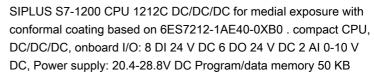
Data sheet





General information		
Product type designation	CPU 1212C DC/DC/DC	
Supply voltage		
Rated value (DC)		
• 24 V DC	Yes	
permissible range, lower limit (DC)	20.4 V	
permissible range, upper limit (DC)	28.8 V	
Reverse polarity protection	Yes	
Load voltage L+		
Rated value (DC)	24 V	
• permissible range, lower limit (DC)	20.4 V	
• permissible range, upper limit (DC)	28.8 V	
Input current		
Current consumption (rated value)	400 mA; Typical	
Current consumption, max.	1 200 mA; CPU with all expansion modules	
Inrush current, max.	12 A; at 28.8 V DC	
Output current		
for backplane bus (5 V DC), max.	1 000 mA; Max. 5 V DC for SM and CM	

Encoder supply	
24 V encoder supply	
• 24 V	L+ minus 4 V DC min.
Power loss	
Power loss, typ.	9 W
Memory	
Work memory	
● integrated	75 kbyte
• expandable	No
Load memory	
• integrated	1 Mbyte
 Plug-in (SIMATIC Memory Card), max. 	with SIMATIC memory card
Backup	
• present	Yes; maintenance-free
• without battery	Yes
CPU processing times	
for bit operations, typ.	0.085 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
ОВ	
Number, max.	Limited only by RAM for code
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	10 kbyte
El .	
Flag	
• Number, max.	4 kbyte; Size of bit memory address area
	4 kbyte; Size of bit memory address area
• Number, max.	4 kbyte; Size of bit memory address area 16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2 to 26: 6 KB
Number, max. Local data per priority class, max.	16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2
Number, max. Local data per priority class, max.	16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2
Number, max. Local data per priority class, max. Address area	16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2
Number, max. Local data per priority class, max. Address area Process image	16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2 to 26: 6 KB
Number, max. Local data per priority class, max. Address area Process image Inputs, adjustable	16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2 to 26: 6 KB

Time of day	
Clock	
Hardware clock (real-time)	Yes
Backup time	480 h; Typical
 Deviation per day, max. 	60 s/month at 25 °C
Digital inputs	
Number of digital inputs	8; Integrated
of which inputs usable for technological	4; HSC (High Speed Counting)
functions	
Source/sink input	Yes
Number of simultaneously controllable inputs	
all mounting positions	
— up to 40 °C, max.	8
Input voltage	
Rated value (DC)	24 V
● for signal "0"	5 V DC at 1 mA
● for signal "1"	15 V DC at 2.5 mA
Input delay (for rated value of input voltage)	
for standard inputs	
— parameterizable	0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four
— at "0" to "1", min.	0.1 ms
— at "0" to "1", max.	20 ms
for interrupt inputs	
— parameterizable	Yes
for technological functions	
— parameterizable	Single phase: 3 @ 100 kHz & 1 @ 30 kHz, differential: 3 @ 80 kHz & 1 @ 30 kHz
Cable length	
• shielded, max.	500 m; 50 m for technological functions
• unshielded, max.	300 m; for technological functions: No
Digital outputs	
Number of digital outputs	6
of which high-speed outputs	4; 100 kHz Pulse Train Output
Limitation of inductive shutdown voltage to	L+ (-48 V)
Switching capacity of the outputs	
• with resistive load, max.	0.5 A
● on lamp load, max.	5 W
Output voltage	
● for signal "0", max.	0.1 V; with 10 kOhm load
• for signal "1", min.	20 V
Output current	

