc. to IEC 60068-2-13-40 °C• Operation, min.795 hPa• Operation, max.1080 hPa• Storage/transport, min.660 hPa• Storage/transport, max.1080 hPa• Storage/transport, max.1080 hPa• Installation altitude, min1000 m• Installation altitude, max.2000 m• Relative humidity95 %; no condensation	<ul> <li>horizontal installation, min.</li> </ul>	-20 °C
• vertical installation, max.50 °CAmbient temperature during storage/transportation-• min40 °C• max.70 °CAir 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• Attitude during operation relating to sea level-• Installation altitude, max.2 000 m• Relative humidity-• Operation, max.95 %; no condensation	<ul> <li>horizontal installation, max.</li> </ul>	60 °C
Ambient temperature during storage/transportation• min40 °C• max.70 °CAir 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• Installation altitude, min1 000 m• Installation altitude, max.2 000 mRelative humidity95 %; no condensation	<ul> <li>vertical installation, min.</li> </ul>	-20 °C
• min40 °C• max.70 °CAir pressure acc. to IEC 60068-2-13795 hPa• Operation, min.795 hPa• Operation, max.1 080 hPa• Storage/transport, min.660 hPa• Storage/transport, max.1 080 hPa• Storage/transport, max.1 080 hPa• Installation altitude, min1 000 m• Installation altitude, max.2 000 mRelative humidity95 %; no condensation	<ul> <li>vertical installation, max.</li> </ul>	50 °C
• max.70 °CAir pressure acc. to IEC 60068-2-13795 hPa• Operation, min.795 hPa• Operation, max.1 080 hPa• Storage/transport, min.660 hPa• Storage/transport, max.1 080 hPa• Storage/transport, max.1 080 hPa• Installation altitude, min1 000 m• Installation altitude, max.2 000 mRelative humidity95 %; no condensation	Ambient temperature during storage/transportation	
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 level1 080 hPa• Installation altitude, min1 000 m• Installation altitude, max.2 000 mRelative humidity95 %; no condensation	• min.	-40 °C
• Operation, min.795 hPa• Operation, max.1 080 hPa• Storage/transport, min.660 hPa• Storage/transport, max.1 080 hPaAltitude during operation relating to sea level1 080 hPa• Installation altitude, min1 000 m• Installation altitude, max.2 000 mRelative humidity95 %; no condensation	• max.	70 °C
<ul> <li>Operation, max.</li> <li>Storage/transport, min.</li> <li>Storage/transport, max.</li> <li>1080 hPa</li> <li>660 hPa</li> <li>1080 hPa</li> <li>1080 hPa</li> </ul> Altitude during operation relating to sea level Installation altitude, min. <ul> <li>-1 000 m</li> <li>-1 000 m</li> <li>Installation altitude, max.</li> <li>2 000 m</li> </ul> Relative humidity <ul> <li>Operation, max.</li> <li>95 %; no condensation</li> </ul>	Air pressure acc. to IEC 60068-2-13	
• Storage/transport, min.660 hPa• Storage/transport, max.1 080 hPaAltitude during operation relating to sea level• Installation altitude, min1 000 m• Installation altitude, max.2 000 mRelative humidity• Operation, max.95 %; no condensation	• Operation, min.	795 hPa
<ul> <li>Storage/transport, max.</li> <li>Storage/transport, max.</li> <li>1 080 hPa</li> <li>Altitude during operation relating to sea level</li> <li>Installation altitude, min.</li> <li>Installation altitude, max.</li> <li>2 000 m</li> <li>Relative humidity</li> <li>Operation, max.</li> <li>95 %; no condensation</li> </ul>	• Operation, max.	1 080 hPa
Altitude during operation relating to sea level       • Installation altitude, min.       • Installation altitude, max.       2 000 m       Relative humidity       • Operation, max.       95 %; no condensation	• Storage/transport, min.	660 hPa
• Installation altitude, min.       -1 000 m         • Installation altitude, max.       2 000 m         Relative humidity       -         • Operation, max.       95 %; no condensation	• Storage/transport, max.	1 080 hPa
Installation altitude, max. 2 000 m      Relative humidity     Operation, max. 95 %; no condensation	Altitude during operation relating to sea level	
Relative humidity       • Operation, max.       95 %; no condensation	<ul> <li>Installation altitude, min.</li> </ul>	-1 000 m
Operation, max.     95 %; no condensation	<ul> <li>Installation altitude, max.</li> </ul>	2 000 m
	Relative humidity	
Vibrations	• Operation, max.	95 %; no condensation
	Vibrations	

• Vibration resistance during operation acc. to IEC 60068-2-6	2 g (m/s²) wall mounting, 1 g (m/s²) DIN rail
<ul> <li>Operation, tested according to IEC 60068-2-6</li> </ul>	Yes
Shock testing	
<ul> <li>tested according to IEC 60068-2-27</li> </ul>	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		
Programming		
Programming language		
— LAD	Yes	
— FBD	Yes	
— SCL	Yes	
Know-how protection		
<ul> <li>User program protection/password protection</li> </ul>	Yes	
Copy protection	Yes	
Block protection	Yes	
Access protection		
<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	
Cycle time monitoring		
• adjustable	Yes	
Dimensions		
Width	90 mm	
Height	100 mm	
Depth	75 mm	
Weights Weight, approx.	380 g	
ννσιγπ, αρμιολ.	500 g	

last modified:

07/25/2018