6ES7314-6CH04-0AB0

Data sheet



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 192 KB, Front connector (2x 40-pole) and Micro Memory Card required

General information	
HW functional status	01
Firmware version	V3.3
Engineering with	
Programming package	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	19.2 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
Mains buffering	
 Mains/voltage failure stored energy time 	5 ms
Repeat rate, min.	1 s
Load voltage L+	
Digital inputs	
— Rated value (DC)	24 V
 Reverse polarity protection 	Yes
Digital outputs	
— Rated value (DC)	24 V
 Reverse polarity protection 	No
Input current	
Current consumption (rated value)	880 mA
Current consumption (in no-load operation), typ.	150 mA
Inrush current, typ.	5 A
l²t	0.7 A ² ·s
Digital inputs	
 from load voltage L+ (without load), max. 	80 mA
Digital outputs	
 from load voltage L+, max. 	50 mA
Power loss	
Power loss, typ.	13 W
Memory	
Work memory	
integrated	192 kbyte
expandable	No
Load memory	
• Plug-in (MMC)	Yes
Plug-in (MMC), max.	8 Mbyte
 Data management on MMC (after last programming), min. 	10 a

Backup	
• present	Yes; Guaranteed by MMC (maintenance-free)
without battery	Yes; Program and data
CPU processing times	
for bit operations, typ.	0.06 µs
for word operations, typ.	0.12 μs
for fixed point arithmetic, typ.	0.16 µs
for floating point arithmetic, typ.	0.59 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.	1 024; Number range: 1 to 16000
• Size, max.	64 kbyte
FB	
Number, max.	1 024; Number range: 0 to 7999
• Size, max.	64 kbyte
FC	
Number, max.	1 024; Number range: 0 to 7999
• Size, max.	64 kbyte
OB	
Number, max.	see instruction list
• Size, max.	64 kbyte
Number of free cycle OBs	1; OB 1
 Number of time alarm OBs 	1; OB 10
 Number of delay alarm OBs 	2; OB 20, 21
 Number of cyclic interrupt OBs 	4; OB 32, 33, 34, 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 	16
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	Z 0 to Z 7
Counting range	
— lower limit	0
— upper limit	999
IEC counter	
• present	Yes
• Type	SFB
Number	Unlimited (limited only by RAM capacity)
S7 times	
Number	256
Retentivity	
— adjustable	Yes
— adjustable — lower limit	Yes 0
•	
— lower limit	0
— lower limit— upper limit	0 255
— lower limit— upper limit— preset	0 255
lower limit upper limit preset Time range	0 255 No retentivity

- areaant	Ven
• present	Yes
• Type	SFB
• Number	Unlimited (limited only by RAM capacity)
Data areas and their retentivity	C4 lb. 4.
Retentive data area (incl. timers, counters, flags), max.	64 kbyte
Flag	OFC hite
• 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	V · · · · · · · · · · · · · · · · · · ·
Retentivity adjustable	Yes; via non-retain property on DB
Retentivity preset	Yes
Local data	
per priority class, max.	32 kbyte; Max. 2048 bytes per block
Address area	
I/O address area	
• Inputs	2 048 byte
• Outputs	2 048 byte
of which distributed	
— Inputs	2 003 byte
— Outputs	2 010 byte
Process image	
• Inputs	2 048 byte
Outputs	2 048 byte
Inputs, adjustable	2 048 byte
 Outputs, adjustable 	2 048 byte
Inputs, default	128 byte
Outputs, default	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	
• Inputs	16 048
— of which central	1 016
Outputs	16 096
— of which central	1 008
Analog channels	
• Inputs	1 006
— of which central	253
 Outputs 	1 007
— 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)	
• FM	8
• CP, PtP	8
• 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

