SIEMENS

Data sheet

6ES7214-1AG40-0XB0

SIMATIC S7-1200, CPU 1214C, COMPACT CPU, DC/DC/DC, ONBOARD I/O: 14 DI 24V DC; 10 DO 24 V DC; 2 AI 0 - 10V DC, POWER SUPPLY: DC 20.4 - 28.8 V DC, PROGRAM/DATA MEMORY: 100 KB



General information	
Product type designation	CPU 1214C DC/DC/DC
Firmware version	V4.2
Engineering with	
 Programming package 	STEP 7 V14 or higher
Display	
with display	No
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)	500 mA; CPU only
Current consumption, max.	1 500 mA; CPU with all expansion modules
Inrush current, max.	12 A; at 28.8 V
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	100 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.	0.085 μs; / instruction
for word operations, typ.	1.7 μs; / instruction
for floating point arithmetic, typ.	2.3 μs; / instruction
CPU-blocks	
Number of blocks (total)	DBs, FCs, FBs, counters and timers. The maximum number of addressable blocks ranges from 1 to 65535. There is no restriction, the entire working memory can be used
OB	
● Number, max.	Limited only by RAM for code
Data areas and their retentivity	
retentive data area in total (incl. times, counters,	10 kbyte
flags), max.	
Flag	
• Number, max.	8 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	
Inputs, adjustable	1 kbyte
Outputs, adjustable	1 kbyte
	1 Koyte
Hardware configuration	
Number of modules per system, max.	3 comm. modules, 1 signal board, 8 signal modules
Time of day	
Clock	
 Hardware clock (real-time) 	Yes
Backup time	480 h; Typical
• Deviation per day, max.	+/- 60 s/month at 25 °C
Digital inputs	
Number of digital inputs	14; Integrated
 of which inputs usable for technological 	6; HSC (High Speed Counting)
functions	
integrated channels (DI)	14
Source/sink input	Yes
Number of simultaneously controllable inputs	
all mounting positions	
— up to 40 °C, max.	14
Input voltage	
Rated value (DC)	24 V
● for signal "0"	5 V DC at 1 mA
● for signal "1"	15 V DC at 2.5 mA
Input delay (for rated value of input voltage)	
for standard inputs	
— parameterizable	0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four
— at "0" to "1", min.	0.2 ms
— at "0" to "1", max.	12.8 ms
for interrupt inputs	
— parameterizable	Yes
·	
for counter/technological functions	Single phone: 2 @ 100 kHz & 2 @ 20 kHz differential, 2 @ 00
— 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	

