## **SIEMENS**

## **Data sheet**



Figure similar

SIPLUS S7-1200 CPU 1212C DC/DC/DC based on 6ES7212-1AE40-0XB0 with conformal coating, -20...+60 °C, compact CPU, DC/DC/DC, onboard I/O: 8 DI 24 V DC 6 DQ 24 V DC 2 AI 0-10 V DC, power supply: 20.4-28.8 V DC program/data memory 50 KB

Product type designation Engineering with  STEP 7 TIA Portal configurable/integrated from version Supply voltage Rated value (DC)  24 V DC  Permissible range, lower limit (DC) Permissible range, upper limit (DC) Pess V Uppermissible range, upper limit (DC) Pess V	General information	
e STEP 7 TIA Portal configurable/integrated from version  Supply voltage  Rated value (DC)  • 24 V DC  permissible range, lower limit (DC) permissible range, upper limit (DC	Product type designation	CPU 1212C DC/DC/DC
version  Supply voltage Rated value (DC)  • 24 V DC permissible range, lower limit (DC) permissible range, upper limit (DC) permissible range, upper limit (DC) Reverse polarity protection  Load voltage L+  • Rated value (DC) • 24 V • permissible range, lower limit (DC) • permissible range, upper limit (DC) • 28.8 V	Engineering with	
Rated value (DC)  • 24 V DC  permissible range, lower limit (DC) permissible range, upper limit (DC) Reverse polarity protection Pes  Load voltage L+  • Rated value (DC) • permissible range, lower limit (DC) permissible range, lower limit (DC) permissible range, lower limit (DC) • permissible range, lower limit (DC) • permissible range, lower limit (DC) permissible range, upper limit (DC) permissible range, upper limit (DC)  • 28.8 V  Input current  Current consumption (rated value)  • Lay at 28.8 V DC  Output current, max.  • 1 200 mA; TPJ with all expansion modules  Inrush current, max.  • 12 A; at 28.8 V DC  Output current  for backplane bus (5 V DC), max.  • 1 000 mA; Max. 5 V DC for SM and CM  Encoder supply  • 24 V		see entry ID: 109746275
emissible 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 epermissible range, lower limit (DC) 20.4 V epermissible range, lower limit (DC) 20.4 V epermissible range, upper limit (DC) 28.8 V  Input current  Current consumption (rated value) 400 mA; Typical Current consumption, max. 1 200 mA; CPU with all expansion modules Inrush current, max. 12 A; at 28.8 V DC  Output current  for backplane bus (5 V DC), max. 1 000 mA; Max. 5 V DC for SM and CM  Encoder supply 24 V encoder supply 24 V encoder supply  24 V L+ minus 4 V DC min.  Power loss  Power loss, typ. 9 W  Memory  Work memory  integrated 75 kbyte expandable No  Load memory  integrated 1 Mbyte e Plug-in (SIMATIC Memory Card), max. with SIMATIC memory card  Backup e present e without battery  for bit operations, typ. 0.085 µs; / instruction	Supply voltage	
permissible range, lower limit (DC) permissible range, upper limit (DC) Reverse polarity protection Load voltage L+  Rated value (DC) permissible range, lower limit (DC) permissible range, lower limit (DC) permissible range, upper limit (DC)  Input current  Current consumption (rated value) Current consumption, max. 1 200 mA; Typical Current onsumption, max. 1 200 mA; CPU with all expansion modules Inrush current, max.  1 200 mA; CPU with all expansion modules  Invush 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 9 W  Memory  Work memory integrated expandable No  Load memory integrated Plug-in (SIMATIC Memory Card), max. with SIMATIC memory card Backup  Present ves; maintenance-free without battery  CPU processing times  for bit operations, typ. 0.085 µs; / instruction	Rated value (DC)	
permissible range, upper limit (DC) Reverse polarity protection Load voltage L+  Rated value (DC) permissible range, lower limit (DC) permissible range, upper limit (DC)  Input current  Current consumption (rated value) Current consumption (rated value) Current consumption, max. 1 200 mA; Typical 1 2A; at 28.8 V DC  Output current for backplane bus (5 V DC), max. 1 000 mA; Max. 5 V DC for SM and CM  Encoder supply 24 V encoder supply 24 V 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 expandable No  Load memory integrated Plug-in (SIMATIC Memory Card), max. with SIMATIC memory card Backup  present yes: maintenance-free without battery  CPU processing times for bit operations, typ. 0.085 µs; / instruction		Yes
Reverse polarity protection  Load voltage L+  • Rated value (DC) • permissible range, lower limit (DC) • permissible range, lower limit (DC) • permissible range, upper limit (DC)  28.8 V  Input current  Current consumption (rated value)  Current consumption, max. 1 200 mA; Typical  Current consumption, max. 1 200 mA; CPU with all expansion modules Inrush current, max.  1 2A; at 28.8 V DC  Output current  for backplane bus (5 V DC), max.  1 000 mA; Max. 5 V DC for SM and CM  Encoder supply  24 V encoder supply  24 V L+ minus 4 V DC min.  Power loss  Power loss, typ.  9 W  Memory  Work memory  • integrated • expandable No  Load memory  • integrated • Plug-in (SIMATIC Memory Card), max.  Backup • present • without battery  CPU processing times  for bit operations, typ.  0.085 µs; / instruction		20.4 V
Load voltage L+  Rated value (DC) permissible range, lower limit (DC) permissible range, upper limit (DC) permissible range, upper limit (DC) 28.8 V  Input current  Current consumption (rated value) Current consumption, max. 1 200 mA; Typical Current consumption, max. 1 200 mA; CPU with all expansion modules Inrush current, max. 1 2 A; at 28.8 V DC  Output current  for backplane bus (5 V DC), max. 1 000 mA; Max. 5 V DC for SM and CM  Encoder supply 24 V encoder supply 24 V L+ minus 4 V DC min.  Power loss Power loss, typ. 9 W  Memory  Work memory  integrated expandable No  Load memory integrated Plug-in (SIMATIC Memory Card), max.  Backup present without battery Yes; maintenance-free vithout battery  CPU processing times  for bit operations, typ. 0.085 µs; / instruction	permissible range, upper limit (DC)	28.8 V