Non-back or the clock following POMER-ON Shehward of the clock following POMER-ON Shehward of the clock following exply of backup period Shehward of the clock following exply of backup period Shehward of the clock following exply of backup period Shehward of the clock following exply of backup period Shehward of the clock following exply of backup period Shehward of the clock continues at the time of day, it had when power was switched off Shehward of visues S	5	
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Behavior of the clock following expiry of backup period Coperating hours counter Number Number Number of values Or of values Or or or values Or values Or values Or values Or values Or or values		**
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Supported		Yes; Must be restarted at each restart
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• to MPI, slave • to DP, master • to DP, slave • to DP, slave • to DP, slave • to DP, slave • to AS, master • in AS, slave No Digital inputs Number of digital inputs • of which inputs usable for technological functions integrated channels (DI) 24		
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Injury Section Sect	to DP, slave	Yes
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Number of digital inputs of which inputs usable for technological functions integrated channels (DI) Input characteristic curve in accordance with IEC 61131, type 1 Number of simultaneously controllable inputs horizontal installation — up to 40 °C, max. — up to 60 °C, max. — up to 60 °C, max. — up to 60 °C, max. — up to 40 °C, max. — 12 Input clause • Rated value (DC) • for signal °0 • -3 to +5V • for signal °1", type. Input delay (for rated value of input voltage) for standard inputs — parameterizable — parameterizable — parameterizable — parameterizable — yes 0,1 / 0,3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set liter time may not be effective until the next filter cycle.) 3 ms for technological functions — at °0' to "1", max. 2able length • shielded, max. • unshielded, max. • unshielded, max. • unshielded, max. — unshielded, max. • of which high-speed outputs integrated channels (DO) 5 of "4". Notice: You cannot connect the fast outputs of your CPU in parallel integrated channels (DO) 5 of "4". Notice: You cannot connect the fast outputs of your CPU in parallel integrated channels (DO) 5 of which high-speed outputs integrated channels (DO) 5 of which high-speed outputs integrated channels (DO) 5 of which high-speed outputs integrated channels (DO) 6 Response threshold, typ. Limitation of inductive shutdown voltage to Le (48 V) Controlling a digital input 9 ves	,	No
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- up to 60 °C, max. vertical installation - up to 40 °C, max. Input voltage • Rated value (DC) • for signal "0" • for signal "1" + 15 to +30 V Input current • for signal "1", typ. • for signal "1", typ. Input delay (for rated value of input voltage) for standard inputs - parameterizable - parameterizable - Rated value - parameterizable - Rated value - a "0" to "1", max. Cable length • shielded, max. • on shielded, max. • on shielded, max. - shielded, max wushielded, max unshielded, max unshielded, max unshielded, max unshielded, max unshielded, max unshielded, max vushielded, ma	horizontal installation	
vertical installation — up to 40 °C, max. Input voltage • Rated value (DC) • for signal "0" • for signal "1" • for signal "1" • for signal "1", typ. Input delay (for rated value of input voltage) for standard inputs — parameterizable • Rated value 3 ms Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.) 3 ms For technological functions — at "0" to "1", max. 8 µs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. • unshielded, max. for technological functions — shielded, max. — unshielded, max. — unshielded, max. — shielded, max. — unshielded, max. — of which high-speed outputs • of which high-speed outputs • of which high-speed outputs • Response threshold, typ. 1 A Limitation of inductive shutdown voltage to Controlling a digital input • Response threshold, typ. 1 A Limitation of inductive shutdown voltage to Controlling a digital input • on lamp load, max. 5 W	— up to 40 °C, max.	24
Input voltage Rated value (DC)	— up to 60 °C, max.	12
Input voltage • Rated value (DC) • for signal "0" • for signal "1" • 15 to +30 V Input current • for signal "1", typ. Input delay (for rated value of input voltage) for standard inputs — parameterizable — parameterizable — Rated value • Rated value • Rated value 3 ms for technological functions — at "0" to "1", max. Cable length • shielded, max. • unshielded, max. • unshielded, max. — unshielded, max. — shielded, max. — unshielded, max. — unshielded, max. — on allowed Digital outputs Number of digital outputs Number of digital outputs • Response threshold, typ. I may be subtown voltage to Controlling a digital input • Response threshold, typ. I may be subtown voltage to Controlling a digital input • Response threshold, typ. I may be subtown voltage to Controlling a digital input • Response threshold, typ. I may be subtown voltage to Controlling a digital input • Response threshold, typ. I may be subtown voltage to Let (48 V) Controlling a digital input • on lamp load, max.	vertical installation	
• Rated value (DC) • for signal "0" • for signal "1" Input current • for signal "1", typ. Input delay (for rated value of input voltage) for standard inputs — parameterizable — parameterizable — Parameterizable — Parameterizable — Rated value — To" to "1", max. — Wes; 0.1/0.3/3/15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.) — Rated value — Rated value — Rated value — To" to "1", max. — B µs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. — unshielded, max. Digital outputs Number of digital outputs Number of digital outputs • of which high-speed outputs — (4 Notice: You cannot connect the fast outputs of your CPU in parallel integrated channels (DO) — Response threshold, typ. Limitation of inductive shutdown voltage to L+ (-48 V) Controlling a digital input — Yes Switching capacity of the outputs • on lamp load, max. 5 W	— up to 40 °C, max.	12
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Input current • for signal "1", typ. Input delay (for rated value of input voltage) for standard inputs — parameterizable Pated value Rated value 3 ms for technological functions — at "0" to "1", max. Supsilided, max. • shielded, max. • unshielded, max. — shielded, max. — shielded, max. — shielded, max. — ounshielded, max. ounshielded, max. — ounshielded, max. — ounshielded, max. — ounshielded, max. — ounshielded, max. ounshielded, max. ounshielded, max. ounshielded, max. ounshielded, max. ounshielded, m	• for signal "0"	-3 to +5V
• for signal "1", typ. 8 mA Input delay (for rated value of input voltage) for standard inputs — parameterizable — parameterizable — Rated value — Rated value — at "0" to "1", max. Cable length • shielded, max. • unshielded, max. • unshielded, max. — shielded, max. — shielded, max. — shielded, max. — while ded, max. — shielded, max. — of trechnological functions — shielded, max. — of trechnological functions — shielded, max. • unshielded, max. • unshielded, max. — of this high-speed 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 • on lamp load, max. • on lamp load, max. • on lamp load, max. • on lamp load, max. • on lamp load, max. • on lamp load, max. • on lamp load, max. • on lamp load, max. • on lamp load, max. • on lamp load, max. • on lamp load, max. • of which sigh-speed outputs • on lamp load, max. • of which lamps and the standard input shad maximum cuntime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter circumstances your newly set limitation of inductive shutdown voltage to • on lamp load, max.	• for signal "1"	+15 to +30 V
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— parameterizable Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.) — Rated value 3 ms for technological functions — at "0" to "1", max. 8 μs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. • unshielded, max. 50 m; for technological functions: No for technological functions — shielded, max. — unshielded, max. 50 m; at maximum count frequency not allowed Digital outputs Number of digital outputs 16 • of which high-speed outputs 16 • of which high-speed outputs 17 Short-circuit protection • Response threshold, typ. 18 Limitation of inductive shutdown voltage to L + (-48 V) Controlling a digital input Yes Switching capacity of the outputs • on lamp load, max. 5 W	Input delay (for rated value of input voltage)	
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- at "0" to "1", max. 8 μs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. • unshielded, max. for technological functions - shielded, max unshielded, max. - unshielded, max. 16 • of which high-speed outputs Number of digital outputs 4; Notice: You cannot connect the fast outputs of your CPU in parallel integrated channels (DO) Short-circuit protection • Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Yes Switching capacity of the outputs • on lamp load, max. 5 W	— Rated value	3 ms
Cable length • shielded, max. • unshielded, max. - unshielded, max. - shielded, max. - shielded, max. - shielded, max. - shielded, max. - unshielded, max. - of 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 Yes Switching capacity of the outputs • on lamp load, max. 1 000 m; 50 m for technological functions 600 m; for technological functions: No 1 000 m; 50 m for technological functions: No 1 000 m; 50 m for technological functions: No 1 000 m; 50 m for technological functions: No 1 000 m; 50 m for technological functions: No 1 000 m; 50 m for technological functions: No 1 000 m; 50 m for technological functions: No 1 000 m; 50 m for technological functions: No 1 000 m; 50 m for technological functions: No 1 000 m; 50 m for technological functions: No 1 000 m; 50 m for technological functions: No 1 000 m; 50 m for technological functions: No 1 000 m; 50 m for technological functions: No 1 000 m; 50 m for technological functions: No 1 000 m; 50 m for technological functions: No 1 000 m; 50 m for technological functions: No 1 000 m; 50 m for technological functions: No 1 000 m; 50 m for technological functions: No 1 000 m; 600 m; 6	for technological functions	
 shielded, max. unshielded, max. for technological functions: No for technological functions: No — shielded, max. — shielded, max. — unshielded, max. — unshielded, 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 L+ (-48 V) Controlling a digital input Switching capacity of the outputs • on lamp load, max. 5 W 	— at "0" to "1", max.	
 unshielded, max. for technological functions: No — shielded, max. — unshielded, max. — ot allowed — unshielded, max. — ot allowed — ot allowed — integrated digital outputs — integrated channels (DO) — integrated channel	Cable length	
for technological functions — 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. 50 m; at maximum count frequency not allowed 16 4; Notice: You cannot connect the fast outputs of your CPU in parallel integrated channels (DO) 16 Short-circuit protection Yes; Clocked electronically L+ (-48 V) Yes Switching capacity of the outputs on lamp load, max. 5 W	• shielded, max.	1 000 m; 50 m for technological functions
— shielded, max. — unshielded, max.	• unshielded, max.	600 m; for technological functions: No
— unshielded, max. Digital outputs Number of digital outputs of which high-speed outputs integrated channels (DO) Short-circuit protection Pesponse threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Switching capacity of the outputs on lamp load, max. not allowed not allowed not allowed 16 4; Notice: You cannot connect the fast outputs of your CPU in parallel 16 Yes; Clocked electronically 1 A Li+ (-48 V) Yes Switching capacity of the outputs on lamp load, max. 5 W	for technological functions	
Digital outputs Number of digital outputs 16 ● of which high-speed outputs 4; Notice: You cannot connect the fast outputs of your CPU in parallel integrated channels (DO) Short-circuit protection Yes; Clocked electronically ● Response threshold, typ. 1 A Limitation of inductive shutdown voltage to L+ (-48 V) Controlling a digital input Yes Switching capacity of the outputs 5 W	— shielded, max.	50 m; at maximum count frequency
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; Notice: You cannot connect the fast outputs of your CPU in parallel 16 Yes; Clocked electronically 1 A L+ (-48 V) Yes Switching capacity of the outputs	— unshielded, max.	not allowed
of which high-speed outputs 4; Notice: You cannot connect the fast outputs of your CPU in parallel integrated channels (DO) 16 Short-circuit protection Response threshold, typ. 1 A Limitation of inductive shutdown voltage to Controlling a digital input Switching capacity of the outputs on lamp load, max. 5 W	Digital 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 Yes; Clocked electronically 1 A L+ (-48 V) Yes Switching capacity of the outputs	Number of digital outputs	16
Short-circuit protection Response threshold, typ. 1 A Limitation of inductive shutdown voltage to Controlling a digital input Yes Switching capacity of the outputs on lamp load, max. Yes; Clocked electronically 1 A L+ (-48 V) Yes Switching capacity of the outputs	of which high-speed outputs	4; Notice: You cannot connect the fast outputs of your CPU in parallel
 Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Switching capacity of the outputs on lamp load, max. 5 W 	integrated channels (DO)	16
Limitation of inductive shutdown voltage to L+ (-48 V) Controlling a digital input Yes Switching capacity of the outputs on lamp load, max. 5 W	Short-circuit protection	Yes; Clocked electronically
Controlling a digital input Yes Switching capacity of the outputs on lamp load, max. 5 W		1 A
Switching capacity of the outputs • on lamp load, max. 5 W	Limitation of inductive shutdown voltage to	L+ (-48 V)
• on lamp load, max. 5 W	Controlling a digital input	Yes
	Switching capacity of the outputs	
Load resistance range	• on lamp load, max.	5 W
	Load resistance range	

