SIEMENS

Data sheet



Figure similar

SIPLUS S7-300 CPU 314C-2DP based on 6ES7314-6CH04-0AB0 with conformal coating, -25...+70 $^{\circ}$ C, compact CPU with MPI, 24 DI/16 DQ, 4 AI, 2 AQ, 1 Pt100, 4 high-speed counters (60 kHz), integrated DP interface, integrated power supply 24 V DC, work memory 192 KB, front connector (2x 40-pole) and Micro Memory Card required

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) permissible range, lower limit (DC) external protection for power supply lines (recommendation) Mains buffering Mains-voltage failure stored energy time Repeat rate, min. 1 s Load voltage L+ Digital inputs Rated value (DC) Reverse polarity protection Pacturent consumption (rated value) Current consumption (in no-load operation), typ. Input current. typ. Promound budy voltage L+ (without load), max. Digital inputs From load voltage L+ (without load), max. Digital outputs From load voltage L+, max. Power loss Power loss, typ. Memory Work memory Plug-in (MMC) Plug-in (MM	General information	
Rated value (DC) 24 V permissible range, lower limit (DC) 19.2 V permissible range, lower limit (DC) 28.8 V external protection for power supply lines (recommendation) B, min. 4 A Mains buffering • Mains/voltage failure stored energy time • 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 Pt 0.7 A²-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	Engineering with	
Rated value (DC) permissible range, lower limit (DC) permissible range, upper limit (DC) permissible range, upper limit (DC) external protection for power supply lines (recommendation) Mains buffering • Mains/voltage failure stored energy time • Repeat rate, min. Load voltage L+ Digital inputs - Rated value (DC) - Reverse polarity protection Pigital outputs - Rated value (DC) - Reverse polarity protection No Input current Current consumption (rated value) Current consumption (in no-load operation), typ. Inrush current, typ. 5 A Pt 0,7 A²-s Digital inputs • from load voltage L+ (without load), max. Bo mA Digital outputs • from load voltage L+, max. Fower loss Power loss Power loss Power loss, typ. Memory • integrated • expandable Load memory • Plug-in (MMC) Yes Miniature circuit breaker, type C; min. 2 A; miniature circuit breaker type Miniature circuit breaker, type C; min. 2 A; miniature circuit breaker type Miniature circuit breaker, type C; min. 2 A; miniature circuit breaker type Miniature circuit breaker, type C; min. 2 A; miniature circuit breaker type Miniature circuit breaker, type C; min. 2 A; miniature circuit breaker type Miniature circuit breaker, type C; min. 2 A; mi	Programming package	
permissible range, lower limit (DC) permissible range, upper limit (DC) external protection for power supply lines (recommendation) Miniature circuit breaker, type C; min. 2 A; miniature circuit breaker type (recommendation) Miniature circuit breaker, type C; min. 2 A; miniature circuit breaker type (Repeat rate, min. 1 s Load voltage L+ Digital inputs — Rated value (DC) — Reverse polarity protection Pigital outputs — Rated value (DC) — Reverse polarity protection No Input current Current consumption (rated value) Current consumption (in no-load operation), typ. 150 mA Inrush current, typ. 5 A Pit 0.7 A²-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. Work memory • integrated 192 kbyte • expandable Load memory • Plug-in (MMC) Yes	Supply voltage	
permissible range, upper limit (DC) external protection for power supply lines (recommendation) Mains buffering Mains buffe	Rated value (DC)	24 V
external protection for power supply lines (recommendation) Mains buffering Mains voltage failure stored energy time Repeat rate, min. Load voltage L+ Digital inputs Reverse polarity protection Pated value (DC) Reverse polarity protection Position for power and power loss. Power loss, typ. Miniature circuit breaker, type C; min. 2 A; miniature circuit breaker type B, min. 4 A Miniature circuit breaker, type C; min. 2 A; miniature circuit breaker type B, min. 4 A Miniature circuit breaker, type C; min. 2 A; miniature circuit breaker type B, min. 4 A Miniature circuit breaker, type C; min. 2 A; miniature circuit breaker type B, min. 4 A Miniature circuit breaker, type C; min. 2 A; miniature circuit breaker, type B, min. 4 A Miniature circuit breaker, type C; min. 2 A; miniature circuit breaker, type B, min. 4 A Miniature circuit breaker, type C; min. 2 A; miniature circuit breaker, type B, min. 4 A Miniature circuit breaker, type C; min. 2 A; miniature circuit breaker, type B, min. 4 A Miniature circuit breaker, type C; min. 2 A; miniature circuit breaker, type B, min. 4 A Miniature circuit breaker, type C; min. 2 A; miniature circuit breaker, type B, min. 4 A ### State	permissible range, lower limit (DC)	19.2 V
