6ES7217-1AG40-0XB0

Data sheet

SIMATIC S7-1200, CPU 1217C, compact CPU, DC/DC/DC, 2 PROFINET ports onboard I/O: 10 DI 24 V DC; 4 DI RS422/485; 6 DO 24 V DC; 0.5A; 4 DO RS422/485; 2 AI 0-10 V DC, 2 AO 0-20 mA Power supply: DC 20.4-28.8V DC, Program/data memory 150 KB



General information	
Product type designation	CPU 1217C DC/DC/DC
Firmware version	V4.4
Engineering with	
 Programming package 	STEP 7 V16 or higher
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Load voltage L+	
Rated value (DC)	24 V
 permissible range, lower limit (DC) 	20.4 V
 permissible range, upper limit (DC) 	28.8 V
Input current	
Current consumption (rated value)	600 mA
Current consumption, max.	1 600 mA; CPU with all expansion modules
Inrush current, max.	12 A; at 28.8 V DC
l²t	0.5 A ² ·s
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	
• integrated	150 kbyte
expandable	No
Load memory	
• integrated	4 Mbyte
 Plug-in (SIMATIC Memory Card), max. 	with SIMATIC memory card
Backup	
• present	Yes
 maintenance-free 	Yes

without battery	Yes
CPU processing times	
for bit operations, typ.	0.08 µs; / instruction
for word operations, typ. for floating point arithmetic, typ.	1.7 μs; / instruction 2.3 μs; / Operation
	2.5 μs, / Operation
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	
Number, max.	8 kbyte; Size of bit memory address area
Local data	
• per priority class, max.	16 kbyte
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
Digital inputs	100 II, Typical
	14: Integrated
Number of digital inputs	14; Integrated
of which inputs usable for technological functions Source/sink input	6; HSC (High Speed Counting) Yes
Number of simultaneously controllable inputs	165
all mounting positions	
— up to 40 °C, max.	14
Input voltage	14
	24 V
Rated value (DC)for signal "0"	5 V DC at 1 mA
• for signal "1"	15 V DC at 1111A
Input delay (for rated value of input voltage)	10 V DO at 2.0 IIIA
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
— parametenzable	in groups of four
— at "0" to "1", min.	0.2 ms
— at "0" to "1", max.	12.8 ms
for interrupt inputs	
— parameterizable	Yes
for technological functions	
— parameterizable	Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3
	@ 30 kHz
Cable length	
• shielded, max.	500 m; 50 m for technological functions
• unshielded, max.	300 m; for technological functions: No
Digital outputs	
Number of digital outputs	10
of which high-speed outputs	4; 100 kHz Pulse Train Output
Limitation of inductive shutdown voltage to	L+ (-48 V)
Switching capacity of the outputs	
with resistive load, max.	0.5 A
, ··· -	

• In lamp Gad, max. • Or signal 1", max. • For signal 1", max. • For signal 1", max. • For signal 1" rated value • For signal 1" rate	and language languages.	E 14/	
• for signal ""1" min. • for signal ""1" min. • for signal ""1 rated value • for signal "1" rated val	• on lamp load, max.	5 W	
	· · ·		
Output delay with resistive load • for signal "1" rated value • for signal "0" residual current, max. 0.1 mA Output delay with resistive load • "0" to "1", max. • "1" to "0", max. \$ 1 μs • "1" to "0", max. \$ 1 μs • "1" to "0", max. \$ 1 μs • "1" to "0", max. • 100 kHz Relay outputs • Number of relay outputs • sheided, max. • unsheided, max. • unsheided, max. • unsheided, max. • "150 m Analog inputs Number of analog inputs • 100 kHz Input ranges • 101 kHz Input ranges • 101 kHz Input ranges • 101 kHz Input ranges (relete values), voltages • 101 kHz Input ranges (releted values), voltages • 101 kHz • 102 kHz • 103 kHz • 103 kHz • 104 kHz • 104 kHz • 105 kHz •			
Or or signal "1" rated value of or signal "0" residual current, max Output design with resistive boad O" 10" 1", max 1		20 V	
• for signal "O' residual current, max. Output delay with resistive load • "O" to "1", max. • "1" to "0", max. • full to "0", max. • Number of relay outputs • Number of relay outputs • Number of relay outputs • shielded, max. • soo m • unshielded, max. • full to "0", m	·		
Output delay with resistive load 1 μs		0.5 A	
• "1" to "1", max,		0.1 mA	
• "1" to "0", max. • of the pulse outputs, with resistive load, max. **Relay outputs • Number of relay outputs • shelefed, max. • shelefed, max. • shelefed, max. • unshielded, max. **Number of analog inputs **Number of analog inputs • Voltage Input ranges • Voltage Input ranges (rated values), voltages • 0 to +10 V — Input resistance (0 to 10 V) **Zalole length • shelefed, max. **Number of analog outputs Output ranges (rated values), voltages • 0 to +10 V — Input resistance (0 to 10 V) **Zalole length • shelefed, max. **Number of analog outputs Number of analog outputs Output ranges, current • 0 to 20 mA **Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (lot including sign), max. • Integration and conversion time/resolution per channel • Resolution with overrange (lot including sign), max. • Integration and conversion time/resolution per channel • Resolution with overrange (lot including sign), max. • Integration and conversion time/resolution per channel • Resolution with overrange (lot including sign), max. • Integration and conversion time/resolution per channel • Resolution with overrange (lot including sign), max. • 10 bit • Resolution with overrange (lot including sign), max. • 2 wive sensor • RJ 45 (Cithernet) • Resolution of transmission rate	Output delay with resistive load		
