Data sheet

6ES7314-6CG03-0AB0



Spare part SIMATIC S7-300, CPU 314C-2 DP Compact CPU with MPI, 24 DI/16 DO, 4 AI, 2 AO, 1 Pt100, 4 high-speed counters (60 kHz), integrated DP interface, Integr. power supply 24 V DC, Work memory 96 KB, Front connector (2x 40-pole) and Micro Memory Card required

General information	
HW functional status	01
Firmware version	V2.6
Engineering with	V2.0
Programming package	STEP 7 V5.3 SP2 or higher with HW update
3. 3.	STEF 7 V3.3 SFZ of higher with TIVV appeale
Supply voltage	041/
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+	B, IIIII. 4 A
Rated value (DC)	24 V
permissible range, lower limit (DC)	20.4 V
 permissible range, lower limit (DC) permissible range, upper limit (DC) 	28.8 V
Digital inputs	20.0 V
— 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)	1 000 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	96 kbyte
expandable	No
Load memory	
Plug-in (MMC)	Yes

 Plug-in (MMC), max. 	8 Mbyte
Data management on MMC (after last	10 a
programming), min.	
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 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
	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	
Number, max.	1 024; Number range: 0 to 2047
• Size, max.	16 kbyte
OB	40 lb. 4-
• Size, max.	16 kbyte
Number of free cycle OBs	1; OB 1
 Number of time alarm OBs 	1; OB 10
 Number of delay alarm OBs 	1; OB 20
 Number of cyclic interrupt OBs 	1; OB 35
 Number of process alarm OBs 	1; OB 40
 Number of DPV1 alarm OBs 	3; OB 55, 56, 57
 Number of startup OBs 	1; OB 100
 Number of asynchronous error OBs 	5; OB 80, 82, 85, 86, 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
	200
Retentivity	
— adjustable	Yes
·	Yes 0
— adjustable — lower limit — upper limit	Yes 0 255
— adjustable— lower limit— upper limit— preset	Yes 0
— adjustable — lower limit — upper limit — preset Counting range	Yes 0 255 8
— adjustable — lower limit — upper limit — preset Counting range — lower limit	Yes 0 255 8
— adjustable — lower limit — upper limit — preset Counting range — lower limit — upper limit — upper limit	Yes 0 255 8
— adjustable — lower limit — upper limit — preset Counting range — lower limit — upper limit IEC counter	Yes 0 255 8 0 999
 adjustable lower limit upper limit preset Counting range lower limit upper limit IEC counter present 	Yes 0 255 8 0 999 Yes
 adjustable lower limit upper limit preset Counting range lower limit upper limit IEC counter present Type 	Yes 0 255 8 0 999 Yes SFB
 adjustable lower limit upper limit preset Counting range lower limit upper limit IEC counter present Type Number 	Yes 0 255 8 0 999 Yes
 adjustable lower limit upper limit preset Counting range lower limit upper limit IEC counter present Type Number S7 times	Yes 0 255 8 0 999 Yes SFB Unlimited (limited only by RAM capacity)
- adjustable - lower limit - upper limit - preset Counting range - lower limit - upper limit IEC counter • present • Type • Number S7 times • Number	Yes 0 255 8 0 999 Yes SFB
- adjustable - lower limit - upper limit - preset Counting range - lower limit - upper limit IEC counter • present • Type • Number S7 times • Number Retentivity	Yes 0 255 8 0 999 Yes SFB Unlimited (limited only by RAM capacity)
 adjustable lower limit upper limit preset Counting range lower limit upper limit EC counter present Type Number Number Retentivity adjustable 	Yes 0 255 8 0 999 Yes SFB Unlimited (limited only by RAM capacity) 256 Yes
- adjustable - lower limit - upper limit - preset Counting range - lower limit - upper limit IEC counter • present • Type • Number S7 times • Number Retentivity - adjustable - lower limit	Yes 0 255 8 0 999 Yes SFB Unlimited (limited only by RAM capacity) 256 Yes 0
- adjustable - lower limit - upper limit - preset Counting range - lower limit - upper limit IEC counter • present • Type • Number S7 times • Number Retentivity - adjustable - lower limit - upper limit - upper limit - upper limit	Yes 0 255 8 0 999 Yes SFB Unlimited (limited only by RAM capacity) 256 Yes 0 255
- adjustable - lower limit - upper limit - preset Counting range - lower limit - upper limit IEC counter • present • Type • Number S7 times • Number Retentivity - adjustable - lower limit - upper limit - upper limit - upper limit - preset	Yes 0 255 8 0 999 Yes SFB Unlimited (limited only by RAM capacity) 256 Yes 0
- adjustable - lower limit - upper limit - preset Counting range - lower limit - upper limit IEC counter • present • Type • Number S7 times • Number Retentivity - adjustable - lower limit - upper limit - upper limit - upper limit - preset Time range	Yes 0 255 8 0 999 Yes SFB Unlimited (limited only by RAM capacity) 256 Yes 0 255 No retentivity
- adjustable - lower limit - upper limit - preset Counting range - lower limit - upper limit IEC counter • present • Type • Number S7 times • Number Retentivity - adjustable - lower limit - upper limit - upper limit - preset Time range - lower limit	Yes 0 255 8 0 999 Yes SFB Unlimited (limited only by RAM capacity) 256 Yes 0 255 No retentivity 10 ms
- adjustable - lower limit - upper limit - preset Counting range - lower limit - upper limit IEC counter • present • Type • Number S7 times • Number Retentivity - adjustable - lower limit - upper limit - upper limit - preset Time range - lower limit - upper limit - upper limit - upper limit - upper limit	Yes 0 255 8 0 999 Yes SFB Unlimited (limited only by RAM capacity) 256 Yes 0 255 No retentivity
- adjustable - lower limit - upper limit - preset Counting range - lower limit - upper limit IEC counter • present • Type • Number S7 times • Number Retentivity - adjustable - lower limit - upper limit - upper limit - preset Time range - lower limit	Yes 0 255 8 0 999 Yes SFB Unlimited (limited only by RAM capacity) 256 Yes 0 255 No retentivity 10 ms