(recommendation) Mains buffering Mains/voltage failure stored energy time Repeat rate, min. Load voltage L+ Digital inputs Reverse polarity protection Pigital outputs Reverse polarity protection Pigital outputs Reverse polarity protection No Input current Current consumption (rated value) Roy Reverse polarity protection In Inrush current, typ. Fit O, 7 A²-s Digital inputs Irrent load voltage L+ (without load), max. Bo mA Digital outputs Irrent load voltage L+ (without load), max. Power loss Power loss Power loss, typ. Mormory Work memory Incurrent lomSumption Incurrent logs when loss logs	permissible range, upper limit (DC)	28.8 V
 Mains/voltage failure stored energy time Repeat rate, min. Digital inputs — Rated value (DC) — Reverse polarity protection Digital outputs — Rated value (DC) — Reverse polarity protection No Input current Current consumption (rated value) Current consumption (rated value) Enursh current, typ. 5 A Pt 0,7 A²-s Digital inputs ● from load voltage L+ (without load), max. Bo mA Digital outputs ● from load voltage L+, max. Fower loss Power loss, typ. 13 W Memory Work memory • integrated • expandable No Load memory • Plug-in (MMC) Yes 		
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 Pt 0,7 A²·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) Yes	Mains buffering	
Load voltage L+ Digital inputs	 Mains/voltage failure stored energy time 	5 ms
Digital inputs Rated value (DC) Reverse polarity protection Pess Digital outputs Rated value (DC) Reverse polarity protection No Input current Current consumption (rated value) Rourent, typ. Fit 0.7 A²-s Digital inputs • from load voltage L+ (without load), max. Digital outputs • from load voltage L+, max. Power loss Power loss, typ. Integrated Pug-in (MMC) Plug-in (MMC) Pug-in (MMC) 24 V No AND AND AND AND AND AND AND	Repeat rate, min.	1 s
Rated value (DC) Reverse polarity protection Rated value (DC) Reverse polarity protection Rated value (DC) Reverse polarity protection No	Load voltage L+	
— 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 I*t 0.7 A²·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	Digital inputs	
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 I*t 0.7 A*-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	— Rated value (DC)	24 V
— 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 Ift 0.7 A²-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	 Reverse polarity protection 	Yes
- 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 I²t 0.7 A²·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	Digital outputs	
Input current Current consumption (rated value) 880 mA Current consumption (in no-load operation), typ. 150 mA Inrush current, typ. 5 A I²t 0.7 A²·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	— Rated value (DC)	24 V
Current consumption (rated value) Current consumption (in no-load operation), typ. Inrush current, typ. I²t O.7 A²-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 • expandable Load memory • Plug-in (MMC) Yes	 Reverse polarity protection 	No
Current consumption (in no-load operation), typ. Inrush current, typ. If to 0.7 A²-s Digital inputs Inrush current, typ. If to 0.7 A²-s Digital inputs Inrush current, typ. If to 0.7 A²-s Digital inputs Inrush current, typ. Inrush c	Input current	
Inrush current, typ. If to 0.7 A²-s Digital inputs In from load voltage L+ (without load), max. In from load v	Current consumption (rated value)	880 mA
it	Current consumption (in no-load operation), typ.	150 mA
Digital inputs	Inrush current, typ.	5 A
 from load voltage L+ (without load), max. Digital outputs from load voltage L+, max. Fower loss Power loss, typ. Memory Work memory integrated expandable No Load memory Plug-in (MMC) 80 mA 80 mA<	l²t	0.7 A ² ·s
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	Digital inputs	
 ● from load voltage L+, max. Fower loss Power loss, typ. 13 W Memory Work memory ● integrated ● expandable Load memory ● Plug-in (MMC) 50 mA 13 W 13 W 14 W 15 W 16 W 17 W 18 W 19 W 10 W	 from load voltage L+ (without load), max. 	80 mA
Power loss, typ. 13 W Memory Work memory • integrated 192 kbyte • expandable No Load memory • Plug-in (MMC) Yes	Digital outputs	
Power loss, typ. Memory Work memory • integrated • expandable Load memory • Plug-in (MMC) 13 W 13 W No 192 kbyte No Yes	 from load voltage L+, max. 	50 mA
Memory Work memory integrated 192 kbyte expandable No Load memory Plug-in (MMC) Yes	Power loss	
Work memory • integrated 192 kbyte • expandable No Load memory • Plug-in (MMC) Yes	Power loss, typ.	13 W
 integrated expandable No Load memory Plug-in (MMC) Yes 	Memory	
 expandable Load memory Plug-in (MMC) Yes 	Work memory	
 expandable Load memory Plug-in (MMC) Yes 	integrated	192 kbyte
Load memory ● Plug-in (MMC) Yes		
● Plug-in (MMC), max. 8 Mbyte	• Plug-in (MMC)	Yes
	• Plug-in (MMC), max.	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.	0.06 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
DB	be reduced by the MMC used.