Switching frequency of the pulse outputs, with resistive load, max. Relay outputs Number of relay outputs obsideded, max. ounshielded, max. ounshielded, max. Integration and conversion time fresolution per channel of analog outputs Number of analog outputs output ranges outputs Number of analog outputs Output ranges, current output ranges, c		1 μs	
e of the pulse outputs, with resistive load, max. Relay outputs Number of relay outputs shelded, max. o shelded, max. 150 m Analog inputs Number of analog inputs voltage voltage to to 10 v V Yes Input ranges voltage Input ranges (rated values), voltages voltage Input resistance (0 to 10 V) — Input resistance (0 to 10 V) Shelded, max. Analog outputs Number of analog outputs 0 to 20 mA Analog value generation for the Inputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. integration and conversion time (resolution per channel Resolution with overrange (bit including sign), max. integration and conversion time (resolution per channel) Resolution with overrange (bit including sign), max. integration and conversion time (resolution per channel) Resolution with overrange (bit including sign), max. Integration and conversion time (resolution per channel) Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integrated the performance of the outputs Integrated subset of the outputs Integrated subset of transmission rate Ves Autorocopistion Yes Autorocopistion PROFINET IC Controller PROFINET IC Controlle	• "1" to "0", max.	5 μs	
Relay outputs Number of relay outputs Shiekted, max. So 00 m shiekted, max. Is 0 m Analog inputs Number of analog inputs Potage Ves Input ranges Voltage Ves Input ranges Voltage Ves Input ranges (rated values), voltages Ves Input ranges (rated values), voltages Ves Input ranges (rated values), voltages Ves Integration and conversion time fresolution per channel Resolution with overrange (bit including sign), max. Ves Conversion time (per channel) Resolution with overrange (bit including sign), max. Ves Conversion time (per channel) Resolution with overrange (bit including sign), max. Ves Ves Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Ves Ves Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Ves Ves Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Ves Ves Integrates ensor Ves	Switching frequency		
Obligation of the large of the control of the large of the control of the contro	 of the pulse outputs, with resistive load, max. 	100 kHz	
Cable length • shielded, max. • unshielded, max. 150 m Analog inputs Number of analog inputs • Voltage • Voltage • Voltage • Voltages • Olto +10 V — Input resistance (0 to 10 V) — Input resistance (0 to 10 V) — Input resistance (0 to 10 V) — Shielded, max. 100 m; twisted and shielded Analog outputs • Shielded, max. 100 m; twisted and shielded Analog outputs Oto 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameter/zable • Conversion time (per channel) • Resolution with overrange (bit including sign), max. • Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. 10 bit Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. 10 bit Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. 10 bit Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. 10 bit Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. 10 bit Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. 10 bit Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. 10 bit Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. 10 bit Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. 10 bit Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. 10 bit Integration and conversion time/resolution per channel • Resolut	Relay outputs		
shielded, max.	 Number of relay outputs 	0	
• unshielded, max. Analog inputs Number of analog inputs • Votage • Votage • Votages • Votages • Votages • Votages • 10 to +10 V — Input resistance (0 to 10 V) Cable length • shielded, max. Number of analog outputs Ves Output ranges, current • 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overange (bit including sign), max. • Integration and conversion time/resolution per channel • Resolution with overange (bit including sign), max. • Integration and conversion time/resolution per channel • Resolution with overange (bit including sign), max. • Integration and conversion time/resolution per channel • Resolution with overange (bit including sign), max. • Integration and conversion time/resolution per channel • Resolution with overange (bit including sign), max. • 10 bit Encoder Connectable encoders • 2-wire sensor • 2-wire sensor • Yes Autorossing interface type Interface type PROFINET Isolated Autorossing interface types • R4 45 (Ethernet) • Yes Autorossing interface types • R4 45 (Ethernet) • Yes • Integrated switch PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Yes • Open IE communication	Cable length		
Analog inputs Number of analog inputs 2	• shielded, max.	500 m	
Number of analog inputs Input ranges	unshielded, max.	150 m	
Number of analog inputs Input ranges			
Input ranges • Voltage • Voltages • O to +10 V Yes — Input resistance (0 to 10 V) Yes — Input resistance (0 to 10 V) Yes — Input resistance (0 to 10 V) Yes — Input resistance (0 to 10 V) Yes — Input resistance (0 to 10 V) Yes — Input resistance (0 to 10 V) Yes — Input resistance (0 to 10 V) Yes — Ves Manier Vested and shielded Analog outputs Vested Analog outputs		2	
Voltage			
Input ranges (rated values), voltages		Yes	
O to +10 V Yes — Input resistance (0 to 10 V) 2 t00k ohms Cable length • shielded, max.			
