SIEMENS

Data sheet

6ES7313-5BF03-0AB0



Figure similar

Spare part SIMATIC S7-300, CPU 313C, Compact CPU with MPI, 24 DI/16 DO, 4 AI, 2 AO, 1 Pt100, 3 high-speed counters (30 kHz), Integr. power supply 24 V DC, work memory 64 KB, Front connector (2x 40-pole) and Micro Memory Card required

General information	
HW functional status	01
Firmware version	V2.6
Engineering with	
 Programming package 	STEP 7 V5.3 SP2 or higher with HW update
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
external protection for power supply lines (recommendation)	Miniature circuit breaker, type C; min. 2 A; miniature circuit breaker type B, min. 4 A
Load voltage L+	
 Rated value (DC) 	24 V
 permissible range, lower limit (DC) 	20.4 V
 permissible range, upper limit (DC) 	28.8 V
Digital inputs	
— Rated value (DC)	24 V
 Reverse polarity protection 	Yes
Digital outputs	
— Rated value (DC)	24 V
 Reverse polarity protection 	No
Analog outputs	
— Rated value (DC)	24 V
Reverse polarity protection	Yes
Input current	
Current consumption (rated value)	700 mA
Current consumption (in no-load operation), typ.	150 mA
Inrush current, typ.	11 A
l²t	0.7 A ² ·s
Digital inputs	
from load voltage L+ (without load), max.	70 mA
Digital outputs	
from load voltage L+, max.	100 mA
Power loss	
Power loss, typ.	14 W
Memory	
Work memory	
integrated	64 kbyte
expandable	No
Load memory	

a Plug in (MMC)	Von
Plug-in (MMC) Plug-in (MMC)	Yes
Plug-in (MMC), max. Data management on MMC (after last)	8 Mbyte
 Data management on MMC (after last programming), min. 	10 y
Backup	
• present	Yes; Guaranteed by MMC (maintenance-free)
without battery	Yes; Program and data
CPU processing times	
for bit operations, typ.	0.1 μs
for bit operations, max.	0.2 µs
for word operations, typ.	0.2 µs
for fixed point arithmetic, typ.	2 µs
for floating point arithmetic, typ.	3 µs
CPU-blocks	
Number of blocks (total)	1 024; (DBs, FCs, FBs); the maximum number of loadable blocks can
(10.0.1)	be reduced by the MMC used.
DB	
Number, max.	511; Number range: 1 to 511
• Size, max.	16 kbyte
FB	
Number, max.	1 024; Number range: 0 to 2047
• Size, max.	16 kbyte
FC	1004 14 14 15 15 15
Number, max.	1 024; Number range: 0 to 2047
• Size, max.	16 kbyte
OB	16 libito
Size, max.Number of free cycle OBs	16 kbyte 1; OB 1
Number of time alarm OBs	1; OB 1
Number of time alarm OBs Number of delay alarm OBs	1; OB 10
Number of cyclic interrupt OBs	1; OB 35
Number of process alarm OBs	1; OB 40
Number of startup OBs	1; OB 100
Number of startup GBs Number of asynchronous error OBs	4; OB 80, 82, 85, 87
Number of synchronous error OBs	2; OB 121, 122
Nesting depth	
per priority class	8
additional within an error OB	4
Counters, timers and their retentivity	
S7 counter	
Number	256
Retentivity	
— adjustable	Yes
— lower limit	0
— upper limit	255
— preset	8
Counting range	
— lower limit	0
— upper limit	999
IEC counter	
• present	Yes
• Type	SFB
• Number	Unlimited (limited only by RAM capacity)
S7 times	256
Number Potentivity	256
Retentivity	Voe
— adjustable — lower limit	Yes 0
— iower iimit — upper limit	255
— upper iimit — preset	No retentivity
— preset Time range	140 retentivity
— lower limit	10 ms
— upper limit	9 990 s
IEC timer	

present	Yes
• Type	SFB
Number	Unlimited (limited only by RAM capacity)
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	64 kbyte
Flag	05011
Size, max. Deterministry qualitable.	256 byte
Retentivity available Retentivity propert	Yes; MB 0 to MB 255 MB 0 to MB 15
Retentivity preset Number of clock memories	8; 1 memory byte
Data blocks	o, i memory byte
Retentivity adjustable	Yes; via non-retain property on DB
Retentivity preset	Yes
Local data	
per priority class, max.	510 byte
Address area	
I/O address area	
• Inputs	1 kbyte
Outputs	1 kbyte
Process image	
• Inputs	128 byte
Outputs	128 byte
Default addresses of the integrated channels	
— Digital inputs	124.0 to 126.7
— Digital outputs	124.0 to 125.7
— Analog inputs	752 to 761
— Analog outputs	752 to 755
Digital channels	4.040
Inputs— of which central	1 016 1 016
Outputs	1 008
— of which central	1 008
Analog channels	1 000
• Inputs	253
— of which central	253
 Outputs 	250
— of which central	250
Hardware configuration	
Number of expansion units, max.	3
Number of DP masters	
• integrated	none
• via CP	4
Number of operable FMs and CPs (recommended)	
• FM	8
• CP, PtP	8
• CP, LAN	6
Rack Packs may	4
Racks, max. Modulos por rock, max.	4 9: In rook 2 may 7
Modules per rack, max.	8; In rack 3 max. 7
Time of day	
Clock	Ven
Hardware clock (real-time) retentive and everyteenizable	Yes
retentive and synchronizableBackup time	Yes 6 wk: At 40 °C ambient temperature
Deviation per day, max.	6 wk; At 40 °C ambient temperature 10 s
Operating hours counter	
Number	1
Number/Number range	0
Range of values	0 to 2^31 hours (when using SFC 101)
Granularity	1 h
• retentive	Yes; Must be restarted at each restart
Clock synchronization	
• supported	Yes

e to MDI master	Yes
to MPI, masterto MPI, slave	Yes
• in AS, master	Yes
Digital inputs	100
Number of digital inputs	24
of which inputs usable for technological functions	12
integrated channels (DI)	24
Input characteristic curve in accordance with IEC 61131,	Yes
type 1	
Number of simultaneously controllable inputs	
horizontal installation	
— up to 40 °C, max.	24
— up to 60 °C, max.	12
vertical installation — up to 40 °C, max.	12
Input voltage	12
Rated value (DC)	24 V
• for signal "0"	-3 to +5V
• for signal "1"	+15 to +30 V
Input current	
● for signal "1", typ.	9 mA
Input delay (for rated value of input voltage)	
for standard inputs	
— parameterizable	Yes; 0.1 / 0.3 / 3 / 15 ms
— Rated value	3 ms
for technological functions	
— at "0" to "1", max.	16 μs
Cable length	4.000 ms. 400 ms for took relacion franctions
shielded, max.unshielded, max.	1 000 m; 100 m for technological functions 600 m; for technological functions: No
for technological functions	600 III, for technological functions. No
— shielded, max.	100 m
 unshielded, max. 	not allowed
— unshielded, max. Digital outputs	not allowed
Digital outputs	
Digital outputs Number of digital outputs	not allowed 16 4
Digital outputs	16
Digital outputs Number of digital outputs • of which high-speed outputs	16 4
Digital outputs Number of digital outputs of which high-speed outputs integrated channels (DO)	16 4 16
Digital outputs Number of digital outputs of which high-speed outputs integrated channels (DO) Short-circuit protection	16 4 16 Yes; Clocked electronically
Digital outputs Number of digital outputs of which high-speed outputs integrated channels (DO) Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input	16 4 16 Yes; Clocked electronically 1 A
Digital outputs Number of digital outputs of which high-speed outputs integrated channels (DO) Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Switching capacity of the outputs	16 4 16 Yes; Clocked electronically 1 A L+ (-48 V) Yes
Digital outputs Number of digital outputs of which high-speed outputs integrated channels (DO) Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Switching capacity of the outputs on lamp load, max.	16 4 16 Yes; Clocked electronically 1 A L+ (-48 V)
Digital outputs Number of digital outputs of which high-speed outputs integrated channels (DO) Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Switching capacity of the outputs on lamp load, max. Load resistance range	16 4 16 Yes; Clocked electronically 1 A L+ (-48 V) Yes
Digital outputs Number of digital outputs of which high-speed outputs integrated channels (DO) Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Switching capacity of the outputs on lamp load, max. Load resistance range lower limit	16 4 16 Yes; Clocked electronically 1 A L+ (-48 V) Yes 5 W
Digital outputs Number of digital outputs of which high-speed outputs integrated channels (DO) Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Switching capacity of the outputs on lamp load, max. Load resistance range lower limit upper limit	16 4 16 Yes; Clocked electronically 1 A L+ (-48 V) Yes
Digital outputs Number of digital outputs of which high-speed outputs integrated channels (DO) Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Switching capacity of the outputs on lamp load, max. Load resistance range lower limit upper limit Output voltage	16 4 16 Yes; Clocked electronically 1 A L+ (-48 V) Yes 5 W