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	Von
• present	Yes
• Type	SFB
Number S7 times	Unlimited (limited only by RAM capacity)
	256
Number Potentivity	256
Retentivity	Voc
— adjustable	Yes
— lower limit	0
— upper limit	255
— preset	No retentivity
Time range	

— lower limit	10 ms
— upper limit	9 990 s
— upper limit	0 000 0
• present	Yes
• Type	SFB
• Number	Unlimited (limited only by RAM capacity)
Data areas and their retentivity	Chillinica (illinica Chily by PANIV Capacity)
Retentive data area (incl. timers, counters, flags), max.	64 khyta
	64 kbyte
Flag ● Size, max.	256 byte
Retentivity available	Yes; MB 0 to MB 255
Retentivity available Retentivity preset	MB 0 to MB 15
Number of clock memories	8; 1 memory byte
Data blocks	o, i memory byte
Retentivity adjustable	Yes; via non-retain property on DB
Retentivity adjustable Retentivity preset	Yes
Local data	165
per priority class, max.	32 kbyte; Max. 2048 bytes per block
Address area	32 kbyte, Max. 2040 bytes per block
I/O address area	2.049 byto
• Inputs	2 048 byte
Outputs Studies distributed.	2 048 byte
of which distributed	2 002 h. 4-
— Inputs	2 003 byte
— Outputs	2 010 byte
Process image	2.049 byto
• Inputs	2 048 byte
Outputs	2 048 byte
Inputs, adjustable Outputs, adjustable	2 048 byte
Outputs, adjustable Inputs, default	2 048 byte
• Inputs, default	128 byte
Outputs, default	128 byte
Default addresses of the integrated channels	404.0 % 400.7
— 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	40.040
Inputs of which central	16 048
— of which central	1 016
Outputs of which control	16 096
— of which central	1 008
Analog channels	1.006
Inputs of which control	1 006
— of which central	253
Outputs of which control	1 007
— of which central	250
Hardware configuration	
Number of expansion units, max.	3
Number of DP masters	4
• 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
Backup time	6 wk; At 40 °C ambient temperature
Deviation per day, max.	10 s; Typ.: 2 s
Behavior of the clock following POWER-ON	Clock continues running after POWER OFF
Behavior of the clock following expiry of backup	the clock continues at the time of day it had when power was switched
period	off
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
• 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
• in AS, slave	No
Digital inputs	
Number of digital inputs	24
 of which inputs usable for technological functions 	16
integrated channels (DI)	24
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; up to 70 °C
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.	8 mA
Input delay (for rated value of input voltage)	
for standard inputs	
— 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.	1 000 m; 50 m for technological functions
unshielded, max.	600 m; for technological functions: No
for technological functions	
— shielded, max.	50 m; at maximum count frequency
— unshielded, max.	not allowed
Digital outputs	
Digital outputs Number of digital outputs	16
	16 4; Notice: You cannot connect the fast outputs of your CPU in parallel

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	
 on lamp load, max. 	5 W
Load resistance range	
lower limit	48 Ω
• upper limit	4 kΩ
Output voltage	
• for signal "1", min.	L+ (-0.8 V)
Output current	L. (0.0 v)
·	500 mA
• for signal "1" rated value	500 MA 5 mA
• for signal "1" permissible range, min.	