- Input resistance (0 to 10 V) Cable length ● shielded, max. Analog outputs Number of analog outputs 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel ● Resolution with overrange (bit including sign), max. ● Integration time, parameterizable ● Conversion time (per channel) Analog value generation for the outputs Integration and conversion time/resolution per channel ● Resolution with overrange (bit including sign), max. ■ Integration and conversion time/resolution per channel ● Resolution with overrange (bit including sign), max. Encoder Connectable encoders ● 2-wire sensor 1. Interface Interface type Isolated Autonegotiation Autocrossing Nes Autonegotiation Yes Autonegotiation Autocrossing Interface types ● RJ 45 (Ethernet) • RJ 45 (Ethernet) • RS 45 (Ethernet) • Integrated switch Protocols ● PROFINET IO Controller • PROFINET IO Controller • PROFINET IO Device • PROFINET IO Device • SIMATIC communication Yes • Open IE communication Yes; Optionally also encrypted		Voc	
Cable length			
• shielded, max. Analog outputs Number of analog outputs Output ranges, current • 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Analog value generation for the outputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Integration and conve		2 TOOK OHIIIS	
Analog outputs 2 Output ranges, current • 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable (Conversion time (per channel)) 625 μs Analog value generation for the outputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Interface Interface type PROFINET Isolated Yes 4. Interface type PROFINET Isolated Yes automatic detection of transmission rate Yes Autorossing Yes Interface types • RJ 45 (Ethernet) Yes • Number of ports 2 • Integrated switch Yes • PROFINET IO Controller Yes • PROFINET IO Device Yes • SIMATIC communication Yes • Open IE communication Yes		100 m; twisted and ahialded	
Number of analog outputs Output ranges, current ● 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel ● Resolution with overrange (bit including sign), max. ● Integration time, parameterizable Yes • Conversion time (per channel) Analog value generation for the outputs Integration and conversion time/resolution per channel ● Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel ● Resolution with overrange (bit including sign), max. Integrate encoder Connectable encoders ● 2-wire sensor 1. Interface Interface type Isolated Yes automatic detection of transmission rate Autonegotiation Autocrossing Yes Interface types ● RJ 45 (Ethernet) ● Number of ports ● Number of ports ● Number of ports ● PROFINET IO Controller ● PROFINET IO Controller ● PROFINET IO Controller PROFINET IO Device ● SIMATIC communication ▼es • Open IE communication Yes; Optionally also encrypted	·	100 m, twisted and shielded	
Output ranges, current • 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Analog value generation for the outputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integrate encoders 2 - wire sensor Yes 1. Interface Interface type PROFINET Isolated ves automatic detection of transmission rate Yes Autocrossing Yes Interface types • RJ 45 (Ethernet) • Number of ports • Number of ports • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Yes • Open IE communication • Yes; Optionally also encrypted			
• 0 to 20 mA Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Analog value generation for the outputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. 10 bit Encoder Connectable encoders • 2-wire sensor Yes 1. Interface Interface type Interface type Interface type Autonegotiation Yes Autocrossing Yes Interface types • RJ 45 (Ethernet) • Number of ports • Integrated switch Yes PROFINET IO Controller • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Yes Open IE communication Yes; Optionally also encrypted		2	
Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable Yes • Conversion time (per channel) 625 µs Analog value generation for the outputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Encoder Connectable encoders • 2-wire sensor Yes 1. Interface Interface type Interface type Isolated automatic detection of transmission rate Autonegotiation Autocrossing Yes Interface types • RJ 45 (Ethernet) • Number of ports • Number of ports • Number of ports • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Yes • SIMATIC communication • Yes • Open IE communication • Yes • Open IE communication • Yes • Open IE communication • Yes; Optionally also encrypted			
Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration time, parameterizable Conversion time (per channel) Conversion time (per channel) Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Interfacer Connectable encoders 2-wire sensor Yes Interface type Interface type Isolated Yes automatic detection of transmission rate Yes Autonegotiation Autoreossing Yes Interface types RJ 45 (Ethernet) Number of ports Integrated switch Yes PROFINET IO Controller PROFINET IO Controller PROFINET IO Device SIMATIC communication Yes; Optionally also encrypted	• 0 to 20 mA	Yes	
Resolution with overrange (bit including sign), max. Integration time, parameterizable Conversion time (per channel) Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration Procritically signal s	Analog value generation for the inputs		
 Integration time, parameterizable	Integration and conversion time/resolution per channel		
Conversion time (per channel) Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Encoder Connectable encoders 2-wire sensor Yes Interface Interface type Interface type Isolated Autonegotiation Autocrossing RJ 45 (Ethernet) Number of ports integrated switch PROFINET Yes PROFINET Yes PROFINET Yes Number of ports integrated switch PROFINET IO Controller PROFINET IO Device SIMATIC communication Yes Open IE communication Yes; Optionally also encrypted	 Resolution with overrange (bit including sign), max. 	10 bit	
Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. 10 bit Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. 10 bit Integrated Resolution with overrange (bit including sign), max. 10 bit Integrated Resolution Res	 Integration time, parameterizable 	Yes	
Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Intercoder Connectable encoders 2-wire sensor Yes Interface Interface type Interface type Interface type Automatic detection of transmission rate Autonegotiation Autocrossing Interface types RJ 45 (Ethernet) Number of ports Number of ports Intergrated switch PROFINET Yes PROFINET Yes SIMATIC communication Yes Open IE communication Yes 10 bit 10 bit 11 bit 12 bit 14 bit 15 bit 16 bit 16 bit 17 bit 18 bit	 Conversion time (per channel) 	625 µs	
Resolution with overrange (bit including sign), max. Encoder Connectable encoders 2-wire sensor Yes Interface Interface Interface type Interface type Interface type Automatic detection of transmission rate Autonegotiation Yes Autocrossing Yes Interface type Autocrossing Yes Autoperation PRJ 45 (Ethernet) Number of ports integrated switch PROFINET IO Controller PROFINET IO Controller PROFINET IO Device SIMATIC communication Yes; Optionally also encrypted	Analog value generation for the outputs		
Encoder Connectable encoders • 2-wire sensor Interface Interface type Interface type Isolated automatic detection of transmission rate Autonegotiation Autocrossing Interface types • RJ 45 (Ethernet) • Number of ports • Number of ports • PROFINET IO Controller • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication Yes Pes Pes • Open IE communication Yes Yes Yes Yes • Optionally also encrypted			
Connectable encoders • 2-wire sensor Interface Interface type Interface type Isolated automatic detection of transmission rate Autonegotiation Autocrossing Interface types • RJ 45 (Ethernet) • Number of ports • Number of ports • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication Yes Yes Yes Yes Yes Protionally also encrypted	integration and conversion time/resolution per channel		
Connectable encoders • 2-wire sensor Interface Interface type Interface type Isolated automatic detection of transmission rate Autonegotiation Autocrossing Interface types • RJ 45 (Ethernet) • Number of ports • Number of ports • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication Yes Yes Yes Yes Yes Protionally also encrypted	-	10 bit	
1. Interface Interface type	Resolution with overrange (bit including sign), max.	10 bit	
Interface Unterface type PROFINET Isolated Yes automatic detection of transmission rate Yes Autonegotiation Yes Autocrossing Yes Interface types • RJ 45 (Ethernet) Yes • Number of ports 2 • integrated switch Yes Protocols • PROFINET IO Controller Yes • SIMATIC communication Yes • Open IE communication Yes; Optionally also encrypted	• Resolution with overrange (bit including sign), max. Encoder	10 bit	
Interface type Isolated Isolat	 Resolution with overrange (bit including sign), max. Encoder Connectable encoders 		
Isolated automatic detection of transmission rate Autonegotiation Autocrossing Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Yes Yes Yes Yes Yes Yes Yes Ye	 Resolution with overrange (bit including sign), max. Encoder Connectable encoders 2-wire sensor 		