• 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	CTROPIC
• Size, max.	256 byte
 Retentivity available 	Yes; MB 0 to MB 255
 Retentivity preset 	MB 0 to MB 15
Number of clock memories	8; 1 memory byte
Data blocks	
Retentivity adjustable	Yes; via non-retain property on DB
Retentivity preset Local data	Yes
per priority class, max.	510 byte
Address area	
I/O address area	
• Inputs	1 kbyte
Outputs	1 kbyte
of which distributed	
— Inputs	979 byte
— Outputs	986 byte
Process image	
• Inputs	128 byte
Outputs Default addresses of the integrated channels.	128 byte
Default addresses of the integrated channels — Digital inputs	124.0 to 126.7
— Digital nitputs	124.0 to 125.7
— Analog inputs	752 to 761
— Analog outputs	752 to 755
Digital channels	
Inputs	7 856
— of which central	1 016
• Outputs	7 904
— of which central Analog channels	1 008
Inputs	494
— of which central	253
Outputs	495
— of which central	250
Hardware configuration	
Number of expansion units, max.	3
Number of DP masters	
integrated	1
• via CP	4
Number of operable FMs and CPs (recommended)	0
► FM◆ CP, PtP	8
• CP, PTP • CP, LAN	10
Rack	
• Racks, max.	4
Modules per rack, max.	8; In rack 3 max. 7
Time of day	
Clock	
Hardware clock (real-time)	Yes
 retentive and synchronizable 	Yes
Backup time	6 wk; At 40 °C ambient temperature
Deviation per day, max.	10 s
Operating hours counter	4
Number / Number range	1
Number/Number rangeRange 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
• to MPI, master	Yes
• to MPI, slave	Yes
• to DP, master	Yes; With DP slave only slave clock
• to DP, slave	Yes
• in AS, master	Yes
Digital inputs	
	24
Number of digital inputs	24 16
of which inputs usable for technological functions integrated channels (DI)	24
integrated channels (DI)	
Input characteristic curve in accordance with IEC 61131, type 1	Yes
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	
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.	8 µs
Cable length	
• shielded, max.	1 000 m; 50 m for technological functions
• unshielded, max.	600 m; for technological functions: No
for technological functions	
	50
— shielded, max.	50 m
— shielded, max. — unshielded, max.	50 m not allowed
— shielded, max.	
— shielded, max. — unshielded, max. Digital outputs Number of digital outputs	not allowed 16
 — shielded, max. — unshielded, max. Digital outputs Number of digital outputs • of which high-speed outputs 	not allowed 16 4
— shielded, max. — unshielded, max. Digital outputs Number of digital outputs • of which high-speed outputs integrated channels (DO)	not allowed 16 4 16
 — shielded, max. — unshielded, max. Digital outputs Number of digital outputs of which high-speed outputs integrated channels (DO) Short-circuit protection	not allowed 16 4 16 Yes; Clocked electronically
— shielded, max. — unshielded, max. Digital outputs Number of digital outputs • of which high-speed outputs integrated channels (DO) Short-circuit protection • Response threshold, typ.	not allowed 16 4 16 Yes; Clocked electronically 1 A
— shielded, max. — unshielded, max. 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	not allowed 16 4 16 Yes; Clocked electronically 1 A L+ (-48 V)
— shielded, max. — unshielded, max. 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	not allowed 16 4 16 Yes; Clocked electronically 1 A
— shielded, max. — unshielded, max. 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	not allowed 16 4 16 Yes; Clocked electronically 1 A L+ (-48 V) Yes
— shielded, max. — unshielded, max. 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.	not allowed 16 4 16 Yes; Clocked electronically 1 A L+ (-48 V)
— shielded, max. — unshielded, max. 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	not allowed 16 4 16 Yes; Clocked electronically 1 A L+ (-48 V) Yes
— shielded, max. — unshielded, max. 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	not allowed 16 4 16 Yes; Clocked electronically 1 A L+ (-48 V) Yes 5 W
— shielded, max. — unshielded, max. 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	not allowed 16 4 16 Yes; Clocked electronically 1 A L+ (-48 V) Yes
— shielded, max. — unshielded, max. 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	not allowed 16 4 16 Yes; Clocked electronically 1 A L+ (-48 V) Yes $5 W$ 48Ω $4 k\Omega$
— shielded, max. — unshielded, max. 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.	not allowed 16 4 16 Yes; Clocked electronically 1 A L+ (-48 V) Yes 5 W
— shielded, max. — unshielded, max. 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	not allowed 16 4 16 $Yes; Clocked electronically$ $1 A$ $L+ (-48 \text{ V})$ Yes 5 W 48Ω $4 \text{ k}\Omega$ $L+ (-0.8 \text{ V})$
— shielded, max. — unshielded, max. 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	not allowed 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
— shielded, max. — unshielded, max. 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 upper limit Output voltage for signal "1", min. Output current for signal "1" rated value for signal "1" permissible range, min.	not allowed 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
— shielded, max. — unshielded, max. 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.	not allowed 16 4 16 Yes; Clocked electronically 1 A L+ (-48 V) Yes 5 W 48 Ω 4 k Ω L+ (-0.8 V)
— shielded, max. — unshielded, max. 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. for signal "1" minimum load current	not allowed 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
— shielded, max. — unshielded, max. 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. for signal "1" minimum load current for signal "1" minimum load current for signal "0" residual current, max.	not allowed 16 4 16 Yes; Clocked electronically 1 A L+ (-48 V) Yes 5 W 48 Ω 4 k Ω L+ (-0.8 V)
— shielded, max. — unshielded, max. 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. 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 0.5 mA
— shielded, max. — unshielded, max. 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 Iower 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 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
— shielded, max. — unshielded, max. 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 for signal "1" rated value for signal "1" permissible range, min. 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
— shielded, max. — unshielded, max. 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" 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	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
— shielded, max. — unshielded, max. 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 for signal "1" rated value for signal "1" permissible range, min. 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