Digital outputs Number of digital outputs of which high-speed outputs integrated channels (DO) Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Switching capacity of the outputs on lamp load, max. Load resistance range I lower limit upper limit Output voltage for signal "1", min.	16 4 16 Yes; Clocked electronically 1 A L+ (-48 V) Yes 5 W
Digital outputs Number of digital outputs of which high-speed outputs integrated channels (DO) Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Switching capacity of the outputs on lamp load, max. Load resistance range I lower limit upper limit Output voltage for signal "1", min. Output current	16 4 16 Yes; Clocked electronically 1 A L+ (-48 V) Yes 5 W
Digital outputs Number of digital outputs of which high-speed outputs integrated channels (DO) Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Switching capacity of the outputs on lamp load, max. Load resistance range I lower limit upper limit Output voltage for signal "1", min.	16 4 16 Yes; Clocked electronically 1 A L+ (-48 V) Yes 5 W 48 Ω 4 k Ω L+ (-0.8 V)
Digital outputs Number of digital outputs of which high-speed outputs integrated channels (DO) Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Switching capacity of the outputs on lamp load, max. Load resistance range I lower limit upper limit Output voltage of r signal "1", min. Output current for signal "1" rated value	16 4 16 Yes; Clocked electronically 1 A L+ (-48 V) Yes 5 W 48 Ω 4 k Ω L+ (-0.8 V)
Digital outputs Number of digital outputs of which high-speed outputs integrated channels (DO) Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Switching capacity of the outputs on lamp load, max. Load resistance range lower limit upper limit Output voltage for signal "1", min. Output current for signal "1" rated value for signal "1" permissible range, min.	16 4 16 $Yes; Clocked electronically$ $1 A$ $L+ (-48 \text{ V})$ Yes 5 W 48Ω $4 \text{ k}\Omega$ $L+ (-0.8 \text{ V})$ 500 mA 5 mA
Digital outputs Number of digital outputs of which high-speed outputs integrated channels (DO) Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Switching capacity of the outputs on lamp load, max. Load resistance range lower limit upper limit Output voltage for signal "1", min. Output current for signal "1" rated value for signal "1" permissible range, min. for signal "1" permissible range, max.	16 4 16 Yes; Clocked electronically 1 A L+ (-48 V) Yes 5 W 48 Ω 4 kΩ L+ (-0.8 V) 500 mA 5 mA 0.6 A
Digital outputs Number of digital outputs of which high-speed outputs integrated channels (DO) Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Switching capacity of the outputs on lamp load, max. Load resistance range lower limit upper limit Output voltage for signal "1", min. Output current for signal "1" rated value for signal "1" permissible range, min. for signal "1" minimum load current for signal "1" minimum load current for signal "0" residual current, max. Parallel switching of two outputs	16 4 16 Yes; Clocked electronically 1 A L+ (-48 V) Yes 5 W 48 Ω 4 kΩ L+ (-0.8 V) 500 mA 5 mA 0.6 A 5 mA
Digital outputs Number of digital outputs of which high-speed outputs integrated channels (DO) Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Switching capacity of the outputs on lamp load, max. Load resistance range lower limit upper limit Output voltage of r signal "1", min. Output current of r signal "1" rated value of r signal "1" permissible range, min. of r signal "1" permissible range, max. of r signal "1" minimum load current of r signal "0" residual current, max. Parallel switching of two outputs of r uprating	16 4 16 Yes; Clocked electronically 1 A L+ (-48 V) Yes 5 W 48 Ω 4 kΩ L+ (-0.8 V) 500 mA 5 mA 0.6 A 5 mA 0.5 mA
Digital outputs Number of digital outputs of which high-speed outputs integrated channels (DO) Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Switching capacity of the outputs on lamp load, max. Load resistance range lower limit upper limit Output voltage of or signal "1", min. Output current of or signal "1" rated value of ra signal "1" permissible range, min. of ra signal "1" permissible range, max. of or signal "1" minimum load current of or signal "0" residual current, max. Parallel switching of two outputs of or redundant control of a load	16 4 16 Yes; Clocked electronically 1 A L+ (-48 V) Yes 5 W 48 Ω 4 kΩ L+ (-0.8 V) 500 mA 5 mA 0.6 A 5 mA 0.5 mA
Digital outputs Number of digital outputs of which high-speed outputs integrated channels (DO) Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Switching capacity of the outputs on lamp load, max. Load resistance range lower limit upper limit Output voltage of r signal "1", min. Output current of r signal "1" rated value of r signal "1" permissible range, min. of r signal "1" permissible range, max. of r signal "1" minimum load current of r signal "0" residual current, max. Parallel switching of two outputs of r redundant control of a load Switching frequency	16 4 16 Yes; Clocked electronically 1 A L+ (-48 V) Yes 5 W 48 Ω 4 kΩ L+ (-0.8 V) 500 mA 5 mA 0.6 A 5 mA 0.5 mA No Yes
Number of digital outputs of which high-speed outputs integrated channels (DO) Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Switching capacity of the outputs on lamp load, max. Load resistance range lower limit upper limit Output voltage of or signal "1", min. Output current of or signal "1" rated value of ro signal "1" permissible range, min. of r signal "1" permissible range, max. of r signal "1" minimum load current of or signal "0" residual current, max. Parallel switching of two outputs of or redundant control of a load Switching frequency with resistive load, max.	16 4 16 Yes; Clocked electronically 1 A L+ (-48 V) Yes 5 W 48 Ω 4 kΩ L+ (-0.8 V) 500 mA 5 mA 0.6 A 5 mA 0.5 mA No Yes
Number of digital outputs of which high-speed outputs integrated channels (DO) Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Switching capacity of the outputs on lamp load, max. Load resistance range lower limit upper limit Output voltage for signal "1", min. Output current for signal "1" rated value for signal "1" permissible range, min. for signal "1" permissible range, max. for signal "1" minimum load current for signal "0" residual current, max. Parallel switching of two outputs for redundant control of a load Switching frequency with resistive load, max. with inductive load, max.	16 4 16 Yes; Clocked electronically 1 A L+ (-48 V) Yes 5 W 48 Ω 4 kΩ L+ (-0.8 V) 500 mA 5 mA 0.6 A 5 mA 0.5 mA 0.5 mA No Yes
Number of digital outputs of which high-speed outputs integrated channels (DO) Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Switching capacity of the outputs on lamp load, max. Load resistance range lower limit upper limit Output voltage for signal "1", min. Output current for signal "1" permissible range, min. for signal "1" permissible range, max. for signal "1" minimum load current for signal "0" residual current, max. Parallel switching of two outputs for redundant control of a load Switching frequency with resistive load, max. with inductive load, max. on lamp load, max.	16 4 16 Yes; Clocked electronically 1 A L+ (-48 V) Yes 5 W 48 Ω 4 kΩ L+ (-0.8 V) 500 mA 5 mA 0.6 A 5 mA 0.5 mA No Yes
Number of digital outputs	16 4 16 Yes; Clocked electronically 1 A L+ (-48 V) Yes 5 W 48 Ω 4 kΩ L+ (-0.8 V) 500 mA 5 mA 0.6 A 5 mA 0.5 mA 0.5 mA No Yes
Number of digital outputs of which high-speed outputs integrated channels (DO) Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Switching capacity of the outputs on lamp load, max. Load resistance range lower limit upper limit Output voltage for signal "1", min. Output current for signal "1" permissible range, min. for signal "1" permissible range, max. for signal "1" minimum load current for signal "0" residual current, max. Parallel switching of two outputs for redundant control of a load Switching frequency with resistive load, max. with inductive load, max. on lamp load, max.	16 4 16 Yes; Clocked electronically 1 A L+ (-48 V) Yes 5 W 48 Ω 4 kΩ L+ (-0.8 V) 500 mA 5 mA 0.6 A 5 mA 0.5 mA No Yes

1. 10.53	
— up to 40 °C, max.	3 A
— up to 60 °C, max.	2 A
vertical installation	2.4
— up to 40 °C, max.	2 A
Cable length • shielded, max.	1 000 m
snielded, max.unshielded, max.	600 m
Analog inputs	000 III
Number of analog inputs	4
 For voltage/current measurement For resistance/resistance thermometer 	4
measurement	1
integrated channels (AI)	4+1
permissible input voltage for current input (destruction	5 V; Permanent
limit), max.	
