SIEMENS

Data sheet

6ES7212-1AF40-0XB0



SIMATIC S7-1200F, CPU 1212 FC, compact CPU, DC/DC/DC, onboard I/O: 8 DI 24 V DC; 6 DO 24 V DC; 2 AI 0-10 V DC, Power supply: DC 20.4-28.8V DC, Program/data memory 100 KB

General information	
Product type designation	CPU 1212FC DC/DC/DC
Firmware version	V4.5
Engineering with	
 Programming package 	STEP 7 V17 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)	400 mA; CPU only
Current consumption, max.	1 200 mA; CPU with all expansion modules
Inrush current, max.	12 A; at 28.8 V DC
² t	0.5 A ² ·s
Output current	
for backplane bus (5 V DC), max.	1 000 mA; Max. 5 V DC for SM and CM
Encoder supply	
24 V encoder supply	
• 24 V	L+ minus 4 V DC min.
Power loss	
Power loss, typ.	9 W
Memory	
Work memory	
integrated	100 kbyte
expandable	No
Load memory	
integrated	2 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.	1.7 µs; / instruction
for floating point arithmetic, typ.	2.3 µs; / instruction
CPU-blocks	Σ.ο μο, η ποιασσιστή
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.	14 kbyte
Flag	
• Size, max.	4 kbyte; Size of bit memory address area
● 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
Hardware configuration	
Number of modules per system, max.	3 comm. modules, 1 signal board, 2 signal modules
Time of day	o comm. modules, i signal board, 2 signal modules
Clock	
	Yes
Hardware clock (real-time) Realize time	
Backup time Deviation per day, may	480 h; Typical 60 s/month at 25 °C
Deviation per day, max.	60 S/IIIOHIII 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	0
— up to 40 °C, max.	8
Input voltage	24.1/
• Rated value (DC)	24 V
• for signal "0"	5 V DC at 1 mA
for signal "1" Input delay (for rated value of input voltage)	15 V DC at 2.5 mA
for standard inputs	0.2 mg 0.4 mg 0.9 mg 1.6 mg 2.2 mg 6.4 mg and 12.9 mg calcatable
— 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	Voc
— parameterizable	Yes
for technological functions	Single phase: 3 @ 100 kHz 2 2 @ 20 kHz differential: 3 @ 20 kHz 2 2
— parameterizable	Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz
Cable length	
• shielded, max.	500 m; 50 m for technological functions
• unshielded, max.	300 m; for technological functions: No
Digital outputs	
Number of digital outputs	6
of which high-speed outputs	4; 100 kHz Pulse Train Output
Limitation of inductive shutdown voltage to	L+ (-48 V)
LIMITATION OF INDUCTIVE STUTCOWN VOITAGE TO	LT (-40 V)

Switching capacity of the outputs • with residive load, max. • on lamp load, max. • on lamp load, max. • on lamp load, max. • on signal "0", max. • on signal "1", min. • or signal "1" rated value • for signal "1" rated value • for signal "1" restal value • for signal "1" res		
	Switching capacity of the outputs	
Couptr voltage	 with resistive load, max. 	
		5 W
• for signal "1", min. 20 V Output current • for signal "1" rated value • for signal "0" residual current, max. 0.5 m Output delay with resistive load • "0" to "1", max. • "1" to "0", max 5 µs Switching frequency • of the pulse outputs, with resistive load, max Relay outputs • Number of relay outputs • Number of relay outputs • Number of relay outputs • Unabledod, max. • Ison output delay outputs • Ison output season • I	Output voltage	
Output design "1" rated value	● for signal "0", max.	0.1 V; with 10 kOhm load
• for signal "1" rated value • for signal "0" residual current, max. Output delay with resistive boad • "0" to "1", max. • "1" to "0", max. Sylkshing frequency • of the pulse outputs, with resistive load, max. • "1" to "0", max. Sylkshing frequency • of the pulse outputs, with resistive load, max. • "1" to "0", max. • Number of relay outputs • In selected, max. • Use heleded, max. • Outage • Ves — Input resistance (0 to 10 V) • Yes — Input resistance (0 to 10 V) • Shielded, max. • Outage • Out +10 V • Yes — Input resistance (0 to 10 V) • Shielded, max. • Out to +10 V • Shielded, max. • Outs heleded, max. • Outs h	● for signal "1", min.	20 V
	Output current	
Output delay with resistive load 0°0° to 1°1°, max. 5 μs	for signal "1" rated value	0.5 A
Output delay with resistive load 0°0° to 1°1°, max. 5 μs	for signal "0" residual current, max.	0.1 mA
e "1" to "0", max. Switching frequency • of the pulse outputs, with resistive load, max. Number of relay outputs • shielded, max. • s	·	1 µs
Switching frequency of the pulse outputs, with resistive load, max. felay outputs Number of relay outputs oshielded, max. shielded, max.		·