● 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.	3 μs
Switching frequency	
of the pulse outputs, with resistive load, max.	100 kHz
Relay outputs	
Number of relay outputs	0
Cable length	
• shielded, max.	500 m
• unshielded, max.	150 m
Analog inputs	
Number of analog inputs	2
Input ranges	V.
Voltage	Yes
Input ranges (rated values), voltages	
• 0 to +10 V	Yes
Input resistance (0 to 10 V)	≥100k ohms
Cable length	
• shielded, max.	100 m; twisted and shielded
Analog outputs	
Number of analog outputs	0
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
 Resolution with overrange (bit including sign), 	10 bit
max.	
Integration time, parameterizable	Yes
Conversion time (per channel)	625 µs
" ·	
Encoder	
Connectable encoders	Vac
• 2-wire sensor	Yes
1. Interface	
Interface type	PROFINET
Physics	Ethernet
Isolated	Yes
automatic detection of transmission rate	Yes
Autonegotiation	Yes
Autocrossing	Yes
Protocols	100

PROFINET IO Device Yes POPINET IO Device Yes Open IE communication Web server Yes PROFINET IO Controller Transmission rate, max. 100 Mbit/s Services Number of connectable IO Devices, max. PROFINET IO Device Services Services Services Supports of IO Controllers with shared device, max. Protocols Supports protocol for PROFINET IO PROFINET OF PROFINET IO PROFIDUS AS Interface Protocols (Ethernet) TOPIP Protocols (Ethernet) TOPIP Pes ISO-on-TCP (RFC1006) Upp Yes PROFIDUS Yes Upports device, was in the protocol of the protocols of the protocols (Ethernet) Topin Iso-on-TCP (RFC1006) Upp Yes Further protocols MODBUS Communication functions Sommunication Ves Sommunication Ves Sommunication Sommunication Ves Sommunication Ves Sommunication Ves Sommunication Ves Sommunication (Incitons) Sommunication Ves Sommunication Ves Sommunication (Incitons) Sommunication Ves Sommunication Ve		
Open IE communication Web server PROFINET IO Controller Transmission rate, max. Services — Number of connectable IO Devices, max. PROFINET IO Device Services — Number of IO Controllers with shared device, max. Protocols Supports protocol for PROFINET IO PROFIBUS AS-interface Protocols (Ethernet) TCP/IP Open IE communication TCP/IP Services - Supports Suppo	 PROFINET IO Controller 	Yes
Web server PROFINET IO Controller Transmission rate, max. Services — Number of connectable IO Devices, max. PROFINET IO Device Services — Shared device — Number of IO Controllers with shared device, max. Protocols Supports protocol for PROFINET IO PROFIBUS AS-Interface Protocols (Ethernet) • TCP/IP Open IE communication • TCP/IP • ISO-an-TCP (RFC1006) • UDP Web server • supported • User-defined websites Further protocols Further protocols Communication functions Status/control • Status/control • Status/control • Status/control • Status/control • Status/control • Status/control • Status/control • Status/control • Status/control • Status/control • Status/control • Status/control variable • Variables Ves Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters Communication functions Communication functions Status/control • Ves Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters Communication functions Communication functions Communication functions Status/control • Status/control • Status/control • Status/control • Status/control • Variables Status/control • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	PROFINET IO Device	Yes
PROFINET IO Controller In Transmission rate, max. Services Number of connectable IO Devices, max. PROFINET IO Device Services Services Services Number of IO Controllers with shared device, max. Protocols Supports protocol for PROFINET IO PROFIBUS AS-Interface Yes Protocols (Ethernet) TCP/IP Ves Open IE communication TCP/IP Ves Ves Ves Ves Ves Ves Ves Ve	Open IE communication	Yes
Transmission rate, max. Services - Number of connectable IO Devices, max. PROFINET IO Device Services - Shared device - Number of IO Controllers with shared device, max. Protocols Supports protocol for PROFINET IO Yes PROFIBUS AS-Interface Protocols (Ethernet) - TCP/IP Open IE communication - TCP/IP Open IE communication - TCP/IP (SiO-on-TC/RFC1006) - UDP Yes Web server - supported - User-defined websites - Yes Further protocols - MODBUS Yes Communication - supported - as server - as a client - as server - as a client - Yes Number of connections Status/control variable - Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	Web server	Yes
Services - Number of connectable IO Devices, max. PROFINET IO Device Services - Shared device - Number of IO Controllers with shared device, max. Protocols Supports protocol for PROFINET IO PROFIBUS Yes; CM 1243-5 required AS-Interface Protocols (Ethernet) • TCP/IP • TCP/IP • ISO-on-TCP (RFC1006) • UDP Yes Web server • supported • User-defined websites Futher protocols • MODBUS Communication • supported • user-defined websites Futher protocols • MODBUS Yes Communication • supported • as server • as client • as client Number of connections • overall Test commissioning functions Status/control • Status/control variable • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	PROFINET IO Controller	