lower limit	48 Ω
upper limit	4 kΩ
Output voltage	144
• for signal "1", min.	L+ (-0.8 V)
Output current	2. (0.0 v)
for signal "1" rated value	500 mA
• for signal "1" permissible range, min.	5 mA
• for signal "1" permissible range, max.	0.6 A
• for signal "1" minimum load current	5 mA
for signal "0" residual current, max.	0.5 mA
Parallel switching of two outputs	
• for uprating	No
for redundant control of a load	Yes
Switching frequency	
with resistive load, max.	100 Hz
 with inductive load, max. 	0.5 Hz
• 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	5
 For voltage/current measurement 	4
For resistance/resistance thermometer measurement	1
integrated channels (AI)	5; 4x current/voltage, 1x resistance
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.	3.3 V
Constant measurement current for resistance-type transmitter, typ.	1.25 mA
Technical unit for temperature measurement adjustable	Yes; Degrees Celsius / degrees Fahrenheit / Kelvin
Input ranges	V40.V/40010 0.V/1 40.V/10010
• Voltage	Yes; ±10 V / 100 kΩ; 0 V to 10 V / 100 kΩ
• Current	Yes; ± 20 mA / 100 Ω ; 0 mA to 20 mA / 100 Ω ; 4 mA to 20 mA / 100 Ω
Resistance thermometer	Yes; Pt 100 / 10 MΩ
Resistance	Yes; 0 Ω to 600 Ω / 10 M Ω
Input ranges (rated values), voltages	Von
• 0 to +10 V	Yes 100 kΩ
— Input resistance (0 to 10 V) Input ranges (rated values), currents	100 177
0 to 20 mA	Yes
- Input resistance (0 to 20 mA)	res 100 Ω
- Input resistance (0 to 20 mA) 20 mA to +20 mA	Yes
	res 100 Ω
Input resistance (-20 mA to +20 mA)4 mA to 20 mA	Yes
— Input resistance (4 mA to 20 mA)	100 Ω
Input ranges (rated values), resistance thermometer	100 12
• Pt 100	Yes
- 1 (100	

