## **SIEMENS**

## Data sheet

6ES7212-1HE40-0XB0

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



General information	
Product type designation	CPU 1212C DC/DC/relay
Firmware version	V4.2
Engineering with	
Programming package	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)	400 mA; CPU only
Current consumption, max.	1 200 mA; CPU with all expansion modules

Pit 0.8 A²-s  Output current for backplane bus (5 V DC), max. 1 000 mA; Max. 5 V DC for SM and CM  Encoder supply 24 V encoder supply • 24 V	Inrush current, max.	12 A; at 28.8 V
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 encoder supply 24 V encoder supply 28 V encoder supply 29 V L+ minus 4 V DC min.  Power loss Power loss, typ. 9 W  Memory  Work memory  integrated expandable No  Load memory  integrated Plug-in (SIMATIC Memory Card), max.  Backup  orresent emaintenance-free visithout battery  Poss  CPU processing times for bit operations, typ. 0 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.  Flag Number, max.  4 kbyte; Size of bit memory address area		
for backplane bus (5 V DC), max.  Encoder supply 24 V encoder supply 24 V encoder supply 24 V encoder supply 24 V encoder supply 25 V encoder supply 26 V encoder supply 27 V Enrinus 4 V DC min.  28 Power loss, typ.  9 W  29 W  Memory  Work memory  integrated 20 No  Load memory  integrated 21 Mbyte 22 Mbyte 24 With SIMATIC memory card  Backup  10 Present 25 Ves 26 Without battery  Present 26 Without battery  CPU processing times 27 For bit operations, typ. 28 Jus; / instruction 29 Jus; / instruction 20 Jus; / instruction 21	11	U.U A 3
Encoder supply  24 V encoder supply  24 V L+ minus 4 V DC min.  Power loss Power loss, typ. 9 W  Memory  Work memory  integrated 75 kbyte expandable No  Load memory integrated 2 Mbyte ePlug-in (SIMATIC Memory Card), max. with SIMATIC memory card  Backup epresent 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  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  Limited only by RAM for code  A kbyte; Size of bit memory address area	Output current	
24 V encoder supply  • 24 V L+ minus 4 V DC min.  Power loss Power loss, typ.  9 W  Memory  Work memory  • integrated • expandable Load memory • integrated • Plug-in (SIMATIC Memory Card), max.  Backup • present • maintenance-free • without battery  CPU processing times  for bit operations, typ. for word operations, typ. for word operations, 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.  Flag • Number, max.  4 kbyte; Size of bit memory address area	for backplane bus (5 V DC), max.	1 000 mA; Max. 5 V DC for SM and CM
24 V encoder supply  • 24 V L+ minus 4 V DC min.  Power loss Power loss, typ.  9 W  Memory  Work memory  • integrated • expandable Load memory • integrated • Plug-in (SIMATIC Memory Card), max.  Backup • present • maintenance-free • without battery  CPU processing times  for bit operations, typ. for word operations, typ. for word operations, 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.  Flag • Number, max.  4 kbyte; Size of bit memory address area	Encoder supply	
Power loss Power loss, typ.  Memory  Work memory  integrated expandable No  Load memory integrated Plug-in (SIMATIC Memory Card), max.  Backup present maintenance-free without battery  Yes without battery  CPU processing times for bit operations, typ. for floating point arithmetic, typ.  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.  Flag Number, max.  4 kbyte; Size of bit memory address area		
Power loss, typ.  Memory  Work memory  integrated expandable  Load memory  integrated Plug-in (SIMATIC Memory Card), max.  Backup  present maintenance-free without battery  CPU processing times for bit operations, typ. for floating point arithmetic, typ.  CPU-blocks  Number of blocks (total)  Data areas and their retentivity  Retentive data area (incl. timers, counters, flags), max.  Flag  Number, max.  Piskyte  To kbyte  Abyte  To kbyte  No  Abyte  To kbyte  To	• 24 V	L+ minus 4 V DC min.
Power loss, typ.  Memory  Work memory  integrated expandable  Load memory  integrated Plug-in (SIMATIC Memory Card), max.  Backup  present maintenance-free without battery  CPU processing times for bit operations, typ. for floating point arithmetic, typ.  CPU-blocks  Number of blocks (total)  Data areas and their retentivity  Retentive data area (incl. timers, counters, flags), max.  Flag  Number, max.  Piskyte  To kbyte  Abyte  To kbyte  No  Abyte  To kbyte  To		
Memory  Work memory  integrated expandable No  Load memory  integrated Plug-in (SIMATIC Memory Card), max.  Backup  present maintenance-free without battery  CPU processing times for bit operations, typ. for word operations, typ. for floating point arithmetic, typ.  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  Data areas and their retentivity  Retentive data area (incl. timers, counters, flags), max.  Flag Number, max.  4 kbyte; Size of bit memory address area		OW
Work memory          • integrated	Power loss, typ.	9 W
integrated expandable No  Load memory  integrated Plug-in (SIMATIC Memory Card), max.  Backup  present maintenance-free without battery  CPU processing times for bit operations, typ. for floating point arithmetic, typ.  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  Data areas and their retentivity  Retentive data area (incl. timers, counters, flags), max.  Flag Number, max.  V Mbyte with SIMATIC memory card with SIMATIC memory card with SIMATIC memory card with SIMATIC memory card  2 Mbyte with SIMATIC memory card  2 Mbyte with SIMATIC memory card  2 Mbyte with SIMATIC memory card  Backup  10 kbyte  10 kbyte Number, max.  4 kbyte; Size of bit memory address area	Memory	
• expandable     Load memory     • integrated     • Plug-in (SIMATIC Memory Card), max.  Backup     • present     • maintenance-free     • without battery  CPU processing times  for bit operations, typ.     for word operations, typ.     for floating point arithmetic, typ.  CPU-blocks  Number of blocks (total)  Baskup  • Number, max.  No  No  No  No  No  No  No  No  No  N	Work memory	