• of which high-speed outputs 4: 100 kHz Pulse Train Output Integrated channels (DO) 10 Limitation of inductive shuldown voltage to 1+ (-48 V) Switching capacity of the outputs 5.A • on Iamp load, max. 0.5 A • or signal "0", max. 0.1 V; with 10 kOhm load • or signal "1", min. 20 V Output voltage 0.5 A • for signal "1" rated value 10 thKIz Cable length 1 • shielded, max. 100 kHz • shielded, max. 2 • shielded, max. 2 • ot to 10 V 2 • ot to 10 V Yes • ot to 10 V Ves	Number of digital outputs	10
Limitation of inductive shuldown voltage to L+ (48 V) Switching capacity of the outputs 0.5 A • with resistive load, max. 5 W Output voltage 0.1 V; with 10 kOhm load • for signal "0", max. 0.1 V; with 10 kOhm load • for signal "1", max. 0.1 V; with 10 kOhm load • for signal "1", max. 0.1 V; with 10 kOhm load • for signal "1" rated value 0.5 A • for signal "1" rated value 0.5 A • for signal "1" residual current, max. 0.1 mA Output delay with resistive load 1 µs • "1" to "1", max. 1 µs • 1" to "1", max. 5 µs Switching frequency 100 kHz • of the pulse outputs, with resistive load, max. 100 kHz • of the pulse outputs, with resistive load, max. 100 kHz • of the pulse outputs, with resistive load, max. 100 kHz • of the pulse outputs, with resistive load, max. 500 m • unshielded, max. 500 m • Unter of analog inputs 2 • Oto 10 V 150 m Input ranges 2 • of to +10 V Yes • linput resista	 of which high-speed outputs 	4; 100 kHz Pulse Train Output
Switching capacity of the outputs 0.5 A • with resistive load, max. 0.5 A • on lamp load, max. 5 W Output voitage 0.1 V; with 10 kOhm load • for signal "0", max. 0.1 V; with 10 kOhm load • for signal "1" rated value 0.5 A • for signal "1" rated value 0.5 A • for signal "0" residual current, max. 0.1 mA Output delay with resistive load 0.1 mA Output delay with resistive load 1 µs • 1" to "0" to "1", max. 1 µs • 1" to "0" on max. 50 m Switching frequency 100 kHz • of singlo inputs 2 • ot shielded, max. 500 m • unshielded, max. 500 m • unshielded, max. 500 m • unshielded, max. 500 m • lingur ranges 2 • Integrated channels (Al) 2; 0 to 10V Input ranges 2 • Ot +10 V Yes • Input resistance (0 to 10 V) Yes • Input resistance (0 to 10 V) Yes • shiel	integrated channels (DO)	10
• with resistive load, max.0.5 Å• on lamp load, max.5 WOutput voltage	Limitation of inductive shutdown voltage to	L+ (-48 V)
on lang load, max.5 WOutput voltage	Switching capacity of the outputs	
Interpretation Integrated Interpretation Integration Interpretin <td> with resistive load, max. </td> <td>0.5 A</td>	 with resistive load, max. 	0.5 A
• for signal *0°, max.0.1 V; with 10 kOhm load• for signal *1°, man.20 VOutput current0.5 A• for signal *1° residual current, max.0.1 mAOutput delay with resistive load1 μs• *0° to *1°, max.5 μsSwitching frequency100 kHz• of the pulse outputs, with resistive load, max.100 kHzCable length100 m• shielded, max.500 m• unshielded, max.2 0 to 10VIntegrate channels (AI)2 0 to 10VInput ranges (rated values), voltages2 0 to 10V• VoltageYes• to to +10 V2 100k ohmsCable length5100 k ohmsInput ranges (rated values), voltages2 100k ohms• Number of analog outputs0Cable length5100k ohmsCable length5100k ohms• hop to poly to100 m; twisted and shieldedNumber of analog outputs0Cable length5100k ohmsCable length10 bit• hop to poly to the for the parameterizableYes• hop to poly to10 bit• hop to poly to10 bit• hop to poly to the output signal, max.10 bit• hole gration mid noorversion time/resolution per channel10 bit• hor to poly to the output signal, max.10 bit• hole gration	• on lamp load, max.	5 W
• for signal "1", min. 20 V Output current 0.5 A • for signal "1" rated value 0.5 A • for signal "0" residual current, max. 0.1 mA Output delay with resistive load 1 us • "0" to "1", max. 1 us • "1" to "0", max. 5 us Switching frequency 00 kHz • of the pulse outputs, with resistive load, max. 100 kHz Cable length 500 m • shielded, max. 500 m • unshielded, max. 500 m • unshielded, max. 500 m • of the pulse outputs, with resistive load, max. 150 m • of the pulse outputs 2 • nalog inputs 2 • vunshielded, max. 500 m • ot on 400 inputs 2 • ot on 400 input resistance (0 to 10 V) Yes • lonput resistance (0 to 10 V) 2100k ohms Cable length 0 • shielded, max. 100 m; twisted and shielded Analog outputs 0 Analog outputs 0 Analog outputs 10 bit • shielded, max. 10 bit • shielde	Output voltage	
Output current 0.5 A • for signal "1" rated value 0.1 mA Output delay with resistive load - • "0" to "1", max. 1 µs • "0" to "1", max. 5 µs • "0" to "1", max. 5 µs • "0" to "1", max. 5 µs • "1" to "0", max. 5 µs • "1" to "0", max. 500 m • of the pulse outputs, with resistive load, max. 100 kHz Cable length - • shielded, max. 500 m • unshielded, max. 150 m • unshielded, max. 50 to m • unshielded, max. 100 V • for ganalog inputs 2 • Ustage Yes Integrated channels (AI) 2: 0 to 10V Input ranges (rated values), voltages - • Voltage Yes Input resistance (0 to 10 V) Yes • loput resistance (0 to 10 V) 2100k ohms Cable length - • nalog outputs 0 Analog outputs 0 Analog outputs 10 b	● for signal "0", max.	0.1 V; with 10 kOhm load