- Number of connectable IO Devices, max. PROFINET IO Device Services - Shared device	Transmission rate, max.	100 Mbit/s
PROFINET IO Device Services — Shared device — Number of IO Controllers with shared device, max. Protocols Supports protocol for PROFINET IO PROFIBUS AS-Interface Protocols (Ethernet) • TCP/IP • Yes Open IE communication • TCP/IP • ISO-on-TCP (RFC1006) • UDP • Yes Web server • supported • User-defined websites Further protocols • MODBUS Formunication • Yes Communication • supported • as server • as client Number of connections • overall Test commissioning functions Status/control • Status/control variable • Variables I res I yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	Services	
Services	Number of connectable IO Devices, max.	16
Shared device Number of IO Controllers with shared device, max. Protocols Supports protocol for PROFINET IO PROFIBUS AS-Interface Protocols (Ethernet) • TCP/IP Pyes Popen IE communication • TCP/IP P(SO-on-TCP (RFC1006) Puber very • Supported Puber very • Subscript very • Subs	PROFINET IO Device	
Number of IO Controllers with shared device, max. Protocols Supports protocol for PROFINET IO Yes PROFIBUS Yes; CM 1243-5 required AS-Interface Yes Protocols (Ethernet) • TCP/IP Yes Open IE communication • TCP/IP Yes • ISO-on-TCP (RFC1006) Yes • UDP Yes Web server • supported Yes Further protocols • MODBUS Yes Further protocols • MODBUS Yes Sommunication • supported Yes • as server Yes • as client Yes Number of connections • overall 16; dynamically Test commissioning functions Status/control • Status/control variable • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	Services	
Protocols Supports protocol for PROFINET IO PROFIBUS AS-Interface Protocols (Ethernet) • TCP/IP Poper IE communication • TCP/IP Pose Ves Pose Ves Pose Ves Pose Ves Protocols (Ethernet) • TCP/IP Poper IE communication • TCP/IP Poper IE communication • TCP/IP Poper IE communication • UDP Pose Ves Pose V	— Shared device	Yes
Supports protocol for PROFINET IO PROFIBUS Yes; CM 1243-5 required AS-Interface Yes Protocols (Ethernet) • TCP/IP Yes Open IE communication • TCP/IP (ISO-on-TCP (RFC1006) • UDP Yes Web server • supported • User-defined websites Further protocols • MODBUS Yes Communication • supported Yes Yes Communication • supported Yes Yes Test communication • overall 16; dynamically Test commissioning functions Status/control • Status/control variable • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters		2
PROFIBUS AS-Interface Protocols (Ethernet) TCP/IP Ves Open IE communication TCP/IP ISO-on-TCP (RFC1006) UDP Ves Web server Supported User-defined websites Further protocols MODBUS Yes Communication functions S7 communication Sy supported as server as client Yes Number of connections Status/control Status/control Status/control variable Ves Ves Ves Ves Ves Ves Ves V	Protocols	
AS-Interface Yes Protocols (Ethernet) • TCP/IP Yes Open IE communication • TCP/IP Yes • ISO-on-TCP (RFC1006) Yes • UDP Yes Web server • supported Yes • User-defined websites Yes Further protocols • MODBUS Yes Communication functions \$7 communication • supported Yes • as server Yes • as client Yes Number of connections • overall 16; dynamically Test commissioning functions Status/control variable • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters		Yes
Protocols (Ethernet) • TCP/IP • TCP/IP Open IE communication • TCP/IP • ISO-on-TCP (RFC1006) • UDP Yes Web server • supported • User-defined websites Further protocols • MODBUS Yes Communication functions S7 communication • supported • sa server • as client Yes Number of connections • overall Test commissioning functions Status/control • Status/control • Status/control variable • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	PROFIBUS	Yes; CM 1243-5 required
TCP/IP Open IE communication TCP/IP ISO-on-TCP (RFC1006) UDP Yes Web server supported User-defined websites Further protocols MODBUS Yes Tommunication supported Yes Yes Yes Further protocols MODBUS Yes Tommunication ST communication Yes ST communication ST com	AS-Interface	Yes
Open IE communication • TCP/IP • ISO-on-TCP (RFC1006) • UDP Yes Web server • supported • User-defined websites Further protocols • MODBUS Yes Communication functions S7 communication • supported • as server • as client Number of connections • overall Test commissioning functions Status/control • Status/control • Status/control variable • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	Protocols (Ethernet)	