Input registance (Pt 100)	10 ΜΩ
— Input resistance (Pt 100)	10 MIZ
Input ranges (rated values), resistors	Van
• 0 to 600 ohms	Yes 10 MO
— Input resistance (0 to 600 ohms)	10 MIZ
Thermocouple (TC)	
Temperature compensation	NI-
— parameterizable	No
Characteristic linearization	Vasi hij aaffijara
parameterizable for registance thermometer.	Yes; by software
— for resistance thermometer Cable length	Pt 100
	100 m
shielded, max. Analog outputs	100 111
	2
Number of analog outputs	2
integrated channels (AO)	
Voltage output, short-circuit protection	Yes
Voltage output, short-circuit current, max.	55 mA
Current output, no-load voltage, max.	14 V
Output ranges, voltage	Voc
• 0 to 10 V	Yes
• -10 V to +10 V	Yes
Output ranges, current	Voc
0 to 20 mA-20 mA to +20 mA	Yes Yes
4 mA to 20 mA Connection of actuators	Yes
	Vac: Without componentian of the line registered
for voltage output two-wire connection for voltage output four wire connection	Yes; Without compensation of the line resistances No
 for voltage output four-wire connection for current output two-wire connection 	Yes
Load impedance (in rated range of output)	Tes
	1 kΩ
with voltage outputs, min. with voltage outputs, expecitive lead, may	0.1 μF
with voltage outputs, capacitive load, max. with current cutouts, may.	
 with current outputs, max. with current outputs, inductive load, max. 	300 Ω 0.1 mH
Destruction limits against externally applied voltages and currents	0.1 IIII
	16 V; Permanent
Voltages at the outputs towards MANA Current may	50 mA; Permanent
Current, max. Cable length	50 IIIA, Fermanent
shielded, max.	200 m
Analog value generation for the inputs	200 111
	Actual value energetion (augeocaive energyimation)
Measurement principle	Actual value encryption (successive approximation)
Integration and conversion time/resolution per channel	12 bit
 Resolution with overrange (bit including sign), max. Integration time, parameterizable 	12 bit
	Yes; 16.6 / 20 ms 50 / 60 Hz
 Interference voltage suppression for interference frequency f1 in Hz 	30 / 00 FIZ
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	
 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