permissible input voltage for voltage input (destruction limit), max.	30 V; Permanent
permissible input current for voltage input (destruction limit), max.	0.5 mA; Permanent
permissible input current for current input (destruction	50 mA; Permanent
limit), max.	400 Hz
Electrical input frequency, max. No-load voltage for resistance-type transmitter, typ.	400 Hz 2.5 V
Constant measurement current for resistance-type	2.5 V 1.8 to 3.3 mA
transmitter, typ.	1.0 to 3.0 IIIA
Technical unit for temperature measurement adjustable	Yes; Degrees Celsius / degrees Fahrenheit / Kelvin
Input ranges	, ,
• Current	Yes
Resistance thermometer	Yes; Pt 100 / 10 MΩ
Resistance	Yes
Input ranges (rated values), voltages	
• 0 to +10 V	Yes
— Input resistance (0 to 10 V)	100 kΩ
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
— Input resistance (0 to 20 mA)	100 Ω
• -20 mA to +20 mA	Yes
	100.0
— Input resistance (-20 mA to +20 mA)	100 Ω
• 4 mA to 20 mA	Yes
4 mA to 20 mA— Input resistance (4 mA to 20 mA)	
4 mA to 20 mA — Input resistance (4 mA to 20 mA) Input ranges (rated values), resistance thermometer	Yes 100 Ω
 4 mA to 20 mA — Input resistance (4 mA to 20 mA) Input ranges (rated values), resistance thermometer Pt 100 	Yes 100 Ω Yes
4 mA to 20 mA — Input resistance (4 mA to 20 mA) Input ranges (rated values), resistance thermometer Pt 100 — Input resistance (Pt 100)	Yes 100 Ω
 4 mA to 20 mA — Input resistance (4 mA to 20 mA) Input ranges (rated values), resistance thermometer Pt 100 — Input resistance (Pt 100) Input ranges (rated values), resistors 	Yes $100~\Omega$ Yes $10~M\Omega$
 4 mA to 20 mA — Input resistance (4 mA to 20 mA) Input ranges (rated values), resistance thermometer Pt 100 — Input resistance (Pt 100) Input ranges (rated values), resistors 0 to 600 ohms 	Yes $100~\Omega$ Yes $10~M\Omega$
4 mA to 20 mA — Input resistance (4 mA to 20 mA) Input ranges (rated values), resistance thermometer Pt 100 — Input resistance (Pt 100) Input ranges (rated values), resistors 0 to 600 ohms — Input resistance (0 to 600 ohms)	Yes $100~\Omega$ Yes $10~M\Omega$
4 mA to 20 mA — Input resistance (4 mA to 20 mA) Input ranges (rated values), resistance thermometer • Pt 100 — Input resistance (Pt 100) Input ranges (rated values), resistors • 0 to 600 ohms — Input resistance (0 to 600 ohms) Thermocouple (TC)	Yes $100~\Omega$ Yes $10~M\Omega$
4 mA to 20 mA — Input resistance (4 mA to 20 mA) Input ranges (rated values), resistance thermometer • Pt 100 — Input resistance (Pt 100) Input ranges (rated values), resistors • 0 to 600 ohms — Input resistance (0 to 600 ohms) Thermocouple (TC) Temperature compensation	Yes $100~\Omega$ Yes $10~M\Omega$ Yes $10~M\Omega$
4 mA to 20 mA — Input resistance (4 mA to 20 mA) Input ranges (rated values), resistance thermometer • Pt 100 — Input resistance (Pt 100) Input ranges (rated values), resistors • 0 to 600 ohms — Input resistance (0 to 600 ohms) Thermocouple (TC) Temperature compensation — parameterizable	Yes $100~\Omega$ Yes $10~M\Omega$
4 mA to 20 mA — Input resistance (4 mA to 20 mA) Input ranges (rated values), resistance thermometer • Pt 100 — Input resistance (Pt 100) Input ranges (rated values), resistors • 0 to 600 ohms — Input resistance (0 to 600 ohms) Thermocouple (TC) Temperature compensation — parameterizable Characteristic linearization	Yes $100~\Omega$ Yes $10~M\Omega$ Yes $10~M\Omega$ No
4 mA to 20 mA — Input resistance (4 mA to 20 mA) Input ranges (rated values), resistance thermometer • Pt 100 — Input resistance (Pt 100) Input ranges (rated values), resistors • 0 to 600 ohms — Input resistance (0 to 600 ohms) Thermocouple (TC) Temperature compensation — parameterizable Characteristic linearization • parameterizable	Yes $100 \ \Omega$ Yes $10 \ M\Omega$ Yes $10 \ M\Omega$ No $ Yes; \ by \ software $
4 mA to 20 mA — Input resistance (4 mA to 20 mA) Input ranges (rated values), resistance thermometer • Pt 100 — Input resistance (Pt 100) Input ranges (rated values), resistors • 0 to 600 ohms — Input resistance (0 to 600 ohms) Thermocouple (TC) Temperature compensation — parameterizable Characteristic linearization • parameterizable — for resistance thermometer	Yes $100~\Omega$ Yes $10~M\Omega$ Yes $10~M\Omega$ No
4 mA to 20 mA — Input resistance (4 mA to 20 mA) Input ranges (rated values), resistance thermometer • Pt 100 — Input resistance (Pt 100) Input ranges (rated values), resistors • 0 to 600 ohms — Input resistance (0 to 600 ohms) Thermocouple (TC) Temperature compensation — parameterizable Characteristic linearization • parameterizable — for resistance thermometer Cable length	Yes $100 \ \Omega$ Yes $10 \ M\Omega$ Yes $10 \ M\Omega$ No $Yes; \ by \ software Pt \ 100$
4 mA to 20 mA — Input resistance (4 mA to 20 mA) Input ranges (rated values), resistance thermometer • Pt 100 — Input resistance (Pt 100) Input ranges (rated values), resistors • 0 to 600 ohms — Input resistance (0 to 600 ohms) Thermocouple (TC) Temperature compensation — parameterizable Characteristic linearization • parameterizable — for resistance thermometer Cable length • shielded, max.	Yes $100 \ \Omega$ Yes $10 \ M\Omega$ Yes $10 \ M\Omega$ No $ Yes; \ by \ software $
4 mA to 20 mA — Input resistance (4 mA to 20 mA) Input ranges (rated values), resistance thermometer • Pt 100 — Input resistance (Pt 100) Input ranges (rated values), resistors • 0 to 600 ohms — Input resistance (0 to 600 ohms) Thermocouple (TC) Temperature compensation — parameterizable Characteristic linearization • parameterizable — for resistance thermometer Cable length • shielded, max. Analog outputs	Yes $100 \ \Omega$ Yes $10 \ M\Omega$ Yes $10 \ M\Omega$ No $Yes; \ by \ software Pt \ 100 100 \ m$
4 mA to 20 mA — Input resistance (4 mA to 20 mA) Input ranges (rated values), resistance thermometer • Pt 100 — Input resistance (Pt 100) Input ranges (rated values), resistors • 0 to 600 ohms — Input resistance (0 to 600 ohms) Thermocouple (TC) Temperature compensation — parameterizable Characteristic linearization • parameterizable — for resistance thermometer Cable length • shielded, max. Analog outputs Number of analog outputs	Yes $100 \ \Omega$ Yes $10 \ M\Omega$ Yes $10 \ M\Omega$ No $Yes; \ by \ software \\ Pt \ 100$ $100 \ m$
4 mA to 20 mA — Input resistance (4 mA to 20 mA) Input ranges (rated values), resistance thermometer • Pt 100 — Input resistance (Pt 100) Input ranges (rated values), resistors • 0 to 600 ohms — Input resistance (0 to 600 ohms) Thermocouple (TC) Temperature compensation — parameterizable Characteristic linearization • parameterizable — for resistance thermometer Cable length • shielded, max. Analog outputs Number of analog outputs integrated channels (AO)	Yes $100 \ \Omega$ Yes $10 \ M\Omega$ Yes $10 \ M\Omega$ No $Yes; \ by \ software \\ Pt \ 100$ $100 \ m$
4 mA to 20 mA — Input resistance (4 mA to 20 mA) Input ranges (rated values), resistance thermometer • Pt 100 — Input resistance (Pt 100) Input ranges (rated values), resistors • 0 to 600 ohms — Input resistance (0 to 600 ohms) Thermocouple (TC) Temperature compensation — parameterizable Characteristic linearization • parameterizable — for resistance thermometer Cable length • shielded, max. Analog outputs Number of analog outputs integrated channels (AO) Voltage output, short-circuit protection	Yes $100 \ \Omega$ Yes $10 \ M\Omega$ Yes $10 \ M\Omega$ No $Yes; \ by \ software \\ Pt \ 100$ $100 \ m$
4 mA to 20 mA — Input resistance (4 mA to 20 mA) Input ranges (rated values), resistance thermometer • Pt 100 — Input resistance (Pt 100) Input ranges (rated values), resistors • 0 to 600 ohms — Input resistance (0 to 600 ohms) Thermocouple (TC) Temperature compensation — parameterizable Characteristic linearization • parameterizable — for resistance thermometer Cable length • shielded, max. Analog outputs Number of analog outputs integrated channels (AO) Voltage output, short-circuit protection Voltage output, short-circuit current, max.	Yes 100Ω Yes $10 \text{M}\Omega$ Yes $10 \text{M}\Omega$ No Yes; by software Pt 100 100m 2 2 2 Yes 55mA