TCP/IP ISO-on-TCP (RFC1006) Ves UDP Yes Web server supported User-defined websites Yes Further protocols MODBUS Yes Communication functions S7 communication supported Sa server Sa sclient Yes ves Number of connections overall Test commissioning functions Status/control Status/control Status/control Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	• TCP/IP	Yes
ISO-on-TCP (RFC1006) UDP Yes Web server Supported User-defined websites Yes Further protocols MODBUS Yes Communication functions \$7 communication Status/control Status/control Status/control Status/control Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters Pes Ves Ves Yes Augustation Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	Open IE communication	
UDP Web server supported User-defined websites Further protocols MODBUS Yes Communication functions S7 communication supported sa server as client Number of connections overall Test commissioning functions Status/control Status/control Status/control Status/control variable Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	• TCP/IP	Yes
Web server • supported • User-defined websites Further protocols • MODBUS Communication functions \$7 communication • supported • as server • as client Number of connections • overall Test commissioning functions Status/control • Status/control • Status/control variable • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	• ISO-on-TCP (RFC1006)	Yes
supported User-defined websites Yes Further protocols MODBUS Communication functions S7 communication supported Yes as server as client Number of connections overall Test commissioning functions Status/control Status/control Status/control variable Ves Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters Overall Statis / Outputs, memory bits, DBs, distributed I/Os, timers, counters	• UDP	Yes
User-defined websites Further protocols MODBUS Yes Communication functions S7 communication supported supported as server as client Number of connections overall Test commissioning functions Status/control Status/control Pes Variables Ves Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	Web server	
Further protocols • MODBUS Yes Communication functions S7 communication • supported • as server • as client Number of connections • overall Test commissioning functions Status/control • Status/control variable • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	• supported	Yes
MODBUS Communication functions S7 communication supported supported as server as client Number of connections overall Test commissioning functions Status/control Status/control Status/control variable Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	 User-defined websites 	Yes
Communication functions S7 communication • supported • as server • as client Number of connections • overall Test commissioning functions Status/control • Status/control variable • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	Further protocols	
S7 communication • supported • as server • as client Number of connections • overall Test commissioning functions Status/control • Status/control • Status/control variable • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	• MODBUS	Yes
S7 communication • supported • as server • as client Number of connections • overall Test commissioning functions Status/control • Status/control • Status/control variable • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	Communication functions	
 as server as client Yes Number of connections overall 16; dynamically Test commissioning functions Status/control Status/control variable Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 		
 as client Number of connections overall 16; dynamically Test commissioning functions Status/control Status/control variable Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 	• supported	Yes
Number of connections • overall 16; dynamically Test commissioning functions Status/control • Status/control variable • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	• as server	Yes
 overall Test commissioning functions Status/control Status/control variable Variables Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 	• as client	Yes
Test commissioning functions Status/control • Status/control variable • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	Number of connections	
Status/control Status/control variable Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters	• overall	16; dynamically
 Status/control variable Variables Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 		
 Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 		Voo
counters		
Forcing	 Variables 	
	Forcing	