automatic detection of transmission rate Autonegotiation Autocrossing Yes Interface types RJ 45 (Ethernet) Number of ports integrated switch Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Yes Yes Yes Yes Yes Yes Yes Ye	 Resolution with overrange (bit including sign), max. Encoder Connectable encoders 2-wire sensor Interface 	Yes	
Autorossing Autorossing Pes Interface types RJ 45 (Ethernet) Number of ports Number of ports integrated switch Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Yes Yes Yes Yes Yes Yes Yes Ye	 Resolution with overrange (bit including sign), max. Encoder Connectable encoders 2-wire sensor Interface Interface type 	Yes PROFINET	
Autocrossing Interface types RJ 45 (Ethernet) Number of ports Number of ports Integrated switch Yes Integrated switch Yes Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Yes Open IE communication Yes; Optionally also encrypted	 Resolution with overrange (bit including sign), max. Encoder Connectable encoders 2-wire sensor Interface Interface type Isolated 	Yes PROFINET Yes	
Interface types RJ 45 (Ethernet) Number of ports Integrated switch Yes Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Yes; Optionally also encrypted	Resolution with overrange (bit including sign), max. Encoder Connectable encoders	Yes PROFINET Yes Yes	
 RJ 45 (Ethernet) Number of ports integrated switch Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Yes Optionally also encrypted 	Resolution with overrange (bit including sign), max. Encoder Connectable encoders • 2-wire sensor 1. Interface Interface type Isolated automatic detection of transmission rate Autonegotiation	Yes PROFINET Yes Yes Yes	
 Number of ports integrated switch Yes Protocols PROFINET IO Controller PROFINET IO Device PROFINET IO Device SIMATIC communication Open IE communication Yes; Optionally also encrypted 	Resolution with overrange (bit including sign), max. Encoder Connectable encoders	Yes PROFINET Yes Yes Yes	
 integrated switch Protocols PROFINET IO Controller PROFINET IO Device PROFINET IO Device SIMATIC communication Open IE communication Yes; Optionally also encrypted 	Resolution with overrange (bit including sign), max. Encoder Connectable encoders	Yes PROFINET Yes Yes Yes Yes Yes	
Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Yes; Optionally also encrypted	Resolution with overrange (bit including sign), max. Encoder Connectable encoders 2-wire sensor 1. Interface Interface type Isolated automatic detection of transmission rate Autoregotiation Autocrossing Interface types RJ 45 (Ethernet)	Yes PROFINET Yes Yes Yes Yes Yes	
 PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Yes; Optionally also encrypted 	Resolution with overrange (bit including sign), max. Encoder Connectable encoders 2-wire sensor 1. Interface Interface type Isolated automatic detection of transmission rate Autonegotiation Autocrossing Interface types RJ 45 (Ethernet) Number of ports	Yes PROFINET Yes Yes Yes Yes Yes Yes	
 PROFINET IO Device SIMATIC communication Open IE communication Yes; Optionally also encrypted 	 Resolution with overrange (bit including sign), max. Encoder Connectable encoders 2-wire sensor Interface Interface type Isolated automatic detection of transmission rate Autonegotiation Autocrossing Interface types RJ 45 (Ethernet) Number of ports integrated switch 	Yes PROFINET Yes Yes Yes Yes Yes Yes	
 SIMATIC communication Open IE communication Yes Yes; Optionally also encrypted 	 Resolution with overrange (bit including sign), max. Encoder Connectable encoders 2-wire sensor Interface Interface type Isolated automatic detection of transmission rate Autonegotiation Autocrossing Interface types RJ 45 (Ethernet) Number of ports integrated switch Protocols	Yes PROFINET Yes Yes Yes Yes Yes Yes Yes	
Open IE communication Yes; Optionally also encrypted	Resolution with overrange (bit including sign), max. Encoder Connectable encoders 2-wire sensor Interface Interface type Isolated automatic detection of transmission rate Autonegotiation Autocrossing Interface types RJ 45 (Ethernet) Number of ports integrated switch Protocols PROFINET IO Controller	Yes PROFINET Yes Yes Yes Yes Yes Yes Yes Yes Yes	
	Resolution with overrange (bit including sign), max. Encoder Connectable encoders 2-wire sensor 1. Interface Interface type Isolated automatic detection of transmission rate Autonegotiation Autocrossing Interface types RJ 45 (Ethernet) Number of ports integrated switch Protocols PROFINET IO Controller PROFINET IO Device	Yes PROFINET Yes Yes Yes Yes Yes Yes Yes Yes 2 Yes	