4 mA to 20 mA — Input resistance (4 mA to 20 mA) Input ranges (rated values), resistance thermometer • Pt 100 — Input resistance (Pt 100) Input ranges (rated values), resistors • 0 to 600 ohms — Input resistance (0 to 600 ohms) Thermocouple (TC) Temperature compensation — parameterizable Characteristic linearization • parameterizable — for resistance thermometer Cable length • shielded, max. Analog outputs Number of analog outputs integrated channels (AO) Voltage output, short-circuit protection Voltage output, no-load voltage, max.	Yes 100Ω Yes $10 M\Omega$ Yes $10 M\Omega$ No $Yes; by software \\ Pt 100$ $100 m$
4 mA to 20 mA — Input resistance (4 mA to 20 mA) Input ranges (rated values), resistance thermometer • Pt 100 — Input resistance (Pt 100) Input ranges (rated values), resistors • 0 to 600 ohms — Input resistance (0 to 600 ohms) Thermocouple (TC) Temperature compensation — parameterizable Characteristic linearization • parameterizable — for resistance thermometer Cable length • shielded, max. Analog outputs Number of analog outputs integrated channels (AO) Voltage output, short-circuit protection Voltage output, no-load voltage, max. Output ranges, voltage	Yes $100 \ \Omega$ Yes $10 \ M\Omega$ Yes $10 \ M\Omega$ No $Yes; \ by \ software \\ Pt \ 100$ $100 \ m$ 2 2 2 Yes $55 \ mA$ $17 \ V$
4 mA to 20 mA — Input resistance (4 mA to 20 mA) Input ranges (rated values), resistance thermometer • Pt 100 — Input resistance (Pt 100) Input ranges (rated values), resistors • 0 to 600 ohms — Input resistance (0 to 600 ohms) Thermocouple (TC) Temperature compensation — parameterizable Characteristic linearization • parameterizable — for resistance thermometer Cable length • shielded, max. Analog outputs Number of analog outputs integrated channels (AO) Voltage output, short-circuit protection Voltage output, short-circuit current, max. Current output, no-load voltage, max. Output ranges, voltage • 0 to 10 V	Yes 100 Ω Yes 10 MΩ Yes 10 MΩ No Yes; by software Pt 100 100 m 2 2 2 Yes 55 mA 17 V Yes
4 mA to 20 mA — Input resistance (4 mA to 20 mA) Input ranges (rated values), resistance thermometer • Pt 100 — Input resistance (Pt 100) Input ranges (rated values), resistors • 0 to 600 ohms — Input resistance (0 to 600 ohms) Thermocouple (TC) Temperature compensation — parameterizable Characteristic linearization • parameterizable — for resistance thermometer Cable length • shielded, max. Analog outputs Number of analog outputs integrated channels (AO) Voltage output, short-circuit protection Voltage output, short-circuit current, max. Current output, no-load voltage, max. Output ranges, voltage • 0 to 10 V • -10 V to +10 V	Yes $100 \ \Omega$ Yes $10 \ M\Omega$ Yes $10 \ M\Omega$ No $Yes; \ by \ software \\ Pt \ 100$ $100 \ m$ 2 2 2 Yes $55 \ mA$ $17 \ V$
4 mA to 20 mA — Input resistance (4 mA to 20 mA) Input ranges (rated values), resistance thermometer • Pt 100 — Input resistance (Pt 100) Input ranges (rated values), resistors • 0 to 600 ohms — Input resistance (0 to 600 ohms) Thermocouple (TC) Temperature compensation — parameterizable Characteristic linearization • parameterizable — for resistance thermometer Cable length • shielded, max. Analog outputs Number of analog outputs integrated channels (AO) Voltage output, short-circuit protection Voltage output, short-circuit current, max. Current output, no-load voltage, max. Output ranges, voltage • 0 to 10 V	Yes 100 Ω Yes 10 MΩ Yes 10 MΩ No Yes; by software Pt 100 100 m 2 2 2 Yes 55 mA 17 V Yes

- 20 ma A do 1 20 A	Vee
• -20 mA to +20 mA	Yes
4 mA to 20 mA Connection of actuators	Yes
for voltage output two-wire connection	Yes; Without compensation of the line resistances
for voltage output four-wire connection	No
for current output two-wire connection	Yes
Load impedance (in rated range of output)	
with voltage outputs, min.	1 kΩ
with voltage outputs, capacitive load, max.	0.1 μF
 with current outputs, max. 	300 Ω
 with current outputs, inductive load, max. 	0.1 mH
Destruction limits against externally applied voltages and cur	rrents
 Voltages at the outputs towards MANA 	16 V; Permanent
Current, max.	50 mA; Permanent
Cable length	
• shielded, max.	200 m
Analog value generation for the inputs	
Measurement principle	Actual value encryption (successive approximation)
Integration and conversion time/resolution per channel	
 Resolution with overrange (bit including sign), max. 	12 bit
Integration time, parameterizable	Yes; 2,5 / 16,6 / 20 ms
 Interference voltage suppression for interference frequency f1 in Hz 	400 / 60 / 50 Hz
Time constant of the input filter	0.38 ms
Basic execution time of the module (all channels)	1 ms
released)	1 1110
Analog value generation for the outputs	
Integration and conversion time/resolution per channel	
Resolution with overrange (bit including sign), max.	12 bit
 Conversion time (per channel) 	1 ms
Settling time	
 for resistive load 	0.6 ms
 for capacitive load 	1 ms
for inductive load	0.5 ms
Encoder	
Connection of signal encoders	
 for voltage measurement 	Yes
 for current measurement as 2-wire transducer 	Yes; with external supply
for current measurement as 4-wire transducer	Yes
• for resistance measurement with two-wire	Yes; Without compensation of the line resistances
 for resistance measurement with two-wire connection 	Yes; Without compensation of the line resistances
• for resistance measurement with two-wire	
 for resistance measurement with two-wire connection for resistance measurement with three-wire connection for resistance measurement with four-wire 	Yes; Without compensation of the line resistances
 for resistance measurement with two-wire connection for resistance measurement with three-wire connection for resistance measurement with four-wire connection 	Yes; Without compensation of the line resistances No
for resistance measurement with two-wire connection for resistance measurement with three-wire connection for resistance measurement with four-wire connection Connectable encoders	Yes; Without compensation of the line resistances No No
for resistance measurement with two-wire connection for resistance measurement with three-wire connection for resistance measurement with four-wire connection Connectable encoders 2-wire sensor	Yes; Without compensation of the line resistances No No Yes
for resistance measurement with two-wire connection for resistance measurement with three-wire connection for resistance measurement with four-wire connection Connectable encoders 2-wire sensor permissible quiescent current (2-wire sensor),	Yes; Without compensation of the line resistances No No
for resistance measurement with two-wire connection for resistance measurement with three-wire connection for resistance measurement with four-wire connection Connectable encoders 2-wire sensor permissible quiescent current (2-wire sensor), max.	Yes; Without compensation of the line resistances No No Yes
for resistance measurement with two-wire connection for resistance measurement with three-wire connection for resistance measurement with four-wire connection Connectable encoders 2-wire sensor permissible quiescent current (2-wire sensor), max. Errors/accuracies	Yes; Without compensation of the line resistances No No Yes 1.5 mA
for resistance measurement with two-wire connection for resistance measurement with three-wire connection for resistance measurement with four-wire connection Connectable encoders 2-wire sensor permissible quiescent current (2-wire sensor), max. Errors/accuracies Temperature error (relative to input range), (+/-)	Yes; Without compensation of the line resistances No No Yes 1.5 mA
for resistance measurement with two-wire connection for resistance measurement with three-wire connection for resistance measurement with four-wire connection Connectable encoders 2-wire sensor — permissible quiescent current (2-wire sensor), max. Errors/accuracies Temperature error (relative to input range), (+/-) Crosstalk between the inputs, min.	Yes; Without compensation of the line resistances No No Yes 1.5 mA 0.006 %/K 60 dB
