## SIEMENS

## Data sheet

## 6AG1214-1HG40-4XB0



SIPLUS S7-1200 CPU 1214C DC/DC/relay based on 6ES7214-1HG40-0XB0 with conformal coating, -20...+60 °C, compact CPU, DC/DC/relay, onboard I/O: 14 DI 24 V DC 10 DQ relay 2 A 2 AI 0-10 V DC, power supply: DC 20.4-28.8 V DC, program/data memory 100 KB

Figure	similar
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General information	
Product type designation	CPU 1214C DC/DC/relay
Firmware version	V4.1
Engineering with	
<ul> <li>STEP 7 TIA Portal configurable/integrated from</li> </ul>	see entry ID: 109746275
version	
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
Load voltage L+	
<ul> <li>Rated value (DC)</li> </ul>	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)	500 mA; CPU only
Current consumption, max.	1 500 mA; CPU with all expansion modules
Inrush current, max.	12 A; at 28.8 V
Output current	
for backplane bus (5 V DC), max.	1 600 mA; Max. 5 V DC for SM and CM
Encoder supply	
24 V encoder supply	
• 24 V	L+ minus 4 V DC min.
Power loss	
Power loss, typ.	12 W
Memory	
Work memory	
<ul> <li>integrated</li> </ul>	100 kbyte
expandable	No
Load memory	
<ul> <li>integrated</li> </ul>	4 Mbyte
<ul> <li>Plug-in (SIMATIC Memory Card), max.</li> </ul>	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
OB	
Number, max.	Limited only by RAM for code
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	10 kbyte
Flag	
• Size, max.	8 kbyte; Size of bit memory address area
Address area	
Process image	
Inputs, adjustable	1 kbyte
Outputs, adjustable	1 kbyte
Hardware configuration	
Number of modules per system, max.	3 comm. modules, 1 signal board, 8 signal modules
Time of day	
Clock	
Hardware clock (real-time)	Yes
Backup time	480 h; Typical
Deviation per day, max.	60 s/month at 25 °C
Digital inputs	
Number of digital inputs	14; Integrated
of which inputs usable for technological functions	6; HSC (High Speed Counting)
Source/sink input	Yes
Number of simultaneously controllable inputs	100
all mounting positions	
— up to 40 °C, max.	14
Input voltage	
Rated value (DC)	24 V
• for signal "0"	5 V DC at 1 mA
• for signal "1"	15 V DC at 2.5 mA
Input delay (for rated value of input voltage)	
for standard inputs	
— parameterizable	0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable
	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	1 es
— parameterizable	Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3
parameterizable	@ 30 kHz
Cable length	
• shielded, max.	500 m; 50 m for technological functions
<ul> <li>unshielded, max.</li> </ul>	300 m; for technological functions: No
Digital outputs	
Number of digital outputs	10; Relays
Switching capacity of the outputs	
with resistive load, max.	2 A
<ul> <li>on lamp load, max.</li> </ul>	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.
Switching frequency	
• of the pulse outputs, with resistive load, max.	1 Hz
Relay outputs	
Number of relay outputs	
Number of operating cycles, max.	mechanically 10 million, at rated load voltage 100 000
Cable length	500 m
• shielded, max.	500 m 150 m
<ul> <li>unshielded, max.</li> </ul>	150 m

Andre of analog inputs 2 input maps i of the interpole (det values), votages i	Analog inputs	
input ranges         Yes           input resistance         Yes           input resistance         Yes           input resistance         Yes           integration and conversion time/secondation per channel         Yes           integration and conversion time/secondation per channel         Yes           interface type         POFINET           isolated         Yes           interface type         POFINET           isolated         Yes           interface type         Yes           interface		2
• VoringeYes• 10 + 10 VYes• 10 + 10 VYes• Include values/, voltageVes• Include for No100 m; lvisited and shieldedAnalog outputs0Analog not person0Analog not person0Analog not person0Analog not person0Analog not person0Analog not person0Analog not person0• Analog not person0• Resolution with overrange (in throuting ring), ma.10 it		2
Input ranges (reter values), voltages • 0 to + 10 V V Yes - Input resistance (0 to 10 V) 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		Vos
• 0 to +10 VYes		165
- Input residence (0 to 10 V) 2 100k chms - shielded, max. 100 m; twisted and shielded Analog outputs Number of analog outputs 0 0 Analog outputs 0 10 bit - Resolution with overrange (bit incluing sign), max - Infragetion and conversion (Imericabilion per channel) 265 µs Encoder - Conversion time parameterizable Vise - Conversion time (per channel) 265 µs Encoder - Conversion time (per channel) 265 µs - Folder 265 - Folder 265 - Folder 265 - Folder 265 - Folder 265 - Folder 265 - Number of connelative 100 Molt/s - Services - Number of connelative 100 Envices, max. 100 Molt/s - Services - Number of connelative shifts and device, max. 100 Molt/s - Services - Number of connelative shifts and device, max. 100 Molt/s - Services - Number of connelative shifts and device, max. 100 Molt/s - Number of connelative shifts and device - Number of connelative shifts and		Vee
Cable (angle in and in any indication of the input of analog output is         0           Analog output is         0           Number of analog outputs         0           Analog value generation for the inputs         1           Integration and conversion time/resolution gen channel         • Resolution with overrange (including sign), max.         • Dit           • Resolution with overrange (including sign), max.         • Dit         • Sign (including sign), max.           • Resolution with overrange (including sign), max.         • Dit         • Sign (including sign), max.           • Resolution with overrange (including sign), max.         • Obit         • Sign (including sign), max.           • Resolution with overrange (including sign), max.         • Sign (including sign), max.         • Sign (including sign), max.           • Interface (including sign), max.         • Vers (including sign), max.         • Sign (including sign), max.           • Interface (including sign), max.         • Vers (including sign), max.         • Sign (including sign), max.           • Interface (including sign), max.         • Vers (including sign), max.         • Sign (including sign), max.           • Interface (including sign), max.         • Vers (including sign), max.         • Sign (including sign), max.           • Resol (including sign), max.         • Vers (including sign), max.         • Sign (including sign), max.		