Web server Yes	Resolution with overrange (bit including sign), max. Encoder Connectable encoders 2-wire sensor Interface Interface type Isolated automatic detection of transmission rate Autonegotiation Autocrossing Interface types RJ 45 (Ethernet) Number of ports integrated switch Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication	Yes PROFINET Yes Yes Yes Yes Yes Yes Yes Ye	
	Resolution with overrange (bit including sign), max. Encoder Connectable encoders 2-wire sensor Interface Interface Interface type Isolated automatic detection of transmission rate Autonegotiation Autocrossing Interface types RJ 45 (Ethernet) Number of ports integrated switch Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication	Yes PROFINET Yes Yes Yes Yes Yes Yes Yes Ye	

Media redundancy	Yes; as MRP client
PROFINET IO Controller	
Transmission rate, max.	100 Mbit/s
Services	
— PG/OP communication	Yes
— Isochronous mode	No
— IRT	No
— PROFlenergy	No
Prioritized startup	Yes
 Number of IO devices with prioritized startup, max. 	16
 Number of connectable IO Devices, max. 	16
 Number of connectable IO Devices for RT, 	16
max.	
— of which in line, max.	16
 Activation/deactivation of IO Devices 	Yes
 Number of IO Devices that can be simultaneously activated/deactivated, max. 	8
— Updating time	The minimum value of the update time also depends on the communication component set for PROFINET IO, on the number of IO devices and the quantity of configured user data.
PROFINET IO Device	
Services	
— PG/OP communication	Yes
— Isochronous mode	No
— IRT	No
— PROFlenergy	Yes
— Shared device	Yes
 Number of IO Controllers with shared device, 	2
max.	
Protocols	
Supports protocol for PROFINET IO	Yes
PROFIBUS	Yes; CM 1243-5 (master) or CM 1242-5 (slave) required
AS-Interface	Yes; CM 1243-2 required
Protocols (Ethernet)	
• TCP/IP	Yes
• DHCP	No
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Redundancy mode	
Media redundancy	
— MRP	Yes
— MRPD	No
SIMATIC communication	
S7 routing	Yes
Open IE communication	
• TCP/IP	Yes
— Data length, max.	8 kbyte
• ISO-on-TCP (RFC1006)	Yes
— Data length, max.	8 kbyte
• UDP	Yes
— Data length, max.	1 472 byte
Web server	
• supported	Yes
User-defined websites	Yes
OPC UA	
 Runtime license required 	Yes
OPC UA Server	Yes; Data access (read, write, subscribe), runtime license required
Number of sessions, max.	5

 Number of accessible variables, max. 	1 000
 Number of subscriptions per session, max. 	5
— Sampling interval, min.	100 ms
— Publishing interval, min.	200 ms
 Number of monitored items, max. 	500
 Number of server interfaces, max. 	2
 Number of nodes for user-defined server interfaces, max. 	1 000
Further protocols	
• MODBUS	Yes
Communication functions	
S7 communication	
• supported	Yes
• as server	Yes
• as client	Yes
User data per job, max.	See online help (S7 communication, user data size)
Number of connections	
• overall	8 connections for open user communication (active or passive): TSEND_C, TRCV_C, TCON, TDISCON, TSEND and TRCV, 8 CPU/CPU connections (Client or Server) for GET/PUT data, 6 connections for dynamic assignment to GET/PUT or open user communication
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	
 Number of configurable Traces 	2
 Memory size per trace, max. 	512 kbyte
Interrupts/diagnostics/status information	
Diagnostics indication LED	
RUN/STOP LED	Yes
• ERROR LED	Yes
MAINT LED	Yes
Integrated Functions	
Number of counters	6
Counting frequency (counter) max.	1 MHz
Frequency measurement	Yes
controlled positioning	Yes
Number of position-controlled positioning axes, max.	8
Number of positioning axes via pulse-direction interface	4; With integrated outputs
PID controller	Yes
Number of alarm inputs	4
Number of pulse outputs	4
Limit frequency (pulse)	1 MHz
Potential separation	
Potential separation digital inputs	
Potential separation digital inputs Potential separation digital inputs	No
between the channels, in groups of	1
Potential separation digital outputs	
Potential separation digital outputs	Yes
between the channels	No
between the channels, in groups of	1
EMC	
Interference immunity against discharge of static electricity	

 Interference immunity against discharge of static electricity acc. to IEC 61000-4-2 	Yes
 Test voltage at air discharge 	8 kV
Test voltage at contact discharge	6 kV
Interference immunity to cable-borne interference	
 Interference immunity on supply lines acc. to IEC 61000-4-4 	Yes
 Interference immunity on signal cables acc. to IEC 61000-4-4 	Yes
Interference immunity against voltage surge	
 Interference immunity on supply lines acc. to IEC 61000-4-5 	Yes
Interference immunity against conducted variable disturbance	e induced by high-frequency fields