• 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; 1.5 A @ > 60 °C
vertical installation	2 A, 1.3 A @ 2 00 C
	0.4
— 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	1
measurement	
integrated channels (AI)	5; 4x current/voltage, 1x resistance
permissible input voltage for current input (destruction	5 V; Permanent
limit), max.	
permissible input voltage for voltage input (destruction	30 V; Permanent
limit), max.	
permissible input current for voltage input (destruction	0.5 mA; Permanent
limit), max.	50 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	. 55, Dogross Colores augross Famoritain Activiti
· · ·	Vac: +10 V / 100 kO: 0 V to 10 V / 100 kO
Voltage Current	Yes; ±10 V / 100 kΩ; 0 V to 10 V / 100 kΩ
Current Pagistance thermometer	Yes; ± 20 mA / 100Ω ; 0 mA to 20 mA / 100Ω ; 4 mA to 20 mA / 100Ω
Resistance thermometer	Yes; Pt 100 / 10 MΩ
Resistance	Yes; 0 Ω to 600 Ω / 10 MΩ
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
	Yes
Voltage output, short-circuit protection	55 mA
Voltage output, short-circuit current, max.	14 V
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	V
• 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; 16.6 / 20 ms
 Interference voltage suppression for interference frequency f1 in Hz 	50 / 60 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	

 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 connection 	No
 for resistance measurement with four-wire connection 	No
Connectable encoders	
• 2-wire sensor	Yes
 permissible quiescent current (2-wire sensor), max. 	1.5 mA
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 range), (+/-)	0.06 %
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 frequency
 Series mode interference (peak value of interference < rated value of input range), min. 	30 dB
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 S7 communication, as client	No; but via CP and loadable FB
— S7 communication, as server	Yes
·	165
2. Interface	late rested DC 405 interfer-
Interface type	Integrated RS 485 interface
Isolated	Yes
Interface types	V.
• 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	
Transmission rate, max.	12 Mbit/s
 Number of DP slaves, max. 	124
Services	
	Yes
— PG/OP communication	
	Yes
— PG/OP communication— Routing— Global data communication	
— Routing	Yes
— Routing— Global data communication	Yes No Yes; I blocks only
— Routing— Global data communication— S7 basic communication	Yes No
 Routing Global data communication S7 basic communication S7 communication S7 communication, as client 	Yes No Yes; I blocks only Yes; Only server, configured on one side
 Routing Global data communication S7 basic communication S7 communication S7 communication, as client S7 communication, as server 	Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes
 Routing Global data communication S7 basic communication S7 communication S7 communication, as client S7 communication, as server Equidistance 	Yes No Yes; I blocks only Yes; Only server, configured on one side No
 Routing Global data communication S7 basic communication S7 communication S7 communication, as client S7 communication, as server Equidistance Isochronous mode 	Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes
 Routing Global data communication S7 basic communication S7 communication S7 communication, as client S7 communication, as server Equidistance Isochronous mode SYNC/FREEZE 	Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes Yes No Yes
 Routing Global data communication S7 basic communication S7 communication S7 communication, as client S7 communication, as server Equidistance Isochronous mode SYNC/FREEZE Activation/deactivation of DP slaves 	Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes Yes No Yes Yes
 Routing Global data communication S7 basic communication S7 communication S7 communication, as client S7 communication, as server Equidistance Isochronous mode SYNC/FREEZE 	Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes Yes No Yes
 Routing Global data communication S7 basic communication S7 communication S7 communication, as client S7 communication, as server Equidistance Isochronous mode SYNC/FREEZE Activation/deactivation of DP slaves Number of DP slaves that can be simultaneously activated/deactivated, max. Direct data exchange (slave-to-slave) 	Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes No Yes No Yes Yes
 Routing Global data communication S7 basic communication S7 communication S7 communication, as client S7 communication, as server Equidistance Isochronous mode SYNC/FREEZE Activation/deactivation of DP slaves Number of DP slaves that can be simultaneously activated/deactivated, max. Direct data exchange (slave-to-slave communication) 	Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes No Yes No Yes Yes 8 Yes; as subscriber
 Routing Global data communication S7 basic communication S7 communication S7 communication, as client S7 communication, as server Equidistance Isochronous mode SYNC/FREEZE Activation/deactivation of DP slaves Number of DP slaves that can be simultaneously activated/deactivated, max. Direct data exchange (slave-to-slave communication) DPV1 	Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes No Yes No Yes 8
