## **SIEMENS**

## Data sheet

## 6ES7212-1AE40-0XB0

SIMATIC S7-1200, CPU 1212C, compact CPU, DC/DC/DC, onboard I/O: 8 DI 24 V DC; 6 DO 24 V DC; 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/DC
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
<ul> <li>permissible range, upper limit (DC)</li> </ul>	28.8 V
Input current	
Current consumption (rated value)	400 mA; CPU only
Current consumption, max.	1 200 mA; CPU with all expansion modules

Inrush current, max.	12 A; at 28.8 V DC
l²t	0.5 A <sup>2</sup> ·s
Output current	
for backplane bus (5 V DC), max.	1 000 mA; Max. 5 V DC for SM and CM
Encoder supply 24 V encoder supply	
• 24 V	L+ minus 4 V DC min.
• Z4 V	
Power loss	
Power loss, typ.	9 W
Memory	
Work memory	
• integrated	75 kbyte
• expandable	No
Load memory	
• integrated	2 Mbyte
<ul> <li>Plug-in (SIMATIC Memory Card), max.</li> </ul>	with SIMATIC memory card
Backup	
• present	Yes
maintenance-free	Yes
• 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 code
• Number, max.	Limited only by RAM for code
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags),	10 kbyte
max.	
Flag	4 khuta: Siza of hit mamori address area
Number, max.	4 kbyte; Size of bit memory address area
Local data	16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2
<ul> <li>per priority class, max.</li> </ul>	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 comm. modules, 1 signal board, 2 signal modules
Time of day	
Clock	
<ul> <li>Hardware clock (real-time)</li> </ul>	Yes
Backup time	480 h; Typical
<ul> <li>Deviation per day, max.</li> </ul>	±60 s/month at 25 °C
Digital inputs	
Number of digital inputs	8; Integrated
<ul> <li>of which inputs usable for technological functions</li> </ul>	6; HSC (High Speed Counting)
Source/sink input	Yes
Number of simultaneously controllable inputs	
all mounting positions	
— up to 40 °C, max.	8
Input voltage	
• Rated value (DC)	24 V
● for signal "0"	5 V DC at 1 mA
• for signal "1"	15 V DC at 2.5 mA
Input delay (for rated value of input voltage)	
for standard inputs	
— parameterizable	0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable 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 & 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
<ul> <li>of which high-speed outputs</li> </ul>	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

Output voltage       0.1 V; with 10 kOhm load         • for signal "0", max.       0.1 V; with 10 kOhm load         • for signal "1", min.       20 V         Output current       0.5 A         • for signal "0" residual current, max.       0.1 mA         Output delay with resistive load       0.1 mA         Output delay with resistive load       1 μs         • "0" to "1", max.       1 μs         • "1" to "0", max.       5 μs         Switching frequency       100 kHz         Relay outputs       0         • Shielded, max.       500 m         • shielded, max.       500 m	• on lamp load, max.	5 W
• for signal "0", max.0.1 V; with 10 kOhm load• for signal "1" min.20 VOutput current0.5 A• for signal "1" rated value0.5 A• for signal "1" residual current, max.0.1 mAOutput delay with resisitive load1 μs• '' to ''', ''max.1 μs• ''' to ''', ''max.1 μs• ''' to ''', '''100 kHzRelay outputs0• of the pulse outputs, with resistive load, max.100 kHzRelay outputs0• Number of relay outputs0• shielded, max.500 m• unshielded, max.500 m• unshielded, max.150 m• UsageYes• lot stage inputs2• lot stage inputs2• lot stage inputs2• lot stage inputs100 khrms• lot stage inputs100 khrms• lot stageYes• lot stage outputs0• lot stage input senset (0 to 10 V)100 khrmsCable lengt100 khrms• shielded, max.100 mm k wisted and shielded• kaleg autout senset (bit including sign), max.10 bit• shielded, max.10 bit• lot stage outputs10 bit• shielded, max.10 bit• kaleg aton time, parameterizableYes• conversion time/resolution per channelYes• conversion time/resolution per channel10 bit• kesolution with overrange (bit including sign), max.10 bit• heingration time, parameterizableYes<		
• for signal *1*, min.20 VOutput current		0.1 V: with 10 kOhm load
Interface         Image: Comparison of the public of t		