<ul> <li>Rated value (DC)</li> <li>permissible range, lower limit (DC)</li> <li>22.4 V</li> <li>permissible range, upper limit (DC)</li> <li>28.8 V</li> </ul> Input current <ul> <li>Current consumption (rated value)</li> <li>400 mA; Typical</li> <li>Current consumption, max.</li> <li>1 200 mA; CPU with all expansion modules</li> <li>Inrush current, max.</li> <li>12 A; at 28.8 V DC</li> </ul> Output current <ul> <li>for backplane bus (5 V DC), max.</li> <li>1 000 mA; Max. 5 V DC for SM and CM</li> </ul> Encoder supply <ul> <li>24 V encoder supply</li> <li>24 V</li> <li>L+ minus 4 V DC min.</li> </ul> Power loss Power loss, typ. <ul> <li>9 W</li> </ul> Memory <ul> <li>integrated</li> <li>expandable</li> <li>No</li> </ul> Load memory <ul> <li>integrated</li> <li>expandable</li> <li>No</li> </ul> Load memory <ul> <li>integrated</li> <li>Plug-in (SIMATIC Memory Card), max.</li> <li>with SIMATIC memory card</li> </ul> Backup <ul> <li>present</li> <li>with SIMATIC memory card</li> </ul> Backup <ul> <li>present</li> <li>without battery</li> <li>Yes</li> </ul> CPU processing times <ul> <li>for bit operations, typ.</li> <li>0.085 μs; / instruction</li> </ul>		Yes
permissible range, lower limit (DC)     permissible range, upper limit (DC)     permissible range, upper limit (DC)     28.8 V    Input current	Load voltage L+	
• permissible range, upper limit (DC)  Input current  Current consumption (rated value)  Current consumption, max.  1 20 mA; CPU with all expansion modules  Inrush current, max.  12 A; at 28.8 V DC  Output current  for backplane bus (5 V DC), max.  1 000 mA; Max. 5 V DC for SM and CM  Encoder supply  24 V encoder supply  • 24 V  L+ minus 4 V DC min.  Power loss  Power loss, typ.  Memory  Work memory  • integrated • expandable Load memory • integrated • Plug-in (SIMATIC Memory Card), max.  Backup • present • without battery  CPU processing times  for bit operations, typ.  0 400 mA; Typical  400 mA; Typical  400 mA; CPU with all expansion modules  100 mA; OP With all expansi	, ,	
Input current Current consumption (rated value) Current consumption, max. 1 200 mA; CPU with all expansion modules Inrush current, max. 1 2 A; at 28.8 V DC  Output current  for backplane bus (5 V DC), max. 1 000 mA; Max. 5 V DC for SM and CM  Encoder supply 24 V encoder supply  • 24 V  L+ minus 4 V DC min.  Power loss  Power loss, typ. 9 W  Memory  Work memory • integrated • expandable No  Load memory • integrated • Plug-in (SIMATIC Memory Card), max.  Backup • present • without battery  Yes  CPU processing times  for bit operations, typ. 0.085 µs; / instruction		
Current consumption (rated value) Current consumption, max.  1 200 mA; Typical 1 200 mA; CPU with all expansion modules Inrush current, max.  12 A; at 28.8 V DC  Output current  for backplane bus (5 V DC), max.  1 000 mA; Max. 5 V DC for SM and CM  Encoder supply 24 V encoder supply 24 V encoder supply  • 24 V  L+ minus 4 V DC min.  Power loss  Power loss  Power loss, typ.  9 W  Memory  Work memory  • integrated • expandable  Load memory  • integrated • Plug-in (SIMATIC Memory Card), max.  Backup  • present • with out battery  Yes; maintenance-free • without battery  For bit operations, typ.  0.085 µs; / instruction	permissible range, upper limit (DC)	28.8 V
Current consumption, max. Inrush current, max.  1 200 mA; CPU with all expansion modules Inrush current, max.  1 2 A; at 28.8 V DC  Output current  for backplane bus (5 V DC), max.  1 000 mA; Max. 5 V DC for SM and CM  Encoder supply  24 V encoder supply  24 V becoder supply  24 V L+ minus 4 V DC min.  Power loss  Power loss  Power loss, typ.  9 W  Memory  Work memory  integrated expandable No  Load memory  integrated Plug-in (SIMATIC Memory Card), max.  Backup  o present o with SIMATIC memory card  ### Wes; maintenance-free o without battery  CPU processing times  for bit operations, typ.  1 200 mA; CPU with all expansion modules  1 000 mA; Max. 5 V DC for SM and CM	Input current	
Inrush current, max.  Output current for backplane bus (5 V DC), max.  I 000 mA; Max. 5 V DC for SM and CM  Encoder supply  24 V encoder supply  • 24 V  L+ minus 4 V DC min.  Power loss  Power loss, typ.  9 W  Memory  Work memory  • integrated • expandable Load memory  • integrated • Plug-in (SIMATIC Memory Card), max.  Backup • present • without battery  For bit operations, typ.  1 0.085 µs; / instruction	Current consumption (rated value)	400 mA; Typical
Output current  for backplane bus (5 V DC), max.  Encoder supply  24 V encoder supply  • 24 V	Current consumption, max.	1 200 mA; CPU with all expansion modules
for backplane bus (5 V DC), max.  I 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 DC
Encoder supply  24 V encoder supply  24 V Examinus 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 present without battery  Yes; maintenance-free without battery  for bit operations, typ.  0.085 µs; / instruction	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 No  Load memory  • integrated • Plug-in (SIMATIC Memory Card), max.  Backup • present • without battery  For bit operations, typ.  0.085 µs; / instruction	for backplane bus (5 V DC), max.	1 000 mA; Max. 5 V DC for SM and CM