• for signal "1" rated value 0.5 Å • for signal "0" residual current, max. 0.1 mÅ Output delay with resistive load 1 μs • "0" to "1", max. 1 μs • "0" to "1", max. 1 μs • "1" to "0", max. 5 μs Switching frequency • of the pulse outputs, with resistive load, max. 100 kHz Cable length 500 m • unshielded, max. 500 m • unshielded, max. 500 m • unshielded, max. 150 m Analog inputs 2 Number of analog inputs 2 • Voltage Yes Input ranges 7 • Voltage Yes • lnput resistance (0 to 10 V) ≥100k ohms Cable length - • shielded, max. 100 m; twisted and shielded Analog outputs 0 Cable length - • lnput resistance (0 to 10 V) ≥100k ohms Cable length - • shielded, max. 100 m; twisted and shielded Number of analog outputs 0 Analog outputs -	● for signal "1", min.	20 V
• for signal "0" residual current, max. 0.1 mA Output delay with resistive load 1 μs • "0" to "1", max. 5 μs Switching frequency 6 of the pulse outputs, with resistive load, max. 100 kHz Cable length 500 m • shielded, max. 500 m • unshielded, max. 150 m Analog inputs 2 • to targe Yes Integrated channels (All) 2; 0 to 10V Input ranges Yes • Voltage Yes Input resistance (0 to 10 V) Yes • shielded, max. 100 m; twisted and shielded • Voltage Yes Input ranges (rated values), voltages 0 • Oto +10 V Yes • Input resistance (0 to 10 V) Yes • shielded, max. 100 m; twisted and shielded Analog outputs 0 Analog outputs 0 Analog outputs 0 Integration and conversion time/resolution per channel Yes • Integration with overrange (bit including sign), max. 10 bit • Integration time, parameterizable Yes <td>Output current</td> <td></td>	Output current	
Output delay with resistive load • "0" to "1", max. 1 μs • "1" to "0", max. 5 μs Switching frequency 100 kHz • of the pulse outputs, with resistive load, max. 100 kHz Cable length 500 m • unshielded, max. 100 kHz Analog inputs 2 • unshielded, max. 100 m Integrate channels (AI) 2: 0 to 10V Input ranges Yes • Voltage Yes • 10 to +10 V Yes • 10 to +10 V Yes • ol to +10 V Yes • shielded, max. 100 m; twisted and shielded Analog outputs 0 Analog outputs 0 Analog outputs 0 Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. 10 bit </td <td> for signal "1" rated value </td> <td>0.5 A</td>	 for signal "1" rated value 	0.5 A
• "0" to "1", max. 1 μs • "1" to "0", max. 5 μs Switching frequency 100 kHz • of the pulse outputs, with resistive load, max. 100 kHz Cable length 500 m • unshielded, max. 150 m Analog inputs 2 • unshielded, max. 150 m Analog inputs 2 Number of analog inputs 2 • Voltage Yes Input ranges Yes • Voltage Yes • Number of analog outputs Yes • Oto +10 V Yes • Input resistance (0 to 10 V) ≥100k ohms Cable length - • shielded, max. 100 m; twisted and shielded Analog outputs 0 Analog outputs 0 Analog outputs 0 Resolution with overrange (bit including sign), max. 10 bit • Integration time, parameterizable Yes	 for signal "0" residual current, max. 	0.1 mA
• "1" to "0", max. 5 μs Switching frequency 100 kHz • of the pulse outputs, with resistive load, max. 100 kHz Cable length 500 m • unshielded, max. 500 m • unshielded, max. 150 m Analog inputs 2 Number of analog inputs 2 integrated channels (Al) 2: to 10V Input ranges Yes • Voltage Yes • to 10 V Yes • lnput resistance (0 to 10 V) 2100k ohms Cable length 100 m; twisted and shielded • Analog outputs 0 Analog outputs 0 Analog outputs 0 Analog outputs 0 Integration and conversion time/resolution per channel Yes • Integration inme, parameterizable max. 10 bit • Resolution with overrange (bit including sign), max. 10 bit • Integration time, parameterizable max Yes • Integration time (per channel) Yes • Conversion time (per channel) Yes	Output delay with resistive load	
Switching frequency 00 kHz Cable length 500 m • shielded, max. 500 m • unshielded, max. 150 m Analog inputs 2 Integrated channels (AI) 2; 0 to 10V Input ranges Yes • Voltage Yes Input resistance (0 to 10 V) 2100k ohms Cable length 400 m; twisted and shielded • Shielded, max. 100 m; twisted and shielded	• "0" to "1", max.	1 µs
• of the pulse outputs, with resistive load, max. 100 kHz Cable length 500 m • unshielded, max. 500 m • unshielded, max. 150 m Analog inputs 2 Number of analog inputs 2, 0 to 10V Input ranges 2; 0 to 10V Input ranges Yes • Voltage Yes Input resistance (0 to 10 V) 2100k ohms Cable length 2 • shielded, max. 100 m; twisted and shielded Analog outputs 0 Analog outputs 0 Analog value generation 10 bit • Resolution with overrange (bit including sign), max. 10 bit • Integration time, parameterizable Yes • Conversion time (per channel) 25 µs	• "1" to "0", max.	5 µs