• shelded, max.100 m; wisted and sheldedAnalog outputs0Analog outputs0• Resolution with overange (bit including sign), max.10 bit• Interface transmission rateYes• AutonegotionYes• AutonegotionYes• AutonegotionYes• AutonegotionYes• ReformerYes• ReformerYes• Rof-INET IO ControllerYes• Number of IO Controllers with shared device, max.10 Mbits• ServicesYes• ServicesYes• Supports protool for PROFINET IOYes• Supports pro		2100k onms
Analog outputs         0           Number of analog outputs         0           Analog value generation for the inputs         0           Integration and conversion time/resolution per channel         0           • Resolution with overange (bui houlding sign), max.         10 bit           • Integration time (per channel)         625 µs           Encoder         626 µs           Connectable encoders         Yes           • Autor sensor         Yes           1 Interface         Yes           Interface trype         Yes           Interface trype         Yes           • Autor sensor         Yes           • Autor sensor         Yes           • Autor sensor         Yes           • PAGE/INET IO Controller         Yes           • PROFINET IO Controller         Yes           • PROFINET IO Controller         Yes           • Number of connectable IO Devices, max.         16           PROFINET IO Controllers with shared device, max. </td <td></td> <td>400 mu twisted and shields d</td>		400 mu twisted and shields d
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 and conversion time/per channel)           Encoder           Conversion time (per channel)           Encoder           • Zwire sensor           • Veis           1 Interface           Interface type           Isolated           automatic detection of transmission rate           Autorossing           Yes           Interface type           Isolated           automatic detection of transmission rate           Autorossing           Yes           Interface type           Isolated           automatic detection of transmission rate           Autorossing           Yes           PROFINET IO Controller           • PROFINET IO Controller           • PROFINET IO Controller           • PROFINET IO Controller with shared device,           - Number of connectable IO Devices, max.           PROFINET IO Device           Services           - Shared device           - Number of IO Controllers with s		100 m; twisted and shielded
Analog value generation for the inputs         Integration and conversion time/resolution per channel         • Resolution with overange (bit including sign), max.         • Integration time (per channel)         • Conversion         • Conversion         • Protocols         • Protocols <t< td=""><td>Analog outputs</td><td></td></t<>	Analog outputs	
Integration and conversion limit resolution per channel  Resolution with overrange (bit including sign), max.  Resolution with overrange (bit including sign), max.  Conversion time, parameterizable  PROFINET  Conversion  PROFINET  Interface type  Interface  Interface Interface Interface Interface Interface Interface Interface  Interface	Number of analog outputs	0
• Resolution with overrange (pit including sign), max.         10 bit           • Integrates inten (per channel)         625 µs           Encoder         625 µs           Conversion time (per channel)         625 µs           Encoder         Yes           • Avites sensor         Yes           • Avites sensor         Yes           • Interface type         PROFINET           Interface type         PROFINET           Interface type         Yes           • Autorossing         Yes           • Autorossing         Yes           • Autorossing         Yes           • PROFINET IO Controller         Yes           • Onnectable IO Devices, max.         100 Mbit/s           Services         2           • - Number of connectable IO Devices, max.         2           • Shared device         Yes           • Shared device         Yes           • Shared device         Yes           • Shared device         Yes           • Nomber of IO Controllers with shared device,	Analog value generation for the inputs	
• Resolution with overrange (pit including sign), max.         10 bit           • Integrates inten (per channel)         625 µs           Encoder         625 µs           Conversion time (per channel)         625 µs           Encoder         Yes           • Avites sensor         Yes           • Avites sensor         Yes           • Interface type         PROFINET           Interface type         PROFINET           Interface type         Yes           • Autorossing         Yes           • Autorossing         Yes           • Autorossing         Yes           • PROFINET IO Controller         Yes           • Onnectable IO Devices, max.         100 Mbit/s           Services         2           • - Number of connectable IO Devices, max.         2           • Shared device         Yes           • Shared device         Yes           • Shared device         Yes           • Shared device         Yes           • Nomber of IO Controllers with shared device,	Integration and conversion time/resolution per channel	
• Inlegration time, parameterizableYes• Conversion time (per channe))625 µsEncoder•Conversion time (per channe))Yes• LinterfaceYes• Linterface type sensorYes• AutoregotistionYes• AutoregotistionYes• AutoregotistionYes• AutoregotistionYes• PROFINET IO ControllerYes• PROFINET IO DeviceYes: Also simultaneously with IO-Device functionalityPROFINET IO ControllerYes: Also simultaneously with IO-Device functionality• PROFINET IO DevicesYes: Also simultaneously with IO-Device functionalityPROFINET IO DevicesYes: Also simultaneously with IO-Device functionality• PROFINET IO Devices (Profinet IO Devices, max.16PROFINET IO DeviceYes• SarvicesYes• SarvicesYes• Supports protocol for PROFINET IOYes• Supports protocol for PROFINET IOYes• Supports protocol for PROFINET IOYes• TOPIPYes• UDPYes• UDPYes• UDPYes<		10 bit