• 24 V L+ minus 4 V DC min.  Power loss  Power loss, typ. 9 W  Memory  Work memory  • integrated 75 kbyte • expandable No  Load memory • integrated 1 Mbyte • Plug-in (SIMATIC Memory Card), max. with SIMATIC memory card  Backup • present Yes; maintenance-free • without battery Yes  CPU processing times  for bit operations, typ. 0.085 µs; / instruction	Encoder supply	
Power loss Power loss, typ. 9 W  Memory  Work memory  integrated 75 kbyte  expandable No  Load memory  integrated 1 Mbyte  Plug-in (SIMATIC Memory Card), max. with SIMATIC memory card  Backup  present Yes; maintenance-free  without battery Yes  CPU processing times  for bit operations, typ. 0.085 µs; / instruction	24 V encoder supply	
Power loss, typ.  Memory  Work memory  integrated  expandable  Load memory  integrated  Plug-in (SIMATIC Memory Card), max.  Backup  present  present  with SIMATIC memory card  Yes; maintenance-free  without battery  CPU processing times  for bit operations, typ.  9 W  No  15 kbyte  No  No  1 Mbyte  with SIMATIC memory card  Yes; maintenance-free  Yes  CPU processing times  0.085 µs; / instruction	• 24 V	L+ minus 4 V DC min.
Memory  Work memory  ● integrated 75 kbyte  ● expandable No  Load memory  ● integrated 1 Mbyte  ● Plug-in (SIMATIC Memory Card), max. with SIMATIC memory card  Backup  ● present Yes; maintenance-free  ● without battery Yes  CPU processing times  for bit operations, typ. 0.085 µs; / instruction	Power loss	
Work memory  integrated  expandable  No  Load memory  integrated  Plug-in (SIMATIC Memory Card), max.  Backup  present  with SIMATIC memory card  Yes; maintenance-free  without battery  CPU processing times  for bit operations, typ.  75 kbyte  No  1 Mbyte  Ves  yes  The processing times  75 kbyte  No  1 Mbyte  Yes  Yes  The processing times  75 kbyte  No  1 Mbyte  Yes  The processing times  75 kbyte  No  1 Mbyte  Yes  With SIMATIC memory card  Yes; maintenance-free  Yes  O.085 µs; / instruction	Power loss, typ.	9 W
<ul> <li>integrated</li> <li>expandable</li> <li>No</li> <li>Load memory</li> <li>integrated</li> <li>Plug-in (SIMATIC Memory Card), max.</li> <li>Backup</li> <li>present</li> <li>with SIMATIC memory card</li> <li>Backup</li> <li>Operations times</li> <li>For bit operations, typ.</li> <li>On the state of the state o</li></ul>	Memory	
<ul> <li>expandable</li> <li>Load memory</li> <li>integrated</li> <li>Plug-in (SIMATIC Memory Card), max.</li> <li>Backup</li> <li>present</li> <li>with SIMATIC memory card</li> <li>Backup</li> <li>Operations times</li> <li>for bit operations, typ.</li> <li>No</li> <li>No</li> <li>No</li> <li>No</li> <li>No</li> <li>No</li> <li>No</li> <li>No</li> <li>No</li> <li>Simple times</li> <li>O.085 µs; / instruction</li> </ul>	Work memory	
Load memory  • integrated • Plug-in (SIMATIC Memory Card), max. with SIMATIC memory card  Backup  • present • without battery  CPU processing times  for bit operations, typ.  1 Mbyte  Yes; maintenance-free  Yes; maintenance-free  Yes  O.085 µs; / instruction	• integrated	75 kbyte
<ul> <li>integrated</li> <li>Plug-in (SIMATIC Memory Card), max.</li> <li>Backup</li> <li>present</li> <li>with SIMATIC memory card</li> <li>Yes; maintenance-free</li> <li>without battery</li> <li>CPU processing times</li> <li>for bit operations, typ.</li> <li>0.085 µs; / instruction</li> </ul>	<ul><li>expandable</li></ul>	No
<ul> <li>Plug-in (SIMATIC Memory Card), max.</li> <li>Backup</li> <li>present</li> <li>with SIMATIC memory card</li> <li>Yes; maintenance-free</li> <li>without battery</li> <li>Yes</li> </ul> CPU processing times for bit operations, typ. 0.085 µs; / instruction	Load memory	
Backup	<ul><li>integrated</li></ul>	1 Mbyte
<ul> <li>present         <ul> <li>without battery</li> </ul> </li> <li>CPU processing times         <ul> <li>for bit operations, typ.</li> </ul> </li> <li>0.085 µs; / instruction</li> </ul>	<ul> <li>Plug-in (SIMATIC Memory Card), max.</li> </ul>	with SIMATIC memory card
without battery  CPU processing times  for bit operations, typ.      0.085 μs; / instruction	Backup	
CPU processing times for bit operations, typ.  0.085 μs; / instruction	•	
for bit operations, typ. 0.085 µs; / instruction	-	Yes
	CPU processing times	
for word operations, typ. 1.7 µs; / instruction	for bit operations, typ.	0.085 μs; / instruction
1.0	for word operations, typ.	1.7 µs; / instruction

for floating point grithmatic, typ	2.2 us: / 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	Chaire froming memory can be deed
Number, max.	Limited only by RAM for code
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	10 kbyte
Flag	TO ROYLO
• Size, max.	4 kbyte; Size of bit memory address area
Local data	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
• per priority class, max.	16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2 to 26: 6 KB
Address area	
Process image	
<ul> <li>Inputs, adjustable</li> </ul>	1 kbyte
<ul> <li>Outputs, adjustable</li> </ul>	1 kbyte
Hardware configuration	
Number of modules per system, max.	3 comm. modules, 1 signal board, 2 signal modules
Time of day	
Clock	
Hardware clock (real-time)	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
of which inputs usable for technological functions	4; HSC (High Speed Counting)
Source/sink input	Yes
Number of simultaneously controllable inputs	
all mounting positions	
— up to 40 °C, max.	8
Input voltage	
<ul><li>Rated value (DC)</li></ul>	24 V
● for signal "0"	5 V DC at 1 mA
• for signal "1"	15 V DC at 2.5 mA