Cable length 500 m • unshielded, max. 150 m Analog inputs 2 Number of analog inputs 2, 0 to 10V Input ranges 2, 0 to 10V Input ranges Yes Input ranges (rated values), voltages 2 0 to +10 V Yes Input resistance (0 to 10 V) 2100k ohms Cable length 400 m; twisted and shielded Analog outputs 0 Analog outputs 0 Analog value generation 100 m; twisted and shielded Integration and conversion time/resolution per channel 10 bit • Resolution with overrange (bit including sign), max. 10 bit • Integration time, parameterizable Yes • Conversion time (per channel) 625 µs	Switching frequency	
• shielded, max.500 m• unshielded, max.150 mAnalog inputs2Number of analog inputs2integrated channels (AI)2; 0 to 10VInput rangesYes• VoltageYesInput ranges (rated values), voltages2• 0 to +10 VYes• lnput resistance (0 to 10 V)2100k ohmsCable length100 m; twisted and shielded• shielded, max.100 m; twisted and shieldedAnalog outputs0Number of analog outputs0Integration and conversion time/resolution per channel10 bit max.• Integration time, parameterizableYes• Integration time, parameterizableYes• Conversion time (per channel)25 μsEncoderEncoder	 of the pulse outputs, with resistive load, max. 	100 kHz
• unshielded, max. 150 m Analog inputs 2 Number of analog inputs 2 integrated channels (AI) 2; 0 to 10V Input ranges Yes • Voltage Yes Input ranges (rated values), voltages 2 • 0 to +10 V Yes • lnput resistance (0 to 10 V) 2100k ohms Cable length 2 • shielded, max. 100 m; twisted and shielded Analog outputs 0 Number of analog outputs 0 Analog value generation 10 bit near. 10 bit • Integration and conversion time/resolution per channel Yes • Integration time, parameterizable Yes • Integration time, parameterizable Yes • Integration time (per channel) 625 µs Encoder Encoder	Cable length	
Analog inputs 2 Number of analog inputs 2 integrated channels (AI) 2; 0 to 10V Input ranges 2; 0 to 10V Input ranges Yes • Voltage Yes Input ranges (rated values), voltages 2100k ohms • 0 to +10 V Yes • Input resistance (0 to 10 V) 2100k ohms Cable length 2 • shielded, max. 100 m; twisted and shielded Analog outputs 0 Number of analog outputs 0 Analog value generation 10 bit Integration and conversion time/resolution per channel 10 bit • Resolution with overrange (bit including sign), max. 10 bit • Integration time, parameterizable Yes • Conversion time (per channel) 625 µs Encoder Encoder	• shielded, max.	500 m
Number of analog inputs 2 integrated channels (AI) 2; 0 to 10V Input ranges 2; 0 to 10V Input ranges Yes Input ranges (rated values), voltages 9 • 0 to +10 V Yes • Input resistance (0 to 10 V) ≥100k ohms Cable length 2 • shielded, max. 100 m; twisted and shielded Analog outputs 0 Number of analog outputs 0 Analog value generation 10 bit Integration and conversion time/resolution per channel 10 bit • Resolution with overrange (bit including sign), max. 10 bit • Integration time, parameterizable Yes • Conversion time (per channel) 625 μs	• unshielded, max.	150 m
integrated channels (AI) 2; 0 to 10V Input ranges • Voltage Yes Input ranges (rated values), voltages • 0 to +10 V Yes • Input resistance (0 to 10 V) ≥100k ohms Cable length • shielded, max. 100 m; twisted and shielded Analog outputs 0 Analog outputs 0 Analog value generation Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable Yes • Conversion time (per channel) Yes	· ·	
Input ranges Yes Input ranges (rated values), voltages Yes • 0 to +10 V Yes • Input resistance (0 to 10 V) ≥100k ohms Cable length 100 m; twisted and shielded • shielded, max. 100 m; twisted and shielded Analog outputs 0 Number of analog outputs 0 Integration and conversion time/resolution per channel 10 bit • Resolution with overrange (bit including sign), max. 10 bit • Integration time, parameterizable Yes • Conversion time (per channel) 625 µs		
• VoltageYesInput ranges (rated values), voltagesYes• 0 to +10 VYes• Input resistance (0 to 10 V)≥100k ohmsCable lengthTo m; twisted and shielded• shielded, max.100 m; twisted and shieldedAnalog outputs0Analog value generationTo mIntegration and conversion time/resolution per channel10 bit• Resolution with overrange (bit including sign), max.10 bit• Integration time, parameterizableYes• Conversion time (per channel)625 μsEncoderEncoder		2; 0 to 10V
Input ranges (rated values), voltages • 0 to +10 V Yes • Input resistance (0 to 10 V) ≥100k ohms Cable length ≥100k ohms • shielded, max. 100 m; twisted and shielded Analog outputs 0 Number of analog outputs 0 Analog value generation 0 Integration and conversion time/resolution per channel 10 bit • Resolution with overrange (bit including sign), max. 10 bit • Integration time, parameterizable Yes • Conversion time (per channel) 625 µs Encoder Encoder	Input ranges	
• 0 to +10 V Yes • Input resistance (0 to 10 V) ≥100k ohms Cable length • shielded, max. • shielded, max. 100 m; twisted and shielded Analog outputs 0 Number of analog outputs 0 Analog value generation 100 m; twisted and shielded Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable Yes • Conversion time (per channel) 625 μs Encoder		N