of the pulse outputs, with resistive load, max. Relay outputs Number of relay outputs one of the pulse outputs on		
Relay outputs Number of relay outputs o shielded, max. ounshielded, max. Instituted, max. instituted, max. output registers of voltage voltage vol		100 kHz
Number of relay outputs shelded, max. unshielded, max. 150 m Number of analog inputs Number of analog inputs 2 Input ranges Voltage Input ranges 10 to -10 V Input ranges Shelded, max. 100 m; twisted and shielded Shielded, max. Analog outputs Number of analog outputs Shielded, max. Analog outputs Number of analog outputs Cable length Shielded, max. Analog outputs Number of analog outputs Number of analog outputs Conversion time/resolution per channel Seasolution with overrange (bit including sign), max. Integration time, parameterizable Conversion time (per channel) Seasolution with overrange (bit including sign), max. Integration time, parameterizable Conversion time (per channel) Seasolution Seasolution Ves Connectable encoders Linterface Tinterface type Sicolated Autonogotistion Yes Autonogotistion Yes Autonogotistion Ves RIA St (Ethernet) No Protocois PROFINET IO Controller Ves SIMATIC communication Ves SIMATIC communication Ves SIMATIC communication Ves SIMATIC controller Ves Media redundancy No PROFINET IO Controller Ves Simariasion rate, max. 100 Mbit/s		100 1012
Cable length • shielded, max. unshielded, max. 150 m Number of analog inputs • Voltage • Voltage • Votage • Votage • Votage • O to +10 V — Input resistance (0 to 10 V) — Cable length • shielded, max. Analog vutputs Number of analog outputs O to Hold visual eigencation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) • Zwife sensor • Zwife sensor • Zwife sensor • Yes Interface type PROFINET Isolated Yes Autonogotiation Yes Autonegotiation Autocrossing Yes • RJ 46 (Ethemet) • No Protocols • PROFINET IO Controller • PROFINET IO Controller • PROFINET IO Device • SiMATIC communication Yes • SIMATIC communication Yes • SIMATIC communication Yes • One Den IE communication Yes • Web server • Web server • Web server • Web server • Yes • Transmission rate, max. 100 Mbit/s		0
shielded, max. 500 m unshielded, max. 150 m Analog inputs Number of analog inputs 2 Input ranges		U
Integration with generation for the inputs Integration with generation with generatio	-	500 m
Analog inputs Number of analog inputs ● Voltage Ves Input ranges • Voltage Ves Input ranges (reted values), voltages • 0 to +10 V — Input resistance (0 to 10 V) Zable length • shielded, max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Encoder Connectable encoders • 2-wire sensor Interface type Rutherface type Rutherface type Rutherface types Rut		
Number of analog inputs Solitage Yes		130 111
Input ranges • Voltage • Votage (a) to +10 V — Input resistance (0 to 10 V) — Input resistance (0 to 10 V) • shielded, max. Analog outputs Number of analog outputs Number of analog outputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Encoder Connectable encoders • 2-wire sensor • 1. Interface Interface type sudundate detection of transmission rate Autorogotiation Autocrossing • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • PROFINET IO Controller • Yes • Media redundancy No PROFINET IO Controller • Yes • Media redundancy No PROFINET IO Controller • Yes • Media redundancy No PROFINET IO Controller • Yes • Media redundancy No PROFINET IO Controller • Transmission rate, max. 100 Mbit/s		
• Voltage Yes		2
Input ranges (rated values), voltages • 0 to +10 V	Input ranges	
● 0 to +10 V	Voltage	Yes
— Input resistance (0 to 10 V) Cable length	Input ranges (rated values), voltages	
Cable length	• 0 to +10 V	Yes
• shielded, max. 100 m; twisted and shielded Analog outputs 0 Number of analog outputs 0 Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable 4 • Conversion time (per channel) 625 µs Encoder Connectable encoders • 2-wire sensor Yes 1. Interface Interface type PROFINET Isolated Yes automatic detection of transmission rate Yes Autocrossing Yes Interface types • RJ 45 (Ethernet) Yes • Number of ports 1 • Integrated switch No PROFINET IO Controller Yes • SIMATIC communication Yes; Optionally also encrypted • Web server Yes • Media redundancy • Transmission rate, max. 100 Mbit/s	— Input resistance (0 to 10 V)	≥100k ohms