for resistance measurement with two-wire connection for resistance measurement with three-wire connection for resistance measurement with four-wire connection Connectable encoders 2-wire sensor permissible quiescent current (2-wire sensor), max. Errors/accuracies Temperature error (relative to input range), (+/-)	Yes; Without compensation of the line resistances No No Yes 1.5 mA
for resistance measurement with two-wire connection for resistance measurement with three-wire connection for resistance measurement with four-wire connection Connectable encoders 2-wire sensor — permissible quiescent current (2-wire sensor), max. Errors/accuracies Temperature error (relative to input range), (+/-) Crosstalk between the inputs, min. Repeat accuracy in steady state at 25 °C (relative to input range), (+/-) Output ripple (relative to output range, bandwidth 0 to 50	Yes; Without compensation of the line resistances No No Yes 1.5 mA 0.006 %/K 60 dB
for resistance measurement with two-wire connection for resistance measurement with three-wire connection for resistance measurement with four-wire connection Connectable encoders 2-wire sensor — permissible quiescent current (2-wire sensor), max. Errors/accuracies Temperature error (relative to input range), (+/-) Crosstalk between the inputs, min. Repeat accuracy in steady state at 25 °C (relative to input range), (+/-) Output ripple (relative to output range, bandwidth 0 to 50 kHz), (+/-)	Yes; Without compensation of the line resistances No No Yes 1.5 mA 0.006 %/K 60 dB 0.06 %
for resistance measurement with two-wire connection for resistance measurement with three-wire connection for resistance measurement with four-wire connection Connectable encoders 2-wire sensor — permissible quiescent current (2-wire sensor), max. Errors/accuracies Temperature error (relative to input range), (+/-) Crosstalk between the inputs, min. Repeat accuracy in steady state at 25 °C (relative to input range), (+/-) Output ripple (relative to output range, bandwidth 0 to 50	Yes; Without compensation of the line resistances No No Yes 1.5 mA 0.006 %/K 60 dB 0.06 % 0.1 %
 for resistance measurement with two-wire connection for resistance measurement with three-wire connection for resistance measurement with four-wire connection Connectable encoders 2-wire sensor permissible quiescent current (2-wire sensor), max. Errors/accuracies Temperature error (relative to input range), (+/-) Crosstalk between the inputs, min. Repeat accuracy in steady state at 25 °C (relative to input range), (+/-) Output ripple (relative to output range, bandwidth 0 to 50 kHz), (+/-) Linearity error (relative to output range), (+/-) 	Yes; Without compensation of the line resistances No No Yes 1.5 mA 0.006 %/K 60 dB 0.06 % 0.1 % 0.15 %
 for resistance measurement with two-wire connection for resistance measurement with three-wire connection for resistance measurement with four-wire connection Connectable encoders 2-wire sensor permissible quiescent current (2-wire sensor), max. Errors/accuracies Temperature error (relative to input range), (+/-) Crosstalk between the inputs, min. Repeat accuracy in steady state at 25 °C (relative to input range), (+/-) Output ripple (relative to output range, bandwidth 0 to 50 kHz), (+/-) Linearity error (relative to output range), (+/-) Temperature error (relative to output range), (+/-) 	Yes; Without compensation of the line resistances No No Yes 1.5 mA 0.006 %/K 60 dB 0.06 % 0.1 % 0.15 % 0.01 %/K
 for resistance measurement with two-wire connection for resistance measurement with three-wire connection for resistance measurement with four-wire connection Connectable encoders 2-wire sensor permissible quiescent current (2-wire sensor), max. Errors/accuracies Temperature error (relative to input range), (+/-) Crosstalk between the inputs, min. Repeat accuracy in steady state at 25 °C (relative to input range), (+/-) Output ripple (relative to output range, bandwidth 0 to 50 kHz), (+/-) Linearity error (relative to output range), (+/-) Temperature error (relative to output range), (+/-) Crosstalk between the outputs, min. Repeat accuracy in steady state at 25 °C (relative to output range), (+/-) 	Yes; Without compensation of the line resistances No No Yes 1.5 mA 0.006 %/K 60 dB 0.06 % 0.1 % 0.15 % 0.01 %/K 60 dB
 for resistance measurement with two-wire connection for resistance measurement with three-wire connection for resistance measurement with four-wire connection Connectable encoders 2-wire sensor permissible quiescent current (2-wire sensor), max. Errors/accuracies Temperature error (relative to input range), (+/-) Crosstalk between the inputs, min. Repeat accuracy in steady state at 25 °C (relative to input range), (+/-) Output ripple (relative to output range, bandwidth 0 to 50 kHz), (+/-) Linearity error (relative to output range), (+/-) Temperature error (relative to output range), (+/-) Crosstalk between the outputs, min. Repeat accuracy in steady state at 25 °C (relative to output range), (+/-) Operational error limit in overall temperature range 	Yes; Without compensation of the line resistances No No Yes 1.5 mA 0.006 %/K 60 dB 0.06 % 0.1 % 0.15 % 0.01 %/K 60 dB 0.06 %
 for resistance measurement with two-wire connection for resistance measurement with three-wire connection for resistance measurement with four-wire connection Connectable encoders 2-wire sensor permissible quiescent current (2-wire sensor), max. Errors/accuracies Temperature error (relative to input range), (+/-) Crosstalk between the inputs, min. Repeat accuracy in steady state at 25 °C (relative to input range), (+/-) Output ripple (relative to output range, bandwidth 0 to 50 kHz), (+/-) Linearity error (relative to output range), (+/-) Temperature error (relative to output range), (+/-) Crosstalk between the outputs, min. Repeat accuracy in steady state at 25 °C (relative to output range), (+/-) Operational error limit in overall temperature range Voltage, relative to input range, (+/-) 	Yes; Without compensation of the line resistances No No Yes 1.5 mA 0.006 %/K 60 dB 0.06 % 0.1 % 0.15 % 0.01 %/K 60 dB 0.06 % 1 %
 for resistance measurement with two-wire connection for resistance measurement with three-wire connection for resistance measurement with four-wire connection Connectable encoders 2-wire sensor permissible quiescent current (2-wire sensor), max. Errors/accuracies Temperature error (relative to input range), (+/-) Crosstalk between the inputs, min. Repeat accuracy in steady state at 25 °C (relative to input range), (+/-) Output ripple (relative to output range, bandwidth 0 to 50 kHz), (+/-) Linearity error (relative to output range), (+/-) Temperature error (relative to output range), (+/-) Crosstalk between the outputs, min. Repeat accuracy in steady state at 25 °C (relative to output range), (+/-) Operational error limit in overall temperature range 	Yes; Without compensation of the line resistances No No Yes 1.5 mA 0.006 %/K 60 dB 0.06 % 0.1 % 0.15 % 0.01 %/K 60 dB 0.06 %

 Voltage, relative to output range, (+/-) 	1 %
Current, relative to output range, (+/-)	1 %
Basic error limit (operational limit at 25 °C)	
 Voltage, relative to input range, (+/-) 	0.7 %; Linearity error ±0.06 %
 Current, relative to input range, (+/-) 	0.7 %; Linearity error ±0.06 %
 Resistance, relative to input range, (+/-) 	3 %; Linearity error ±0.2 %
 Resistance thermometer, relative to input range, (+/- 	3 %
)	
 Voltage, relative to output range, (+/-) 	0.7 %
 Current, relative to output range, (+/-) 	0.7 %
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 =	interference frequency
Series mode interference (peak value of	30 dB
interference < rated value of input range), min.	