• for signal "1" rated value0.5 A• for signal "0" residual current, max.0.1 mAOutput delay with resistive load1 μS• "0" to "1", max.5 μSSwitching frequency0• 10" to "0", max.0 No KHz• Relay outputs0• Number of relay outputs0• Number of relay outputs500 m• unshielded, max.500 m• unshielded, max.150 mAnalog inputs2• VoltageYesInput ranges (rated values), voltages• U to +10 V2100k ohmsCable length-• unshielded, max.100 m; twisted and shieldedAnalog outputs0Cable length-• Shielded, max.100 m; twisted and shieldedAnalog outputs0Cable length-• shielded, max.100 m; twisted and shieldedAnalog outputs0Analog outputs10 bitIntegration and conversion time/resolution per channel-• Resolution with overrange (bit including sign), max.10 bit• Integration time, parameterizableYes• Conversion time (per channel)625 μsEncoder-• Livier sensorYes• Livier sensorYes• Livier sensor	-	20 0
of or signal "0" residul current, max.         0.1 mA           Output delay with resistive load         1 μs           • "0" to "1", max.         5 μs           • "1" to "0", max.         5 μs           • Switching frequency         100 kHz           • of the pulse outputs, with resistive load, max.         100 kHz           Relay outputs         0           • Number of relay outputs         0           • Shielded, max.         500 m           • unshielded, max.         150 m           Analog inputs         2           Number of analog inputs         2           • Oto +10 V         Yes           • Input ranges (rated values), voltages         100 khms           • Oto +10 V         Yes           • Input resistance (0 to 10 V)         2100k ohms           Cable length         100 m; twisted and shielded           • Oto +10 V         Yes           • Input resistance (0 to 10 km)         2100k ohms           Cable length         100 m; twisted and shielded           • Integration and conversion time/resolution per channel         Yes           • Integration and conversion time/resolution per channel         Yes           • Integration time, parameterizable         Yes           • Conversion time (per		0.5.4
Inside the resistive load       • "0" to "1", max.     5 µs       Switching frequency     5 µs       • of the pulse outputs, with resistive load, max.     100 kHz       • of the pulse outputs, with resistive load, max.     100 kHz       • Number of relay outputs     0       • Shielded, max.     500 m       • unshielded, max.     500 m       • unshielded, max.     500 m       • unshielded, max.     150 m       Analog inputs     2       Number of analog inputs     2       • Votage     Yes       • lot + 10 V     Yes       • lot + 10 V     Yes       • lot + 10 V     Yes       • lot e with the inputs     0       Cable length     100 mr, twisted and shielded       • Shielded, max.     100 mr, twisted and shielded       Analog outputs     0       Analog outputs     0       Analog outputs     0       Analog outputs     0       Integration and conversion time/resolution per channel)     10 bit       max.     10 bit       • Integration time, parameterizable     625 µS       Encoder     Yes       • Conversion time (per channel)     625 µS       Encoders     Yes       • Zwire sensor     Yes	-	
• "0" to "1", max.1 μs• "1" to "0", max.5 μsSwitching frequency100 kHz• of the pulse outputs, with resistive toad, max.100 kHz• Number of relay outputs0Cable length500 m• unshielded, max.500 m• unshielded, max.150 mAnalog inputs2• Number of analog inputs2• VoltageYesInput ranges (rated values), voltages-• O to 40 VYes- Input resistance (0 to 10 V)Yes• shielded, max.100 m; twisted and shieldedAnalog outputs0Cable length-• Number of analog outputs0Cable length-• Input resistance (0 to 10 V)Yes• Input resistance (0 to 10 V)Yes• shielded, max.100 m; twisted and shieldedAnalog outputs0Cable length-• shielded, max.100 m; twisted and shieldedAnalog outputs0Integration and conversion time/resolution per channel10 bit· Resolution with overrange (bit including sign), max.10 bit· Integration time, parameterizable625 μs· Conversion time (per channel)Yes· Conversion time (per channel)Yes· Lencoder-· 2-wire sensorYesInterface typePROFINET	-	0.1111A
• "1" to "0", max.5 μsSwitching frequency100 kHz• of the pulse outputs, with resistive load, max.100 kHzRelay outputs0Cable length		1.00
Switching frequency       100 kHz         Relay outputs       100 kHz         Relay outputs       0         Cable length       0         • shielded, max.       500 m         • unshielded, max.       150 m         Analog inputs       2         • voltage       Yes         • loput ranges (rated values), voltages       >         • voltage (rated values), voltages       >         • loput resistance (0 to 10 V)       Yes         - Input resistance (0 to 10 V)       >         • shielded, max.       100 m; twisted and shielded         Analog outputs       0         Analog outputs       0         Analog outputs       0         Analog value generation for the inputs         • Resolution with overrange (bit including sign), max.       10 bit         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 µs         Encoder		