• Conversion time (per channel)625 µsEncodersConnectable encoders• Avites sensorYes• Avites sensorPROFINETInterfacePROFINETIsolatedYesautomatic detection of transmission rateYesAutocrossingYes• AutocrossingYes• PROFINET IO ControllerYes• PROFINET IO DeviceYesBervices100 Mbli/sServices2• Shared deviceYes• Number of IO Controllers with shared device, max.10• Supports protocol for PROFINET IOYesProtocolsYesProtocolsYesProtocols (Ethernet)Yes• TOPIPYes• Supports protocol for PROFINET IOYes• Number of IO PROFINET IOYes• Number of ID Controllers with shared device, max.Yes• Supports protocol for PROFINET IOYes• Number of ID ControllersYes• Model MaximumYes• Number of ID ControllersYes• SupportedYes• User, defined websitesYes• User, defined websites		Yes
Encoder         Connectable encoders         • 2-wire sensor       Yes         Interface       PROFINET         Isolated       Yes         automatic detection of transmission rate       Yes         Autorcogotiation       Yes         Autorcogotiation       Yes         Autorcogotiation       Yes         Autorcogotiation       Yes         Autorcogotiation       Yes         Autorcogotiation       Yes         PROFINET IO Controller       Yes         • Number of connectable IO Devices, max.       100 Mbit/s         Services       -         - Number of Controllers with shared device, max.       16         PROFINET IO Device       Yes         - Number of IO Controllers with shared device, max.       16         PROFINET IO Device       Yes         - Shared device       Yes; CM 1243-5 required         - Shared device       Yes; CM 1243-5 required         AsInterface       Yes         Proficisis       Yes		625 µs
Connectable encoders     Yes       • Autorsoc     Yes       Interface type     PROFINET       Isolated     Yes       automatic detection of transmission rate     Yes       Autorospitation     Yes       Autorospitation     Yes       Interface type     Yes       Interface types     Yes       PROFINET IO Controller     Yes       PROFINET IO Controller     Yes, Also simultaneously with IO-Device functionality       PROFINET IO Controller swith shared device, max.     100 Mbit/s       Services     -       - Number of IO Controllers with shared device, max.     16       PROFINET IO Evace     Yes       Supports protocol for PROFINET IO     Yes       Noneber of IO Controllers with shared device, max.     10       PROFINET     Yes       Supports protocol for PROFINET IO     Yes       Protocols     Yes       Protocols     Yes       Open Lie communication     Yes       • TCP/IP     Yes		
• 2-wire sensor     Yes       1. Interface type     PROFINET       Isolated     Yes       automatic detection of transmission rate     Yes       automatic detection of transmission rate     Yes       Autorcognition     Yes       Autorcorssing     Yes       Interface types     Yes       • PROFINET IO Controller     Yes       • Transmission rate, max.     100 Mbit/s       Services     Services       - Number of connectable IO Devices, max.     16       PROFINET IO Device     Yes       Services     Yes       - Number of IO Controllers with shared device, max.     16       PROFINET IO Device     Yes       Services     Yes       - Number of IO Controllers with shared device, max.     16       PROFISE     Yes       Services     Yes       - Nonther of IO Controllers with shared device, max.     10       PROFISE     Yes       Services     Yes       - Nonther of IO Controllers with shared device, max.     12       PROFISE     Yes       Services     Yes       Services     Yes		
1. Interface         Interface type       PROFINET         Isolated       Yes         automatic detection of transmission rate       Yes         Autoregotiation       Yes         Autoregotiation       Yes         Autorecrossing       Yes         Interface types       Yes         Interface types       Yes         PROFINET IO Controller       Yes         PROFINET IO Controller       Yes         PROFINET IO Controller       Yes         Transmission rate, max.       100 Mbit/s         Services       -         - Number of connectable IO Devices, max.       16         PROFINET IO Device       Yes         - Number of IO Controllers with shared device, max.       2         - Number of IO Controllers with shared device, max.       2         - Number of IO Controllers with shared device, max.       2         PROFINET IO Device       Yes         Protocol       Yes         Services       Yes         - Number of IO Controllers with shared device, max.       16         PROFINET IO       Yes         Services       Yes         - Device       Yes         Services       Yes <t< td=""><td></td><td>Vec</td></t<>		Vec
Interface type         PROFINET           Isolated         Yes           automatic detection of transmission rate         Yes           Autoropoliation         Yes           Autorositic detection of transmission rate         Yes           Autorositic detection of transmission rate         Yes           Autorositic detection of transmission rate         Yes           Interface types         Yes           • PROFINET IO Controller         Yes           • PROFINET IO Device         Yes; Also simultaneously with IO-Device functionality           PROFINET IO Controller         Yes           • Transmission rate, max.         100 Mbit/s           Services         -           - Number of connectable IO Devices, max.         16           PROFINET IO Device         Yes           - Number of IO Controllers with shared device, max.         16           PROFISE         Yes           - Number of IO Controllers with shared device, max.         10           Supports protocol for PROFINET IO         Yes           PROFISIAE         No           PROFISIAE         Yes           Protocols         Yes           Open IE communication         Yes           • UDP         Yes           Suppo		