 Common mode interference, min. 	40 dB
Interfaces	
Number of industrial Ethernet interfaces	0
Number of PROFINET interfaces	0
Number of RS 485 interfaces	1; MPI
Number of RS 422 interfaces	0
MPI	U
	50 m; without reporter
Cable length, max.	50 m; without repeater
1. Interface	
Interface type	Integrated RS 485 interface
Isolated	No
Interface types	
• RS 485	Yes
 Output current of the interface, max. 	200 mA
Protocols	
• MPI	Yes
PROFIBUS DP master	No
PROFIBUS DP slave	No
Point-to-point connection	No
MPI	NO
Number of connections	8
	0 187.5 kbit/s
Transmission rate, max.	187.3 KDIVS
Services	V
— PG/OP communication	Yes
— Routing	No
 Global data communication 	Yes
	Yes
 S7 basic communication 	165
— S7 basic communication— S7 communication	Yes
— S7 communication	Yes
— S7 communication— S7 communication, as client	Yes No
 — S7 communication — S7 communication, as client — S7 communication, as server Protocols	Yes No Yes
 — S7 communication — S7 communication, as client — S7 communication, as server Protocols PROFIsafe	Yes No
S7 communication S7 communication, as client S7 communication, as server Protocols PROFIsafe communication functions / header	Yes No Yes
— S7 communication — S7 communication, as client — S7 communication, as server Protocols PROFIsafe communication functions / header PG/OP communication	Yes No Yes
S7 communication S7 communication, as client S7 communication, as server Protocols PROFIsafe communication functions / header	Yes No Yes No
— S7 communication — S7 communication, as client — S7 communication, as server Protocols PROFIsafe communication functions / header PG/OP communication Global data communication • supported	Yes No Yes No
— S7 communication — S7 communication, as client — S7 communication, as server Protocols PROFIsafe communication functions / header PG/OP communication Global data communication	Yes No Yes No Yes
— S7 communication — S7 communication, as client — S7 communication, as server Protocols PROFIsafe communication functions / header PG/OP communication Global data communication • supported	Yes No Yes No Yes Yes
— S7 communication — S7 communication, as client — S7 communication, as server Protocols PROFIsafe communication functions / header PG/OP communication Global data communication • supported • Number of GD loops, max.	Yes No Yes No Yes Yes 4
— S7 communication — S7 communication, as client — S7 communication, as server Protocols PROFIsafe communication functions / header PG/OP communication Global data communication • supported • Number of GD loops, max. • Number of GD packets, max.	Yes No Yes No Yes 4 4
— S7 communication — S7 communication, as client — S7 communication, as server Protocols PROFIsafe communication functions / header PG/OP communication Global data communication • supported • Number of GD loops, max. • Number of GD packets, max. • Number of GD packets, transmitter, max.	Yes No Yes No Yes 4 4 4
— S7 communication — S7 communication, as client — S7 communication, as server Protocols PROFIsafe communication functions / header PG/OP communication Global data communication • supported • Number of GD loops, max. • Number of GD packets, max. • Number of GD packets, transmitter, max. • Number of GD packets, receiver, max. • Size of GD packets, max.	Yes No Yes No Yes 4 4 4 22 byte
— S7 communication — S7 communication, as client — S7 communication, as server Protocols PROFIsafe communication functions / header PG/OP communication Global data communication • supported • Number of GD loops, max. • Number of GD packets, max. • Number of GD packets, transmitter, max. • Number of GD packets, receiver, max.	Yes No Yes No Yes 4 4 4 4 4
— S7 communication — S7 communication, as client — S7 communication, as server Protocols PROFIsafe communication functions / header PG/OP communication Global data communication • supported • Number of GD loops, max. • Number of GD packets, max. • Number of GD packets, transmitter, max. • Number of GD packets, receiver, max. • Size of GD packets, max. • Size of GD packet (of which consistent), max. S7 basic communication	Yes No Yes No Yes Yes 4 4 4 4 22 byte 22 byte
— S7 communication — S7 communication, as client — S7 communication, as server Protocols PROFIsafe communication functions / header PG/OP communication Global data communication • supported • Number of GD loops, max. • Number of GD packets, max. • Number of GD packets, transmitter, max. • Number of GD packets, receiver, max. • Size of GD packets, max. • Size of GD packet (of which consistent), max. S7 basic communication • supported	Yes No Yes No Yes Yes Yes 4 4 4 4 22 byte 22 byte Yes
— S7 communication — S7 communication, as client — S7 communication, as server Protocols PROFIsafe communication functions / header PG/OP communication Global data communication • supported • Number of GD loops, max. • Number of GD packets, max. • Number of GD packets, transmitter, max. • Number of GD packets, receiver, max. • Size of GD packets, max. • Size of GD packet (of which consistent), max. S7 basic communication • supported • User data per job, max.	Yes No Yes No Yes Yes Yes 4 4 4 4 22 byte 22 byte Yes 76 byte
— S7 communication — S7 communication, as client — S7 communication, as server Protocols PROFIsafe communication functions / header PG/OP communication Global data communication • supported • Number of GD loops, max. • Number of GD packets, max. • Number of GD packets, transmitter, max. • Number of GD packets, receiver, max. • Size of GD packets, max. • Size of GD packet (of which consistent), max. S7 basic communication • supported	Yes No Yes No Yes Yes Yes 4 4 4 4 22 byte 22 byte Yes 76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or
— S7 communication — S7 communication, as client — S7 communication, as server Protocols PROFIsafe communication functions / header PG/OP communication Global data communication • supported • Number of GD loops, max. • Number of GD packets, max. • Number of GD packets, transmitter, max. • Number of GD packets, receiver, max. • Size of GD packets, max. • Size of GD packet (of which consistent), max. S7 basic communication • supported • User data per job, max. • User data per job (of which consistent), max.	Yes No Yes No Yes Yes 4 4 4 4 22 byte 22 byte Yes 76 byte
— S7 communication — S7 communication, as client — S7 communication, as server Protocols PROFIsafe communication functions / header PG/OP communication Global data communication • supported • Number of GD loops, max. • Number of GD packets, max. • Number of GD packets, transmitter, max. • Number of GD packets, receiver, max. • Size of GD packets, max. • Size of GD packet (of which consistent), max. S7 basic communication • supported • User data per job, max. • User data per job (of which consistent), max.	Yes No Yes No Yes Yes Yes 4 4 4 4 22 byte 22 byte Yes 76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)
— S7 communication — S7 communication, as client — S7 communication, as server Protocols PROFIsafe communication functions / header PG/OP communication Global data communication • supported • Number of GD loops, max. • Number of GD packets, max. • Number of GD packets, transmitter, max. • Number of GD packets, receiver, max. • Size of GD packets, max. • Size of GD packet (of which consistent), max. S7 basic communication • supported • User data per job, max. • User data per job (of which consistent), max.	Yes No Yes No Yes Yes 4 4 4 22 byte 22 byte Yes 76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or

Solver data per job, max. User data per job, max. Solver data per job, max. Solver data per job (a which consistent), max. Solver data per job, max. Solver data per job (a which consistent), max. Solver data per job (a which consistent), max. Solver data per job (a which consistent), max. Solver data per job, max. Solver data per job (a which consistent), max. Solver data per job (a which consistent per job (a which per job (a which consistent per job (a which consistent per job (V V OD 11 111 FD
• User data per job (of which consistent), max. • Sconpatible communication • upported • usuported • usable for PC communication • description of PC communication • description of PC communication • state of PC communication • usable for PC communication • description of PC communication • usable for PC communication • description of PC communication	as client	Yes; Via CP and loadable FB
SS compatible communication - supported Number of connections - overall - usable for PG communication - reserved for PG communication, mix. - adjustable for PG soft PG communication, mix. - adjustable for PG communication, mix. - adjustable for PG communication, mix. - adjustable for PG soft PG communic		