• Input resistance (0 to 10 V) ≥100k ohms Cable length • shielded, max. • shielded, max. 100 m; twisted and shielded Analog outputs 0 Number of analog outputs 0 Analog value generation 100 bit Integration and conversion time/resolution per channel 10 bit • Resolution with overrange (bit including sign), max. 10 bit • Integration time, parameterizable Yes • Conversion time (per channel) 625 μs	• Voltage	Yes
Cable length 100 m; twisted and shielded • shielded, max. 100 m; twisted and shielded Analog outputs 0 Number of analog outputs 0 Analog value generation 0 Integration and conversion time/resolution per channel 10 bit • Resolution with overrange (bit including sign), max. 10 bit • Integration time, parameterizable Yes • Conversion time (per channel) 625 µs	 Voltage Input ranges (rated values), voltages 	
• shielded, max. 100 m; twisted and shielded Analog outputs 0 Number of analog outputs 0 Analog value generation Integration and conversion time/resolution per channel Integration and conversion time/resolution per channel 10 bit • Resolution with overrange (bit including sign), max. 10 bit • Integration time, parameterizable Yes • Conversion time (per channel) 625 µs	 Voltage Input ranges (rated values), voltages 0 to +10 V 	Yes
Analog outputs 0 Analog value generation 0 Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable Yes • Conversion time (per channel) 625 µs	 Voltage Input ranges (rated values), voltages 0 to +10 V Input resistance (0 to 10 V) 	Yes
Number of analog outputs 0 Analog value generation Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. 10 bit • Integration time, parameterizable Yes • Conversion time (per channel) 625 µs	 Voltage Input ranges (rated values), voltages 0 to +10 V Input resistance (0 to 10 V) Cable length 	Yes ≥100k ohms
Analog value generation Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. 10 bit • Integration time, parameterizable Yes • Conversion time (per channel) 625 µs	 Voltage Input ranges (rated values), voltages 0 to +10 V Input resistance (0 to 10 V) Cable length 	Yes ≥100k ohms
Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration time, parameterizable Conversion time (per channel) Encoder Integration and conversion time (per channel) Integration time (pe	 Voltage Input ranges (rated values), voltages 0 to +10 V Input resistance (0 to 10 V) Cable length shielded, max. 	Yes ≥100k ohms
 Resolution with overrange (bit including sign), max. Integration time, parameterizable Conversion time (per channel) Kes Kes<td> Voltage Input ranges (rated values), voltages 0 to +10 V Input resistance (0 to 10 V) Cable length shielded, max. </td><td>Yes ≥100k ohms 100 m; twisted and shielded</td>	 Voltage Input ranges (rated values), voltages 0 to +10 V Input resistance (0 to 10 V) Cable length shielded, max. 	Yes ≥100k ohms 100 m; twisted and shielded
max. • Integration time, parameterizable Yes • Conversion time (per channel) 625 µs Encoder	 Voltage Input ranges (rated values), voltages 0 to +10 V Input resistance (0 to 10 V) Cable length shielded, max. Analog outputs Number of analog outputs Analog value generation 	Yes ≥100k ohms 100 m; twisted and shielded
Conversion time (per channel) 625 μs Encoder	 Voltage Input ranges (rated values), voltages 0 to +10 V Input resistance (0 to 10 V) Cable length shielded, max. Analog outputs Number of analog outputs Analog value generation Integration and conversion time/resolution per channel 	Yes ≥100k ohms 100 m; twisted and shielded 0
Encoder	 Voltage Input ranges (rated values), voltages 0 to +10 V Input resistance (0 to 10 V) Cable length shielded, max. Analog outputs Number of analog outputs Analog value generation Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), 	Yes ≥100k ohms 100 m; twisted and shielded 0
	 Voltage Input ranges (rated values), voltages 0 to +10 V Input resistance (0 to 10 V) Cable length shielded, max. Analog outputs Number of analog outputs Analog value generation Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. 	Yes ≥100k ohms 100 m; twisted and shielded 0 10 bit
Connectable encoders	 Voltage Input ranges (rated values), voltages 0 to +10 V Input resistance (0 to 10 V) Cable length shielded, max. Analog outputs Number of analog outputs Analog value generation Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration time, parameterizable 	Yes ≥100k ohms 100 m; twisted and shielded 0 10 bit Yes
	 Voltage Input ranges (rated values), voltages 0 to +10 V Input resistance (0 to 10 V) Cable length shielded, max. Analog outputs Number of analog outputs Analog value generation Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration time, parameterizable Conversion time (per channel) 	Yes ≥100k ohms 100 m; twisted and shielded 0 10 bit Yes