• of the pulse outputs, with resistive load, max.       100 kHz         Relay outputs       0         • Number of relay outputs       0         Cable length       500 m         • unshielded, max.       500 m         • unshielded, max.       150 m         Analog inputs       2         Number of analog inputs       2         Input ranges       γes         • Voltage       Yes         Input ranges (rated values), voltages       100 m; twisted and shielded         • 0 to +10 ∨       ≥100k ohms         Cable length       2100k ohms         Cable length       2100k ohms         Cable length       100 m; twisted and shielded         Analog outputs       0         Analog outputs       0         Analog outputs       0         Analog outputs       0         Number of analog outputs       0         Analog value generation for the inputs       10 bit         • Resolution with overrange (bit including sign), max.       10 bit         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 µs         Encoder       2         Connectable encoders       Yes <td< td=""><td></td><td>5 µs</td></td<>		5 µs
Relay outputs       0         • Number of relay outputs       0         Cable length       500 m         • unshielded, max.       150 m         Analog inputs       2         Number of analog inputs       2         Input ranges       Yes         • Voltage       Yes         Input ranges (rated values), voltages       2100k ohms         Cable length       Yes         • 0 to +10 ∨       Yes         - Input resistance (0 to 10 ∨)       2100k ohms         Cable length       2100k ohms         Cable length       100 m; twisted and shielded         Analog outputs       0         Analog outputs       0         Analog outputs       0         Analog outputs       0         Integration and conversion time/resolution per channel       Integration with overrange (bit including sign), max.         • Integration mice per channel)       625 µs         Encoder       Yes         Connectable encoders       Yes         • 2-wire sensor       Yes         1. Interface       PROFINET		
• Number of relay outputs       0         Cable length       500 m         • unshielded, max.       500 m         • unshielded, max.       150 m         Analog inputs       2         Number of analog inputs       2         Input ranges       Voltage         • Voltage       Yes         Input ranges (rated values), voltages       ≥100k ohms         Cable length       ≥100k ohms         Cable length       ≥100k ohms         Cable length       shielded, max.         • Number of analog outputs       0         Cable length          • shielded, max.       100 m; twisted and shielded         Analog outputs       0         Analog outputs       0         Analog outputs       0         Integration and conversion time/resolution per channel         • Resolution with overrange (bit including sign), max.       10 bit         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 µs         Encoder       Yes         • 2-wire sensor       Yes         • 1.terface       PROFINET	· · ·	100 KHZ
Cable length       500 m         • unshielded, max.       500 m         • unshielded, max.       150 m         Analog inputs       2         Input ranges       2         • 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       0         Number of analog outputs       0         Analog value generation for the inputs       10 bit         Integration and conversion time/resolution per channel       Yes         • Resolution with overrange (bit including sign), max.       10 bit         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 µs         Encoder       Source sensor         • 2-wire sensor       Yes         • 1. Interface       PROFINET		0
• shielded, max.       500 m         • unshielded, max.       150 m         Analog inputs       2         Number of analog inputs       2         Input ranges       Yes         • Voltage       Yes         Input ranges (rated values), voltages       2         • 0 to +10 V       Yes         — Input resistance (0 to 10 V)       ≥100k ohms         Cable length       2         • shielded, max.       100 m; twisted and shielded         Analog outputs       0         Number of analog outputs       0         Analog value generation for the inputs       10 bit         Integration and conversion time/resolution per channel       Yes         • Resolution with overrange (bit including sign), max.       10 bit         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 μs         Encoder       Encoders         • 2-wire sensor       Yes         • 2-wire sensor       Yes         • 1. Interface       PROFINET	· ·	0