*usported Ves; via CP and loadable FC Number of commerciation *overall *usable for PG communication *-reserved for PG communication, min. *-adjustable for PG communication, max. *usable for PG communication, min. *-adjustable for PG communication, max. *-reserved for PC communication, max. *-usable for PG communication, max. *-usable for ST basic communication, min. *-adjustable for ST basic communication, min. *-adjustable for ST basic communication, min. *-adjustable for ST basic communication, max. *No **ST message functions** Number of login stations for message functions, max. Process diagnostic messages *Simultaneously active Alarm-S blocks, max. 20 **Test commissioning functions** Status block *Yes Number of breakpoints *2 **Status block *Yes Number of breakpoints *2 **Status-fortior variable *Variables *Number of variables, max. *-of which status variables, max. *-of which control variables, max. *-of which control variables, max. *-of which status variables, max. *-of which status variables, max. *-of which control variables, max. *-of which control variables, max. *-of which status variables, max.		64 byte
Number of topic stations S	·	Vest via CP and loadable FC
• usable for PG communication		res, via or and loadable ro
		8
reserved for PG communication 1		
adjustable for PG communication , max. usable for OP communication		
- usable for OP communication - reserved for OP communication, min. - adjustable for OP communication, min. - adjustable for OP communication, min. - adjustable for ST basic communication - reserved for ST basic communication - adjustable for ST basic communication - adjustable for ST basic communication, min. - adjustable for ST basic communication, max. - susable for routing ST message functions Number of login stations for message functions, max. - Process diagnostic messages - Commissioning functions Status blook - Yes Single step - Yes Single step - Yes Number of breakpoints - Status-control variable - Variables - Number of variables, max. - of which status variables, max. - of variables - Number of variables, max. - of which control variables, max. - of which status variables, max. - of which control variables, max. - of which point variables, max. - of which status variables, max. - of which control variables, max. - of whi	 adjustable for PG communication, min. 	1
	 adjustable for PG communication, max. 	7
adjustable for OP communication, min adjustable for S7 basic communication reserved for S7 basic communication dijustable for S7 basic communication, min adjustable for S7 basic communication adjustable for S7	 usable for OP communication 	7
- adjustable for GP communication, max. • usable for S7 basic communication, min. - adjustable for S7 basic communication, min. - adjustable for S7 basic communication, min. - adjustable for routing S7 message functions Number of login stations for message functions, max. Process diagnostic messages simultaneously active Alarm-S blocks, max. Process diagnostic messages simultaneously active Alarm-S blocks, max. 20 Test commissioning functions Status block Single step Yes Number of breakpoints 2 Status/control variable • Variables • Number of variables, max. - of which status variables, max. - of which control variables, max. - of which control variables, max. • Number of variables max. • Number of variables, max. • Number of variables, max. - of which control variables, max. • Number of variables, max. 10 Diagnostic buffer • present • Number of entries, max. Number of entries, max. Number of entries, max. Number of variables, max. Number of variables, max. Number of entries, max. Number of frequency meters • Number of putes outputs • Status indication digital input (green) • Status indicator digital input (green)	 reserved for OP communication 	1
usable for \$7 basic communication — reserved for \$7 basic communication, min. — adjustable for for the state of t	 adjustable for OP communication, min. 	1
	 adjustable for OP communication, max. 	7
adjustable for S7 basic communication, min adjustable for S7 basic communication, max. • usable for routing S7 message functions Number of login stations for message functions, max. Process diagnostic messages simultaneously active Alarm-S blocks, max. Process diagnostic messages simultaneously active Alarm-S blocks, max. 20 Test commissioning functions Status block Single step Number of breakpoints 2 Status block Status Scontrol • Status Scontrol • Status Scontrol • Number of variables, max. - of which status variables, max. - of which control variables, max. - of which control variables, max. 14 Forcing • Forcing, variables • Number of variables, max. 10 Diagnostic buffer • present • Number of variables, max. 100 Interrupts/diagnostics/status information Diagnostics indication LED • Status indicator digital input (green) • Status indicator digital input	 usable for S7 basic communication 	4
- adjustable for S7 basic communication, max. • usable for routing No S7 message functions Number of login stations for message functions, max. Process diagnostic messages simultaneously active Alarm-S blocks, max. 20 Test commissioning functions Status block Single step Ves Number of breakpoints 2 Status/control variables • Status/control variables, max. — of which status variables, max. — of which control variables, max.	 reserved for S7 basic communication 	0
• usable for routing 37 message functions Number of login stations for message functions, max. Process diagnostic messages simultaneously active Alarm-S blocks, max. 20 Test commissioning functions Status block Single step Number of breakpoints 2 Status/control • Status/control variable • Ves Ves Number of variables, max. — of which status variables, max. — of which status variables, max. — of which control variables, max. — of which control variables, max. — of which status variables, max. • Forcing • Forcing, variables • Number of variables, max. 10 Diagnostic buffer • present • Number of variables, max. 100 Interrupts/diagnostics/status information Diagnostics indication LED • Status indicator digital input (green) • Status indicator digital input (green) • Yes • Number of frequency meters routined function blocks (closed-loop control) PID controller Pictorial separation digital inputs • Potential separation digital inputs • Potential separation digital inputs • Potential separation Potential separation digital inputs • between the channels • between the chan	 adjustable for S7 basic communication, min. 	0
Number of login stations for message functions, max. Process diagnostic messages simultaneously active Alarm-S blocks, max. Process diagnostic messages yes immultaneously active Alarm-S blocks, max. 20 Test commissioning functions Status block Single step Yes Yes Number of breakpoints Status/control variable Yes Inputs, outputs, memory bits, DB, times, counters Number of variables, max. — of which status variables, max. — of which control variables, max. — of which control variables, max. — of which control variables, max. — of which order of variables, max. — of which order of variables, max. — of which control variables, max. — of which control variables, max. — of which status variables, max. — of which order of variables, max. — of which status variables, max. — of which control variables		
Number of login stations for message functions, max. Process diagnostic messages simultaneously active Alarm-S blocks, max. Process diagnostic messages simultaneously active Alarm-S blocks, max. 20 Status block Single step Number of breakpoints Status/control variable Ves Number of variables, max. Of which status variables, max. Of which control variables, max. Forcing Forcing Forcing, variables Number of variables, max. Number of variables, max. Of which control variables, max. To which control variables, max. Forcing Forcing, variables Number of variables, max. 10 Diagnostic buffer Present Number of entries, max. Interrupts/diagnostics/status information Diagnostic indicator digital input (green) Status indicator digital output (green) Prequency measurement Number of frequency meters Number of frequency meters Ontrolled positioning integrated function blocks (closed-loop control) PID controller PiD controller Potential separation digital inputs Potential separation digital inputs Potential separation digital outputs Potential separation digital outputs Determial separation digital outputs Potential separation digital outputs		No
Process diagnostic messages simultaneously active Alarm-S blocks, max. 7est commissioning functions Status block Single step Number of breakpoints Status Stock Status Scortrol Status/Control variable Variables Number of variables, max. Of which control variables, max. So Of which control variables, max. Of which control variab	S7 message functions	
Process diagnostic messages simultaneously active Alarm-S blocks, max. 20 Test Commissioning functions Status block Yes Single step Yes Number of breakpoints 2 Status/scontrol • Status/scontrol • Status/scontrol • Status/scontrol variable Yes • Number of variables, max. 30 • Of which status variables, max. 41 Forcing • Forcing, variables, max. 10 Diagnostic buffer • Present Yes • Number of variables, max. 100 Interrupts/diagnostics/status information Diagnostics indicator digital input (green) • Status indicator digital unger (green) • Status indicator digital unger (green) • Potential separation digital inputs • Number of pulse outputs Uniter (green) • Potential separation digital inputs • Potential separation digital outputs • between the channels • Potential separation digital outputs • between the channels • Potential separation digital outputs • between the channels • Deternial separation digital outputs	Number of login stations for message functions, max.	