 Interference immunity against high-frequency radiation acc. to IEC 61000-4-6 	Yes
Emission of radio interference acc. to EN 55 011	
Limit class A, for use in industrial areas	Yes; Group 1
• Limit class B, for use in residential areas	Yes; When appropriate measures are used to ensure compliance with the limits for Class B according to EN 55011
Degree and class of protection	
IP degree of protection	IP20
Standards, approvals, certificates	
CE mark	Yes
UL approval	Yes
cULus	Yes
FM approval	Yes
KC approval	Yes
Marine approval	Yes
Ambient conditions	
Free fall	
Fall height, max.	0.3 m
Fall height, max. Ambient temperature during operation	0.3 m
	-20 °C
Ambient temperature during operation	
Ambient temperature during operation • min.	-20 °C 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
Ambient temperature during operation • min. • max.	-20 °C 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
Ambient temperature during operation • min. • max. • horizontal installation, min.	-20 °C 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 -20 °C
Ambient temperature during operation • min. • max. • horizontal installation, min. • horizontal installation, max.	-20 °C 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 -20 °C 60 °C
Ambient temperature during operation • min. • max. • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max.	-20 °C 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 -20 °C 60 °C -20 °C
Ambient temperature during operation • min. • max. • horizontal installation, min. • horizontal installation, max. • vertical installation, min.	-20 °C 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 -20 °C 60 °C -20 °C
Ambient temperature during operation • min. • max. • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min.	-20 °C 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 -20 °C 60 °C -20 °C 50 °C
Ambient temperature during operation • min. • max. • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min. • max.	-20 °C 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 -20 °C 60 °C -20 °C 50 °C
Ambient temperature during operation • min. • max. • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min. • max. Air pressure acc. to IEC 60068-2-13	-20 °C 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 -20 °C 60 °C -20 °C 50 °C -40 °C 70 °C
Ambient temperature during operation • min. • max. • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min. • max. Air pressure acc. to IEC 60068-2-13 • Operation, min.	-20 °C 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 -20 °C 60 °C -20 °C 50 °C -40 °C 795 hPa
Ambient temperature during operation • min. • max. • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min. • max. Air pressure acc. to IEC 60068-2-13 • Operation, min. • Operation, max.	-20 °C 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 -20 °C 60 °C -20 °C 50 °C -40 °C 70 °C
Ambient temperature during operation • min. • max. • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min. • max. Air pressure acc. to IEC 60068-2-13 • Operation, min. • Operation, max. • Storage/transport, min.	-20 °C 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 -20 °C 60 °C -20 °C 50 °C -40 °C 70 °C 795 hPa 1 080 hPa 660 hPa
Ambient temperature during operation • min. • max. • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min. • max. Air pressure acc. to IEC 60068-2-13 • Operation, min. • Operation, max. • Storage/transport, min. • Storage/transport, max.	-20 °C 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 -20 °C 60 °C -20 °C 50 °C -40 °C 70 °C
Ambient temperature during operation • min. • max. • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min. • max. Air pressure acc. to IEC 60068-2-13 • Operation, min. • Operation, max. • Storage/transport, min. • Storage/transport, max. Altitude during operation relating to sea level	-20 °C 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 -20 °C 60 °C -20 °C 50 °C -40 °C 795 hPa 1 080 hPa 660 hPa 1 080 hPa
Ambient temperature during operation • min. • max. • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min. • max. Air pressure acc. to IEC 60068-2-13 • Operation, min. • Operation, max. • Storage/transport, min. • Storage/transport, max. Altitude during operation relating to sea level • Installation altitude, min.	-20 °C 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 -20 °C 60 °C -20 °C 50 °C -40 °C 795 hPa 1 080 hPa 1 080 hPa 1 080 hPa