Forcing	Yes
Diagnostic buffer	
• present	Yes
Traces	
Number of configurable Traces	2; Up to 512 KB of data per trace are possible
Integrated Functions	
Number of counters	4
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	4; With integrated DO
PID controller	Yes
Number of alarm inputs	4
Number of pulse outputs	4
Limit frequency (pulse)	100 kHz
Potential separation Potential separation digital inputs	
Potential separation digital inputs	500V AC for 1 minute
 between the channels, in groups of 	1
Potential separation digital outputs	
Potential separation digital outputs	Yes
• between the channels	No
• between the channels, in groups of	1
EMC	
Interference immunity against discharge of static electric	city
 Interference immunity against discharge of static electricity acc. to IEC 61000-4-2 	Yes
 Test voltage at air discharge 	8 kV
 Test voltage at contact discharge 	6 kV
Interference immunity to cable-borne interference	
 Interference immunity on supply lines acc. to IEC 61000-4-4 	Yes
 Interference immunity on signal cables acc. to IEC 61000-4-4 	Yes
Interference immunity against voltage surge	
• on the supply lines acc. to IEC 61000-4-5	Yes
Interference immunity against conducted variable distur	bance induced by high-frequency fields
 Interference immunity against high-frequency radiation acc. to IEC 61000-4-6 	Yes
Emission of radio interference acc. to EN 55 011	

• Limit class A, for use in industrial areas

• Limit class B, for use in residential areas

Yes; Group 1

Yes; When appropriate measures are used to ensure compliance with the limits for Class B according to EN 55011

Degree and class of protection	
Degree of protection acc. to EN 60529	
• IP20	Yes

Armbient conditions Free fall • Fall height, max. Ambient temperature during operation • min. • max. • horizontal installation, min. • horizontal installation, min. • horizontal installation, min. • vertical installation, min. • vertical installation, max. • vertical installation installation, max. • vertical installation installation, max. • vertical installation installation, max. • Ant cold restart, min. Ambient temperature during storage/transportation • min. • max. Anthient air temperature-barometric pressurealitude • Installation altitude above sea level, max. • Ambient air temperature-barometric pressurealitude • With condensation, tested in accordance with IEC 60068-2-38, max. Vibrations • Vibration resistance during operation acc. to IEC 60068-2-6 • Operation, tested according to IEC 60068-2-7 • Ves: IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value), duration 11 ms Resistance Coolants and lubricants Ves: Incl. diesel and oil droplets in the air coolants and lubricants Ves: Incl. diesel and oil droplets in the air coolants and lubricants	• IP20	Yes	
• Fall height, max. Ambient temperature during operation • min. • max. 60 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C 60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • 70 °C Ambient temperature during storage/transportation • min. • max. • And or C Altitude during operation relating to sea level • Installation altitude above sea level, max. • Ambient air temperature-barometric pressure-altitude • Installation altitude above sea level, max. • Ambient air temperature-barometric pressure-altitude • With condensation, tested in accordance with IEC 60068-2-38, max. Pound in the condensation in tested in accordance with IEC 60068-2-38, max. • Vibrations • Vibration resistance during operation acc. to IEC 60068-2-6 • Operation, tested according to IEC 60068-2-6 • Operation, tested according to IEC 60068-2-7 Yes: IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value), duration 11 ms Resistance Coolants and lubricants — Resistant to commercially available Pound in the since of simulation of simulation of simulation of simulation of the condensation of simulation of simulation of the condensation of simulation of simulation of the condensation of simulation of condensation of simulation of simulation of condensation of simulation of s	Ambient conditions		
Ambient temperature during operation • min. • max. 60 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C 60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, min. • vertical installation, max. • At cold restart, min. • min. • min. • max. Anbient temperature during storage/transportation • min. • max. Antibient air temperature-barometric pressurealititude • Installation altitude above sea level, max. • Ambient air temperature-barometric pressurealititude • With condensation, tested in accordance with IEC 60068-2-38, max. Vibrations • Vibration resistance during operation acc. to IEC 60068-2-6 • Operation, tested according to IEC 60068-2-6 Shock testing • tested according to IEC 60068-2-7 Pessistance Coolants and lubricants — Resistant to commercially available 7es Tmin (incl. condensation/frost); start-up @ 0 °C Altitude of °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical of 60 °C • Volo °C Ambient temperature during storage/transportation • Tmin Tmax at 1 140 hpa 795 hpa (-1 000 m +2 000 m) // Tmin (Tmax - 20 K) at 658 hpa 540 hpa (+3 500 m +5 000 m) // Tmin (Tmax - 20 K) at 658 hpa 540 hpa (+3 500 m +5 000 m) // Tmin (Tmax - 20 K) at 658 hpa 540 hpa (+3 500 m +5 000 m) // Tmin (Tmax - 20 K) at 658 hpa 540 hpa (+3 500 m +5 000 m) // Tmin (Tmax - 20 K) at 658 hpa 540 hpa (+3 500 m +5 000 m) // Tmin (Tmax - 10 K			
min. max. max.	● Fall height, max.	0.3 m; five times, in product package	
max.	Ambient temperature during operation		
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, min. • vertical installation, min. • vertical installation, max. • At cold restart, min. Ambient temperature during storage/transportation • min. • max. Altitude during operation relating to sea level • Installation altitude above sea level, max. • Ambient air temperature-barometric pressure-altitude • Installation altitude above sea level, max. • Ambient air temperature-barometric pressure-altitude • With condensation, tested in accordance with IEC 60068-2-38, max. • Vibrations • Vibration resistance during operation acc. to IEC 60068-2-6 • Operation, tested according to IEC 60068-2-6 • Operation, tested according to IEC 60068-2-7 • Yes: IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value), duration 11 ms Resistance Coolants and lubricants — Resistant to commercially available Yes: Incl. diesel and oil droplets in the air	• min.	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C	
horizontal installation, max. vertical installation, min. vertical installation, max. At cold restart, min. At cold restart, min. At cold restart, min. At o'C Ambient temperature during storage/transportation max. Altitude during operation relating to sea level Installation altitude above sea level, max. Ambient air temperature-barometric pressure-altitude Installation altitude above sea level, max. Ambient air temperature-barometric pressure-altitude Vibration Relative humidity With condensation, tested in accordance with IEC 60068-2-38, max. Vibrations Vibration resistance during operation acc. to IEC 60068-2-6 Operation, tested according to IEC 60068-2-6 Operation, tested according to IEC 60068-2-7 Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value), duration 11 ms Resistance Coolants and lubricants — Resistant to commercially available Yes; Incl. diesel and oil droplets in the air	• max.	3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6	
vertical installation, min. vertical installation, max. At cold restart, min. Arbient temperature during storage/transportation min. max. Altitude during operation relating to sea level Installation altitude above sea level, max. Ambient air temperature-barometric pressurealtitude Installation altitude above sea level, max. Ambient air temperature-barometric pressurealtitude Image: Some the state of th	 horizontal installation, min. 	-20 °C	
vertical installation, max. At cold restart, min. Ambient temperature during storage/transportation min.	 horizontal installation, max. 	60 °C	
At cold restart, min. Ambient temperature during storage/transportation inin. inax. Altitude during operation relating to sea level installation altitude above sea level, max. Anhient air temperature-barometric pressurealtitude inin.	 vertical installation, min. 	-20 °C	