Analog outputs Number of analog outputs O 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) Encoder Connectable encoders • 2-wire sensor Yes 1. Interface Interface type Interface type Isolated Yes automatic detection of transmission rate Autonegotiation Yes Autocrossing Yes Interface types • RJ 45 (Ethernet) Yes • Number of ports 1 • integrated switch No Protocols • PROFINET IO Controller Yes • SIMATIC communication Yes • SIMATIC communication Yes • SIMATIC communication Yes • Open IE communication Yes • Media redundancy • Media redundancy • Transmission rate, max. 100 Mbit/s	Cable length	
Number of analog outputs 0 Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable Yes • Conversion time (per channel) 625 µs Encoder Connectable encoders • 2-wire sensor Yes 1. Interface Interface type Isolated Yes automatic detection of transmission rate Yes Autoregotiation Yes Autocrossing Yes Interface types • RJ 45 (Ethernet) Yes • Number of ports 1 • Integrated switch No Protocols • PROFINET IO Controller Yes • SIMATIC communication Yes • SIMATIC communication Yes; Optionally also encrypted • Web server Yes • Media redundancy No PROFINET IO Controller • Transmission rate, max. 100 Mbit/s	• shielded, max.	100 m; twisted and shielded
Number of analog outputs 0 Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable Yes • Conversion time (per channel) 625 µs Encoder Connectable encoders • 2-wire sensor Yes 1. Interface Interface type Isolated Yes automatic detection of transmission rate Yes Autoregotiation Yes Autocrossing Yes Interface types • RJ 45 (Ethernet) Yes • Number of ports 1 • Integrated switch No Protocols • PROFINET IO Controller Yes • SIMATIC communication Yes • SIMATIC communication Yes; Optionally also encrypted • Web server Yes • Media redundancy No PROFINET IO Controller • Transmission rate, max. 100 Mbit/s	Analog outputs	
Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable Yes • Conversion time (per channel) 625 µs Encoder Connectable encoders • 2-wire sensor Yes 1. Interface Interface type Interface type Isolated Yes automatic detection of transmission rate Yes Autonegotiation Yes Autocrossing Yes Interface type • RA 45 (Ethernet) Yes • Number of ports • Integrated switch No Protocols • PROFINET IO Controller • PROFINET IO Device Yes • SIMATIC communication Yes • Media redundancy No PROFINET IO Controller • Transmission rate, max. 100 Mbit/s		0
Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration time, parameterizable Conversion time (per channel) Encoder Connectable encoders 2-wire sensor Yes Interface Interface Interface Interface type Isolated Autocrossing Yes Autocrossing Yes Interface types Resolution PROFINET Interface type Resolution PROFINET IO Controller PROFINET IO Controller PROFINET IO Communication Yes SIMATIC communication Yes Media redundancy No PROFINET IO Controller Web server Media redundancy No PROFINET IO Controller Transmission rate, max. 100 Mbit/s		
• Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Conversion time (per channel) Encoder Connectable encoders • 2-wire sensor 1. Interface Interface type Interface type Isolated automatic detection of transmission rate Autonegotiation Autocrossing Interface types • RJ 45 (Ethernet) • integrated switch Protocols • PROFINET IO Controller • PROFINET IO Controller • Web server • Media redundancy Mo PROFINET IO Controller • Transmission rate, max. 10 bit Yes 42 s 10 bit Yes 42 s 42 s 42 s 42 s 43 s 44 s 45 s 46 s 47 s 48 s 48 s 49 s 49 s 40 s		
Integration time, parameterizable Conversion time (per channel) Encoder Connectable encoders 2-wire sensor Yes 1. Interface Interface type Isolated Autonegotiation Autorossing Interface types FRJ 45 (Ethernet) Number of ports Integrated switch PROFINET IO Controller PROFINET IO Device PROFINET IO Device SIMATIC communication Yes • Web server • Media redundancy PROFINET IO Controller • Web server • Media redundancy PROFINET IO Controller • Transmission rate, max. 100 Mbit/s PROFINET IO Controller • Transmission rate, max.		10 hit
• Conversion time (per channel) Encoder Connectable encoders • 2-wire sensor 1. Interface Interface type Isolated automatic detection of transmission rate Autonegotiation Autocrossing PROFINET Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch PROFINET IO Controller • PROFINET IO Device • SIMATIC communication Yes • Media redundancy PROFINET IO Controller • Web server • Media redundancy PROFINET IO Controller • Transmission rate, max. 100 Mbit/s		