• unshielded, max.       150 m         Analog inputs       2         Number of analog inputs       2         Input ranges       Ves         • Voltage (rated values), voltages       9         • 0 to +10 V       ≥100k ohms         — Input resistance (0 to 10 V)       ≥100k ohms         Cable length       ≥100k ohms         • shielded, max.       100 m; twisted and shielded         Analog outputs       0         Number of analog outputs       0         Analog value generation for the inputs       10 bit         • Resolution with overrange (bit including sign), max.       10 bit         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 µs         Encoder       Ves         • 2-wire sensor       Yes         • 2-wire sensor       Yes         • 1. Interface       Yes		500
Analog inputs       2         Number of analog inputs       2         Input ranges       Yes         Input ranges (rated values), voltages       Yes         0 to +10 V       Yes         — Input resistance (0 to 10 V)       ≥100k ohms         Cable length       = 100 m; twisted and shielded         • shielded, max.       100 m; twisted and shielded         Analog outputs       0         Analog value generation for the inputs       0         Integration and conversion time/resolution per channel       10 bit         • Resolution with overrange (bit including sign), max.       10 bit         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 µs         Encoder       Ves         • Conversion time (per channel)       625 µs         Encoder       Yes         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 µs         Encoder       Yes         • 2-wire sensor       Yes         • 1. Interface       PROFINET		
Number of analog inputs       2         Input ranges       Yes         Input ranges (rated values), voltages       Yes         • 0 to +10 V       Yes         — Input resistance (0 to 10 V)       ≥100k ohms         Cable length       •         • shielded, max.       100 m; twisted and shielded         Analog outputs       0         Number of analog outputs       0         Analog value generation for the inputs       10 bit         Integration and conversion time/resolution per channel       • Resolution with overrange (bit including sign), max.         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 µs         Encoder       Connectable encoders         • 2-wire sensor       Yes         1. Interface       Yes         Interface type       PROFINET	• unshielded, max.	150 m
Input ranges       Yes         Input ranges (rated values), voltages       Yes         • 0 to +10 V       Yes         Input resistance (0 to 10 V)       2100k ohms         Cable length       100 m; twisted and shielded         • shielded, max.       100 m; twisted and shielded         Analog outputs       0         Analog value generation for the inputs       0         Integration and conversion time/resolution per channel       10 bit         • Resolution with overrange (bit including sign), max.       10 bit         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 µs         Encoder       Ves         • 2-wire sensor       Yes         • 1. Interface       Yes         • 1. Interface type       PROFINET	Analog inputs	
• Voltage       Yes         Input ranges (rated values), voltages       Yes         • 0 to +10 V       Yes         - Input resistance (0 to 10 V)       ≥100k ohms         Cable length       2100k ohms         Cable length       100 m; twisted and shielded         Analog outputs       0         Number of analog outputs       0         Integration and conversion time/resolution per channel       10 bit         max.       10 bit         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 μs         Encoder       Seconders         • 2-wire sensor       Yes         1. Interface       PROFINET	Number of analog inputs	2
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), max. ● Integration time, parameterizable Yes ● Conversion time (per channel) 625 µs Encoder Encoder Connectable encoders ● 2-wire sensor Yes 1. Interface Interface type PROFINET	Input ranges	