Load memory  integrated Plug-in (SIMATIC Memory Card), max.  Backup  present maintenance-free without battery  CPU processing times for bit operations, typ. for word operations, typ. for floating point arithmetic, typ.  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  Data areas and their retentivity  Retentive data area (incl. timers, counters, flags), max.  Flag Number, max.  4 kbyte; Size of bit memory address area	integrated	75 kbyte
integrated Plug-in (SIMATIC Memory Card), max.  Backup  present maintenance-free without battery  Puprocessing times for bit operations, typ. for word operations, typ. for floating point arithmetic, typ.  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.  Flag Number, max.  4 kbyte; Size of bit memory address area	• expandable	No
Plug-in (SIMATIC Memory Card), max. with SIMATIC memory card  Backup  Present  maintenance-free  without battery  Pes  for bit operations, typ. for word operations, typ. for floating point arithmetic, typ.  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.  Flag  Number, max.  4 kbyte; Size of bit memory address area	Load memory	
Backup  • present  • present  • maintenance-free  • without battery  CPU processing times  for bit operations, typ.  for word operations, typ.  for floating point arithmetic, typ.  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.  Flag  • Number, max.  4 kbyte; Size of bit memory address area	• integrated	2 Mbyte
<ul> <li>present</li> <li>maintenance-free</li> <li>without battery</li> <li>CPU processing times</li> <li>for bit operations, typ.</li> <li>for word operations, typ.</li> <li>for floating point arithmetic, typ.</li> <li>2.3 μs; / instruction</li> <li>CPU-blocks</li> <li>Number of blocks (total)</li> <li>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</li> <li>OB</li> <li>Number, max.</li> <li>Limited only by RAM for code</li> <li>Data areas and their retentivity</li> <li>Retentive data area (incl. timers, counters, flags), max.</li> <li>Flag</li> <li>Number, max.</li> <li>4 kbyte; Size of bit memory address area</li> </ul>	<ul> <li>Plug-in (SIMATIC Memory Card), max.</li> </ul>	with SIMATIC memory card
<ul> <li>maintenance-free</li> <li>without battery</li> <li>Yes</li> <li>CPU processing times</li> <li>for bit operations, typ.</li> <li>for word operations, typ.</li> <li>for floating point arithmetic, typ.</li> <li>2.3 µs; / instruction</li> <li>CPU-blocks</li> <li>Number of blocks (total)</li> <li>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</li> <li>OB</li> <li>Number, max.</li> <li>Limited only by RAM for code</li> <li>Data areas and their retentivity</li> <li>Retentive data area (incl. timers, counters, flags), max.</li> <li>Flag</li> <li>Number, max.</li> <li>4 kbyte; Size of bit memory address area</li> </ul>	Backup	
• without battery  Pes  CPU processing times  for bit operations, typ.  for word operations, typ.  for floating point arithmetic, typ.  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.  Flag  • Number, max.  4 kbyte; Size of bit memory address area	• present	Yes
CPU processing times  for bit operations, typ.  for word operations, typ.  for floating point arithmetic, typ.  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.  Flag  Number, max.  4 kbyte; Size of bit memory address area	maintenance-free	Yes
for bit operations, typ.  for word operations, typ.  for floating point arithmetic, typ.  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.  Flag  Number, max.  4 kbyte; Size of bit memory address area	without battery	Yes
for word operations, typ.  for floating point arithmetic, typ.  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.  Flag  Number, max.  4 kbyte; Size of bit memory address area	CPU processing times	
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.  Flag  Number, max.  4 kbyte; Size of bit memory address area	for bit operations, typ.	0.08 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.  Flag  Number, max.  4 kbyte; Size of bit memory address area	for word operations, typ.	1.7 µs; / instruction
Number of blocks (total)  DBs, FCs, FBs, counters and timers. The maximum number of addressable blocks ranges from 1 to 65535. There is no restriction, the entire working memory can be used  OB  Number, max.  Limited only by RAM for code  Data areas and their retentivity  Retentive data area (incl. timers, counters, flags), max.  Flag  Number, max.  4 kbyte; Size of bit memory address area	for floating point arithmetic, typ.	2.3 μs; / instruction
Number of blocks (total)  DBs, FCs, FBs, counters and timers. The maximum number of addressable blocks ranges from 1 to 65535. There is no restriction, the entire working memory can be used  OB  Number, max.  Limited only by RAM for code  Data areas and their retentivity  Retentive data area (incl. timers, counters, flags), max.  Flag  Number, max.  4 kbyte; Size of bit memory address area	CPU-blocks	
<ul> <li>Number, max.</li> <li>Limited only by RAM for code</li> <li>Data areas and their retentivity</li> <li>Retentive data area (incl. timers, counters, flags), max.</li> <li>Flag</li> <li>Number, max.</li> <li>4 kbyte; Size of bit memory address area</li> </ul>	Number of blocks (total)	addressable blocks ranges from 1 to 65535. There is no
Data areas and their retentivity  Retentive data area (incl. timers, counters, flags), max.  Flag  • Number, max.  4 kbyte; Size of bit memory address area	ОВ	
Retentive data area (incl. timers, counters, flags), max.  Flag  • Number, max.  4 kbyte; Size of bit memory address area	• Number, max.	Limited only by RAM for code
max.  Flag  ● Number, max.  4 kbyte; Size of bit memory address area	Data areas and their retentivity	
Flag  ● Number, max.  4 kbyte; Size of bit memory address area	Retentive data area (incl. timers, counters, flags),	10 kbyte
Number, max.     4 kbyte; Size of bit memory address area		
	Flag	
Local data		4 kbyte; Size of bit memory address area
	Local data	
<ul> <li>per priority class, max.</li> <li>16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2</li> <li>to 26: 6 KB</li> </ul>	• per priority class, max.	16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2 to 26: 6 KB
Address area	Address area	
Process image	Process image	