	400 11
on lamp load, max.	100 Hz
of the pulse outputs, with resistive load, max.	2.5 kHz
Total current of the outputs (per group)	
horizontal installation	
— up to 40 °C, max.	3 A
— up to 60 °C, max.	2 A
vertical installation	
— up to 40 °C, max.	2 A
Cable length	
• shielded, max.	1 000 m
• unshielded, max.	600 m
Analog inputs	
Number of analog inputs	
 For voltage/current measurement 	4
For resistance/resistance thermometer	1
measurement	4.4
integrated channels (AI)	4+1 5 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
permissible input voltage for current input (destruction limit), max.	5 V; Permanent
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 limit), max.	50 mA; Permanent
Electrical input frequency, max.	400 Hz
No-load voltage for resistance-type transmitter, typ.	2.5 V
Constant measurement current for resistance-type transmitter, typ.	1.8 to 3.3 mA
Technical unit for temperature measurement adjustable	Yes; Degrees Celsius / degrees Fahrenheit / Kelvin
Input ranges	7 00, 2 09, 000 0010110 7 109, 100, 110, 110, 110, 110, 110, 110,
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
 Input resistance (-20 mA to +20 mA) 	100 Ω
• 4 mA to 20 mA	Yes
— Input resistance (4 mA to 20 mA)	100 Ω
Input ranges (rated values), resistance thermometer	
• Pt 100	Yes
— Input resistance (Pt 100)	10 ΜΩ
Input ranges (rated values), resistors	
• 0 to 600 ohms	Yes
— Input resistance (0 to 600 ohms)	10 ΜΩ
Thermocouple (TC)	
Temperature compensation	
— parameterizable	No
Characteristic linearization	
 parameterizable 	Yes; by software
— for resistance thermometer	Pt 100
Cable length	
shielded, max.	100 m
Analog outputs	
Number of analog outputs	2
integrated channels (AO)	2
Voltage output, short-circuit protection	Yes
Voltage output, short-circuit current, max.	55 mA
Current output, no-load voltage, max.	17 V
Output ranges, voltage	