Isolated     Yes       automapid detection of transmission rate     Yes       Autorcopsing     Yes       Autorcossing     Yes       Interface types     ************************************		
automatic detection of transmission rate Yes Autoregoliation Yes Interface types • RJ 45 (Ethernet) Yes • RJ 45 (Ethernet) Yes • PROFINET 10 Controller Yes; Also simultaneously with 10-Device functionality PROFINET 10 Controller • PROFINET 10 Controller • Transmission rate, max. 100 Mbit/s Services - Number of connectable 10 Devices, max. 16 PROFINET 10 Device Yes - Number of connectable 10 Devices, max. 16 PROFINET 10 Device Yes - Number of 10 Controllers with shared device, max. 16 PROFINET 10 Device Yes - Shared device Yes - Shared device Yes - Shared device Yes - Number of 10 Controllers with shared device, max. 16 PROFINET 10 Device Yes - Shared fevice Yes - Nonder of 10 Controllers with shared device, max. 16 PROFISUS Yes - Nonder of 10 Controllers with shared device, max. 16 PROFISUS Yes - Nonder of 10 Controllers with shared device, max. 16 PROFISUS Yes - Nonder of 10 Controllers with shared device, max. 16 PROFISUS Yes - Nonder of 10 Controllers with shared device, max. 16 PROFISUS Yes - Nonder of 10 Controllers with shared device, max. 16 PROFISUS Yes - Nonder of 10 Controllers with shared device, max. 16 PROFISUS Yes - Nonder of 10 Controllers with shared device, max. 16 PROFISUS Yes PROFISUS Yes - Nonder of 00 Controllers with shared device, max. 16 - Nonder of 00 Controllers Yes - Supported Y		
Autonegotiation     Yes       Autocrossing     Yes       Interface types     Yes       Protocols     Yes       PROFINET IO Controller     Yes; Also simultaneously with IO-Device functionality       PROFINET IO Device     Yes; Also simultaneously with IO-Device functionality       PROFINET IO Controller     Yes; Also simultaneously with IO-Device functionality       PROFINET IO Device     Yes; Also simultaneously with IO-Device functionality       PROFINET IO Device     Yes       • Transmission rate, max.     100 Mbit/s       Services     -       - Number of connectable IO Devices, max.     16       PROFINET IO Device     Yes       Services     Yes       - Number of IO Controllers with shared device, max.     2       Supports protocol for PROFINET IO     Yes       PROFISE     Yes       Supports protocol for PROFINET IO     Yes       PROFISE     Yes       Protocols     Yes       Protocols     Yes       Protocols (Ethernet)     Yes       • TCP/IP     Yes       Open IE communication     Yes       • ISO-on-TCP (RFC1006)     Yes       • UDP     Yes       Ves     Yes       Further protocols     Yes       • UDP     Yes	Isolated	Yes
Autorossing     Yes       Interface types     •       • RJ 45 (Ethernet)     Yes       PROFINET IO Controller     Yes: Also simultaneously with IO-Device functionality       • PROFINET IO Device     Yes: Also simultaneously with IO-Device functionality       PROFINET IO Controller     *       • Transmission rate, max.     100 Mbit/s       Services     -       - Number of connectable IO Devices, max.     16       PROFINET IO Device     Yes       Services     -       - Stared device     Yes       - Number of IO Controllers with shared device, max.     2       - Number of IO Controllers with shared device, max.     2       - Number of IO Controllers with shared device, max.     2       Protocols     2       Supports protocol for PROFINET IO     Yes       PROFIBUS     Yes: (M 1243-5 required       As-Interface     Yes       Protocols (Ethernet)     *       • TCP/IP     Yes       Open IE communication     *       • ISO-on-TCP (RFC1006)     Yes       • UDP     Yes       • Web server     *       • UDP     Yes       • WoBUS     Yes       • Outported     Yes       • NOBUS     Yes       • MODBUS     Yes <td></td> <td>Yes</td>		Yes
Interface types            • RJ 45 (Ethernet)             • PROFINET IO Controller             • PROFINET IO Controller             • Transmission rate, max.             • Transmission rate, max.             • Number of connectable IO Devices, max.             • Number of connectable IO Devices, max.             • Number of IO Controllers             • Services             • Shared device             • Shared device             • Shared device             • Shared device             • Supports protocol for PROFINET IO             PROFIBUS             • Supports protocol for PROFINET IO             PROFIBUS             • TCP/IP             • TCP/IP             • TCP/IP             • TCP/IP             • Supported             • UDP             • Suported             • Suported             • Suported             • Suported             • Suported             • Suported	Autonegotiation	Yes
• RJ 45 (Ethernet)       Yes         Protocols       *es         • PROFINET IO Controller       Yes; Also simultaneously with IO-Device functionality         PROFINET IO Controller       *es; Also simultaneously with IO-Device functionality         PROFINET IO Controller       *oriansmission rate, max.         • Transmission rate, max.       100 Mbit/s         Services       -         - Number of connectable IO Devices, max.       16         PROFINET IO Device       Yes         Services       -         - Shared device       Yes         - Number of IO Controllers with shared device, max.       Yes         Protocols       Yes         Supports protocol for PROFINET IO       Yes         PROFIBUS       Yes; CM 1243-5 required         AS-Interface       Yes         Protocols (Ethernet)       Yes         • TCP/IP       Yes         Open IE communication       Yes         • TCP/IP       Yes         • UDP       Yes         • UDP       Yes         • Supported       Yes         • Supported       Yes         • Supported       Yes         • UDP       Yes         • Supported       Yes	Autocrossing	Yes