• Inputs, adjustable	1 kbyte
Outputs, adjustable	1 kbyte
Hardware configuration	
Number of modules per system, max.	3 comm. modules, 1 signal board, 2 signal modules
Time of day	
Time of day  Clock	
Hardware clock (real-time)	Yes
Backup time	480 h; Typical
Deviation per day, max.	±60 s/month at 25 °C
Deviation per day, max.	200 0/1101tu1 at 20 0
Digital inputs	
Number of digital inputs	8; Integrated
<ul> <li>of which inputs usable for technological functions</li> </ul>	4; HSC (High Speed Counting)
Source/sink input	Yes
Number of simultaneously controllable inputs	165
all mounting positions	0
— up to 40 °C, max.	8
Input voltage	24.17
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.	0.2 ms
— at "0" to "1", max.	12.8 ms
for interrupt inputs	
— parameterizable	Yes
for counter/technological functions	
— parameterizable	Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz
Cable length	
• shielded, max.	500 m; 50 m for technological functions
• unshielded, max.	300 m; For technological functions: No
Digital outputs	
Number of digital outputs	6; 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	
• shielded, max.	500 m
• unshielded, max.	150 m
Analog inputs  Number of analog inputs	2
Input ranges	2
• Voltage	Yes
Input ranges (rated values), voltages	165
• 0 to +10 V	Yes
	≥100k ohms
• Input resistance (0 to 10 V)  Cable length	2 TOOK OHITIS
• shielded, max.	100 m; twisted and shielded
• Silleided, max.	100 m, twisted and sineided
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.	
<ul> <li>Integration time, parameterizable</li> </ul>	Yes
<ul> <li>Conversion time (per channel)</li> </ul>	625 µs
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
• integrated switch	No
Functionality	
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
- I IVOI IIVET TO DEVICE	