• 0 to 10 V	Yes
● 0 to 10 V ● -10 V to +10 V	Yes
Output ranges, current	165
• 0 to 20 mA	Yes
• -20 mA to +20 mA	Yes
• 4 mA to 20 mA	Yes
Connection of actuators	
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	rents
 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 	400 / 60 / 50 Hz
frequency f1 in Hz	
Time constant of the input filter	0.38 ms
Basic execution time of the module (all channels	1 ms
released)	
Analog value generation for the outputs	
Integration and conversion time/resolution per channel	40.19
 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 connection 	Yes; Without compensation of the line resistances
for resistance measurement with three-wire	No
connection	NO
for resistance measurement with four-wire	No
connection	
Connectable encoders	
• 2-wire sensor	Yes
 permissible quiescent current (2-wire sensor), 	1.5 mA
max.	
Errors/accuracies	
Temperature error (relative to input range), (+/-)	0.006 %/K
Crosstalk between the inputs, min.	60 dB
Repeat accuracy in steady state at 25 °C (relative to input	0.06 %
range), (+/-)	0.4.0/
Output ripple (relative to output range, bandwidth 0 to 50 kHz), (+/-)	0.1 %
Linearity error (relative to output range), (+/-)	0.15 %
Temperature error (relative to output range), (+/-)	0.15 % 0.01 %/K
remperature error (relative to output larige), (*/-)	0.01 /0/10
	60 dB
Crosstalk between the outputs, min.	60 dB 0.06 %
	60 dB 0.06 %

Operational error limit in overall temperature range	
 Voltage, relative to input range, (+/-) 	1 %
 Current, relative to input range, (+/-) 	1 %
 Resistance, relative to input range, (+/-) 	5 %
 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	2; MPI and PROFIBUS DP
Number of RS 422 interfaces	0
MPI	
Cable length, max.	50 m; without repeater
1. Interface	
Interface type	Integrated RS 485 interface
Isolated	No
Interface types	NO TO THE PERSON OF THE PERSON
• RS 485	Yes
Output current of the interface, max.	200 mA
Protocols	200 111/1
• MPI	Yes
PROFIBUS DP master PROFIBUS DP glava	No No
PROFIBUS DP slave Deint to point connection	No No
Point-to-point connection	No
MPI • Number of connections	12
Number of connections Transmission rate may	12
Transmission rate, max. Son/issa	187.5 kbit/s
Services	Voc
— PG/OP communication	Yes
— Routing	Yes
— Global data communication	Yes
— S7 basic communication	Yes
— S7 communication	Yes
— S7 communication, as client	No
— S7 communication, as server	Yes
2. Interface	
Interface type	Integrated RS 485 interface
Isolated	Yes
Number of connection resources	12
Interface types	
• RS 485	Yes
• RS 485	Yes 200 mA
• •	
RS 485Output current of the interface, max.	
 RS 485 Output current of the interface, max. Protocols MPI 	200 mA No
 RS 485 Output current of the interface, max. Protocols MPI PROFINET IO Controller 	No No
 RS 485 Output current of the interface, max. Protocols MPI PROFINET IO Controller PROFINET CBA 	No No No
 RS 485 Output current of the interface, max. Protocols MPI PROFINET IO Controller PROFINET CBA PROFIBUS DP master 	No No No Yes
 RS 485 Output current of the interface, max. Protocols MPI PROFINET IO Controller PROFINET CBA PROFIBUS DP master PROFIBUS DP slave 	No No No Yes Yes
 RS 485 Output current of the interface, max. Protocols MPI PROFINET IO Controller PROFINET CBA PROFIBUS DP master PROFIBUS DP slave Point-to-point connection 	No No No Yes
 RS 485 Output current of the interface, max. Protocols MPI PROFINET IO Controller PROFINET CBA PROFIBUS DP master PROFIBUS DP slave Point-to-point connection PROFIBUS DP master PROFIBUS DP master 	No No No Yes Yes No
 RS 485 Output current of the interface, max. Protocols MPI PROFINET IO Controller PROFINET CBA PROFIBUS DP master PROFIBUS DP slave Point-to-point connection 	No No No Yes Yes