• 0 to +10 VYes− Input resistance (0 to 10 V)≥100k ohmsCable length100 m; twisted and shielded• shielded, max.100 m; twisted and shieldedAnalog outputs0Analog value generation for the inputs0Integration and conversion time/resolution per channel10 bit• Resolution with overrange (bit including sign), max.10 bit• Integration time, parameterizableYes• Conversion time (per channel)625 μsEncoderConnectable encodersYes• 2-wire sensorYes• 1. InterfaceYesInterface typePROFINET	Voltage	Yes
Input resistance (0 to 10 V)     ≥100k ohms       Cable length     100 m; twisted and shielded       • shielded, max.     100 m; twisted and shielded       Analog outputs     0       Analog value generation for the inputs     0       Integration and conversion time/resolution per channel     10 bit       • Resolution with overrange (bit including sign), max.     10 bit       • Integration time, parameterizable     Yes       • Conversion time (per channel)     625 μs       Encoder     Connectable encoders       • 2-wire sensor     Yes       1. Interface     Yes	Input ranges (rated values), voltages	
Cable length       100 m; twisted and shielded         • shielded, max.       100 m; twisted and shielded         Analog outputs       0         Number of analog outputs       0         Analog value generation for the inputs       0         Integration and conversion time/resolution per channel       • Resolution with overrange (bit including sign), max.         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 µs         Encoder       Ves         • 2-wire sensor       Yes         • 2-wire sensor       Yes         Interface       PROFINET	• 0 to +10 V	Yes
• shielded, max.       100 m; twisted and shielded         Analog outputs       0         Number of analog outputs       0         Analog value generation for the inputs       0         Integration and conversion time/resolution per channel       •         • Resolution with overrange (bit including sign), max.       10 bit         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 µs         Encoder       Ves         • 2-wire sensor       Yes         • 2-wire sensor       Yes         • 1. Interface       Yes         Interface type       PROFINET	— Input resistance (0 to 10 V)	≥100k ohms
Analog outputs       0         Analog value generation for the inputs       0         Integration and conversion time/resolution per channel       0         • Resolution with overrange (bit including sign), max.       10 bit         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 µs         Encoder       Yes         • 2-wire sensor       Yes         • 2-wire sensor       Yes         • 1. Interface       PROFINET	Cable length	
Number of analog outputs       0         Analog value generation for the inputs       Integration and conversion time/resolution per channel         • Resolution with overrange (bit including sign), max.       10 bit         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 μs         Encoder       Ves         • 2-wire sensor       Yes         1. Interface       PROFINET	• shielded, max.	100 m; twisted and shielded
Number of analog outputs       0         Analog value generation for the inputs       Integration and conversion time/resolution per channel         • Resolution with overrange (bit including sign), max.       10 bit         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 μs         Encoder       Ves         • 2-wire sensor       Yes         1. Interface       PROFINET	Analog outputs	
Integration and conversion time/resolution per channel         • Resolution with overrange (bit including sign), max.       10 bit         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 μs         Encoder       Connectable encoders         • 2-wire sensor       Yes         Interface       PROFINET		0
Integration and conversion time/resolution per channel         • Resolution with overrange (bit including sign), max.       10 bit         • Integration time, parameterizable       Yes         • Conversion time (per channel)       625 μs         Encoder       Connectable encoders         • 2-wire sensor       Yes         Interface       PROFINET	Analog value generation for the inputs	
max.     • Integration time, parameterizable     Yes       • Conversion time (per channel)     625 μs   Encoder Encoder		
• Integration time, parameterizable • Conversion time (per channel)Yes 625 μsEncoderConnectable encoders• 2-wire sensorYes1. InterfaceInterface typePROFINET	<ul> <li>Resolution with overrange (bit including sign),</li> </ul>	10 bit
• Conversion time (per channel) 625 µs Encoder Connectable encoders • 2-wire sensor Yes 1. Interface Interface type PROFINET	max.	