Encoder Connectable encoders 2-wire sensor PROFINET Isolated Interface type Isolated Autonegotiation Yes Autocrossing Interface types RJ 45 (Ethernet) integrated switch PROFINET IO Controller PROFINET IO Communication Yes SIMATIC communication Yes PROFINET IO Controller Yes SIMATIC communication Yes Media redundancy PROFINET IO Controller Yes Media redundancy No PROFINET IO Controller Transmission rate, max.	-	
Connectable encoders • 2-wire sensor Yes 1. Interface Interface type Isolated Interface type Isolated Interface type Isolated Interface type Isolated Interface type Interface type Interface types Interface types • RJ 45 (Ethernet) Interface types • RJ 45 (Ethernet) Interface types • RD 45 (Ethernet) Interface types • PROFINET IO Controller Interface types Interface types Interface types Interface ty		625 µs
One of the protocols One of protoc	Encoder	
Interface type Interface type Isolated Yes automatic detection of transmission rate Yes Autonegotiation Autocrossing Yes Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • PROFINET IO Controller • PROFINET IO Communication • Web server • Media redundancy • Media redundancy • Transmission rate, max. PROFINET IO Controller • Transmission rate, max. PROFINET IO Controller • Transmission rate, max. PROFINET IO Controller • Transmission rate, max. PROFINET IO Controller • Transmission rate, max. PROFINET IO Media redundancy • Transmission rate, max.	Connectable encoders	
Interface type Isolated Isolated Yes automatic detection of transmission rate Autonegotiation Yes Autocrossing Yes Interface types RJ 45 (Ethernet) Number of ports Integrated switch No Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy PROFINET IO Controller No PROFINET IO Controller Yes SIMATIC tommunication Yes; Optionally also encrypted No PROFINET IO Controller Yes Media redundancy No PROFINET IO Controller Transmission rate, max. 100 Mbit/s	• 2-wire sensor	Yes
Isolated automatic detection of transmission rate Autonegotiation Yes Autocrossing Yes Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Web server • Media redundancy • Media redundancy PROFINET IO Controller • Transmission rate, max. 100 Mbit/s	1. Interface	
automatic detection of transmission rate Autonegotiation Yes Autocrossing Yes Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Wes server • Media redundancy • Media redundancy PROFINET IO Controller • Transmission rate, max. 100 Mbit/s	Interface type	PROFINET
Autocrossing Yes Interface types RJ 45 (Ethernet) Number of ports integrated switch No Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. Yes 100 Mbit/s	Isolated	Yes
Autocrossing Yes Interface types RJ 45 (Ethernet) Number of ports Integrated switch No Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. Yes 100 Mbit/s	automatic detection of transmission rate	Yes
Autocrossing Interface types RJ 45 (Ethernet) Number of ports Integrated switch No Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy PROFINET IO Controller Tyes Open IE communication Yes; Optionally also encrypted Web server Media redundancy No PROFINET IO Controller Transmission rate, max. 100 Mbit/s	Autonegotiation	
Interface types RJ 45 (Ethernet) Number of ports Integrated switch No Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. Yes Yes Yes Yes Yes Yes Yes Yes Yes No PROFINET IO Controller Transmission rate, max.		
 RJ 45 (Ethernet) Number of ports integrated switch Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy PROFINET IO Controller Yes Optionally also encrypted Yes Mo 		
 Number of ports integrated switch No Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. 100 Mbit/s	• • • • • • • • • • • • • • • • • • • •	Yes
 integrated switch Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. 		
Protocols PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. Yes Yes Yes No Media redundancy No PROFINET IO Controller Transmission rate, max.		
 PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. 		110
 PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. Yes Yes No PROFINET IO Mobit/s		Von
 SIMATIC communication Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. 		
 Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. 		
 Media redundancy PROFINET IO Controller Transmission rate, max. 100 Mbit/s 		
PROFINET IO Controller • Transmission rate, max. 100 Mbit/s	Web server	
• Transmission rate, max. 100 Mbit/s		M
	·	NO
Sorvices	·	NO .