Protocois     Yes       • PROFINET IO Controller     Yes; Also simultaneously with IO-Device functionality       PROFINET IO Controller     100 Mbit/s       • Transmission rate, max.     100 Mbit/s       Services     -       Number of connectable IO Devices, max.     16       PROFINET IO Device     Yes       Services     2       Number of IO Controllers with shared device, max.     16       PROFINET IO Device     Yes       Number of IO Controllers with shared device, max.     2       Number of IO Controllers with shared device, max.     2       Number of IO Controllers with shared device, max.     2       Protocols     2       Supports protocol for PROFINET IO     Yes       PROFIBUS     Yes; CM 1243-5 required       AS-Interface     Yes       Protocols (Ethernet)     Yes       • TCP/IP     Yes       Open IE communication     Yes       • UDP     Yes       • UDP     Yes       • UDP     Yes       • UDP     Yes       • ODBUS     Yes       communication functions / header     Yes       • ODBUS     Yes       • ODBUS     Yes       • Supported     Yes       • Supported     Yes	Interface types	
• PROFINET IO Controller       Yes         • PROFINET IO Device       Yes; Also simultaneously with IO-Device functionality         PROFINET IO Controller         • Transmission rate, max.       100 Mbit/s         Services       100 Mbit/s         - Number of connectable IO Devices, max.       16         PROFINET IO Device       Yes         - Shared device       2         - Number of IO Controllers with shared device, max.       2         - Number of IO Controllers with shared device, max.       2         Protocols       Yes         Supports protocol for PROFINET IO       Yes         PROFIBUS       Yes; CM 1243-5 required         AS-Interface       Yes         Protocols (Ethernet)       Yes         • TCP/IP       Yes         • SO-on-TCP (RFC1006)       Yes         • UDP       Yes         Web server       Yes         • User-defined websites       Yes         • MOBBUS       Yes         Communication functions / header       Yes         S7 communication       Yes         • supported       Yes         • as client       Yes         S7 communication       Yes         • as client       Yes	RJ 45 (Ethernet)	Yes
• PROFINET IO Device       Yes; Also simultaneously with IO-Device functionality         PROFINET IO Controller       100 Mbit/s         Services       16         PROFINET IO Device       Yes; Also simultaneously with IO-Device functionality         Services       16         PROFINET IO Device       Yes; Also simultaneously with IO-Device         Services       16         PROFINET IO Device       Yes; Also simultaneously with IO-Device functionality         PROFINET IO Devices, max.       16         PROFINET IO Device       Yes; Also simultaneously with IO-Device functionality         PROFINET IO Device       Yes; Also simultaneously with IO-Device functionality         PROFINET IO Device       Yes; Also simultaneously with IO-Device functionality         - Number of Connectoles (Devices, max.       16         Protocols       Yes; Also simultaneously with IO-Device functionality         max.       2       2         Protocols       Yes; Also simultaneously with IO-Device functionality         PROFIBUS       Yes; Also simultaneously with IO-Device functionality         PROFIBUS       Yes; Also simultaneously with IO-Device functionality         • Top/IP       Yes; Also simultaneously functionality         • Supported       Yes         • Suported       Yes	Protocols	
PROFINET IO Controller       100 Mbit/s         Services       16         PROFINET IO Device       16         PROFINET IO Device       Yes         Services       2         - Shared device       Yes         - Number of IO Controllers with shared device, max.       2         Protocols       2         Supports protocol for PROFINET IO       Yes         PROFIBUS       No         PROFIBUS       Yes; CM 1243-5 required         AS-Interface       Yes         Protocols       Yes         Open IE communication       Yes         • TCP/IP       Yes         • UDP       Yes         • UDP       Yes         • UDP       Yes         • Supported       Yes         • UDP       Yes         Open IE communication       Yes         • UDP       Yes         Web server       Yes         • Supported       Yes         • UDP       Yes         Communication functions / header       Yes         Stroommunication       Yes         • Supported       Yes         • Supported       Yes         • Solent       Yes <td><ul> <li>PROFINET IO Controller</li> </ul></td> <td>Yes</td>	<ul> <li>PROFINET IO Controller</li> </ul>	Yes
• Transmission rate, max.       100 Mbit/s         Services       -         Number of connectable IO Devices, max.       16         PROFINET IO Device       Yes         Shared device       Yes         Shared device       Yes         Number of IO Controllers with shared device, max.       2         Protocols       2         Supports protocol for PROFINET IO       Yes         PROFISIS       Yes; CM 1243-5 required         PROFIBUS       Yes         Protocols       Yes         Protocols (Ethernet)       Yes         • TCP/IP       Yes         Open IE communication       Yes         • SUported       Yes         • UDP       Yes         Web server       Yes         • Superdefined websites       Yes         • MODBUS       Yes         • MODBUS       Yes         • MODBUS       Yes         • Stor-on-time functions / header       Yes         • Supported       Yes<	PROFINET IO Device	Yes; Also simultaneously with IO-Device functionality
Services       16         PROFINET IO Device       Services	PROFINET IO Controller	
	<ul> <li>Transmission rate, max.</li> </ul>	100 Mbit/s
PROFINET IO Device         Services         Shared device       Yes         Number of IO Controllers with shared device, max.       2         Protocols       2         Supports protocol for PROFINET IO       Yes         PROFIBUS       No         PROFIBUS       Yes; CM 1243-5 required         AS-Interface       Yes         Protocols (Ethernet)       Yes         • TCP/IP       Yes         • TCP/IP       Yes         • Supported verse       Yes         • UDP       Yes         • UDP       Yes         • USC-on-TCP (RFC1006)       Yes         • UDP       Yes         • UDP       Yes         • USer-defined websites       Yes         • Supported       Yes         • Supported       Yes         • Supported       Yes         • Softer of functions / header       Yes         Softer of functions / header       Yes         Softer of functions / header       Yes         Softer of connections       Yes         Protocols       Yes         Protocols       Yes         Softer of function functions / header       Yes	Services	
Services     Yes       Shared device     Yes       Number of IO Controllers with shared device,     2       max.     2       Protocols       Supports protocol for PROFINET IO       Yes     Yes       PROFIBUS     Yes       PROFIBUS     Yes       PROFIBUS     Yes       Protocols (Ethernet)     Yes       • TCP/IP     Yes       Open IE communication     Yes       • ISO-on-TCP (RFC1006)     Yes       • UDP     Yes       Web server     Yes       • Supported websites     Yes       • MODBUS     Yes       • MODBUS     Yes       Stromunication     Yes       • MODBUS     Yes       • MODBUS     Yes       • MODBUS     Yes       • MODBUS     Yes       • Moder     Yes       • Moder     Yes       • Moder     Yes       • Nomber of connections     Yes	<ul> <li>— Number of connectable IO Devices, max.</li> </ul>	16
Shared device     Yes       Number of IO Controllers with shared device, max.     2       Protocols     2       Protocols     2       Supports protocol for PROFINET IO     Yes       PROFIsafe     No       PROFIS     Yes; CM 1243-5 required       AS-Interface     Yes       Protocols (Ethernet)     -       - TCP/IP     Yes       Open IE communication     -       - TCP/IP     Yes       • TCP/IP     Yes       • UDP     Yes       • UDP     Yes       • UDP     Yes       • UDP     Yes       • Web server     -       • Supported     Yes       • USer-defined websites     Yes       Further protocols     -       • MODBUS     Yes       Sommunication     -       • Supported     Yes       • as client     Yes       • as client     Yes	PROFINET IO Device	
Number of IO Controllers with shared device, max.       2         Protocols       Supports protocol for PROFINET IO       Yes         Supports protocol for PROFINET IO       Yes       No         PROFIBUS       No       Yes; CM 1243-5 required         AS-Interface       Yes       Yes         Protocols (Ethernet)	Services	
max.ProtocolsSupports protocol for PROFINET IOYesPROFIsafeNoPROFIsafeNoPROFIBUSYes; CM 1243-5 requiredAS-InterfaceYesProtocols (Ethernet)Yes• TCP/IPYes• TCP/IPYes• TCP/IPYes• SUPOn-TCP (RFC1006)Yes• UDPYes• UDPYesWeb serverYes• USer-defined websitesYes• MODBUSYescommunicationYes• SupportedYes• SupportedYes• SupportedYes• USer-defined websitesYes• SupportedYes• MODBUSYescommunicationYes• SupportedYes• supportedYes• MODBUSYesST communicationYes• SupportedYes• supportedYes• SupportedYes• SupportedYes• SupportedYes• SupportedYes• SupportedYes• SupportedYes• as serverYes• as clientYes• Number of connectionsYes	— Shared device	Yes
Protocols         Supports protocol for PROFINET IO       Yes         PROFIsafe       No         PROFIBUS       Yes; CM 1243-5 required         AS-Interface       Yes         Protocols (Ethernet)       Yes         • TCP/IP       Yes         Open IE communication       Yes         • TCP/IP       Yes         • ISO-on-TCP (RFC1006)       Yes         • UDP       Yes         Web server       Yes         • Supported       Yes         • UDP       Yes         Web server       Yes         • Supported       Yes         • MODBUS       Yes         • MODBUS       Yes         • supported       Yes         • supported       Yes         • Supported       Yes         • MODBUS       Yes         • as server       Yes         • as server       Yes         • as client       Yes         • as client       Yes	<ul> <li>— Number of IO Controllers with shared device,</li> </ul>	2
Supports protocol for PROFINET IO       Yes         PROFIsafe       No         PROFIBUS       Yes; CM 1243-5 required         AS-Interface       Yes         Protocols (Ethernet)       Yes         • TCP/IP       Yes         Open IE communication       Yes         • TCP/IP       Yes         • ISO-on-TCP (RFC1006)       Yes         • UDP       Yes         Web server       Yes         • supported       Yes         • USer-defined websites       Yes         Further protocols       Yes         communication       Yes         S7 communication       Yes         • supported       Yes         • supported       Yes         supported       Yes         • MODBUS       Yes         communication       Yes         supported       Yes         • as server       Yes         • as client       Yes         Number of connections       Yes	max.	
PROFIsafe       No         PROFIBUS       Yes; CM 1243-5 required         AS-Interface       Yes         Protocols (Ethernet)       Yes         • TCP/IP       Yes         Open IE communication       Yes         • TCP/IP       Yes         • ISO-on-TCP (RFC1006)       Yes         • UDP       Yes         Web server       Yes         • Supported       Yes         • USer-defined websites       Yes         Further protocols       Yes         communication       Yes         S7 communication       Yes         • supported       Yes         • supported       Yes         supported       Yes         MODBUS       Yes         supported       Yes         S7 communication       Yes         • as server       Yes         • as server       Yes         • as client       Yes         Number of connections       Yes	Protocols	
PROFIsafe       No         PROFIBUS       Yes; CM 1243-5 required         AS-Interface       Yes         Protocols (Ethernet)       Yes         • TCP/IP       Yes         Open IE communication       Yes         • TCP/IP       Yes         • ISO-on-TCP (RFC1006)       Yes         • UDP       Yes         Web server       Yes         • Supported       Yes         • USer-defined websites       Yes         Further protocols       Yes         communication       Yes         S7 communication       Yes         • supported       Yes         • supported       Yes         supported       Yes         MODBUS       Yes         supported       Yes         S7 communication       Yes         • as server       Yes         • as server       Yes         • as client       Yes         Number of connections       Yes	Supports protocol for PROFINET IO	Yes
PROFIBUS       Yes; CM 1243-5 required         AS-Interface       Yes         Protocols (Ethernet)       Yes         • TCP/IP       Yes         • TCP/IP       Yes         • TCP/IP       Yes         • TCP/IP       Yes         • ISO-on-TCP (RFC1006)       Yes         • UDP       Yes         Web server       Yes         • Supported       Yes         • User-defined websites       Yes         Further protocols       Yes         • MODBUS       Yes         communication       Yes         • Supported       Yes         • MODBUS       Yes         supported       Yes         • MODBUS       Yes         odimentication       Yes         • Supported       Yes         • as server       Yes         • as client       Yes         • as client       Yes		
AS-Interface       Yes         Protocols (Ethernet)       Yes         • TCP/IP       Yes         • TCP/IP       Yes         • ISO-on-TCP (RFC1006)       Yes         • UDP       Yes         Web server       Yes         • Supported       Yes         • USC-defined websites       Yes         • USer-defined websites       Yes         • MODBUS       Yes         communication       Yes         • Supported       Yes         • MODBUS       Yes         communication       Yes         • supported       Yes         • supported       Yes         • MODBUS       Yes         Number of connections       Yes		
Protocols (Ethernet)         • TCP/IP       Yes         Open IE communication         • TCP/IP       Yes         • ISO-on-TCP (RFC1006)       Yes         • UDP       Yes         Web server       Yes         • Supported       Yes         • User-defined websites       Yes         Further protocols       Yes         • MODBUS       Yes         Communication functions / header       Yes         S7 communication       Yes         • as server       Yes         • as client       Yes         • Number of connections       Yes		
• TCP/IPYesOpen IE communicationYes• TCP/IPYes• ISO-on-TCP (RFC1006)Yes• UDPYesWeb serverYes• supportedYes• User-defined websitesYesFurther protocolsYes• MODBUSYescommunication functions / headerYes\$7 communicationYes• supportedYes• as serverYes• as clientYes• Number of connectionsYes		
Open IE communication         • TCP/IP       Yes         • ISO-on-TCP (RFC1006)       Yes         • UDP       Yes         Web server       Yes         • supported       Yes         • User-defined websites       Yes         Further protocols       Yes         • MODBUS       Yes         communication functions / header       Yes         S7 communication       Yes         • as server       Yes         • as client       Yes         Number of connections       Yes		Yes
• TCP/IPYes• ISO-on-TCP (RFC1006)Yes• UDPYesWeb serverYes• supportedYes• User-defined websitesYesFurther protocolsYes• MODBUSYescommunication functions / headerYesS7 communicationYes• supportedYes• as serverYes• as clientYesNumber of connectionsYes		
ISO-on-TCP (RFC1006)YesUDPYesWeb serverYes• supportedYes• User-defined websitesYesFurther protocolsYes• MODBUSYescommunication functions / headerYesS7 communicationYes• supportedYes• supportedYes• supportedYes• supportedYes• supportedYes• supportedYes• as serverYes• as clientYesNumber of connectionsYes		Yes
• UDPYesWeb serverYes• supportedYes• User-defined websitesYesFurther protocolsYes• MODBUSYescommunication functions / headerYesS7 communicationYes• supportedYes• supportedYes• as serverYes• as clientYesNumber of connectionsYes		
Web server         • supported       Yes         • User-defined websites       Yes         Further protocols       Yes         • MODBUS       Yes         communication functions / header       Yes         S7 communication       Yes         • supported       Yes         • as server       Yes         • as client       Yes         Number of connections       Yes		
• supported     Yes       • User-defined websites     Yes       Further protocols		
• User-defined websites     Yes       Further protocols     Yes       • MODBUS     Yes       communication functions / header     S7 communication       § S7 communication     Yes       • supported     Yes       • as server     Yes       • as client     Yes       Number of connections     Yes		Yes