Encoder Connectable encoders • 2-wire sensor Yes 1. Interface Interface type PROFINET	<ul> <li>Integration time, parameterizable</li> </ul>	Yes
Connectable encoders       • 2-wire sensor     Yes       1. Interface       Interface type     PROFINET	Conversion time (per channel)	625 µs
Connectable encoders       • 2-wire sensor     Yes       1. Interface       Interface type     PROFINET	Encoder	
1. Interface       Interface type       PROFINET	Connectable encoders	
Interface type PROFINET	• 2-wire sensor	Yes
Interface type PROFINET	1. Interface	
Physics Ethernet		PROFINET
	Physics	Ethernet

Isolated	Yes
automatic detection of transmission rate	Yes
Autonegotiation	Yes
Autocrossing	Yes
Interface types	
Number of ports	1
• integrated switch	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	
• Transmission rate, max.	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.	
- Number of connectable IO Devices, max.	16
— Number of connectable IO Devices for RT,	16
max.	
— of which in line, max.	16
<ul> <li>Activation/deactivation of IO Devices</li> </ul>	Yes
<ul> <li>— Number of IO Devices that can be simultaneously activated/deactivated, max.</li> </ul>	8
— Updating time	The minimum value of the update time also depends on the communication component set for PROFINET IO, on the number of IO devices and the quantity of configured user data.
PROFINET IO Device	
Services	
— PG/OP communication	Yes
— 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 device, max.</li> </ul>	2

Protocols	
Supports protocol for PROFINET IO	Yes
PROFIBUS	Yes; CM 1243-5 (master) or CM 1242-5 (slave) 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
— several passive connections per port,	Yes
supported	
<ul> <li>ISO-on-TCP (RFC1006)</li> </ul>	Yes
— Data length, max.	8 kbyte
• UDP	Yes
— Data length, max.	1 472 byte
Web server	
• supported	Yes
<ul> <li>User-defined websites</li> </ul>	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)
Number of connections	
• overall	16; dynamically

Test commissioning functions	
Status/control	
<ul> <li>Status/control variable</li> </ul>	Yes
Variables	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
Forcing	
• Forcing	Yes
Diagnostic buffer	
• 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	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 outputs
PID controller	Yes
Number of alarm inputs	4
Number of pulse outputs	4
Limit frequency (pulse)	100 kHz
Potential separation	
Potential separation digital inputs	
<ul> <li>Potential separation digital inputs</li> </ul>	No
<ul> <li>between the channels, in groups of</li> </ul>	1
Potential separation digital outputs	
<ul> <li>Potential separation digital outputs</li> </ul>	Yes
<ul> <li>between the channels</li> </ul>	No
• between the channels, in groups of	1
EMC	
Interference immunity against discharge of static 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
<ul> <li>Test voltage at contact discharge</li> </ul>	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	
<ul> <li>Interference immunity on supply lines acc. to IEC 61000-4-5</li> </ul>	Yes
Interference immunity against conducted variable distur	bance induced by high-frequency fields
<ul> <li>Interference immunity against high-frequency radiation acc. to IEC 61000-4-6</li> </ul>	Yes
Emission of radio interference acc. to EN 55 011	
<ul> <li>Limit class A, for use in industrial areas</li> </ul>	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	
IP degree of protection	IP20
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	
<ul> <li>Fall height, max.</li> </ul>	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
<ul> <li>vertical installation, min.</li> </ul>	-20 °C
<ul> <li>vertical installation, max.</li> </ul>	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
<ul> <li>Storage/transport, min.</li> </ul>	660 hPa
<ul> <li>Storage/transport, max.</li> </ul>	1 080 hPa
Relative humidity	
<ul> <li>Operation, max.</li> </ul>	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
<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
<ul> <li>Copy protection</li> </ul>	Yes
<ul> <li>Block protection</li> </ul>	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.	370 g
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