	V.
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 connection	No
for resistance measurement with four-wire connection	No
Connectable encoders	V
• 2-wire sensor	Yes
— permissible quiescent current (2-wire sensor), max.	1.5 mA
Errors/accuracies	0.000.0/.0/
Temperature error (relative to input range), (+/-)	0.006 %/K 60 dB
Crosstalk between the inputs, min. Repeat accuracy in steady state at 25 °C (relative to input	0.06 %
range), (+/-)	
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), (+/-)	0.01 %/K
Crosstalk between the outputs, min.	60 dB
Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)	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, (+/-) 	1 %
 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, (+/-) 	0.8 %; Linearity error ±0.06 %
 Current, relative to input range, (+/-) 	0.8 %; Linearity error ±0.06 %
 Resistance, relative to input range, (+/-) 	0.8 %; Linearity error ±0.2 %
 Resistance thermometer, relative to input range, (+/-) 	0.8 %
 Voltage, relative to output range, (+/-) 	0.8 %
 Current, relative to output range, (+/-) 	0.8 %
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference	erence frequency
 Series mode interference (peak value of interference < 	30 dB
rated value of input range), min.	40.40
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
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	
Transmission rate, max.	187.5 kbit/s
Services	
— PG/OP communication	Yes
— Routing	Yes
 Global data communication 	Yes
 S7 basic communication 	Yes
— S7 communication	Yes; Only server, configured on one side
 S7 communication, as client 	No; but via CP and loadable FB
 S7 communication, as server 	Yes