- Routing - Global data communication - S7 basic communication - S7 communication - S7 communication, as client - S7 communication, as server - Equidistance - Isochronous mode - SYNC/FREEZE - Activation/deactivation of DP slaves - Number of DP slaves that can be simultaneously activated/deactivated, max Direct data exchange (slave-to-slave communication) - DPV1 Address area	Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes Yes No Yes Yes Yes Yes Yes Yes Yes Yes
- Routing - Global data communication - S7 basic communication - S7 communication - S7 communication, as client - S7 communication, as server - Equidistance - Isochronous mode - SYNC/FREEZE - Activation/deactivation of DP slaves - Number of DP slaves that can be simultaneously activated/deactivated, max Direct data exchange (slave-to-slave communication) - DPV1 Address area - Inputs, max.	Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes No Yes No Yes Yes 8 Yes; as subscriber Yes
- Routing - Global data communication - S7 basic communication - S7 communication - S7 communication, as client - S7 communication, as server - Equidistance - Isochronous mode - SYNC/FREEZE - Activation/deactivation of DP slaves - Number of DP slaves that can be simultaneously activated/deactivated, max Direct data exchange (slave-to-slave communication) - DPV1 Address area - Inputs, max Outputs, max.	Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes Yes No Yes Yes Yes Yes Yes Yes Yes Yes
 Routing Global data communication S7 basic communication S7 communication S7 communication, as client S7 communication, as server Equidistance Isochronous mode SYNC/FREEZE Activation/deactivation of DP slaves Number of DP slaves that can be simultaneously activated/deactivated, max. Direct data exchange (slave-to-slave communication) DPV1 Address area Inputs, max. Outputs, max. User data per DP slave 	Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes No Yes No Yes Yes 8 Yes; as subscriber Yes 2 kbyte 2 kbyte
Routing Global data communication S7 basic communication S7 communication S7 communication, as client S7 communication, as server Equidistance Isochronous mode SYNC/FREEZE Activation/deactivation of DP slaves Number of DP slaves that can be simultaneously activated/deactivated, max Direct data exchange (slave-to-slave communication) DPV1 Address area Inputs, max Outputs, max. User data per DP slave Inputs, max.	Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes No Yes Yes 8 Yes; as subscriber Yes 2 kbyte 2 kbyte
 Routing Global data communication S7 basic communication S7 communication S7 communication, as client S7 communication, as server Equidistance Isochronous mode SYNC/FREEZE Activation/deactivation of DP slaves Number of DP slaves that can be simultaneously activated/deactivated, max. Direct data exchange (slave-to-slave communication) DPV1 Address area Inputs, max. Outputs, max. User data per DP slave Inputs, max. Outputs, max. Outputs, max. Outputs, max. Outputs, max. 	Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes No Yes No Yes Yes 8 Yes; as subscriber Yes 2 kbyte 2 kbyte
Routing Global data communication S7 basic communication S7 communication S7 communication, as client S7 communication, as server Equidistance Isochronous mode SYNC/FREEZE Activation/deactivation of DP slaves Number of DP slaves that can be simultaneously activated/deactivated, max Direct data exchange (slave-to-slave communication) DPV1 Address area Inputs, max Outputs, max. User data per DP slave Inputs, max.	Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes Yes No Yes Yes 8 Yes; as subscriber Yes 2 kbyte 244 byte 244 byte
 Routing Global data communication S7 basic communication S7 communication S7 communication, as client S7 communication, as server Equidistance Isochronous mode SYNC/FREEZE Activation/deactivation of DP slaves Number of DP slaves that can be simultaneously activated/deactivated, max. Direct data exchange (slave-to-slave communication) DPV1 Address area Inputs, max. Outputs, max. User data per DP slave Inputs, max. Outputs, max. Outputs, max. Outputs, max. Outputs, max. 	Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes Yes No Yes Yes 8 Yes; as subscriber Yes 2 kbyte 244 byte 244 byte 244 byte The latest GSD file is available on the Internet
 — Routing — Global data communication — S7 basic communication — S7 communication, as client — S7 communication, as server — Equidistance — Isochronous mode — SYNC/FREEZE — Activation/deactivation of DP slaves — Number of DP slaves that can be simultaneously activated/deactivated, max. — Direct data exchange (slave-to-slave communication) — DPV1 Address area — Inputs, max. — Outputs, max. — Outputs, max. — Outputs, max. — Outputs, max. PROFIBUS DP slave ● GSD file 	Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes No Yes Yes No Yes Yes 8 Yes; as subscriber Yes 2 kbyte 2 kbyte 244 byte 244 byte The latest GSD file is available on the Internet (http://www.siemens.com/profibus-gsd)