Input delay (for rated value of input voltage)	
for standard inputs	0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable
— parameterizable	in groups of four
— at "0" to "1", min.	0.1 ms
— at "0" to "1", max.	20 ms
for interrupt inputs	
— parameterizable	Yes
for technological functions	
— parameterizable	Single phase: 3 @ 100 kHz & 1 @ 30 kHz, differential: 3 @ 80 kHz & 1 @ 30 kHz
Cable length	EOO my EO my fan taghanlagi - 1 f 1
shielded, max.      unshielded, max.	500 m; 50 m for technological functions
• unshielded, max.	300 m; for technological functions: No
Digital outputs	
Number of digital outputs	6 4. 400 ld la Dulas Train Outsut
of which high-speed outputs  Limitation of industries abut down voltage to	4; 100 kHz Pulse Train Output
Limitation of inductive shutdown voltage to	L+ (-48 V)
Switching capacity of the outputs  • with resistive load, max.	0.5 A
on lamp load, max.	5 W
Output voltage	
• for signal "0", max.	0.1 V; with 10 kOhm load
• for signal "1", min.	20 V
Output current	
for signal "1" rated value	0.5 A
<ul> <li>for signal "0" residual current, max.</li> </ul>	0.1 mA

Output delay with resistive load	
• "0" to "1", max.	1 µs
• "1" to "0", max.	3 µs
Switching frequency	400 111
of the pulse outputs, with resistive load, max.  Paley systems.	100 kHz
Relay outputs	0
Number of relay outputs     Cable length	0
• shielded, max.	500 m
unshielded, max.  unshielded, max.	150 m
	130 111
Analog inputs	
Number of analog inputs	2
Input ranges	V
Voltage	Yes
Input ranges (rated values), voltages  • 0 to +10 V	Vee
	Yes ≥100k ohms
— Input resistance (0 to 10 V)  Cable length	≥100K OIIIIS
• shielded, max.	100 m; twisted and shielded
	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	
<ul> <li>Resolution with overrange (bit including sign), max.</li> </ul>	10 bit
<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
Isolated	
iodiatou	Yes
automatic detection of transmission rate	Yes
automatic detection of transmission rate	
	Yes
automatic detection of transmission rate Autonegotiation	Yes Yes
automatic detection of transmission rate Autonegotiation Autocrossing	Yes Yes
automatic detection of transmission rate Autonegotiation Autocrossing Interface types	Yes Yes Yes
automatic detection of transmission rate Autonegotiation Autocrossing Interface types  • RJ 45 (Ethernet)	Yes Yes Yes
automatic detection of transmission rate Autonegotiation Autocrossing Interface types  • RJ 45 (Ethernet) Protocols	Yes Yes Yes Yes
automatic detection of transmission rate Autonegotiation Autocrossing Interface types  • RJ 45 (Ethernet)  Protocols  • PROFINET IO Controller	Yes Yes Yes Yes
automatic detection of transmission rate Autonegotiation Autocrossing Interface types  • RJ 45 (Ethernet)  Protocols  • PROFINET IO Controller  • PROFINET IO Device  • Open IE communication  • Web server	Yes Yes Yes Yes Yes Yes
automatic detection of transmission rate Autonegotiation Autocrossing Interface types  • RJ 45 (Ethernet) Protocols  • PROFINET IO Controller  • PROFINET IO Device  • Open IE communication  • Web server PROFINET IO Controller	Yes
automatic detection of transmission rate Autonegotiation Autocrossing Interface types  • RJ 45 (Ethernet)  Protocols  • PROFINET IO Controller  • PROFINET IO Device  • Open IE communication  • Web server  PROFINET IO Controller  • Transmission rate, max.	Yes
automatic detection of transmission rate Autonegotiation Autocrossing Interface types  • RJ 45 (Ethernet)  Protocols  • PROFINET IO Controller  • PROFINET IO Device  • Open IE communication  • Web server  PROFINET IO Controller  • Transmission rate, max.  Services	Yes
automatic detection of transmission rate Autonegotiation Autocrossing Interface types  RJ 45 (Ethernet)  Protocols  PROFINET IO Controller  PROFINET IO Device  Open IE communication  Web server  PROFINET IO Controller  Transmission rate, max.  Services  Number of connectable IO Devices, max.	Yes
automatic detection of transmission rate Autonegotiation Autocrossing Interface types  RJ 45 (Ethernet)  Protocols  PROFINET IO Controller  PROFINET IO Device  Open IE communication  Web server  PROFINET IO Controller  Transmission rate, max.  Services  Number of connectable IO Devices, max.  PROFINET IO Device	Yes
automatic detection of transmission rate Autonegotiation Autocrossing Interface types  RJ 45 (Ethernet)  Protocols  PROFINET IO Controller  PROFINET IO Device  Open IE communication  Web server  PROFINET IO Controller  Transmission rate, max.  Services  Number of connectable IO Devices, max.  PROFINET IO Device  Services	Yes Yes Yes  Yes  Yes  Yes  Yes  Yes  Y
automatic detection of transmission rate Autonegotiation Autocrossing Interface types  • RJ 45 (Ethernet) Protocols  • PROFINET IO Controller  • PROFINET IO Device  • Open IE communication  • Web server  PROFINET IO Controller  • Transmission rate, max.  Services  — Number of connectable IO Devices, max.  PROFINET IO Device  Services  — Shared device	Yes Yes Yes  Yes  Yes  Yes  Yes  Yes  Y
automatic detection of transmission rate Autonegotiation Autocrossing Interface types  • RJ 45 (Ethernet) Protocols  • PROFINET IO Controller  • PROFINET IO Device  • Open IE communication  • Web server  PROFINET IO Controller  • Transmission rate, max.  Services  — Number of connectable IO Devices, max.  PROFINET IO Device  Services  — Shared device — Number of IO Controllers with shared device,	Yes
automatic detection of transmission rate Autonegotiation Autocrossing Interface types  • RJ 45 (Ethernet) Protocols  • PROFINET IO Controller • PROFINET IO Device • Open IE communication • Web server PROFINET IO Controller • Transmission rate, max. Services  — Number of connectable IO Devices, max.  PROFINET IO Device Services  — Shared device — Number of IO Controllers with shared device, max.	Yes Yes Yes  Yes  Yes  Yes  Yes  Yes  Y
automatic detection of transmission rate Autonegotiation Autocrossing Interface types  RJ 45 (Ethernet)  Protocols  PROFINET IO Controller PROFINET IO Device Open IE communication Web server  PROFINET IO Controller Transmission rate, max. Services Number of connectable IO Devices, max.  PROFINET IO Device Services  Services  Services  Number of IO Controllers with shared device, max.  Protocols	Yes Yes Yes  Yes  Yes Yes Yes Yes Yes Ye
automatic detection of transmission rate Autonegotiation Autocrossing Interface types  RJ 45 (Ethernet)  Protocols  PROFINET IO Controller  PROFINET IO Device  Open IE communication  Web server  PROFINET IO Controller  Transmission rate, max.  Services  Number of connectable IO Devices, max.  PROFINET IO Device  Services  Services  Number of IO Controllers with shared device, max.  Protocols  Supports protocol for PROFINET IO	Yes Yes Yes  Yes  Yes  Yes  Yes  Yes  Y
automatic detection of transmission rate Autonegotiation Autocrossing Interface types  • RJ 45 (Ethernet)  Protocols  • PROFINET IO Controller  • PROFINET IO Device  • Open IE communication  • Web server  PROFINET IO Controller  • Transmission rate, max.  Services  — Number of connectable IO Devices, max.  PROFINET IO Device  Services  — Shared device  — Number of IO Controllers with shared device, max.  Protocols  Supports protocol for PROFINET IO  PROFIsafe	Yes
automatic detection of transmission rate Autonegotiation Autocrossing Interface types  • RJ 45 (Ethernet) Protocols  • PROFINET IO Controller  • PROFINET IO Device  • Open IE communication  • Web server  PROFINET IO Controller  • Transmission rate, max.  Services  — Number of connectable IO Devices, max.  PROFINET IO Device  Services  — Shared device — Number of IO Controllers with shared device, max.  Protocols  Supports protocol for PROFINET IO PROFIsafe PROFIBUS	Yes
automatic detection of transmission rate Autonegotiation Autocrossing Interface types  • RJ 45 (Ethernet) Protocols  • PROFINET IO Controller  • PROFINET IO Device  • Open IE communication  • Web server  PROFINET IO Controller  • Transmission rate, max.  Services  — Number of connectable IO Devices, max.  PROFINET IO Device  Services  — Shared device  — Number of IO Controllers with shared device, max.  Protocols  Supports protocol for PROFINET IO  PROFIsafe PROFIBUS AS-Interface	Yes
automatic detection of transmission rate Autonegotiation Autocrossing Interface types  • RJ 45 (Ethernet) Protocols  • PROFINET IO Controller  • PROFINET IO Device  • Open IE communication  • Web server  PROFINET IO Controller  • Transmission rate, max.  Services  — Number of connectable IO Devices, max.  PROFINET IO Device  Services  — Shared device  — Number of IO Controllers with shared device, max.  Protocols  Supports protocol for PROFINET IO  PROFISafe  PROFIBUS  AS-Interface  Protocols (Ethernet)	Yes
automatic detection of transmission rate Autonegotiation Autocrossing Interface types  • RJ 45 (Ethernet) Protocols  • PROFINET IO Controller • PROFINET IO Device • Open IE communication • Web server PROFINET IO Controller • Transmission rate, max. Services  — Number of connectable IO Devices, max.  PROFINET IO Device Services  — Shared device — Number of IO Controllers with shared device, max.  Protocols  Supports protocol for PROFINET IO PROFISafe PROFIBUS AS-Interface Protocols (Ethernet) • TCP/IP	Yes
automatic detection of transmission rate Autonegotiation Autocrossing Interface types  • RJ 45 (Ethernet)  Protocols  • PROFINET IO Controller  • PROFINET IO Device  • Open IE communication  • Web server  PROFINET IO Controller  • Transmission rate, max.  Services  — Number of connectable IO Devices, max.  PROFINET IO Device  Services  — Shared device — Number of IO Controllers with shared device, max.  Protocols  Supports protocol for PROFINET IO  PROFIsafe PROFIBUS  AS-Interface  Protocols (Ethernet)  • TCP/IP  Open IE communication	Yes Yes Yes  Yes  Yes  Yes  Yes Yes Yes
automatic detection of transmission rate Autonegotiation Autocrossing Interface types  RJ 45 (Ethernet) Protocols  PROFINET IO Controller PROFINET IO Device Open IE communication Web server PROFINET IO Controller Transmission rate, max. Services — Number of connectable IO Devices, max.  PROFINET IO Device Services — Shared device — Number of IO Controllers with shared device, max.  Protocols  Supports protocol for PROFINET IO PROFIsafe PROFIBUS AS-Interface Protocols (Ethernet) TCP/IP  Open IE communication TCP/IP	Yes
automatic detection of transmission rate Autonegotiation Autocrossing Interface types  • RJ 45 (Ethernet)  Protocols  • PROFINET IO Controller  • PROFINET IO Device  • Open IE communication  • Web server  PROFINET IO Controller  • Transmission rate, max.  Services  — Number of connectable IO Devices, max.  PROFINET IO Device  Services  — Shared device — Number of IO Controllers with shared device, max.  Protocols  Supports protocol for PROFINET IO  PROFIsafe PROFIBUS  AS-Interface  Protocols (Ethernet)  • TCP/IP  Open IE communication	Yes Yes Yes  Yes  Yes  Yes  Yes Yes Yes

Web server	Voc
supported     Hear defined websites	Yes
User-defined websites     Further protocols	Yes
MODBUS	Yes
	165
communication functions / header	
S7 communication	V/
• supported	Yes
<ul><li>as server</li><li>as client</li></ul>	Yes Yes
Number of connections	165
• overall	16; dynamically
Test commissioning functions	10, dynamicany
Status/control	Voc
Status/control variable     Variables	Yes
Variables     Forcing	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
• Forcing	Yes
Diagnostic buffer	100
• present	Yes
Traces	
Number of configurable Traces	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	4; With integrated DO
PID controller	Yes
Number of alarm inputs	4
Number of pulse outputs	4
Limit frequency (pulse)	100 kHz
Potential separation	
Potential separation digital inputs	
Potential separation digital inputs  • Potential separation digital inputs	500V AC for 1 minute
Potential separation digital inputs  • Potential separation digital inputs  • between the channels, in groups of	500V AC for 1 minute 1
Potential separation digital inputs	
<ul><li>Potential separation digital inputs</li><li>between the channels, in groups of</li></ul>	
<ul> <li>Potential separation digital inputs</li> <li>between the channels, in groups of</li> <li>Potential separation digital outputs</li> </ul>	1
<ul> <li>Potential separation digital inputs</li> <li>between the channels, in groups of</li> <li>Potential separation digital outputs</li> <li>Potential separation digital outputs</li> </ul>	1 Yes
<ul> <li>Potential separation digital inputs</li> <li>between the channels, in groups of</li> <li>Potential separation digital outputs</li> <li>Potential separation digital outputs</li> <li>between the channels</li> </ul>	1 Yes No
<ul> <li>Potential separation digital inputs</li> <li>between the channels, in groups of</li> <li>Potential separation digital outputs</li> <li>Potential separation digital outputs</li> <li>between the channels</li> <li>between the channels, in groups of</li> </ul>	1 Yes No
<ul> <li>Potential separation digital inputs</li> <li>between the channels, in groups of</li> <li>Potential separation digital outputs</li> <li>Potential separation digital outputs</li> <li>between the channels</li> <li>between the channels, in groups of</li> </ul> EMC	1 Yes No
<ul> <li>Potential separation digital inputs</li> <li>between the channels, in groups of</li> <li>Potential separation digital outputs</li> <li>Potential separation digital outputs</li> <li>between the channels</li> <li>between the channels, in groups of</li> <li>EMC</li> <li>Interference immunity against discharge of static electricity</li> <li>Interference immunity against discharge of static</li> </ul>	Yes No 1
Potential separation digital inputs between the channels, in groups of  Potential separation digital outputs Potential separation digital outputs between the channels between the channels, in groups of  EMC  Interference immunity against discharge of static electricity Interference immunity against discharge of static electricity acc. to IEC 61000-4-2	1 Yes No 1 Yes
Potential separation digital inputs between the channels, in groups of  Potential separation digital outputs Potential separation digital outputs between the channels between the channels, in groups of  EMC  Interference immunity against discharge of static electricity Interference immunity against discharge of static electricity acc. to IEC 61000-4-2 Test voltage at air discharge	Yes No 1  Yes 8 kV
<ul> <li>Potential separation digital inputs</li> <li>between the channels, in groups of</li> <li>Potential separation digital outputs</li> <li>Potential separation digital outputs</li> <li>between the channels</li> <li>between the channels, in groups of</li> <li>EMC</li> <li>Interference immunity against discharge of static electricity</li> <li>Interference immunity against discharge of static electricity acc. to IEC 61000-4-2</li> <li>— Test voltage at air discharge</li> <li>— Test voltage at contact discharge</li> </ul>	Yes No 1  Yes 8 kV
Potential separation digital inputs between the channels, in groups of  Potential separation digital outputs Potential separation digital outputs between the channels between the channels, in groups of  EMC  Interference immunity against discharge of static electricity Interference immunity against discharge of static electricity acc. to IEC 61000-4-2 Test voltage at air discharge Test voltage at contact discharge Interference immunity to cable-borne interference Interference immunity on supply lines acc. to IEC	Yes No 1  Yes  Ko
Potential separation digital inputs between the channels, in groups of  Potential separation digital outputs Potential separation digital outputs between the channels between the channels, in groups of  EMC  Interference immunity against discharge of static electricity Interference immunity against discharge of static electricity acc. to IEC 61000-4-2 Test voltage at air discharge Test voltage at contact discharge Interference immunity to cable-borne interference Interference immunity on supply lines acc. to IEC 61000-4-4 Interference immunity on signal cables acc. to IEC	Yes No 1  Yes 8 kV 6 kV  Yes
<ul> <li>Potential separation digital inputs</li> <li>between the channels, in groups of</li> <li>Potential separation digital outputs</li> <li>Potential separation digital outputs</li> <li>between the channels</li> <li>between the channels, in groups of</li> <li>EMC</li> <li>Interference immunity against discharge of static electricity</li> <li>Interference immunity against discharge of static electricity acc. to IEC 61000-4-2         <ul> <li>Test voltage at air discharge</li> <li>Test voltage at contact discharge</li> </ul> </li> <li>Interference immunity to cable-borne interference</li> <li>Interference immunity on supply lines acc. to IEC 61000-4-4</li> <li>Interference immunity on signal cables acc. to IEC 61000-4-4</li> </ul>	Yes No 1  Yes 8 kV 6 kV  Yes
<ul> <li>Potential separation digital inputs</li> <li>between the channels, in groups of</li> <li>Potential separation digital outputs</li> <li>Potential separation digital outputs</li> <li>between the channels</li> <li>between the channels, in groups of</li> <li>EMC</li> <li>Interference immunity against discharge of static electricity</li> <li>Interference immunity against discharge of static electricity acc. to IEC 61000-4-2         <ul> <li>Test voltage at air discharge</li> <li>Test voltage at contact discharge</li> </ul> </li> <li>Interference immunity to cable-borne interference</li> <li>Interference immunity on supply lines acc. to IEC 61000-4-4</li> <li>Interference immunity against voltage surge</li> <li>Interference immunity on supply lines acc. to IEC</li> </ul>	1 Yes No 1  Yes 8 kV 6 kV  Yes Yes
<ul> <li>Potential separation digital inputs</li> <li>between the channels, in groups of</li> <li>Potential separation digital outputs</li> <li>Potential separation digital outputs</li> <li>between the channels</li> <li>between the channels, in groups of</li> <li>EMC</li> <li>Interference immunity against discharge of static electricity</li> <li>Interference immunity against discharge of static electricity acc. to IEC 61000-4-2         <ul> <li>Test voltage at air discharge</li> <li>Test voltage at contact discharge</li> </ul> </li> <li>Interference immunity to cable-borne interference</li> <li>Interference immunity on supply lines acc. to IEC 61000-4-4</li> <li>Interference immunity against voltage surge</li> <li>Interference immunity on supply lines acc. to IEC 61000-4-5</li> </ul>	1 Yes No 1  Yes 8 kV 6 kV  Yes Yes
<ul> <li>Potential separation digital inputs</li> <li>between the channels, in groups of</li> <li>Potential separation digital outputs</li> <li>Potential separation digital outputs</li> <li>between the channels</li> <li>between the channels, in groups of</li> <li>EMC</li> <li>Interference immunity against discharge of static electricity</li> <li>Interference immunity against discharge of static electricity acc. to IEC 61000-4-2         <ul> <li>Test voltage at air discharge</li> <li>Test voltage at contact discharge</li> </ul> </li> <li>Interference immunity to cable-borne interference</li> <li>Interference immunity on supply lines acc. to IEC 61000-4-4</li> <li>Interference immunity against voltage surge</li> <li>Interference immunity against voltage surge</li> <li>Interference immunity against conducted variable disturbanc</li> <li>Interference immunity against high-frequency</li> </ul>	Yes No 1  Yes 8 kV 6 kV Yes Yes Yes  Yes
<ul> <li>Potential separation digital inputs</li> <li>between the channels, in groups of</li> <li>Potential separation digital outputs</li> <li>Potential separation digital outputs</li> <li>between the channels</li> <li>between the channels, in groups of</li> <li>EMC</li> <li>Interference immunity against discharge of static electricity</li> <li>Interference immunity against discharge of static electricity acc. to IEC 61000-4-2         <ul> <li>Test voltage at air discharge</li> <li>Test voltage at contact discharge</li> </ul> </li> <li>Interference immunity to cable-borne interference</li> <li>Interference immunity on supply lines acc. to IEC 61000-4-4</li> <li>Interference immunity against voltage surge</li> <li>Interference immunity on supply lines acc. to IEC 61000-4-5</li> <li>Interference immunity against conducted variable disturbanc</li> <li>Interference immunity against high-frequency radiation acc. to IEC 61000-4-6</li> </ul>	Yes No 1  Yes 8 kV 6 kV Yes Yes Yes  Yes
<ul> <li>Potential separation digital inputs</li> <li>between the channels, in groups of</li> <li>Potential separation digital outputs</li> <li>Potential separation digital outputs</li> <li>between the channels</li> <li>between the channels, in groups of</li> <li>EMC</li> <li>Interference immunity against discharge of static electricity</li> <li>Interference immunity against discharge of static electricity acc. to IEC 61000-4-2         <ul> <li>Test voltage at air discharge</li> <li>Test voltage at contact discharge</li> </ul> </li> <li>Interference immunity to cable-borne interference</li> <li>Interference immunity on supply lines acc. to IEC 61000-4-4</li> <li>Interference immunity against voltage surge</li> <li>Interference immunity on supply lines acc. to IEC 61000-4-5</li> <li>Interference immunity against conducted variable disturbanc</li> <li>Interference immunity against high-frequency radiation acc. to IEC 61000-4-6</li> <li>Emission of radio interference acc. to EN 55 011</li> </ul>	Yes No 1  Yes 8 kV 6 kV  Yes Yes Yes  Yes  induced by high-frequency fields Yes
<ul> <li>Potential separation digital inputs</li> <li>between the channels, in groups of</li> <li>Potential separation digital outputs</li> <li>Potential separation digital outputs</li> <li>between the channels</li> <li>between the channels, in groups of</li> <li>EMC</li> <li>Interference immunity against discharge of static electricity</li> <li>Interference immunity against discharge of static electricity acc. to IEC 61000-4-2  — Test voltage at air discharge  — Test voltage at contact discharge</li> <li>Interference immunity to cable-borne interference</li> <li>Interference immunity on supply lines acc. to IEC 61000-4-4</li> <li>Interference immunity on signal cables acc. to IEC 61000-4-4</li> <li>Interference immunity against voltage surge</li> <li>Interference immunity against conducted variable disturbanc</li> <li>Interference immunity against high-frequency radiation acc. to IEC 61000-4-6</li> <li>Emission of radio interference acc. to EN 55 011</li> <li>Limit class A, for use in industrial areas</li> <li>Limit class B, for use in residential areas</li> </ul>	Yes No 1  Yes 8 kV 6 kV  Yes Yes Yes  Yes  Yes  Yes  Yes  Yes
<ul> <li>Potential separation digital inputs</li> <li>between the channels, in groups of</li> <li>Potential separation digital outputs</li> <li>Potential separation digital outputs</li> <li>between the channels</li> <li>between the channels, in groups of</li> <li>EMC</li> <li>Interference immunity against discharge of static electricity</li> <li>Interference immunity against discharge of static electricity acc. to IEC 61000-4-2         <ul> <li>Test voltage at air discharge</li> <li>Test voltage at contact discharge</li> </ul> </li> <li>Interference immunity to cable-borne interference</li> <li>Interference immunity on supply lines acc. to IEC 61000-4-4</li> <li>Interference immunity against voltage surge</li> <li>Interference immunity against voltage surge</li> <li>Interference immunity against conducted variable disturbance</li> <li>Interference immunity against high-frequency radiation acc. to IEC 61000-4-6</li> <li>Emission of radio interference acc. to EN 55 011</li> <li>Limit class A, for use in industrial areas</li> <li>Limit class of protection</li> </ul>	Yes No 1  Yes 8 kV 6 kV  Yes Yes Yes  Yes  Yes  Yes  Yes  Yes
<ul> <li>Potential separation digital inputs</li> <li>between the channels, in groups of</li> <li>Potential separation digital outputs</li> <li>Potential separation digital outputs</li> <li>between the channels</li> <li>between the channels, in groups of</li> <li>EMC</li> <li>Interference immunity against discharge of static electricity</li> <li>Interference immunity against discharge of static electricity acc. to IEC 61000-4-2  — Test voltage at air discharge  — Test voltage at contact discharge</li> <li>Interference immunity to cable-borne interference</li> <li>Interference immunity on supply lines acc. to IEC 61000-4-4</li> <li>Interference immunity on signal cables acc. to IEC 61000-4-4</li> <li>Interference immunity against voltage surge</li> <li>Interference immunity against conducted variable disturbanc</li> <li>Interference immunity against high-frequency radiation acc. to IEC 61000-4-6</li> <li>Emission of radio interference acc. to EN 55 011</li> <li>Limit class A, for use in industrial areas</li> <li>Limit class B, for use in residential areas</li> </ul>	Yes No 1  Yes 8 kV 6 kV  Yes Yes Yes  Yes  Yes  Yes  Yes  Yes

Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
<ul><li>min.</li><li>max.</li><li>horizontal installation, min.</li></ul>	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C 60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical
horizontal installation, max.	60 °C
vertical installation, min.	-20 °C
vertical installation, max.	50 °C
At cold restart, min.	0 °C
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> <li>Ambient air temperature-barometric pressure- altitude</li> </ul>	5 000 m  Tmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m) // Tmin (Tmax - 10 K) at 795 hPa 658 hPa (+2 000 m +3 500 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m)
Relative humidity	
With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Vibrations	0 - ((-2)
Vibration resistance during operation acc. to IEC 60068-2-6      Operation tested according to IEC 60068-2-6	2 g (m/s²) wall mounting, 1 g (m/s²) DIN rail
Operation, tested according to IEC 60068-2-6  Shock testing	Yes
• tested according to IEC 60068-2-27	Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value), duration 11 ms
Resistance Coolants and lubricants	
<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	
to biologically active substances according to EN 60721-3-3      to chemically active substances according to	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52
EN 60721-3-3 — to mechanically active substances according to	(severity degree 3); * Yes; Class 3S4 incl. sand, dust, *
EN 60721-3-3	
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
<ul> <li>to chemically active substances according to EN 60721-3-6</li> </ul>	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); $^{\star}$
<ul> <li>to mechanically active substances according to EN 60721-3-6</li> </ul>	Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology	Vary Olace O (explicitly which leavely 1
Against chemically active substances acc. to EN 60654-4  Transportations for process.	Yes; Class 3 (excluding trichlorethylene)
<ul> <li>Environmental conditions for process, measuring and control systems acc. to ANSI/ISA- 71.04</li> </ul>	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas 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> <li>Military testing according to MIL-I-46058C, Amendment 7</li> </ul>	Yes; Type 1 protection 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	
<ul><li>adjustable</li></ul>	Yes
Dimensions	
Width	90 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	370 g
last modified:	4/1/2022 🗗

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