Ambient temperature during storage/transportation • min. • max. Altitude during operation relating to sea level • Installation altitude above sea level, max. • Ambient air temperature-barometric pressure-altitude • With condensation, tested in accordance with IEC 60068-2-38, max. Vibrations • Vibration resistance during operation acc. to IEC 60068-2-6 • Operation, tested according to IEC 60068-2-7 Shock testing • tested according to IEC 60068-2-7 Coolants and lubricants - Resistance Coolants and lubricants - Resistant to commercially available Ambient air temperature during operation acs. 40 °C 70 °C Altitude during operation tested acvording to sea level - 40 °C 70 °C - 40 °	 vertical installation, max. 	50 °C	
 min. max. Altitude during operation relating to sea level Installation altitude above sea level, max. Ambient air temperature-barometric pressurealtitude Tmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m) // Tmin (Tmax -10 K) at 795 hPa 658 hPa (+2 000 m +3 500 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) With condensation, tested in accordance with IEC 60068-2-38, max. Vibrations Vibration resistance during operation acc. to IEC 60068-2-6 Operation, tested according to IEC 60068-2-6 Operation, tested according to IEC 60068-2-7 Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value), duration 11 ms Resistance Coolants and lubricants Resistant to commercially available Yes; Incl. diesel and oil droplets in the air 	 At cold restart, min. 	0 °C	
Max. Altitude during operation relating to sea level Installation altitude above sea level, max. Ambient air temperature-barometric pressure-altitude Tmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m) // Tmin (Tmax - 10 K) at 795 hPa 658 hPa (+2 000 m +3 500 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa	Ambient temperature during storage/transportation		
Altitude during operation relating to sea level Installation altitude above sea level, max. Ambient air temperature-barometric pressurealtitude Tmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m) // Tmin (Tmax - 10 K) at 795 hPa 658 hPa (+2 000 m +3 500 m) // Tmin (Tmax - 20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) Relative humidity With condensation, tested in accordance with IEC 60068-2-38, max. Vibrations Vibration resistance during operation acc. to IEC 60068-2-6 Operation, tested according to IEC 60068-2-6 Shock testing Ves; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value), duration 11 ms Resistance Coolants and lubricants Resistant to commercially available Ves; Incl. diesel and oil droplets in the air	• min.	-40 °C	
Installation altitude above sea level, max. Ambient air temperature-barometric pressure-altitude Tmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m) // Tmin (Tmax - 10 K) at 795 hPa 658 hPa (+2 000 m +3 500 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -10 K) at 795 hPa 658 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -10 K) at 795 hPa 658 hPa 540 hPa (+3 500 m +5 000 m) // Tmin (Tmax -20 K) at 658 hPa 540 hP	• max.	70 °C	
Ambient air temperature-barometric pressure- altitude Tmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m) // Tmin (Tmax - 10 K) at 795 hPa 658 hPa (+2 000 m +3 500 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) Relative humidity With condensation, tested in accordance with IEC 60068-2-38, max. Vibrations Vibrations Vibration resistance during operation acc. to IEC 60068-2-6 Operation, tested according to IEC 60068-2-6 Yes Shock testing tested according to IEC 60068-2-7 Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value), duration 11 ms Resistance Coolants and lubricants — Resistant to commercially available Yes; Incl. diesel and oil droplets in the air	Altitude during operation relating to sea level		
Tmin (Tmax - 10 K) at 795 hPa 658 hPa (+2 000 m +3 500 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) Relative humidity • With condensation, tested in accordance with IEC 60068-2-38, max. 100 %; RH incl. condensation/frost (no commissioning under condensation conditions) Vibrations • Vibration resistance during operation acc. to IEC 60068-2-6 • Operation, tested according to IEC 60068-2-6 Shock testing • tested according to IEC 60068-2-7 Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value), duration 11 ms Resistance Coolants and lubricants — Resistant to commercially available Yes; Incl. diesel and oil droplets in the air	 Installation altitude above sea level, max. 	5 000 m	
With condensation, tested in accordance with IEC 60068-2-38, max. Vibrations Vibration resistance during operation acc. to IEC 60068-2-6 Operation, tested according to IEC 60068-2-6 Shock testing tested according to IEC 60068-2-7 Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value), duration 11 ms Resistance Coolants and lubricants — Resistant to commercially available Yes; Incl. diesel and oil droplets in the air	· · · · · · · · · · · · · · · · · · ·	Tmin (Tmax - 10 K) at 795 hPa 658 hPa (+2 000 m +3 500 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5	
Vibrations • Vibration resistance during operation acc. to IEC 60068-2-6 • Operation, tested according to IEC 60068-2-6 Shock testing • tested according to IEC 60068-2-7 Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value), duration 11 ms Resistance Coolants and lubricants — Resistant to commercially available Yes; Incl. diesel and oil droplets in the air	Relative humidity		
 Vibration resistance during operation acc. to IEC 60068-2-6 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 Resistance Coolants and lubricants Resistant to commercially available Yes; Incl. diesel and oil droplets in the air 			
IEC 60068-2-6 • Operation, tested according to IEC 60068-2-6 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 Resistance Coolants and lubricants — Resistant to commercially available Yes; Incl. diesel and oil droplets in the air	Vibrations		
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 Resistance Coolants and lubricants — Resistant to commercially available Yes; Incl. diesel and oil droplets in the air		2 g (m/s²) wall mounting, 1 g (m/s²) DIN rail	
• 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 Resistance Coolants and lubricants — Resistant to commercially available Yes; Incl. diesel and oil droplets in the air	 Operation, tested according to IEC 60068-2-6 	Yes	
value), duration 11 ms Resistance Coolants and lubricants — Resistant to commercially available Yes; Incl. diesel and oil droplets in the air	Shock testing		
Coolants and lubricants — Resistant to commercially available Yes; Incl. diesel and oil droplets in the air	• tested according to IEC 60068-2-27	- "	
Resistant to commercially available Yes; Incl. diesel and oil droplets in the air	Resistance		
	Coolants and lubricants		
	•	Yes; Incl. diesel and oil droplets in the air	
Use in stationary industrial systems	Use in stationary industrial systems		