Further protocols         • MODBUS       Yes         communication functions / header       S7 communication         \$7 communication       Yes         • supported       Yes         • as server       Yes         • as client       Yes         Number of connections       Yes		
• MODBUS     Yes       communication functions / header       S7 communication        • supported     Yes       • as server     Yes       • as client     Yes       Number of connections     Yes		
communication functions / header       S7 communication       • supported     Yes       • as server     Yes       • as client     Yes       Number of connections     Yes		Ves
S7 communication         • supported       Yes         • as server       Yes         • as client       Yes         Number of connections       Yes		
• supported     Yes       • as server     Yes       • as client     Yes       Number of connections     Yes		
e as server Yes     e as client Yes Number of connections		
as client Yes Number of connections	<ul> <li>supported</li> </ul>	
Number of connections		
		Yes
overall     16; dynamically		
	overall	16; dynamically

Test commissioning functions	
Status/control	
Status/control variable	Yes
Variables	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
Forcing	
Forcing	Yes
Diagnostic buffer	
present	Yes
Traces	
<ul> <li>Number of configurable Traces</li> </ul>	2; Up to 512 KB of data per trace are possible
Integrated Functions	
Frequency measurement	Yes
controlled positioning	Yes
Number of position-controlled positioning axes, max.	8
Number of positioning axes via pulse-direction interface	Up to 4 with SB 1222
PID controller	Yes
Number of alarm inputs	4
Potential separation	·
Potential separation digital inputs	FOOV A C for 4 minute
Potential separation digital inputs	500V AC for 1 minute
between the channels, in groups of	1
Potential separation digital outputs	Delau
Potential separation digital outputs	Relays
between the channels	No
between the channels, in groups of	2
EMC	
Interference immunity against discharge of static electricity	
Interference immunity against discharge of static	Yes
electricity acc. to IEC 61000-4-2	
— Test voltage at air discharge	8 kV
— Test voltage at contact discharge	6 kV
Interference immunity to cable-borne interference	
<ul> <li>Interference immunity on supply lines acc. to IEC 61000-4-4</li> </ul>	Yes
<ul> <li>Interference immunity on signal cables acc. to IEC</li> </ul>	Yes
61000-4-4	
Interference immunity against voltage surge	
<ul> <li>Interference immunity on supply lines acc. to IEC</li> </ul>	Yes
61000-4-5	
Interference immunity against conducted variable disturbance	e induced by high-frequency fields
<ul> <li>Interference immunity against high-frequency</li> </ul>	Yes
radiation acc. to IEC 61000-4-6	
Emission of radio interference acc. to EN 55 011	
<ul> <li>Limit class A, for use in industrial areas</li> </ul>	Yes; Group 1
<ul> <li>Limit class B, for use in residential areas</li> </ul>	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
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C
• max.	60 °C; Number of simultaneously activated inputs or outputs 7 or 5 (no
	adjacent points) at 60 °C horizontal or 50 °C vertical, 14 or 10 at 55 °C
	horizontal or 45 °C vertical
At cold restart, min.	0°0
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Altitude during operation relating to sea level	
<ul> <li>Installation altitude above sea level, max.</li> </ul>	2 000 m
<ul> <li>Ambient air temperature-barometric pressure-</li> </ul>	Tmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m) // Tmin
altitude	(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); above 2 000 m max. 132 V AC
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
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
<ul> <li>Shock testing</li> <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
Resistance	
Coolants and lubricants	
<ul> <li>Resistant to commercially available coolants and lubricants</li> </ul>	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems	
<ul> <li>— to biologically active substances according to EN 60721-3-3</li> </ul>	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
<ul> <li>— to chemically active substances according to EN 60721-3-3</li> </ul>	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
— to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea	
— to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
— to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
— to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology — Against chemically active substances acc. to	Voc: Class 2 (ovaluding trichlarathylana)
— Against chemically active substances acc. to EN 60654-4 — Environmental conditions for process,	Yes; Class 3 (excluding trichlorethylene) Yes; Level GX group A/B (excluding trichlorethylene; harmful gas
measuring and control systems acc. to ANSI/ISA- 71.04	concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark	
<ul> <li>— Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04</li> </ul>	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
<ul> <li>Coatings for printed circuit board assemblies acc. to EN 61086</li> </ul>	Yes; Class 2 for high reliability
<ul> <li>Protection against fouling acc. to EN 60664-3</li> </ul>	Yes; Type 1 protection
<ul> <li>Military testing according to MIL-I-46058C, Amendment 7</li> </ul>	Yes; Discoloration of coating possible during service life
<ul> <li>Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A</li> </ul>	Yes; Conformal coating, Class A
configuration / header	
configuration / programming / header	
Programming language	
— LAD	Yes
— FBD	Yes
— SCL	Yes
programming / cycle time monitoring / header	
adjustable	Yes
Dimensions	
Width	110 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	435 g
last modified:	4/1/2022 🖸