SIMATIC communication	Yes
Open IE communication	Yes
• Web server	Yes
Media redundancy	No
PROFINET IO Controller	
Transmission rate, max.	100 Mbit/s
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	No
<ul> <li>Open IE communication</li> </ul>	Yes
— IRT	No
— MRP	No
— MRPD	No
— PROFlenergy	No
<ul> <li>Prioritized startup</li> </ul>	Yes
<ul> <li>Number of IO devices with prioritized</li> </ul>	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
<ul> <li>Number of IO Controllers with shared</li> </ul>	2
device, max.	

Supports protocol for PROFINET IO	Yes
PROFIBUS	Yes; CM 1243-5 required
AS-Interface	Yes; CM 1243-2 required
Protocols (Ethernet)	
• TCP/IP	Yes
• DHCP	No
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Open IE communication	
• TCP/IP	Yes
— Data length, max.	8 kbyte
• ISO-on-TCP (RFC1006)	Yes
— Data length, max.	8 kbyte
• UDP	Yes
— Data length, max.	1 472 byte
Web server	
User-defined websites	Yes
Further protocols	
• MODBUS	Yes
Communication functions S7 communication	
• supported	Yes
as server	Yes
• as client	Yes
User data per job, max.	See online help (S7 communication, user data size)
Web server	dee drillite freip (dr. communication, deer data size)
• supported	Yes
Number of connections	1.00
• overall	16; dynamically
ovorali	,,
Test commissioning functions	
Status/control	
Status/control variable	Yes
Variables	Inputs/outputs, memory bits, DBs, distributed I/Os, timers,
Forcing	counters
● Forcing	Yes
Diagnostic buffer	100
	Yes
• present  Traces	. 55
Hauca	
Number of configurable Traces	2