Yes; Class 3B2 mold, fungus and dry rot spores (with the - to biologically active substances according to EN 60721-3-3 exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-- to chemically active substances according 52 (severity degree 3); * to EN 60721-3-3 Yes; Class 3S4 incl. sand, dust, * — to mechanically active substances according to EN 60721-3-3 Use on ships/at sea Yes; Class 6B2 mold and fungal spores (excluding fauna); Class - to biologically active substances according 6B3 on request to EN 60721-3-6 - to chemically active substances according Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * to EN 60721-3-6 Yes; Class 6S3 incl. sand, dust; * - to mechanically active substances according to EN 60721-3-6 Usage in industrial process technology Yes; Class 3 (excluding trichlorethylene) - Against chemically active substances acc. to EN 60654-4 Yes; Level GX group A/B (excluding trichlorethylene; harmful gas - Environmental conditions for process, measuring and control systems acc. to concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil) ANSI/ISA-71.04 Remark * The supplied plug covers must remain in place over the unused - Note regarding classification of interfaces during operation! environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04 Conformal coating Yes; Class 2 for high availability • Coatings for printed circuit board assemblies acc. to EN 61086 Yes; Type 1 protection • Protection against fouling acc. to EN 60664-3 Yes; Discoloration of coating possible during service life Military testing according to MIL-I-46058C, Amendment 7 • Qualification and Performance of Electrical Yes; Conformal coating, Class A Insulating Compound for Printed Board Assemblies according to IPC-CC-830A Configuration Programming Programming language Yes - LAD Yes - FBD

Yes

Yes

Width	90 mm
Height	100 mm

- SCL

Cycle time monitoringadjustable

Depth	75 mm
Weights	
Weight, approx.	370 g
last modified:	08/27/2019