 Number of DP slaves, max. 	32
Services	
— PG/OP communication	Yes
— Routing	Yes
Global data communication	No
S7 basic communication	Yes; I blocks only
— S7 communication	Yes
— S7 communication, as client	No
	Yes
— S7 communication, as server	
— Equidistance	Yes
— Isochronous mode	No
— SYNC/FREEZE	Yes
 Activation/deactivation of DP slaves 	Yes
Direct data exchange (slave-to-slave	Yes
communication)	V
— DPV1	Yes
Address area	
— Inputs, max.	1 kbyte
— Outputs, max.	1 kbyte
User data per DP slave	
— Inputs, max.	244 byte
— Outputs, max.	244 byte
PROFIBUS DP slave	
 Number of connections 	12
GSD file	The latest GSD file is available at: http://www.siemens.com/profibus-gsd
 Transmission rate, max. 	12 Mbit/s
automatic baud rate search	Yes; only with passive interface
Address area, max.	32
User data per address area, max.	32 byte
Services	
— PG/OP communication	Yes
— Routing	Yes; Only with active interface
Global data communication	No
— S7 basic communication	No
— S7 communication	Yes
— S7 communication, as client	No
 — S7 communication, as server 	Yes
Direct data exchange (slave-to-slave	Yes
communication)	N.
— DPV1	No
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte
Protocols	
PROFIsafe	No
communication functions / header	
	Voc
PG/OP communication	Yes
Global data communication	V
• supported	Yes
Number of GD loops, max.	4
 Number of GD packets, max. 	4
 Number of GD packets, transmitter, max. 	4
 Number of GD packets, receiver, max. 	4
 Size of GD packets, max. 	22 byte
 Size of GD packet (of which consistent), max. 	22 byte
S7 basic communication	
• supported	Yes
User data per job, max.	76 byte
User data per job (of which consistent), max.	76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or
	X_GET as server)
S7 communication	
• supported	Yes
• as server	Yes
as client	Yes; Via CP and loadable FB
	.,