Services	PROFINET IO Controller	

— PG/OP communication	Yes; encryption with TLS V1.3 pre-selected
 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, max. 	16
— 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; encryption with TLS V1.3 pre-selected
— Isochronous mode	No
— ISOCITIONOUS Mode — 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
OPC UA	Yes; OPC UA Server
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	No
	No
— MRPD	IVO
Open IE communication	Vos
• 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; "Basic" license required
OPC UA Server	Yes; data access (read, write, subscribe), method call, runtime license required
 Application authentication 	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
 User authentication 	"anonymous" or by user name & password
 Number of sessions, max. 	10
	10
 Number of subscriptions per session, max. 	50

— Sampling interval, min.	100 ms
— Publishing interval, min.	200 ms
 Number of server methods, max. 	20
 Number of monitored items, max. 	1 000
 Number of server interfaces, max. 	2
Number of nodes for user-defined server	2 000
interfaces, max.	
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	PG Connections: 4 reserved / 4 max; HMI Connections: 12 reserved / 18 max; S7 Connections: 8 reserved / 14 max; Open User Connections: 8 reserved / 14 max; Web Connections: 2 reserved / 30 max; OPC UA Connections: 0 reserved / 10 max; Total Connections: 34 reserved / 64 max
Test commissioning functions	
Status/control	
Status/control variable	Yes
Variables	inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters
Forcing	
• Forcing	Yes; peripheral inputs/outputs (without fail-safe)
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	165
Counter	
Number of counters	6
	0 100 kHz
Counting frequency, max.	
Frequency measurement	Yes
controlled positioning	Yes
Number of position-controlled positioning axes, max.	8 Lin to 4 with SP 1222
Number of positioning axes via pulse-direction interface	Up to 4 with SB 1222
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	
 Interference immunity on supply lines acc. to IEC 61000-4-5 	Yes
Interference immunity against conducted variable disturband	ce 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
RCM (formerly C-TICK)	Yes
KC approval	Yes
Marine approval	Yes
Highest safety class achievable in safety mode	
Performance level according to ISO 13849-1	PLe
SIL acc. to IEC 61508	SIL 3
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	0 °C
• max.	55 °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
max.horizontal installation, min.	55 °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 0 °C
• max.	55 °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 0 °C 55 °C
 max. horizontal installation, min. horizontal installation, max. vertical installation, min. 	55 °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 0 °C 55 °C 0 °C
 max. horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. 	55 °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 0 °C 55 °C
 max. horizontal installation, min. horizontal installation, max. vertical installation, min. 	55 °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 0 °C 55 °C 0 °C 45 °C
 max. horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. 	55 °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 0 °C 55 °C 0 °C 45 °C
 max. horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation min. max. 	55 °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 0 °C 55 °C 0 °C 45 °C
 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	55 °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 0 °C 55 °C 0 °C 45 °C
 max. horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ambient temperature during storage/transportation min. max. 	55 °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 0 °C 55 °C 0 °C 45 °C
 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	55 °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 0 °C 55 °C 0 °C 45 °C -40 °C 70 °C
 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. 	55 °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 0 °C 55 °C 0 °C 45 °C -40 °C 795 hPa
 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. 	55 °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 0 °C 55 °C 0 °C 45 °C -40 °C 795 hPa 1 080 hPa
 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. 	55 °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 0 °C 55 °C 0 °C 45 °C -40 °C 795 hPa 1 080 hPa 660 hPa
 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. 	55 °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 0 °C 55 °C 0 °C 45 °C -40 °C 795 hPa 1 080 hPa 660 hPa
 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	55 °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 0 °C 55 °C 0 °C 45 °C -40 °C 795 hPa 1 080 hPa 1 080 hPa
 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. 	55 °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 0 °C 55 °C 0 °C 45 °C -40 °C 795 hPa 1 080 hPa 1 080 hPa 1 080 hPa
 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. 	55 °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 0 °C 55 °C 0 °C 45 °C -40 °C 795 hPa 1 080 hPa 1 080 hPa 1 080 hPa
 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	55 °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 0 °C 55 °C 0 °C 45 °C -40 °C 795 hPa 1 080 hPa

60068-2-6	
Operation, tested according to IEC 60068-2-6	Yes
Shock testing	
• 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
Pollutant concentrations	
 SO2 at RH < 60% without condensation 	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
Configuration	
Programming	
Programming language	
— LAD	Yes; incl. failsafe
— FBD	Yes; incl. failsafe
SCL	Yes
Know-how protection	
 User program protection/password protection 	Yes
 Copy protection 	Yes
Block protection	Yes
Access protection	
 protection of confidential configuration data 	Yes
 Protection level: Write protection 	Yes
 Protection level: Read/write protection 	Yes
Protection level: Complete protection	Yes
Cycle time monitoring	
adjustable	Yes
Dimensions	
Width	90 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	370 g
last modified:	5/17/2021 🗗