2. Interface	
Interface type	Integrated RS 485 interface
Isolated	Yes
Interface types	
• RS 485	Yes
Output current of the interface, max.	200 mA
Protocols	
• MPI	No
PROFINET IO Controller	No
PROFINET IO Device	No
PROFINET CBA	No
PROFIBUS DP master	Yes
PROFIBUS DP slave	Yes
Point-to-point connection	No
PROFIBUS DP master	140
• Transmission rate, max.	12 Mbit/s
Number of DP slaves, max. Convices	124
Services	Voc
— PG/OP communication	Yes
— Routing	Yes
— Global data communication	No Veel I blocks only
— S7 basic communication	Yes; I blocks only
— S7 communication	Yes; Only server, configured on one side
— S7 communication, as client	No
— S7 communication, as server	Yes
— Equidistance	Yes
— Isochronous mode	No
— SYNC/FREEZE	Yes
 Activation/deactivation of DP slaves 	Yes
 Number of DP slaves that can be simultaneously activated/deactivated, max. 	8
Direct data exchange (slave-to-slave communication) DPV1	Yes; as subscriber Yes
Address area	163
— Inputs, max.	2 kbyte
— Outputs, max.	2 kbyte
User data per DP slave	2 hoyte
— Inputs, max.	244 byte
— Outputs, max.	244 byte
PROFIBUS DP slave	LTT Dyll
GSD file	The latest GSD file is available on the Internet
	(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; Only server, configured on one side
— S7 communication — S7 communication, as client	No
 — S7 communication, as server — Direct data exchange (slave-to-slave communication) 	Yes Yes
— DPV1	No
Transfer memory	INO
·	244 byte
— Inputs— Outputs	244 byte
·	277 DylC
Protocols	