Routing Global data communication S7 basic communication S7 communication S7 communication, as client S7 communication, as server Equidistance Isochronous mode SYNC/FREEZE Activation/deactivation of DP slaves Number of DP slaves that can be simultaneously activated/deactivated, max Direct data exchange (slave-to-slave communication) DPV1 Address area Inputs, max Outputs, max	Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes Yes No Yes Yes 8 Yes; as subscriber Yes 2 kbyte 244 byte The latest GSD file is available on the Internet (http://www.siemens.com/profibus-gsd) 12 Mbit/s
 — Routing — Global data communication — S7 basic communication — S7 communication, as client — S7 communication, as server — Equidistance — Isochronous mode — SYNC/FREEZE — Activation/deactivation of DP slaves — Number of DP slaves that can be simultaneously activated/deactivated, max. — Direct data exchange (slave-to-slave communication) — DPV1 Address area — Inputs, max. — Outputs, max. — Outputs, max. — Outputs, max. — Outputs, max. PROFIBUS DP slave ● GSD file 	Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes No Yes Yes No Yes Yes 8 Yes; as subscriber Yes 2 kbyte 2 kbyte 244 byte 244 byte The latest GSD file is available on the Internet (http://www.siemens.com/profibus-gsd)

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	Yes
	Yes
 Direct data exchange (slave-to-slave communication) 	165
— DPV1	No
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte
Protocols	Z++ byto
	No
PROFIsafe	No
communication functions / header	
PG/OP communication	Yes
Data record routing	Yes
Global data communication	
• 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	·
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	т, шил.
	12: Depending on the configured connections for DC/OD and C7 having
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

Tost commissioning functions Status block Yes; Up to 2 simultaneously Yes Number of breakpoints Forcing Fo	simultaneously active Alarm-S blocks, max.	300
Status block Vesi Up to 2 simultaneously Number of breakpoints Astass/control Ves Status/control variables Variables Number of variables, max. — of which satius variables, max. — of which control variables, max. — Forcing Forc	·	
Single step		Yes; Up to 2 simultaneously
Number of breakpoints		
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Number of variables, max. — of which status variables, max. — of which control variables, max. Forcing Forcing Forcing, Forcing Yes Forcing (Procing) Forcing	Status/control variable	Yes
Number of variables, max. of which status variables, max. of which status variables, max. Forcing Forcing Forcing, Forcing Forcing, Forcing of variables Forcing of va	Variables	Inputs, outputs, memory bits, DB, times, counters
- of which status variables, max of which control variables, max of which control variables, max of which control variables, max Forcing Forcing, variables - Forcing, variables - Number of variables, max Number of variables, max adjustable - Number of entries, max adjustable - of which powerfail-proof - Number of entries readable in RUN, max adjustable - present - Number of entries readable in RUN, max adjustable - present - Number of entries readable in RUN, max adjustable - present - RUN, max adjustable - present - RUN, max adjustable - present - vean be read out - vessible ve	 Number of variables, max. 	
- of which control variables, max. • Forcing • Forcing, Yes • Forcing, variables • Number of variables, max. — a persent • Number of entries, max. — adjustable — of which powerfail-proof • Number of entries readable in RUN, max. — adjustable — of which powerfail-proof • Number of entries readable in RUN, max. — adjustable — preset • Persent • Persent • Persent • Number of entries readable in RUN, max. — adjustable — preset • Dio, Only the last 100 entries are retained • Number of entries readable in RUN, max. — adjustable — preset • Can be read out • Ves **Torm 10 to 499 — preset • Can be read out • Ves **Interrupts/diagnostics/status information **Bignostics indicator digital input (green) • Status indicator digital input (green) • Status indicator digital input (green) • Number of counters • Counting frequency, max. **Frequency measurement • Number of frequency meters • Countroller positioning • Number of frequency meters • Countroller yes • Number of pulse outputs • Potential separation digital inputs • Potential separation digital outputs • Potential separation analog inputs • Potential separation analog inputs • Potential separation analog outputs • Debween the channels and backplane bus • Potential separation analog outputs • Potential separation analog outputs • Potential separation analog outputs • Debveen the channels and backplane bus • Potential separation and backp	•	30
Forcing • Forcing • Forcing are allowed by the second of t		14
Forcing, variables Forcing, variables, max.		