simultaneously active Alarm-S blocks, max. Test commissioning functions Status block Single step Number of breakpoints Status/control Status/control Status/control Status/control Status/control Status/control Status/control Status/control Status/control variable Ves Number of variables, max. - of which status variables, max. - of which status variables, max. - of which status variables, max. - of which control variables, max. Status/control Forcing Forcing Forcing Forcing, variables Number of variables, max. 10 Diagnostic buffer Present Number of entries, max. 100 Interrupts/diagnostics/status information Diagnostics indication LED Status indicator digital input (green) Status indicator digital output (green) Status indicator digital output (green) Number of frequency meters Number of frequency meters Number of pulse outputs Limit frequency (pulse) Potential separation Potential separation digital inputs Potential separation digital inputs Potential separation digital inputs Determine Separation digital inputs Potential separation digital outputs		
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between the channels and backplane bus Yes Potential separation digital outputs	Potential separation digital inputs	Yes
Potential separation digital outputs		No
	·	Yes
Potential separation digital outputs Yes		
	Potential separation digital outputs	Yes

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Potential separation analog inputs between the channels between the channels between the channels and backplane bus Potential separation analog outputs Potential separation analog outputs Potential separation analog outputs between the channels between the channels between the channels and backplane bus Pes Isolation Isolation Isolation tested with Configuration / header Configuration / programming / header STEP 7 Yes; V5.3 SP2 with HW update Configuration / programming / header Configuration / programming / header STEP 7 See instruction list System functions (SFC) See instruction list System function blocks (SFB) System function blocks (SFB) Programming language — LAD Yes — STL — SCL — FBD — FBD — Yes — STL — SCL — GRAPH — HiGraph® Yes Know-how protection • User program protection/password protection Yes Dimensions Width Height 125 mm Depth 130 mm Wolghts	 between the channels and backplane bus 	Yes
between the channels between the channels and backplane bus Potential separation analog outputs Potential separation analog outputs between the channels between the channels between the channels and backplane bus Yes Isolation Isolation tested with 600 V DC configuration / header Configuration / header **STEP 7** Configuration / programming / header **Ormmand set Nesting levels System functions (SFC) System function blocks (SFB) Programming language - LAD - FBD - STL - SCL - GRAPH - HiGraph® Know-how protection **Use of the channels and backplane bus Programming language - Use of the channels and backplane bus Yes; common for analog I/O No No Yes Solution Possible	Potential separation analog inputs	
between the channels and backplane bus Potential separation analog outputs Potential separation analog outputs between the channels between the channels and backplane bus Solation	 Potential separation analog inputs 	Yes; common for analog I/O
Potential separation analog outputs Potential separation analog outputs between the channels between the channels and backplane bus Stolation Isolation tested with Configuration / header Configuration / programming / header Configuration / programming / header Command set Nesting levels System function blocks (SFB) Programming language LAD FBD SCL SCL GRAPH HIGraph® Know-how protection User program protection/password protection Useights Width Height Depth 130 mm Vesignts	 between the channels 	No
Potential separation analog outputs between the channels between the channels and backplane bus Solation	 between the channels and backplane bus 	Yes
between the channels between the channels and backplane bus Isolation	Potential separation analog outputs	
between the channels and backplane bus Isolation Isolation tested with 600 ∨ DC configuration / header Configuration software • STEP 7 Yes; V5.3 SP2 with HW update configuration / programming / header • Command set • Nesting levels • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language — LAD — FBD — STL — SCL — GRAPH — HiGraph® Know-how protection • User program protection/password protection Dimensions Weights Yes 120 mm Height 120 mm Weights	 Potential separation analog outputs 	Yes; common for analog I/O
Isolation Isolation tested with 600 V DC configuration / header Configuration software ● STEP 7 Yes; V5.3 SP2 with HW update configuration / programming / header ● Command set see instruction list ● Nesting levels 8 ● System functions (SFC) see instruction list Programming language — LAD Yes — FBD Yes — STL Yes — STL Yes — SCL Yes — GRAPH Yes — HiGraph® Yes Know-how protection ● User program protection/password protection Dimensions Width 120 mm Height 125 mm Depth 130 mm Weights	 between the channels 	No
Isolation tested with configuration / header Configuration software • STEP 7 Yes; V5.3 SP2 with HW update configuration / programming / header • Command set • Nesting levels • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language — LAD — FBD — STL — SCL — SCL — GRAPH — HiGraph® Know-how protection • User program protection/password protection Pimensions Width Height Depth 130 mm Weights	 between the channels and backplane bus 	Yes
configuration / header Configuration software STEP 7 Yes; V5.3 SP2 with HW update Configuration / programming / header Command set see instruction list Nesting levels 8 System functions (SFC) see instruction list System function blocks (SFB) see instruction list Programming language LAD Yes FBD Yes STL Yes SCL Yes GRAPH Yes HiGraph® Yes Know-how protection User program protection/password protection Width 120 mm Height 125 mm Depth 130 mm Weights	Isolation	
Configuration software STEP 7 Yes; V5.3 SP2 with HW update Configuration / programming / header Command set see instruction list Nesting levels 8 System functions (SFC) see instruction list Programming language - LAD Yes - FBD Yes - STL Yes - SCL Yes - HiGraph® Yes - HiGraph® Yes Know-how protection User program protection/password protection Weights Ves; V5.3 SP2 with HW update see instruction list Programming list See instruction list Programming language - LAD Yes - FBD Yes - FBD Yes - STL Yes - SCL Yes - GRAPH Yes - HiGraph® Yes Know-how protection User program protection/password protection Isom - User program protection/password protection Weights	Isolation tested with	600 V DC
STEP 7 Configuration / programming / header Command set See instruction list System functions (SFC) System function blocks (SFB) See instruction list System function blocks (SFB) Programming language	configuration / header	
configuration / programming / header Command set See instruction list System functions (SFC) System function blocks (SFB) System function blocks (SFB) Programming language LAD Yes FBD Yes STL Yes SCL GRAPH Yes HiGraph® Yes Know-how protection User program protection/password protection Viet program protection/password protection Ves Dimensions Width Height Depth 130 mm Weights	Configuration software	
Command set Nesting levels System functions (SFC) System function blocks (SFB) System function blocks (SFB) Programming language — LAD — LAD — FBD — STL — SCL — GRAPH — HiGraph® Know-how protection User program protection/password protection Width Height Depth Marking See instruction list 8 8 8 8 8 8 8 8 8 8 8 8 8	• STEP 7	Yes; V5.3 SP2 with HW update
Nesting levels System functions (SFC) See instruction list System function blocks (SFB) Programming language - LAD - FBD - STL - SCL - GRAPH - HiGraph® Know-how protection User program protection/password protection Ves Dimensions 8 8 8 8 8 8 8 8 8 8 8 8 8	configuration / programming / header	
System functions (SFC) System function blocks (SFB) Programming language	 Command set 	see instruction list
System function blocks (SFB) Programming language — LAD — FBD — FBD — STL — SCL — GRAPH — HiGraph® Know-how protection • User program protection/password protection Width Height Depth Weights See instruction list Yes Yes Yes Yes Yes Yes Yes Y	 Nesting levels 	8
Programming language — LAD — FBD — Yes — STL — STL — Yes — GRAPH — HiGraph® Yes Know-how protection • User program protection/password protection Pimensions Width Height Depth 125 mm Depth Weights		see instruction list
— LAD Yes — FBD Yes — STL Yes — SCL Yes — GRAPH Yes — HiGraph® Yes Know-how protection Yes User program protection/password protection Yes Dimensions Vidth Height 125 mm Depth 130 mm Weights	System function blocks (SFB)	see instruction list
FBD Yes STL Yes SCL Yes GRAPH Yes HiGraph® Yes Know-how protection ■ User program protection/password protection Ves Dimensions Width 120 mm Height 125 mm Depth 130 mm Weights	Programming language	
STL Yes SCL Yes GRAPH Yes HiGraph® Yes Know-how protection • User program protection/password protection Yes Dimensions Width 120 mm Height 125 mm Depth 130 mm Weights	— LAD	Yes
- SCL - GRAPH Yes - HiGraph® Yes Know-how protection ● User program protection/password protection Pimensions Width Height Depth 130 mm Weights	— FBD	Yes
— GRAPH — HiGraph® Yes Know-how protection	— STL	Yes
— HiGraph® Yes Know-how protection	— SCL	Yes
Know-how protection ● User program protection/password protection Pimensions Width 120 mm Height 125 mm Depth 130 mm Weights	— GRAPH	Yes
● User program protection/password protection Dimensions Width 120 mm Height 125 mm Depth 130 mm Weights	— HiGraph®	Yes
Dimensions Width 120 mm Height 125 mm Depth 130 mm Weights 130 mm	Know-how protection	
Width 120 mm Height 125 mm Depth 130 mm Weights 130 mm	 User program protection/password protection 	Yes
Height 125 mm Depth 130 mm Weights	Dimensions	
Depth 130 mm Weights	Width	120 mm
Weights	Height	125 mm
	Depth	130 mm
Weight, approx. 660 g	Weights	
	Weight, approx.	660 g

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