PROFIsafe	No
communication functions / header	
PG/OP communication	Yes
Data record routing	Yes
Global data communication	166
supported	Yes
Number of GD loops, max.	8
Number of GD packets, max.	8
Number of GD packets, transmitter, max.	8
Number of GD packets, receiver, max.	8
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
User data per job, max.	180 kbyte; With PUT/GET
User data per job (of which consistent), max.	240 byte; as server
S5 compatible communication	V
• supported	Yes; via CP and loadable FC
Number of connections	
• overall	12
usable for PG communication	11
— reserved for PG communication	1
— adjustable for PG communication, min.	1
— adjustable for PG communication, max.	11
usable for OP communication	11
— reserved for OP communication	1
— adjustable for OP communication, min.	1
— adjustable for OP communication, max.	11
usable for S7 basic communication	8
— reserved for S7 basic communication	0
— adjustable for S7 basic communication, min.	0
adjustable for S7 basic communication, max.	8
usable for routing	4; max.
S7 message functions	40. Deposition on the configuration for DO/OD 1071
Number of login stations for message functions, max.	12; Depending on the configured connections for PG/OP and S7 basic communication
Process diagnostic messages	Yes
simultaneously active Alarm-S blocks, max.	300
Test commissioning functions	
Status block	Yes; Up to 2 simultaneously
Single step	Yes
Number of breakpoints	4
Status/control	
Status/control variable	Yes
Variables	Inputs, outputs, memory bits, DB, times, counters
 Number of variables, max. 	30
— of which status variables, max.	30
— of which control variables, max.	14
Forcing	
• Forcing	Yes
• Forcing, variables	Inputs, outputs
Number of variables, max.	10
Diagnostic buffer	
present	Yes

Number of outside and	500
Number of entries, max.	500
— adjustable	No
— of which powerfail-proof	100; Only the last 100 entries are retained
Number of entries readable in RUN, max.	499
— adjustable	Yes; From 10 to 499
— preset	10
Service data	
can be read out	Yes
Interrupts/diagnostics/status information	
Diagnostics indication LED	
Status indicator digital input (green)	Yes
Status indicator digital output (green)	Yes
Integrated Functions	
Counter	
 Number of counters 	4; See "Technological Functions" manual
Counting frequency, max.	60 kHz
Frequency measurement	Yes
Number of frequency meters	4; up to 60 kHz (see "Technological Functions" manual)
controlled positioning	Yes
integrated function blocks (closed-loop control)	Yes; PID controller (see "Technological Functions" manual)
PID controller	Yes
Number of pulse outputs	4; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual)
Limit frequency (pulse)	2.5 kHz
Potential separation	
Potential separation digital inputs	
 Potential separation digital inputs 	Yes
 between the channels 	No
 between the channels and backplane bus 	Yes
Potential separation digital outputs	
 Potential separation digital outputs 	Yes
 between the channels 	Yes
 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
Ambient conditions	
Ambient temperature during operation	
• min.	0 °C
• max.	60 °C
configuration / header	
Configuration software	
• STEP 7	Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203
STEP 7 Lite	No
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
	. 30

— STL	Yes
— SCL	Yes
— CFC	Yes
— GRAPH	Yes
— HiGraph®	Yes
Know-how protection	
 User program protection/password protection 	Yes
Block encryption	Yes; With S7 block Privacy
Block encryption Dimensions	Yes; With S7 block Privacy
	Yes; With S7 block Privacy 120 mm
Dimensions	
Dimensions Width	120 mm
Dimensions Width Height	120 mm 125 mm

last modified:

8/24/2021