• 2-wire sensor

Yes

. Interface	PROFINET
Interface type	PROFINET
Physics	
Isolated	Yes
automatic detection of transmission rate	Yes
Autonegotiation Autocrossing	Yes
Interface types	
Number of ports	1
integrated switch	No
Functionality	
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
SIMATIC communication	Yes
Open IE communication	Yes
• Web server	Yes
Media redundancy	No
PROFINET IO Controller	
Transmission rate, max.	100 Mbit/s
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	No
— Open IE communication	Yes
— IRT	No
— MRP	No
— MRPD	No
— PROFlenergy	No
— Prioritized startup	Yes
— Number of IO devices with prioritized	16
startup, max.	
— Number of connectable IO Devices, max.	16
— Number of connectable IO Devices for RT,	16
max.	
— of which in line, max.	16
— Activation/deactivation of IO Devices	Yes
— Number of IO Devices that can be	8
simultaneously activated/deactivated, max.	
— Updating time	The minimum value of the update time also depends on the communication component set for PROFINET IO, on the number of IO devices and the quantity of configured user data.

PROFINET IO Device	
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	No
— Open IE communication	Yes
— IRT	No
— MRP	No
— MRPD	No
— PROFlenergy	Yes
— Shared device	Yes
— Number of IO Controllers with shared	2
device, max.	