Sconpatible communication supported Ves: via CP and loadable FC Number of connections overall substite for PG communication - adjustable for PG communication - reserved for PG communication - adjustable for PG communication, min. - adjustable for ST basic communication, min. - Basic communication - ST message functions ST message functions ST message functions Test commissioning stations for message simultaneously active Alarm-S blocks, max. - Process diagnostic messages simultaneously active Alarm-S blocks, max. - Status-Control variable • Vas Number of breakpoints 2 Status-Control variables, max. - of which status variables, max. - of which status variables, max. - of which control variables, max. - of w	User data per job, max.	180 kbyte; With PUT/GET
Secondable communication		
wsported		OT DYIC
Number of connections 0		Yes: via CP and loadable FC
overall usable for PC communication — reserved for PG communication — adjustable for PC communication, min. — adjustable for PC communication, max. usable for PC communication — adjustable for PC communication — reserved for OP communication — reserved for OP communication — adjustable for PC communication, max. usable for SP basic communication, max. usable for SP basic communication — reserved for SP basic communication — adjustable for SP basic communication — reserved for SP basic communication — adjustable for SP basic communication — adjustable for SP basic communication — adjustable for SP basic communication, min. — adjustable for SP basic communication, max. usable for roting SP message functions Number of login stations for message functions, max. Process diagnostic messages simultaneously active Alarm-S blocks, max. Process diagnostic messages ves		1.00, 1.00 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.
- reserved for PG communication, min adjustable for PG communication, max. 11 • usable for OP communication - reserved for OP communication - adjustable for OP communication - adjustable for OP communication, max. 11 • usable for ST basic communication, max. 11 • usable for ST basic communication - adjustable for ST basic communication - adjustable for ST basic communication - adjustable for ST basic communication, max. 11 • usable for ST basic communication, min adjustable for rotling ST message functions Number of login stations for message functions, max. 12: Depending on the configured connections for PG/OP and ST basic communication Yes simultaneously active Alarm-S blocks, max. 12: Depending on the configured connections for PG/OP and ST basic communication Yes simultaneously active Alarm-S blocks, max. 12: Depending on the configured connections for PG/OP and ST basic communication Yes simultaneously active Alarm-S blocks, max. 12: Depending on the configured connections for PG/OP and ST basic communication Yes Status block Single step Yes Number of breakpoints 12: Depending on the configured connections for PG/OP and ST basic communication 12: Depending on the configured connections for PG/OP and ST basic communication 12: Depending on the configured connections for PG/OP and ST basic communication 12: Depending on the configured connections for PG/OP and ST basic communication 12: Depending on the configured connections for PG/OP and ST basic communication 12: Depending on the configured connections for PG/OP and ST basic communication 12: Depending on the configured connections for PG/OP and ST basic communicatio		12
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- adjustable for PG communication, max. • usable for OP communication — reserved for OP communication, min. - adjustable for OP communication, min. • usable for S7 basic communication — reserved for S7 basic communication — adjustable for S7 basic communication — adjustable for S7 basic communication — adjustable for S7 basic communication, min. • usable for routing — adjustable for S7 basic communication, min. — adjustable for S7 basic communication, min. — adjustable for S7 basic communication, min. • usable for routing S7 message functions Number of login stations for message functions, max. • usable for routing Freoses diagnostic messages simultaneously active Alarm-S blocks, max. 12: Depending on the configured connections for PG/OP and S7 basic communication Yes communication Yes simultaneously active Alarm-S blocks, max. 40 Test commissioning functions Status block Single step Number of breakpoints 2 Status slock Yes Number of variables, max. — of which status variables, max. 14 Forcing • Forcing, variables • Number of variables, max. 10 Diagnostic buffer • present • present • present • present • Number of deptal input (green) • Status indicator digital output (green) • Status indicator d	 reserved for PG communication 	1
usable for OP communication	 adjustable for PG communication, min. 	1
- reserved for OP communication, min adjustable for OP communication, max. • usable for SP basic communication - adjustable for SP basic communication - adjustable for SP basic communication - adjustable for SP basic communication, min 38 - usable for routing - SP message functions 12; Depending on the configured connections for PG/OP and SP basic communication - Yes - simultaneously active Alarm-S blocks, max 40 12; Depending on the configured connections for PG/OP and SP basic communication - Yes - simultaneously active Alarm-S blocks, max 40 12; Depending on the configured connections for PG/OP and SP basic communication - Yes - Status block - Yes - Status block - Yes - Status block - Yes - Status control variables, max of which status variables, max of which status variables, max of which ontrol va	 adjustable for PG communication, max. 	11
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Manual) Limit frequency (pulse) 2.5 kHz Potential separation		
Potential separation		
	Limit frequency (pulse)	2.5 kHz
	Potential separation	
Potential separation digital inputs	Potential separation digital inputs	
Potential separation digital inputs Yes		Yes
• between the channels No		No
• between the channels and backplane bus Yes	 between the channels and backplane bus 	Yes
Potential separation digital outputs	Potential separation digital outputs	
Potential separation digital outputs Yes	· · · · · · · · · · · · · · · · · · ·	Yes
• between the channels Yes		Yes
• between the channels, in groups of 8	between the channels, in groups of	8

 between the channels and backplane bus 	Yes
Potential separation analog inputs	
 Potential separation analog inputs 	Yes; common for analog I/O
 between the channels 	No
 between the channels and backplane bus 	Yes
Potential separation analog outputs	
 Potential separation analog outputs 	Yes; common for analog I/O
between the channels	No
 between the channels and backplane bus 	Yes
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
System function blocks (SFB)	see instruction list
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes
— CFC	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	
Weight, approx.	676 g

10/25/2022

last modified:

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