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Present Yes Present Yes Present Pr	Forcing, variables	Inputs, outputs
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Number of entries, max. - adjustable Ord which powerfall-proof Number of entries readable in RUN, max adjustable - preset 10 Service data - can be read out each be read out service data - can be read out linterrupts/diagnostics/status information Diagnostics indication LED - Status indicator digital input (green) - Status indicator digital input (green) - Status indicator digital output (green) - Status indicator digital output (green) - Status indicator digital input (green) - Number of counters - Ocuntrier - Number of counters - Ocuntrier - Number of frequency, max Summasurement - Number of frequency meters - Output of the status of the stat	Diagnostic buffer	
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- Of which powerfail-proof Number of entries readable in RUN, max Adjustable - preset 10 Service data - can be read out - on a be read out - Status indicator digital input (green) - Status indicator digital input (green) - Status indicator digital output (green) - Status indicator digital input (green) - Status indicator digital inputs - Potential separation digital outputs - Potential separation analog inputs - Potential separation analog inputs - Potential separation analog inputs - Potential separation analog outputs - Potential separation and backplane bus - Potent	 Number of entries, max. 	500
- of which powerfail-proof Number of entries readable in RUN, max adjustable - preset 10 Service data - can be read out - on a be read out - Status indicator digital input (green) - Countrel - Number of counters - Countrel - Number of counters - Countrel - Number of frequency measurement - Number of frequency meters - Verential separation digital inputs - Potential separation digital outputs - Potential separation analog inputs - Potential separation analog inputs - Potential separation analog inputs - Potential separation analog outputs - Potential separation and backplane bus - Potential separation and backplane bus - Potential separation and backplane bus - Potential separati	— adjustable	No
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 Potential separation digital outputs between the channels between the channels, in groups of between the channels and backplane bus Potential separation analog inputs Potential separation analog inputs Potential separation analog inputs between the channels between the channels and backplane bus Potential separation analog outputs Potential separation analog outputs Potential separation analog outputs Potential separation analog outputs between the channels between the channels between the channels between the channels and backplane bus Yes 	 between the channels and backplane bus 	Yes
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 Potential separation analog outputs between the channels between the channels and backplane bus Yes; common for analog I/O No Yes 	 between the channels and backplane bus 	Yes
 Potential separation analog outputs between the channels between the channels and backplane bus Yes; common for analog I/O No Yes 	Potential separation analog outputs	
 between the channels between the channels and backplane bus Yes 		Yes; common for analog I/O
Isolation	 between the channels and backplane bus 	Yes
	Isolation	

Isolation tested with	600 V DC
Standards, approvals, certificates	
CE mark	Yes
	Yes
UL approval RCM (formerly C-TICK)	Yes
KC approval	Yes
EAC (formerly Gost-R)	Yes
Use in hazardous areas	Vaa
• ATEX	Yes
Ambient conditions	
Ambient temperature during operation	05.00
• min.	-25 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Ambient temperature during storage/transportation	40.00
• min.	-40 °C
• max.	70 °C
Altitude during operation relating to sea level	F 000
Installation altitude above sea level, max.	5 000 m
Ambient air temperature-barometric pressure- altitude	Tmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m) // Tmin (Tmax - 10 K) at 795 hPa 658 hPa (+2 000 m +3 500 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m)
Relative humidity	
With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Use in stationary industrial systems	
 to biologically active substances according to EN 60721-3-3 	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
 to chemically active substances according to EN 60721-3-3 	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
 to mechanically active substances according to EN 60721-3-3 	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea	
 to biologically active substances according to EN 60721-3-6 	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
 to chemically active substances according to EN 60721-3-6 	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
 to mechanically active substances according to EN 60721-3-6 	Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology	
 Against chemically active substances acc. to EN 60654-4 	Yes; Class 3 (excluding trichlorethylene)
 Environmental conditions for process, measuring and control systems acc. to ANSI/ISA- 71.04 	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark	
 Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04 	* The supplied plug covers must remain in place over the unused interfaces during operation!
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
— STL	Yes

Yes
Yes
Yes
Yes
Yes
Yes; With S7 block Privacy
120 mm
125 mm
130 mm
680 g

last modified: 8/24/2021 🖸