Interrupts/diagnostics/status information  Diagnostics indication LED  • RUN/STOP LED • ERROR LED • MAINT LED  Integrated Functions  Number of counters  Counting frequency (counter) max.  Frequency measurement  controlled positioning  Number of position-controlled positioning axes, max.  Number of positioning axes via pulse-direction interface  PID controller  Number of alarm inputs  Yes  Ves  Ves  Ves  Ves  Ves  Ves  Ve	• Memory size per trace, max.	512 kbyte
<ul> <li>RUN/STOP LED</li> <li>ERROR LED</li> <li>MAINT LED</li> <li>Yes</li> </ul> Integrated Functions Number of counters <ul> <li>Counting frequency (counter) max.</li> <li>Frequency measurement</li> <li>controlled positioning</li> <li>Number of position-controlled positioning axes, max.</li> </ul> Number of position-controlled positioning axes, max. <ul> <li>Number of positioning axes via pulse-direction interface</li> <li>PID controller</li> <li>Yes</li> </ul> Yes	Interrupts/diagnostics/status information	
● ERROR LED  MAINT LED  Yes  Integrated Functions  Number of counters  Counting frequency (counter) max.  Frequency measurement  yes  controlled positioning  Number of position-controlled positioning axes, max.  Number of positioning axes via pulse-direction interface  PID controller  Yes	Diagnostics indication LED	
● MAINT LED  Yes  Integrated Functions  Number of counters  Counting frequency (counter) max.  Frequency measurement  Controlled positioning  Yes  Number of position-controlled positioning axes, max.  Number of positioning axes via pulse-direction interface  PID controller  Yes	RUN/STOP LED	Yes
Integrated Functions  Number of counters  4  Counting frequency (counter) max.  Frequency measurement  yes  controlled positioning  Yes  Number of position-controlled positioning axes, max.  Number of positioning axes via pulse-direction interface  PID controller  Yes	• ERROR LED	Yes
Number of counters  Counting frequency (counter) max.  Frequency measurement  Controlled positioning  Yes  Number of position-controlled positioning axes, max.  Number of positioning axes via pulse-direction interface  PID controller  Yes	• MAINT LED	Yes
Counting frequency (counter) max.  Frequency measurement Yes  controlled positioning Yes  Number of position-controlled positioning axes, max.  Number of positioning axes via pulse-direction interface  PID controller  Yes	Integrated Functions	
Frequency measurement  controlled positioning  Yes  Number of position-controlled positioning axes, max.  Number of positioning axes via pulse-direction interface  PID controller  Yes  Up to 4 with SB 1222	Number of counters	4
Controlled positioning  Yes  Number of position-controlled positioning axes, max.  Number of positioning axes via pulse-direction interface  PID controller  Yes  Yes	Counting frequency (counter) max.	100 kHz
Number of position-controlled positioning axes, max.  Number of positioning axes via pulse-direction interface  PID controller  Yes	Frequency measurement	Yes
Number of positioning axes via pulse-direction unterface  PID controller  Up to 4 with SB 1222  Yes		Yes
interface Yes		
		Up to 4 with SB 1222
Number of alarm inputs 4	PID controller	Yes
	Number of alarm inputs	4
Potential separation	Potential separation	
Potential separation digital inputs	Potential separation digital inputs	
<ul> <li>Potential separation digital inputs</li> <li>500V AC for 1 minute</li> </ul>	<ul> <li>Potential separation digital inputs</li> </ul>	500V AC for 1 minute
• between the channels, in groups of	<ul><li>between the channels, in groups of</li></ul>	1
Potential separation digital outputs	Potential separation digital outputs	
Potential separation digital outputs     Relays	Potential separation digital outputs	Relays
• between the channels No	• between the channels	No
• between the channels, in groups of 2	<ul> <li>between the channels, in groups of</li> </ul>	2
EMC		
Interference immunity against discharge of static electricity	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 air discharge	8 kV
— Test voltage at contact discharge 6 kV	<ul> <li>Test voltage at contact discharge</li> </ul>	6 kV
Interference immunity to cable-borne interference	Interference immunity to cable-borne interference	
• Interference immunity on supply lines acc. to Yes IEC 61000-4-4		Yes
• Interference immunity on signal cables acc. to Yes IEC 61000-4-4	• •	Yes
Interference immunity against voltage surge	Interference immunity against voltage surge	
• on the supply lines acc. to IEC 61000-4-5 Yes	• on the supply lines acc. to IEC 61000-4-5	Yes
Interference immunity against conducted variable disturbance induced by high-frequency fields		
• Interference immunity against high-frequency radiation acc. to IEC 61000-4-6		Yes
Emission of radio interference acc. to EN 55 011	E : : ( ): : ( ) ( ENERO 44	

• 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
Standards, approvals, certificates	
CE mark	Yes
UL approval	Yes
cULus	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes
Marine approval	Yes
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-20 °C
• max.	60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical
<ul> <li>horizontal installation, min.</li> </ul>	-20 °C
<ul> <li>horizontal installation, max.</li> </ul>	60 °C
• vertical installation, min.	-20 °C
• vertical installation, max.	50 °C
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Air pressure acc. to IEC 60068-2-13	
Operation, min.	795 hPa
Operation, max.	1 080 hPa
Storage/transport, min.	660 hPa
Storage/transport, max.	1 080 hPa
Altitude during operation relating to sea level	
Installation altitude, min.	-1 000 m
<ul> <li>Installation altitude, max.</li> </ul>	2 000 m
Relative humidity	
Operation, max.	95 %; no condensation
Vibrations	
<ul> <li>Vibration resistance during operation acc. to IEC 60068-2-6</li> </ul>	2 g (m/s²) wall mounting, 1 g (m/s²) DIN rail

Operation, tested according to IEC 60068-2-6	Yes
Shock testing	
• tested according to IEC 60068-2-27	Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value), duration 11 ms
Pollutant concentrations	
• SO2 at RH < 60% without condensation	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	
User program protection/password protection	Yes
<ul> <li>Copy protection</li> </ul>	Yes
Block protection	Yes
Access protection	
Protection level: Write protection	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.	385 g
last modified:	04/13/2018