Protocols	
Supports protocol for PROFINET IO	Yes
PROFIBUS	Yes; CM 1243-5 required
AS-Interface	Yes; CM 1243-2 required
Protocols (Ethernet)	
• TCP/IP	Yes
• DHCP	No
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
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)
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

Number of connections	
• overall	16; dynamically
+	
Test commissioning functions Status/control	
Status/control variable	Yes
Variables	Inputs/outputs, memory bits, DBs, distributed I/Os, timers,
• valiables	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
	Yes
MAINT LED	165
Integrated Functions	
Number of counters	6
Counting frequency (counter) max.	100 kHz
Frequency meter	Yes
controlled positioning	Yes
Number of position-controlled positioning axes, max.	8
Number of positioning axes via pulse-direction interface	4; With integrated outputs
PID controller	Yes
Number of alarm inputs	4
Number of pulse outputs	4
Limit frequency (pulse)	100 kHz
Potential separation	
Potential separation digital inputs	
 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	
 on the supply lines acc. to IEC 61000-4-5 	Yes
Interference immunity against conducted variable distur	bance 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	
Degree of protection acc. to EN 60529	
• IP20	Yes
Standards, approvals, certificates	
CE mark	Yes
UL approval	Yes
cULus	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes
Marine approval	
Marine approval	Yes
Ambient conditions	
Free fall	
 Fall height, max. 	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-20 °C
• max.	60 °C; Number of simultaneously activated inputs or outputs 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
 horizontal installation, min. 	-20 °C
 horizontal installation, max. 	60 °C
• vertical installation, min.	-20 °C
• vertical installation, max.	50 °C

Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Air pressure acc. to IEC 60068-2-13	
• Operation, min.	795 hPa
• Operation, max.	1 080 hPa
 Storage/transport, min. 	660 hPa
 Storage/transport, max. 	1 080 hPa
 permissible operating height 	-1000 to 2000 m
Relative humidity	
 permissible range (without condensation) at 25 °C 	95 %
Vibrations	
Vibrations	2 g (m/s²) wall mounting, 1 g (m/s²) DIN rail
 Operation, tested according to IEC 60068-2-6 	Yes
Shock test	
• 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
Extended ambient conditions	
Pollutant concentrations	
— SO2 at RH < 60% without condensation	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
Configuration	
Configuration Programming	
Programming	Yes
Programming Programming language	Yes Yes
Programming Programming language — LAD	
Programming Programming language — LAD — FBD	Yes
Programming Programming language — LAD — FBD — SCL	Yes
Programming Programming language — LAD — FBD — SCL Know-how protection	Yes Yes
Programming Programming language — LAD — FBD — SCL Know-how protection • User program protection	Yes Yes
Programming Programming language — LAD — FBD — SCL Know-how protection • User program protection • Copy protection	Yes Yes Yes
Programming Programming language — LAD — FBD — SCL Know-how protection • User program protection • Copy protection • Block protection	Yes Yes Yes
Programming Programming language — LAD — FBD — SCL Know-how protection • User program protection • Copy protection • Block protection Access protection	Yes Yes Yes Yes
Programming Programming language — LAD — FBD — SCL Know-how protection • User program protection • Copy protection • Block protection • Access protection • Protection level: Write protection	Yes Yes Yes Yes Yes
Programming Programming language — LAD — FBD — SCL Know-how protection • User program protection • Copy protection • Block protection • Protection level: Write protection • Protection level: Read/write protection	Yes Yes Yes Yes Yes Yes
Programming Programming language — LAD — FBD — SCL Know-how protection • User program protection • Copy protection • Block protection • Block protection • Protection level: Write protection • Protection level: Complete protection	Yes Yes Yes Yes Yes Yes
Programming Programming language — LAD — FBD — SCL Know-how protection • User program protection • Copy protection • Block protection • Protection level: Write protection • Protection level: Read/write protection • Protection level: Complete protection • Protection level: Complete protection	Yes Yes Yes Yes Yes Yes Yes
Programming Programming language - LAD - FBD - SCL Know-how protection • User program protection • Copy protection • Block protection • Protection level: Write protection • Protection level: Write protection • Protection level: Complete protection • Protection level: Complete protection • adjustable Dimensions Width	Yes Yes Yes Yes Yes Yes Yes Yes
Programming Programming language LAD FBD SCL Know-how protection • User program protection • Copy protection • Block protection • Protection level: Write protection • Protection level: Write protection • Protection level: Complete protection • Protection level: Complete protection • Protection level: Complete protection Dimensions	Yes Yes Yes Yes Yes Yes Yes

Weights	
Weight, approx.	415 g
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