Ambient temperature during operation • min. • max. • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min. • max. Air pressure acc. to IEC 60068-2-13 • Operation, min. • Operation, max. • Storage/transport, min. • Storage/transport, min. • Storage/transport, max. Altitude during operation relating to sea level • Installation altitude, min. • Installation altitude, max.	-20 °C 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 -20 °C 60 °C -20 °C 50 °C -40 °C 795 hPa 1 080 hPa 660 hPa 1 080 hPa
Ambient temperature during operation • min. • max. • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min. • max. Air pressure acc. to IEC 60068-2-13 • Operation, min. • Operation, max. • Storage/transport, min. • Storage/transport, max. Altitude during operation relating to sea level • Installation altitude, min. • Installation altitude, max. Relative humidity	-20 °C 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 -20 °C 60 °C -20 °C 50 °C -40 °C 70 °C 795 hPa 1 080 hPa 1 080 hPa 1 080 hPa 1 080 hPa
Ambient temperature during operation • min. • max. • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min. • max. Air pressure acc. to IEC 60068-2-13 • Operation, min. • Operation, max. • Storage/transport, min. • Storage/transport, min. • Storage/transport, max. Altitude during operation relating to sea level • Installation altitude, min. • Installation altitude, max.	-20 °C 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 -20 °C 60 °C -20 °C 50 °C -40 °C 795 hPa 1 080 hPa 1 080 hPa 1 080 hPa
Ambient temperature during operation • min. • max. • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min. • max. Air pressure acc. to IEC 60068-2-13 • Operation, min. • Operation, max. • Storage/transport, min. • Storage/transport, max. Altitude during operation relating to sea level • Installation altitude, min. • Installation altitude, max. Relative humidity • Operation, max.	-20 °C 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 -20 °C 60 °C -20 °C 50 °C -40 °C 70 °C 795 hPa 1 080 hPa 1 080 hPa 1 080 hPa 1 080 hPa
Ambient temperature during operation • min. • max. • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min. • max. Air pressure acc. to IEC 60068-2-13 • Operation, min. • Operation, max. • Storage/transport, min. • Storage/transport, max. Altitude during operation relating to sea level • Installation altitude, min. • Installation altitude, max. Relative humidity • Operation, max. Vibrations • Vibration resistance during operation acc. to IEC	-20 °C 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 -20 °C 60 °C -20 °C 50 °C -40 °C 70 °C 795 hPa 1 080 hPa 1 080 hPa 1 080 hPa 1 080 mPa 1 090 m 2 000 m
Ambient temperature during operation • min. • max. • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. Ambient temperature during storage/transportation • min. • max. Air pressure acc. to IEC 60068-2-13 • Operation, min. • Operation, max. • Storage/transport, min. • Storage/transport, max. Altitude during operation relating to sea level • Installation altitude, min. • Installation altitude, max. Relative humidity • Operation, max. Vibrations • Vibration resistance during operation acc. to IEC 60068-2-6	-20 °C 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 -20 °C 60 °C -20 °C 50 °C -40 °C 795 hPa 1 080 mPa 2 000 m 95 %; no condensation
Ambient temperature during operation in min. in max. horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation in min. in max. Air pressure acc. to IEC 60068-2-13 in Operation, min. Operation, min. Operation, max. Storage/transport, min. Storage/transport, max. Altitude during operation relating to sea level Installation altitude, min. Installation altitude, max. Relative humidity Operation, max. Vibrations Vibrations Vibration resistance during operation acc. to IEC 60068-2-6 Operation, tested according to IEC 60068-2-6	-20 °C 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 -20 °C 60 °C -20 °C 50 °C -40 °C 795 hPa 1 080 mPa 2 000 m 95 %; no condensation
Ambient temperature during operation inin. ininin. inin. in	-20 °C 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 -20 °C 60 °C -20 °C 50 °C -40 °C 795 hPa 1 080 m 95 %; no condensation 2 g (m/s²) wall mounting, 1 g (m/s²) DIN rail Yes

Programming	
Programming language	
— LAD	Yes
— FBD	Yes
SCL	Yes
Know-how protection	
 User program protection/password protection 	Yes
 Copy protection 	Yes
Block protection	Yes
Access protection	
 Protection level: Write protection 	Yes
 Protection level: Read/write protection 	Yes
Protection level: Complete protection	Yes
Cycle time monitoring	
adjustable	Yes
Dimensions	
Width	150 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	530 g

12/16/2020 🖸

last modified: