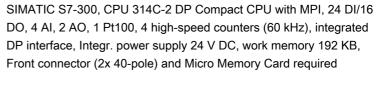
## **SIEMENS**

## Data sheet

## 6ES7314-6CH04-0AB0





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 DC	Yes
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
external protection for power supply lines	Miniature circuit breaker, type C; min. 2 A; miniature circuit
(recommendation)	breaker type B, min. 4 A
Mains buffering	
<ul> <li>Mains/voltage failure stored energy time</li> </ul>	5 ms
• Repeat rate, min.	1 s
Load voltage L+	
Digital inputs	
— Rated value (DC)	24 V

Reverse polarity protection	Yes
	100
Digital outputs	24 V
— Rated value (DC)	
<ul> <li>Reverse polarity protection</li> </ul>	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 <sup>2</sup> ·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	
Work memory	192 kbyte
• integrated	No
• expandable	
<ul> <li>Size of retentive memory for retentive data blocks</li> </ul>	64 kbyte
Load memory	
• Plug-in (MMC)	Yes
• Plug-in (MMC), max.	8 Mbyte
<ul> <li>Data management on MMC (after last</li> </ul>	10 y
programming), min.	
Backup	
• present	Yes; Guaranteed by MMC (maintenance-free)
<ul><li>without battery</li></ul>	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
DD	can be reduced by the MMC used.
DB Name to a second	1.024: Number range: 1 to 16000
• 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	
ОВ		
Description	see instruction list	
• Size, max.	64 kbyte	
<ul> <li>Number of free cycle OBs</li> </ul>	1; OB 1	
<ul> <li>Number of time alarm OBs</li> </ul>	1; OB 10	
<ul> <li>Number of delay alarm OBs</li> </ul>	2; OB 20, 21	
<ul> <li>Number of cyclic interrupt OBs</li> </ul>	4; OB 32, 33, 34, 35	
<ul> <li>Number of process alarm OBs</li> </ul>	1; OB 40	
<ul><li>Number of DPV1 alarm OBs</li></ul>	3; OB 55, 56, 57	
<ul><li>Number of startup OBs</li></ul>	1; OB 100	
<ul> <li>Number of asynchronous error OBs</li> </ul>	5; OB 80, 82, 85, 86, 87	
<ul> <li>Number of synchronous error OBs</li> </ul>	2; OB 121, 122	
Nesting depth		
• per priority class	16	
<ul><li>additional within an error OB</li></ul>	4	
Counters, timers and their retentivity		

Countary timers and their retentivity		
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		
Number	Unlimited (limited only by RAM capacity)	
S7 times		
• Number	256	
Retentivity		
— adjustable	Yes	
— lower limit	0	
— upper limit	255	
— preset	No retentivity	
Time range		

— lower limit	10 ms
— upper limit	9 990 s
IEC timer	
• present	Yes
• Type	SFB
• Number	Unlimited (limited only by RAM capacity)
Data areas and their retentivity	411
retentive data area in total	All, max. 64 KB
Flag	050 h. 4.
Number, 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	
<ul> <li>Retentivity adjustable</li> </ul>	Yes; via non-retain property on DB
Retentivity preset	Yes
Local data	
<ul><li>per priority class, max.</li></ul>	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
•	

Analog channels	— of which central	1 008
Outputs 1007 — of which central 250  Hardware configuration Number of Expansion units, max. 3 Number of DP masters  • integrated • via CP  • FM • CP, PIP • CP, LAN • Racks, max. • Modules per rack, max. • Modules per rack, max. • Modules per rack, max. • Modules per rack of the clock following POWER-ON • Eshavior of the clock following expiry of backup period  • Seange of values • Range	Analog channels	
Outputs Of which central Of which centr	• Inputs	1 006
- 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 • telentive and synchronizable 6 wk, At 40 °C ambient temperature 1 os; Typ.: 2 s • Behavior of the clock following POWER-ON 6 Behavior of the clock following expiry of backup period  Operating hours counter  • Number 1 • Number 9 • Range of values 0 to 2^31 hours (when using SFC 101) • retentive 1 ves Wes 1 ves What 2 ves Wha	— of which central	253
Number of expansion units, max.  Number of expansion units, max.  Number of DP masters  integrated ivia CP  Number of operable FMs and CPs (recommended)  FM  CP, PtP 8 CP, LAN 10  Rack  Racks, max. Modules per rack, max. Modules per rack, max.  Sin rack 3 max. 7  Time of day  Clock  Hardware clock (real-time) retentive and synchronizable Beakup time Deviation per day, max. Behavior of the clock following POWER-ON Behavior of the clock following expiry of backup period  Operating hours counter  Number Number Range of values Range of values Reacks Wes Raves Ra	Outputs	1 007
Number of DP masters  • integrated	— of which central	250
Number of DP masters  • integrated		
Number of DP masters  integrated via CP  A  Number of operable FMs and CPs (recommended)  FM FM CP, PtP 8 CP, LAN 10  Rack  Racks, max. Modules per rack, max. Modules per rack, max. Modules per rack, max.  Kender of day  Clock  Hardware clock (real-time) retentive and synchronizable Deviation per day, max. Behavior of the clock following POWER-ON Behavior of the clock following expiry of backup period  Operating hours counter  Number Number Number Range of values Range of walues Range of values Range of v		2
integrated via CP  Number of operable FMs and CPs (recommended)  FM CP, PM B CP, LAN 10  Rack  Racks, max. Modules per rack, max. Modules per rack, max.  Firme of day  Clock  Hardware clock (real-time) Pertentive and synchronizable Backup time Deviation per day, max. Behavior of the clock following POWER-ON Behavior of the clock following expiry of backup period  Operating hours counter  Number Range of values Range of values Pertentive Person Pertentive Pe		
Number of operable FMs and CPs (recommended)     FM		1
Number of operable FMs and CPs (recommended)  FM CP, PtP CP, LAN 10  Rack  Racks, max. Modules per rack, max. Modules per rack, max.  Hardware clock (real-time) retentive and synchronizable Backup time Deviation per day, max. Behavior of the clock following POWER-ON Behavior of the clock following expiry of backup period  Clock continues running after POWER OFF Clock continues to run with the time at which the power failure occurred  PNumber Number Range of values Range of values Pres Total Muster Poes Poes Poes Poes Poes Poes Poes Poes		
FIM CP, PtP CP, LAN CP, LAN CP, LAN CP, LAN CP, LAN CP, LAN CRack  Racks, max. Modules per rack, max. Modules per rack max. Modules per rack max. Modules per rack max. Modules per ra		,
CP, PtP CP, LAN CP, L		0
Clock  Packs, max. Modules per rack, max. Modules per rack, max. Modules per rack, max. Modules per rack, max.  Prime of day  Clock  Hardware clock (real-time) Pretentive and synchronizable Backup time Deviation per day, max. Behavior of the clock following POWER-ON Behavior of the clock following expiry of backup period  Operating hours counter  Number Number Number Number Number 1 Number/Number range Range of values Pretentive  Other is marked at each restart  Clock synchronization  Supported Nesser Nesee Nesser Nesser Nesser Nesser Nesser Nesser Nesser Nesser Nesser		
Rack  Racks, max.  Modules per rack, max.  Modules per rack, max.  Modules per rack, max.  Image: Rack 3 max. 7   Time of day  Clock  Hardware clock (real-time)  retentive and synchronizable  Backup time  Deviation per day, max.  Behavior of the clock following POWER-ON  Behavior of the clock following expiry of backup period  Clock continues running after POWER OFF  Clock continues to run with the time at which the power failure occurred  Operating hours counter  Number  Number  Number 1  Number/Number 1  Number/Number range  Range of values  O to 2^31 hours (when using SFC 101)  retentive  Ves; Must be restarted at each restart  Clock synchronization  supported  Yes  to MPI, master  Yes  to MPI, slave  to DP, master		
Racks, max.  Modules per rack, max.  Modules per rack, max.  Nodules per rack a max. 7  Nodules per rack, max.  Nodules per rack, max.  Nodules per rack, max.  Nodules per rack, max.  Nodules per rack a max. 7		10
Modules per rack, max.  **S; In rack 3 max. 7  **Time of day**  Clock  **Hardware clock (real-time)**  **retentive and synchronizable**  **Backup time**  **Deviation per day, max.**  **Behavior of the clock following POWER-ON**  **Behavior of the clock following expiry of backup period**  **Operating hours counter**  **Number**		1
Clock  Hardware clock (real-time) retentive and synchronizable Backup time Deviation per day, max. Behavior of the clock following POWER-ON Behavior of the clock following expiry of backup period  Clock continues running after POWER OFF Clock continues to run with the time at which the power failure occurred  Operating hours counter  Number Number Number 1 Number/Number range Range of values Page of values Tetentive  Clock synchronization  Synchronization  Yes  Ves To MPI, master Yes  Yes  Yes  Yes  Yes; With DP slave only slave clock		
Operating hours counter  Number Number/Number range Range of values Pange of values Pange of values Supported Suppo	■ Modules per rack, max.	6, III fack 3 max. I
<ul> <li>Hardware clock (real-time)</li> <li>retentive and synchronizable</li> <li>Backup time</li> <li>Deviation per day, max.</li> <li>Behavior of the clock following POWER-ON</li> <li>Behavior of the clock following expiry of backup period</li> <li>Clock continues running after POWER OFF</li> <li>Clock continues to run with the time at which the power failure occurred</li> </ul> Operating hours counter <ul> <li>Number</li> <li>Number/Number range</li> <li>Range of values</li> <li>Testentive</li> <li>Ves; Must be restarted at each restart</li> </ul> Clock synchronization <ul> <li>supported</li> <li>to MPI, master</li> <li>to MPI, slave</li> <li>to DP, master</li> </ul> Yes; With DP slave only slave clock	Time of day	
<ul> <li>retentive and synchronizable</li> <li>Backup time</li> <li>Deviation per day, max.</li> <li>Behavior of the clock following POWER-ON</li> <li>Behavior of the clock following expiry of backup period</li> <li>Clock continues running after POWER OFF</li> <li>Clock continues to run with the time at which the power failure occurred</li> </ul> Operating hours counter <ul> <li>Number</li> <li>Number/Number range</li> <li>Range of values</li> <li>Range of values</li> <li>Testentive</li> <li>Yes; Must be restarted at each restart</li> </ul> Clock synchronization <ul> <li>supported</li> <li>to MPI, master</li> <li>to MPI, slave</li> <li>to DP, master</li> </ul> Yes; With DP slave only slave clock	Clock	
Backup time Deviation per day, max. Behavior of the clock following POWER-ON Behavior of the clock following expiry of backup period  Operating hours counter  Number Number Range of values Range of values retentive  Clock synchronization  Supported Suppor	Hardware clock (real-time)	Yes
<ul> <li>Deviation per day, max.</li> <li>Behavior of the clock following POWER-ON</li> <li>Behavior of the clock following expiry of backup period</li> <li>Clock continues running after POWER OFF</li> <li>Clock continues to run with the time at which the power failure occurred</li> </ul> Operating hours counter <ul> <li>Number</li> <li>Number/Number range</li> <li>Range of values</li> <li>Testentive</li> <li>Ves; Must be restarted at each restart</li> </ul> Clock synchronization <ul> <li>Yes</li> <li>to MPI, master</li> <li>to MPI, slave</li> <li>to DP, master</li> </ul> Yes; With DP slave only slave clock	<ul> <li>retentive and synchronizable</li> </ul>	Yes
<ul> <li>Behavior of the clock following POWER-ON</li> <li>Behavior of the clock following expiry of backup period</li> <li>Clock continues running after POWER OFF</li> <li>Clock continues to run with the time at which the power failure occurred</li> </ul> Operating hours counter <ul> <li>Number</li> <li>Number range</li> <li>Range of values</li> <li>Range of values</li> <li>Tetentive</li> <li>Yes; Must be restarted at each restart</li> </ul> Clock synchronization <ul> <li>Yes</li> <li>to MPI, master</li> <li>to MPI, slave</li> <li>to DP, master</li> <li>Yes; With DP slave only slave clock</li> </ul>	Backup time	6 wk; At 40 °C ambient temperature
Behavior of the clock following expiry of backup period  Operating hours counter  Number  Number 1  Number/Number range 0  Range of values 0 to 2^31 hours (when using SFC 101)  retentive Yes; Must be restarted at each restart  Clock synchronization  supported Yes  to MPI, master  to MPI, slave  to DP, master  Clock continues to run with the time at which the power failure occurred  Clock continues to run with the time at which the power failure occurred  Clock continues to run with the time at which the power failure occurred	<ul> <li>Deviation per day, max.</li> </ul>	10 s; Typ.: 2 s
period occurred  Operating hours counter  Number  Number  Number 1  Number/Number range  Range of values  Tetentive  O to 2^31 hours (when using SFC 101)  Yes; Must be restarted at each restart  Clock synchronization  Supported  Yes  To MPI, master  To MPI, slave  To MPI, slave  To DP, master	<ul> <li>Behavior of the clock following POWER-ON</li> </ul>	Clock continues running after POWER OFF
Operating hours counter  • Number  • Number/Number range  • Range of values  • Range of values  • retentive  Clock synchronization  • supported  • to MPI, master  • to MPI, slave  • to DP, master  O  1  1  0  0  0  0  0  0  0  0  0  0  0	Behavior of the clock following expiry of backup	Clock continues to run with the time at which the power failure
<ul> <li>Number</li> <li>Number/Number range</li> <li>Range of values</li> <li>retentive</li> <li>Clock synchronization</li> <li>supported</li> <li>to MPI, master</li> <li>to MPI, slave</li> <li>to DP, master</li> <li>Yes; With DP slave only slave clock</li> </ul>	period	occurred
<ul> <li>Number/Number range</li> <li>Range of values</li> <li>tetentive</li> <li>retentive</li> <li>Supported</li> <li>to MPI, master</li> <li>to MPI, slave</li> <li>to DP, master</li> <li>Number/Number range</li> <li>to DP, master</li> <li>Number (when using SFC 101)</li> <li>Yes; Must be restarted at each restart</li> <li>Yes; Must be restarted at each restart</li> </ul>	Operating hours counter	
<ul> <li>Range of values <ul> <li>retentive</li> <li>Yes; Must be restarted at each restart</li> </ul> </li> <li>Clock synchronization <ul> <li>supported</li> <li>to MPI, master</li> <li>to MPI, slave</li> <li>to DP, master</li> </ul> </li> <li>Yes <ul> <li>Yes</li> </ul> </li> <li>Yes</li> </ul> <li>Yes</li> <li>Yes</li> <li>Yes</li> <li>Yes</li>	• Number	1
<ul> <li>retentive</li> <li>Yes; Must be restarted at each restart</li> <li>Clock synchronization</li> <li>supported</li> <li>to MPI, master</li> <li>to MPI, slave</li> <li>to DP, master</li> <li>Yes</li> <li>Yes; With DP slave only slave clock</li> </ul>	<ul><li>Number/Number range</li></ul>	0
Clock synchronization  • supported Yes  • to MPI, master Yes  • to MPI, slave Yes  • to DP, master Yes; With DP slave only slave clock	<ul><li>Range of values</li></ul>	0 to 2^31 hours (when using SFC 101)
<ul> <li>supported</li> <li>to MPI, master</li> <li>to MPI, slave</li> <li>to DP, master</li> <li>Yes</li> </ul>	• retentive	Yes; Must be restarted at each restart
<ul> <li>to MPI, master</li> <li>to MPI, slave</li> <li>to DP, master</li> <li>Yes</li> <li>Yes</li> <li>Yes</li> <li>Yes; With DP slave only slave clock</li> </ul>	Clock synchronization	
<ul> <li>to MPI, slave</li> <li>to DP, master</li> <li>Yes</li> <li>Yes; With DP slave only slave clock</li> </ul>	• supported	Yes
• to DP, master  Yes; With DP slave only slave clock	• to MPI, master	Yes
	• to MPI, slave	Yes
● to DP, slave	• to DP, master	Yes; With DP slave only slave clock
,	• to DP, slave	Yes
• in AS, master Yes	• in AS, master	Yes
• in AS, slave	• in AS, slave	No
Digital inputs	Digital inputs	

Number of digital inputs	24	
	16	
<ul> <li>of which inputs usable for technological functions</li> </ul>	10	
integrated channels (DI)	24	
Input characteristic curve in accordance with IEC	Yes	
61131, type 1	100	
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 +30V	
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	
pa.a	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 counter/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		
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)	16	
Short-circuit protection	Yes; Clocked electronically	
<ul> <li>Response threshold, typ.</li> </ul>	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	
● 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
<ul> <li>for redundant control of a load</li> </ul>	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	1
measurement	
integrated channels (AI)	5; 4 x current/voltage, 1 x 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
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	
<ul><li>Voltage</li></ul>	Yes; $\pm 10$ V / $100$ k $\Omega$ ; 0 V to 10 V / $100$ k $\Omega$
Current	Yes; ±20 mA / 100 $\Omega;$ 0 mA to 20 mA / 100 $\Omega;$ 4 mA to 20 mA / 100 $\Omega$
<ul> <li>Resistance thermometer</li> </ul>	Yes; Pt 100 / 10 MΩ
Resistance	Yes; 0 $\Omega$ to 600 $\Omega$ / 10 $M\Omega$
Input ranges (rated values), voltages	
• 0 to +10 V	Yes
<ul><li>Input resistance (0 to 10 V)</li></ul>	100 kΩ
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
<ul><li>Input resistance (0 to 20 mA)</li></ul>	100 Ω
• -20 mA to +20 mA	Yes
• Input resistance (-20 mA to +20 mA)	100 Ω
• 4 mA to 20 mA	Yes
<ul> <li>Input resistance (4 mA to 20 mA)</li> </ul>	100 Ω
Input ranges (rated values), resistance thermometer	
● Pt 100	Yes
• Input resistance (Pt 100)	10 MΩ
Input ranges (rated values), resistors	
• 0 to 600 ohms	Yes
<ul><li>Input resistance (0 to 600 ohms)</li></ul>	10 MΩ
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.	14 V
Output ranges, voltage	
• 0 to 10 V	Yes
• -10 V to +10 V	Yes
Output ranges, current	
• 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
<ul> <li>with voltage outputs, capacitive load, max.</li> </ul>	0.1 μF
with current outputs, max.	300 Ω
with current outputs, inductive load, max.	0.1 mH
Destruction limits against externally applied voltages an	d currents
Voltages at the outputs towards MANA	16 V; Permanent
Current, max.	50 mA; Permanent
Cable length	
• shielded, max.	200 m
	200 m
Analog value generation for the inputs	
	200 m  Actual value encryption (successive approximation)
Analog value generation for the inputs  Measurement principle	
Analog value generation for the inputs  Measurement principle  Integration and conversion time/resolution per channel	Actual value encryption (successive approximation)
Analog value generation for the inputs  Measurement principle  Integration and conversion time/resolution per channel  • Resolution with overrange (bit including sign),	Actual value encryption (successive approximation)
Analog value generation for the inputs  Measurement principle  Integration and conversion time/resolution per channel  • Resolution with overrange (bit including sign), max.	Actual value encryption (successive approximation)  12 bit
Analog value generation for the inputs  Measurement principle  Integration and conversion time/resolution per channel  • Resolution with overrange (bit including sign), max.  • Integration time, parameterizable	Actual value encryption (successive approximation)  12 bit  Yes; 16.6 / 20 ms
Analog value generation for the inputs  Measurement principle  Integration and conversion time/resolution per channel  • Resolution with overrange (bit including sign), max.  • Integration time, parameterizable  • Interference voltage suppression for	Actual value encryption (successive approximation)  12 bit  Yes; 16.6 / 20 ms
Analog value generation for the inputs  Measurement principle  Integration and conversion time/resolution per channel  • Resolution with overrange (bit including sign), max.  • Integration time, parameterizable  • Interference voltage suppression for interference frequency f1 in Hz	Actual value encryption (successive approximation)  12 bit  Yes; 16.6 / 20 ms 50 / 60 Hz
Analog value generation for the inputs  Measurement principle  Integration and conversion time/resolution per channel  • Resolution with overrange (bit including sign), max.  • Integration time, parameterizable  • Interference voltage suppression for interference frequency f1 in Hz  • permissible input frequency, max.  • Time constant of the input filter  • Basic execution time of the module (all	Actual value encryption (successive approximation)  12 bit  Yes; 16.6 / 20 ms  50 / 60 Hz  400 Hz
Analog value generation for the inputs  Measurement principle  Integration and conversion time/resolution per channel  • Resolution with overrange (bit including sign), max.  • Integration time, parameterizable  • Interference voltage suppression for interference frequency f1 in Hz  • permissible input frequency, max.  • Time constant of the input filter	Actual value encryption (successive approximation)  12 bit  Yes; 16.6 / 20 ms  50 / 60 Hz  400 Hz  0.38 ms
Analog value generation for the inputs  Measurement principle  Integration and conversion time/resolution per channel  • Resolution with overrange (bit including sign), max.  • Integration time, parameterizable  • Interference voltage suppression for interference frequency f1 in Hz  • permissible input frequency, max.  • Time constant of the input filter  • Basic execution time of the module (all	Actual value encryption (successive approximation)  12 bit  Yes; 16.6 / 20 ms  50 / 60 Hz  400 Hz  0.38 ms
Analog value generation for the inputs  Measurement principle  Integration and conversion time/resolution per channel  • Resolution with overrange (bit including sign), max.  • Integration time, parameterizable  • Interference voltage suppression for interference frequency f1 in Hz  • permissible input frequency, max.  • Time constant of the input filter  • Basic execution time of the module (all channels released)	Actual value encryption (successive approximation)  12 bit  Yes; 16.6 / 20 ms  50 / 60 Hz  400 Hz  0.38 ms
Analog value generation for the inputs  Measurement principle  Integration and conversion time/resolution per channel  Resolution with overrange (bit including sign), max.  Integration time, parameterizable  Interference voltage suppression for interference frequency f1 in Hz  permissible input frequency, max.  Time constant of the input filter  Basic execution time of the module (all channels released)  Analog value generation for the outputs	Actual value encryption (successive approximation)  12 bit  Yes; 16.6 / 20 ms  50 / 60 Hz  400 Hz  0.38 ms
Analog value generation for the inputs  Measurement principle  Integration and conversion time/resolution per channel  Resolution with overrange (bit including sign), max.  Integration time, parameterizable  Interference voltage suppression for interference frequency f1 in Hz  permissible input frequency, max.  Time constant of the input filter  Basic execution time of the module (all channels released)  Analog value generation for the outputs  Integration and conversion time/resolution per channel	Actual value encryption (successive approximation)  12 bit  Yes; 16.6 / 20 ms  50 / 60 Hz  400 Hz  0.38 ms  1 ms
Analog value generation for the inputs  Measurement principle  Integration and conversion time/resolution per channel  Resolution with overrange (bit including sign), max.  Integration time, parameterizable  Interference voltage suppression for interference frequency f1 in Hz  permissible input frequency, max.  Time constant of the input filter  Basic execution time of the module (all channels released)  Analog value generation for the outputs  Integration and conversion time/resolution per channel  Resolution with overrange (bit including sign), max.  Conversion time (per channel)	Actual value encryption (successive approximation)  12 bit  Yes; 16.6 / 20 ms  50 / 60 Hz  400 Hz  0.38 ms  1 ms
Analog value generation for the inputs  Measurement principle  Integration and conversion time/resolution per channel  Resolution with overrange (bit including sign), max.  Integration time, parameterizable  Interference voltage suppression for interference frequency f1 in Hz  permissible input frequency, max.  Time constant of the input filter  Basic execution time of the module (all channels released)  Analog value generation for the outputs  Integration and conversion time/resolution per channel  Resolution with overrange (bit including sign), max.  Conversion time (per channel)  Settling time	Actual value encryption (successive approximation)  12 bit  Yes; 16.6 / 20 ms 50 / 60 Hz  400 Hz 0.38 ms 1 ms
Analog value generation for the inputs  Measurement principle  Integration and conversion time/resolution per channel  Resolution with overrange (bit including sign), max.  Integration time, parameterizable  Interference voltage suppression for interference frequency f1 in Hz  permissible input frequency, max.  Time constant of the input filter  Basic execution time of the module (all channels released)  Analog value generation for the outputs  Integration and conversion time/resolution per channel  Resolution with overrange (bit including sign), max.  Conversion time (per channel)	Actual value encryption (successive approximation)  12 bit  Yes; 16.6 / 20 ms 50 / 60 Hz  400 Hz 0.38 ms 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	
<ul> <li>for resistance measurement with two-wire connection</li> </ul>	Yes; Without compensation of the line resistances	
<ul> <li>for resistance measurement with three-wire connection</li> </ul>	No	
<ul> <li>for resistance measurement with four-wire connection</li> </ul>	No	
Connectable encoders		
• 2-wire sensor	Yes	
<ul> <li>permissible quiescent current (2-wire sensor), max.</li> </ul>	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	0.06 %	
input 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		
<ul> <li>Voltage, relative to input range, (+/-)</li> </ul>	1 %	
<ul> <li>Current, relative to input range, (+/-)</li> </ul>	1 %	
• Resistance, relative to input range, (+/-)	1 %	
<ul> <li>Voltage, relative to output range, (+/-)</li> </ul>	1 %	
<ul><li>Current, relative to output range, (+/-)</li></ul>	1 %	
Basic error limit (operational limit at 25 °C)		
<ul> <li>Voltage, relative to input range, (+/-)</li> </ul>	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 %	
<ul> <li>Resistance thermometer, relative to input range, (+/-)</li> </ul>	0.8 %	
<ul> <li>Voltage, relative to output range, (+/-)</li> </ul>	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.

Common mode interference, min.

40 dB

Number of industrial Ethernet interfaces

Number of PROFINET interfaces

Number of RS 485 interfaces

Number of RS 422 interfaces

1. Interface

Interface type

Integrated RS 485 interface

Integrated RS 485 interface

1. Interface		
Interface type	Integrated RS 485 interface	
Physics	RS 485	
Isolated	No	
Power supply to interface (15 to 30 V DC), max.	200 mA	
Functionality		
• MPI	Yes	
<ul> <li>PROFIBUS DP master</li> </ul>	No	
<ul> <li>PROFIBUS DP slave</li> </ul>	No	
<ul> <li>Point-to-point connection</li> </ul>	No	
MPI		
Transmission rate, max.	187.5 kbit/s	
Services		
— PG/OP communication	Yes	
— Routing	Yes	
<ul> <li>Global data communication</li> </ul>	Yes	
<ul> <li>S7 basic communication</li> </ul>	Yes	
— S7 communication	Yes; Only server, configured on one side	
<ul> <li>S7 communication, as client</li> </ul>	No; but via CP and loadable FB	
<ul> <li>S7 communication, as server</li> </ul>	Yes	

2. Interface	
Interface type	Integrated RS 485 interface
Physics	RS 485
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	200 mA
Functionality	
• MPI	No
<ul> <li>PROFINET IO Controller</li> </ul>	No
PROFINET IO Device	No
PROFINET CBA	No
<ul> <li>PROFIBUS DP master</li> </ul>	Yes
PROFIBUS DP slave	Yes
Point-to-point connection	No

DP master	
Transmission rate, max.	12 Mbit/s
<ul><li>Number of DP slaves, max.</li></ul>	124
Services	
— PG/OP communication	Yes
— Routing	Yes
— Global data communication	No
<ul> <li>S7 basic communication</li> </ul>	Yes; I blocks only
— S7 communication	Yes; Only server, configured on one side
— S7 communication, as client	No
<ul> <li>S7 communication, as server</li> </ul>	Yes
— Equidistance	Yes
— Isochronous mode	No
— SYNC/FREEZE	Yes
<ul> <li>Activation/deactivation of DP slaves</li> </ul>	Yes
<ul> <li>Number of DP slaves that can be simultaneously activated/deactivated, max.</li> </ul>	8
<ul> <li>Direct data exchange (slave-to-slave communication)</li> </ul>	Yes; As subscriber
— DPV1	Yes
Address area	
— Inputs, max.	2 kbyte
— Outputs, max.	2 kbyte
User data per DP slave	
— Inputs, max.	244 byte
— Outputs, max.	244 byte
DP slave	
● GSD file	The latest GSD file is available on the Internet (http://www.siemens.com/profibus-gsd)
<ul><li>Transmission rate, max.</li></ul>	12 Mbit/s
automatic baud rate search	Yes; only with passive interface
<ul> <li>Address area, max.</li> </ul>	32
<ul> <li>User data per address area, max.</li> </ul>	32 byte
Services	
— PG/OP communication	Yes
— Routing	Yes; Only with active interface
<ul> <li>Global data communication</li> </ul>	No
<ul><li>— S7 basic communication</li></ul>	No
— S7 communication	Yes; Only server, configured on one side
<ul> <li>S7 communication, as client</li> </ul>	No
<ul> <li>S7 communication, as server</li> </ul>	Yes

	<ul> <li>— Direct data exchange (slave-to-slave communication)</li> </ul>	Yes
Transfer memory  Inputs Outputs Output		No
Inputs		1,0
Communication functions  PG/OP communication Data record routing Global data communication  * supported  * Number of GD loops, max.  * Number of GD packets, max.  * Number of GD packets, transmitter, max.  * Size of GD packets, receiver, max.  * Size of GD packets, max.  * Size		244 hyte
PG/OP communication PG/OP communication PG/OP communication Pes  Bata record routing Pes  Global data communication  Pes  Supported Number of GD loops, max. Number of GD packets, max. Number of GD packets, receiver, max. Size of GD packets, max. Size of GD packet (of which consistent), max. Size of GD packets, max. Size of GD packets	·	
PG/OP communication  Pata record routing  Global data communication  * supported  Number of GD loops, max.  Number of GD packets, max.  Number of GD packets, rransmitter, max.  Number of GD packets, receiver, max.  Number of GD packets, receiver, max.  Size of GD packets, receiver, max.  Size of GD packets, max.  Pata of the packets o	— Outputs	211 Byte
Data record routing  Global data communication  • supported • Number of GD loops, max. • Number of GD packets, max. • Number of GD packets, transmitter, max. • Number of GD packets, transmitter, max. • Number of GD packets, transmitter, max. • Number of GD packets, receiver, max. • Size of GD packets, max. • Size of GD packet (of which consistent), max.  S7 basic communication • supported • User data per job, max. • User data per job (of which consistent), max.  S7 communication • supported • as server • as client • User data per job, max. • User data per job (of which consistent), max.  S8 compatible communication • supported • Syes; Via CP and loadable FB • User data per job (of which consistent), max.  S8 compatible communication • supported • ves; Via CP and loadable FC  Number of connections • overall • usable for PG communication — reserved for PG communication, min. — adjustable for PG communication, min. • usable for OP communication — reserved for OP communication — adjustable for OP communication — reserved for OP communication — adjustable for OP communication — adjustable for OP communication — adjustable for OP communication, min.		
Global data communication  supported Number of GD loops, max. Number of GD packets, max. Number of GD packets, transmitter, max. Number of GD packets, transmitter, max. Number of GD packets, transmitter, max. Size of GD packets, receiver, max. Size of GD packets, max. Size of GD packet (of which consistent), max. Size of GD packets, receiver, ax. Size of GD packet of Size of		
supported     Number of GD loops, max.     Number of GD packets, max.     Number of GD packets, transmitter, max.     Number of GD packets, transmitter, max.     Number of GD packets, transmitter, max.     Number of GD packets, receiver, max.     Size of GD packets, receiver, max.     Size of GD packets, max.     Size of GD packets (for which consistent), max.     Size of GD packet (for Which consistent),		Yes
Number of GD loops, max.  Number of GD packets, max.  Number of GD packets, transmitter, max.  Number of GD packets, transmitter, max.  Number of GD packets, receiver, max.  Size of GD packet (of which consistent), max.  Yes Size of GD packet (of which consistent), max.  Yes User data per job, max.  User data per job (of which consistent), max.  Yes  as server  as client  User data per job, max.  Yes  as client  User data per job, max.  Yes  as client  Sompatible communication  Sompatible communication  very data per job (of which consistent), max.  Yes  as client  User data per job, (of which consistent), max.  Yes  as client  User data per job, (of which consistent), max.  Yes  as client  User data per job (of which consistent), max.  Yes  Yes  as client  User data per job (of which consistent), max.  Yes  Yes  as client  User data per job (of which consistent), max.  Yes; via CP and loadable FB  Yes; via CP and loadable FC  Number of connections  very and CP and loadable FC  Number of connections  adjustable for PG communication  11  - reserved for PG communication, min.  - adjustable for PG communication  - adjustable for OP communication, min.		
Number of GD packets, max.  Number of GD packets, transmitter, max.  Number of GD packets, receiver, max.  Size of GD packets, max.  Size of GD packets, max.  Size of GD packet (of which consistent), max.  Yes  Size of GD packet (of which consistent), max.  Yes  User data per job, max.  User data per job (of which consistent), max.  Yes  To byte (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)  Number of connection  Yes  So compatible communication  Supported  User data per job (of which consistent), max.  Yes  So compatible communication  So compatible communication  So compatible communication  So compatible for PG communication  O everall  Usable for PG communication  11  — adjustable for PG communication  adjustable for PG communication  In cadjustable for PG communication  So communication  In cadjustable for PG communication, min.		
Number of GD packets, transmitter, max.  Number of GD packets, receiver, max.  Size of GD packets, max.  Size of GD packet (of which consistent), max.  Yes  Size of GD packet (of which consistent), max.  Yes  User data per job, max.  Strommunication  Strommunication  Supported  Strommunication  Yes  Strommunication  Yes  Strommunication  Supported	•	8
Number of GD packets, receiver, max. Size of GD packets, max. Size of GD packet (of which consistent), max.  Size of GD packet (of which consistent), max.  Solution of Spackets, max. Size of GD packet (of which consistent), max.  Solution of Spackets, max.  Supported Support	<ul> <li>Number of GD packets, max.</li> </ul>	8
Size of GD packets, max. Size of GD packet (of which consistent), max.  Size of GD packet (of which consistent), max.  Supported Suppor	<ul> <li>Number of GD packets, transmitter, max.</li> </ul>	8
Size of GD packet (of which consistent), max.  S7 basic communication  • supported • User data per job, max. • User data per job (of which consistent), max.  S7 communication  • supported • User data per job (of which consistent), max.  Fyes  • supported • Syes; Via CP and loadable FB • User data per job (of which consistent), max.  • User data per job (of which consistent), max.  • User data per job (of which consistent), max.  S5 compatible communication • supported  • supported  • ves; via CP and loadable FC  Number of connections  • overall • usable for PG communication — adjustable for PG communication — adjustable for PG communication — adjustable for PG communication — reserved for OP communication — adjustable for OP communication, min.  11	<ul> <li>Number of GD packets, receiver, max.</li> </ul>	8
S7 basic communication  • supported  • User data per job, max.  • User data per job (of which consistent), max.  • User data per job (of which consistent), max.  • User data per job (of which consistent), max.  • S7 communication  • supported  • as server  • as client  • User data per job, max.  • User data per job (of which consistent), max.  • User data per job (of which consistent), max.  • User data per job (of which consistent), max.  S5 compatible communication  • supported  • supported  • ves; via CP and loadable FC  Number of connections  • overall  • usable for PG communication  — adjustable for PG communication, min.  — adjustable for PG communication, mix.  • usable for OP communication  • reserved for OP communication  — reserved for OP communication  — adjustable for OP communication, min.	<ul> <li>Size of GD packets, max.</li> </ul>	22 byte
Supported     User data per job, max.     User data per job (of which consistent), max.     User data per job (of which consistent), max.      User data per job (of which consistent), max.      So communication      Supported     Yes     As server     As client     User data per job, max.     User data per job (of which consistent), max.      User data per job (of which consistent), max.      So compatible communication     Supported     Yes; via CP and loadable FB     User data per job (of which consistent), max.      Stompatible communication     Supported     Yes; via CP and loadable FC  Number of connections      overall     usable for PG communication     — adjustable for PG communication, min.     — adjustable for PG communication, min.     usable for OP communication     usable for OP communication     — adjustable for OP communication, min.	<ul> <li>Size of GD packet (of which consistent), max.</li> </ul>	22 byte
User data per job, max.  User data per job (of which consistent), max.  To byte  To byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)  Sommunication  Supported  Supported  Supported  Super data per job, max.  User data per job, max.  User data per job (of which consistent), max.  Supported  Supported  Yes; Via CP and loadable FB  User data per job (of which consistent), max.  User data per job (of which consistent), max.  Supported  Yes; via CP and loadable FC  Number of connections  Overall  Supported  Preserved for PG communication  adjustable for PG communication, min.  adjustable for PG communication  Treserved for PG communication  usable for OP communication  adjustable for OP communication, min.	S7 basic communication	
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 • as server  • as client • User data per job, max. • User data per job (of which consistent), max.  180 kbyte; With PUT/GET  • User data per job (of which consistent), max.  240 byte; as server  S5 compatible communication • supported  • supported  Number of connections  • overall • usable for PG communication — reserved for PG communication — adjustable for PG communication, min. — adjustable for PG communication  11 — reserved for OP communication 11 — reserved for OP communication 11 — adjustable for OP communication — adjustable for OP communication, min. — adjustable for OP communication, max.	• supported	Yes
X_PUT or X_GET as server)  S7 communication  • supported • as server • as client • User data per job, max. • User data per job (of which consistent), max.  S5 compatible communication • supported • versil • usable for PG communication  - reserved for PG communication, min adjustable for OP communication  • usable for OP communication  11 - reserved for OP communication  11 - adjustable for OP communication, min adjustable for OP communication, max.  11	<ul><li>User data per job, max.</li></ul>	76 byte
<ul> <li>supported</li> <li>as server</li> <li>as client</li> <li>User data per job, max.</li> <li>User data per job (of which consistent), max.</li> <li>User data per job (of which consistent), max.</li> <li>240 byte; as server</li> </ul> S5 compatible communication <ul> <li>supported</li> <li>Yes; via CP and loadable FC</li> </ul> Number of connections <ul> <li>overall</li> <li>usable for PG communication</li> <li>reserved for PG communication</li> <li>adjustable for PG communication, min.</li> <li>adjustable for PG communication</li> <li>usable for OP communication</li> <li>adjustable for OP communication</li> <li>reserved for OP communication</li> <li>adjustable for OP communication</li> <li>adjustable for OP communication, min.</li> </ul>	<ul> <li>User data per job (of which consistent), max.</li> </ul>	
as server as client Suser data per job, max. User data per job (of which consistent), max. Susported Susported  Augustable for PG communication  adjustable for PG communication, max.  augustable for OP communication, min. adjustable for OP communication  as as client Yes; Via CP and loadable FC  Yes; via CP and loadable FC  Number of connections  12  usable for PG communication 11  adjustable for PG communication 11  adjustable for PG communication, min. adjustable for OP communication 11  adjustable for OP communication 11  adjustable for OP communication 11  adjustable for OP communication, min. 11	S7 communication	
<ul> <li>as client</li> <li>User data per job, max.</li> <li>User data per job (of which consistent), max.</li> <li>240 byte; as server</li> </ul> S5 compatible communication <ul> <li>supported</li> <li>Yes; via CP and loadable FC</li> </ul> Number of connections <ul> <li>overall</li> <li>usable for PG communication</li> <li>reserved for PG communication</li> <li>adjustable for PG communication, min.</li> <li>adjustable for PG communication</li> <li>reserved for PG communication, max.</li> </ul> 11 <ul> <li>usable for OP communication</li> <li>adjustable for OP communication</li> <li>adjustable for OP communication, min.</li> <li>adjustable for OP communication, max.</li> </ul>	• supported	Yes
<ul> <li>User data per job, max.</li> <li>User data per job (of which consistent), max.</li> <li>User data per job (of which consistent), max.</li> <li>S5 compatible communication</li> <li>supported</li> <li>Yes; via CP and loadable FC</li> <li>Number of connections</li> <li>overall</li> <li>usable for PG communication</li> <li>reserved for PG communication</li> <li>adjustable for PG communication, min.</li> <li>adjustable for PG communication</li> <li>usable for OP communication</li> <li>reserved for OP communication</li> <li>adjustable for OP communication</li> <li>adjustable for OP communication, min.</li> <li>adjustable for OP communication, min.</li> <li>adjustable for OP communication, max.</li> </ul>	• as server	Yes
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  usable for PG communication  reserved for PG communication  adjustable for PG communication, min.  adjustable for PG communication  reserved for OP communication  adjustable for OP communication  adjustable for OP communication  adjustable for OP communication, min.  adjustable for OP communication, max.	• as client	Yes; Via CP and loadable FB
S5 compatible communication  • supported  Yes; via CP and loadable FC  Number of connections  • overall  • usable for PG communication  — reserved for PG communication  — adjustable for PG communication, min.  — adjustable for PG communication, max.  • usable for OP communication  — reserved for OP communication  — adjustable for OP communication  — adjustable for OP communication, min.  — adjustable for OP communication, min.  — adjustable for OP communication, max.	<ul> <li>User data per job, max.</li> </ul>	180 kbyte; With PUT/GET
<ul> <li>supported</li> <li>Yes; via CP and loadable FC</li> <li>Number of connections</li> <li>overall</li> <li>usable for PG communication</li> <li>reserved for PG communication</li> <li>adjustable for PG communication, min.</li> <li>adjustable for PG communication, max.</li> <li>usable for OP communication</li> <li>reserved for OP communication</li> <li>adjustable for OP communication</li> <li>adjustable for OP communication, min.</li> <li>adjustable for OP communication, min.</li> <li>adjustable for OP communication, max.</li> </ul>	<ul> <li>User data per job (of which consistent), max.</li> </ul>	240 byte; as server
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	S5 compatible communication	
<ul> <li>overall</li> <li>usable for PG communication</li> <li>reserved for PG communication</li> <li>adjustable for PG communication, min.</li> <li>adjustable for PG communication, max.</li> <li>usable for OP communication</li> <li>reserved for OP communication</li> <li>adjustable for OP communication, min.</li> <li>adjustable for OP communication, min.</li> <li>adjustable for OP communication, max.</li> </ul>	• supported	Yes; via CP and loadable FC
<ul> <li>usable for PG communication</li> <li>reserved for PG communication</li> <li>adjustable for PG communication, min.</li> <li>adjustable for PG communication, max.</li> <li>usable for OP communication</li> <li>reserved for OP communication</li> <li>adjustable for OP communication</li> <li>adjustable for OP communication, min.</li> <li>adjustable for OP communication, max.</li> </ul>	Number of connections	
<ul> <li>reserved for PG communication</li> <li>adjustable for PG communication, min.</li> <li>adjustable for PG communication, max.</li> <li>usable for OP communication</li> <li>reserved for OP communication</li> <li>adjustable for OP communication, min.</li> <li>adjustable for OP communication, max.</li> </ul>	• overall	12
<ul> <li>adjustable for PG communication, min.</li> <li>adjustable for PG communication, max.</li> <li>usable for OP communication</li> <li>reserved for OP communication</li> <li>adjustable for OP communication, min.</li> <li>adjustable for OP communication, max.</li> </ul>	<ul> <li>usable for PG communication</li> </ul>	11
<ul> <li>— adjustable for PG communication, max.</li> <li>• usable for OP communication</li> <li>— reserved for OP communication</li> <li>— adjustable for OP communication, min.</li> <li>— adjustable for OP communication, max.</li> </ul>	<ul> <li>reserved for PG communication</li> </ul>	1
<ul> <li>usable for OP communication</li> <li>reserved for OP communication</li> <li>adjustable for OP communication, min.</li> <li>adjustable for OP communication, max.</li> </ul>	<ul> <li>adjustable for PG communication, min.</li> </ul>	1
<ul> <li>reserved for OP communication</li> <li>adjustable for OP communication, min.</li> <li>adjustable for OP communication, max.</li> </ul>	<ul> <li>adjustable for PG communication, max.</li> </ul>	11
<ul> <li>— adjustable for OP communication, min.</li> <li>— adjustable for OP communication, max.</li> <li>11</li> </ul>	<ul> <li>usable for OP communication</li> </ul>	11
— adjustable for OP communication, max.	<ul> <li>reserved for OP communication</li> </ul>	1
	<ul> <li>adjustable for OP communication, min.</li> </ul>	1
• usable for S7 basic communication 8	<ul> <li>adjustable for OP communication, max.</li> </ul>	11
	• usable for S7 basic communication	8

reserved for S7 basic communication adjustable for S7 basic communication, min adjustable for S7 basic communication, max.  • usable for routing  S7 message functions  Number of login stations for message functions, max.  12; Depending on the configured connections for PG/OP and S7 basic communication  Process diagnostic messages Yes simultaneously active Alarm-S blocks, max.  Test commissioning functions  Status block Yes; Up to 2 simultaneously Single step Yes Number of breakpoints  Status/control  • Status/control variable Variables Number of variables, max of which status variables, max of which status variables, max of which control variables, max of which status variables, max of which control variables, max of which control variables, max of which control variables, max of which status variables, max of which control variables, max of which contr		
min.  — adjustable for S7 basic communication, max.  • usable for routing  S7 message functions  Number of login stations for message functions, max.  Process diagnostic messages  Process diagnostic messages  Yes  simultaneously active Alarm-S blocks, max.  300  Test commissioning functions  Status block  Status block  Status control  Status/control  Status/control  Status/control  Status/control  Status/control  Status/control  Status/control variable  Ves  Number of variables, max.  — of which status variables, max.  — of which control variables, max.  — of which control variables, max.  — of which control variables, max.  — of which ontrol variables, max.  — of which control variables, max.  — of which control variables, max.  — of which ontrol variables, max.  Diagnostic buffer  • present  • Number of entries, max.  — adjustable  — of which powerfail-proof  • Number of entries readable in RUN, max.  — can be set  — preset  Pressit Ves; From 10 to 499  Testing and the configured connections for PG/OP and S7 basic communication  12; Depending on the configured connections for PG/OP and S7 basic communication  12; Depending on the configured connections for PG/OP and S7 basic communication  12; Depending on the configured connections for PG/OP and S7 basic communication  12; Depending on the configured connections for PG/OP and S7 basic communication  12; Depending on the configured connections for PG/OP and S7 basic communication  12; Depending on the configured connections for PG/OP and S7 basic communication  12; Depending on the configured connections for PG/OP and S7 basic communication  12; Depending on the configured connections for PG/OP and S7 basic communication  12; Depending on the configured connections for PG/OP and S7 basic communication  12; Depending on the configured connections for passections and communication  12; Depending on the configured connections for passections and communication	<ul> <li>reserved for S7 basic communication</li> </ul>	0
adjustable for S7 basic communication, max.  • usable for routing  S7 message functions  Number of login stations for message functions, max.  Process diagnostic messages simultaneously active Alarm-S blocks, max.  Process diagnostic messages simultaneously active Alarm-S blocks, max.  Test commissioning functions  Status block Yes; Up to 2 simultaneously Single step Yes  Number of breakpoints  4  Status/control • Status/control variable • Variables • Number of variables, max.  - of which status variables, max.  - of which control variables, max.  - of which ontrol variables, max.  14  Forcing • Forcing, variables • Number of variables, max.  10  Diagnostic buffer  • present • present • Number of entries, max.  - adjustable - of which powerfail-proof • Number of entries readable in RUN, max.  - can be set - preset  10  Service data	<ul> <li>adjustable for S7 basic communication,</li> </ul>	0
max.  • usable for routing  4; max.  S7 message functions  Number of login stations for message functions, max.  Process diagnostic messages simultaneously active Alarm-S blocks, max.  Test commissioning functions  Status block Yes; Up to 2 simultaneously Single step Yes  Number of breakpoints  4  Status/control • Status/control variable • Variables • Number of variables, max. — of which status variables, max.	min.	
vasable for routing     37 message functions Number of login stations for message functions, max.  Process diagnostic messages simultaneously active Alarm-S blocks, max.  Prosess diagnostic messages 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  Status/control  Status/control  Status/control  Status/control  Status/control  Status/control  Yes Inputs, outputs, memory bits, DB, times, counters  Number of variables, max.  of which status variables, max.  forcing Forcing Forcing Forcing Forcing Forcing, variables Number of variables, max.  10  Diagnostic buffer  present Number of entries, max.  adjustable of which powerfail-proof Number of entries readable in RUN, max.  - can be set - preset  10  Service data	<ul> <li>adjustable for S7 basic communication,</li> </ul>	8
Number of login stations for message functions, max.  Process diagnostic messages simultaneously active Alarm-S blocks, max.  Process diagnostic messages simultaneously active Alarm-S blocks, max.  Test commissioning functions  Status block Yes; Up to 2 simultaneously Single step Yes Number of breakpoints  Status/control  Status/control  Status/control variable Variables Number of variables, max. Of which status variables, max. Forcing Forcing Forcing Forcing Forcing, variables, max. Number of variables, max.  Number of variables, max.  Forcing Forcing Forcing Forcing Forcing Forcing, variables, max.  Number of variables, max.  Obliagnostic buffer  Present Number of entries, max.  - adjustable - of which powerfail-proof Number of entries readable in RUN, max.  - can be set - preset  10  Service data	max.	
Number of login stations for message functions, max.  Process diagnostic messages simultaneously active Alarm-S blocks, max.  Test commissioning functions  Status block Yes; Up to 2 simultaneously Single step Yes Number of breakpoints  Status/control  Status/control variable Variables Number of variables, max.  of which status variables, max.  of which control variables, max.  Forcing  Forcing Forcing, variables Number of variables, max.  Number of variables, max.  of which control variables, max.  of which control variables, max.  10  Diagnostic buffer  present Number of entries, max.  - adjustable - of which powerfail-proof Number of entries readable in RUN, max.  - can be set - preset  Service data	<ul><li>usable for routing</li></ul>	4; max.
Number of login stations for message functions, max.  Process diagnostic messages simultaneously active Alarm-S blocks, max.  Test commissioning functions  Status block Yes; Up to 2 simultaneously Single step Yes Number of breakpoints  Status/control  Status/control variable Variables Number of variables, max.  of which status variables, max.  of which control variables, max.  Forcing  Forcing Forcing, variables Number of variables, max.  Number of variables, max.  of which control variables, max.  of which control variables, max.  10  Diagnostic buffer  present Number of entries, max.  - adjustable - of which powerfail-proof Number of entries readable in RUN, max.  - can be set - preset  Service data	S7 message functions	
Process diagnostic messages simultaneously active Alarm-S blocks, max.  Test commissioning functions  Status block Single step Yes Number of breakpoints 4  Status/control  Status/control variable Variables Number of variables, max. of which status variables, max.  - of which control variables, max.  14  Forcing Forcing Forcing, variables, max. Number of variables, max.  Number of variables, max.  Forcing Forcing Forcing Forcing Forcing Forcing Forcing Number of variables, max.  Number of variables, max.  Number of variables Number of variables Number of variables, max.  10  Diagnostic buffer  present  present No Number of entries, max.  - adjustable - of which powerfail-proof Number of entries readable in RUN, max.  - can be set - preset  10  Service data	Number of login stations for message functions, max.	12; Depending on the configured connections for PG/OP and S7
simultaneously active Alarm-S blocks, max.  Test commissioning functions  Status block Single step Yes Number of breakpoints  • Status/control  • Status/control variable Variables Number of variables, max. Of which control variables, max.  - of which control variables, max.  - of which control variables, max.  14  Forcing Forcing Forcing, variables, max.  • Number of variables, max.    Obiagnostic buffer   Present   Number of entries, max.   Adjustable   On which powerfail-proof   Number of entries readable in RUN, max.   Can be set   Preset   Preset   Preset   Can be set   Preset   Preset   Can be set   Preser on to 499   Preser on		basic communication
Status block Single step Yes Number of breakpoints  Forcing Fo	Process diagnostic messages	Yes
Status block Single step Yes Number of breakpoints 4  Status/control  Status/control variable Variables Number of variables, max. Of which status variables, max. Forcing Forcing Forcing Forcing, variables, max. Number of variables, max. Number of variables, max. Of which control variables, max. To find the control variables, max.  Forcing F	simultaneously active Alarm-S blocks, max.	300
Status block Single step Yes Number of breakpoints 4  Status/control  Status/control variable Variables Number of variables, max. Of which status variables, max. Forcing Forcing Forcing Forcing, variables, max. Number of variables, max. Number of variables, max. Of which control variables, max. To find the control variables, max.  For cond Forcing	Test commissioning functions	
Number of breakpoints  Status/control  Status/control variable  Ves Inputs, outputs, memory bits, DB, times, counters  Number of variables, max.  of which status variables, max.  of which control variables, max.  It  Forcing  Forcing  Forcing, variables  Number of variables, max.  Number of variables, max.  Porcing  Forcing  Forcing  Forcing Ves  Inputs, outputs  Number of variables, max.  10  Diagnostic buffer  Present  Number of entries, max.  adjustable  of which powerfail-proof  Number of entries readable in RUN, max.  - can be set  preset  10  Service data		Yes; Up to 2 simultaneously
Status/control  Status/control variable  Variables  Inputs, outputs, memory bits, DB, times, counters  Outputs, outputs, and	Single step	Yes
Status/control variable Variables Inputs, outputs, memory bits, DB, times, counters  Number of variables, max.  of which status variables, max.  of which control variables, max.  Forcing  Forcing  Forcing  Forcing, variables Inputs, outputs Inputs, outputs Inputs, outputs  Number of variables, max.  Ves Inputs, outputs  Number of variables, max.  No  Diagnostic buffer  Present Number of entries, max.  adjustable of which powerfail-proof Number of entries readable in RUN, max.  - can be set - preset  Service data	Number of breakpoints	4
Variables Number of variables, max. Of which status variables, max. Of which control variables, max. Of which control variables, max. Of which control variables, max.  Forcing Forcing Forcing Forcing, variables Number of variables, max.  Number of variables, max.  Diagnostic buffer  Present Number of entries, max. Of which powerfail-proof Number of entries readable in RUN, max. Or can be set Or preset  Persent Ves; From 10 to 499 Or can be set Or which powerfail-prost Or can be set	Status/control	
<ul> <li>Number of variables, max.</li> <li>— of which status variables, max.</li> <li>— of which control variables, max.</li> <li>14</li> <li>Forcing</li> <li>Forcing (Procing, variables)</li> <li>Number of variables, max.</li> <li>Number of variables, max.</li> <li>Diagnostic buffer</li> <li>Present (Present)</li> <li>Number of entries, max.</li> <li>— adjustable (Present)</li> <li>— of which powerfail-proof (Present)</li> <li>No (Present)</li> <li>Number of entries readable in RUN, max.</li> <li>— can be set (Present)</li> <li>— can be set (Present)</li> <li>— preset (Present)</li> <li>No (Present)</li> <li>— can be set (Present)</li> <li>— can be set (Present)</li> <li>— preset (Present)</li> <li>— preset (Present)</li> <li>— preset (Present)</li> <li>— preset (Present)</li> <li>— can be set (Present)</li> <li>— preset (Presen</li></ul>	Status/control variable	Yes
- of which status variables, max of which control variables, max.  14  Forcing  • Forcing  • Forcing, variables • Number of variables, max.  10  Diagnostic buffer  • present • Number of entries, max adjustable - of which powerfail-proof • Number of entries readable in RUN, max can be set - preset  Service data  30  14  Yes  Inputs, outputs  10  10  No  10  Ves  10  10  10  10  10  10  10  10  10  1	• Variables	Inputs, outputs, memory bits, DB, times, counters
— of which control variables, max.  Forcing  Forcing  Forcing  Forcing, variables  Inputs, outputs  Inputs, outputs  Inputs, outputs  Inputs, outputs  Inputs, outputs  Ves  Number of variables, max.  Present  Present  No  — adjustable — of which powerfail-proof  No  — of which powerfail-proof  Number of entries readable in RUN, max.  — can be set — preset  Person  Yes  100  No  100; Only the last 100 entries are retained  Yes; From 10 to 499 — preset  100  Service data	<ul> <li>Number of variables, max.</li> </ul>	30
Forcing  Forcing  Forcing, variables  Number of variables, max.  Diagnostic buffer  present  Number of entries, max.  - adjustable  - of which powerfail-proof  Number of entries readable in RUN, max.  - can be set  - preset  Service data	— of which status variables, max.	30
<ul> <li>Forcing</li> <li>Forcing, variables</li> <li>Number of variables, max.</li> <li>Diagnostic buffer</li> <li>present</li> <li>Number of entries, max.</li> <li>— adjustable</li> <li>— of which powerfail-proof</li> <li>Number of entries readable in RUN, max.</li> <li>— can be set</li> <li>— preset</li> <li>Service data</li> </ul>	— of which control variables, max.	14
<ul> <li>Forcing, variables</li> <li>Number of variables, max.</li> <li>Diagnostic buffer</li> <li>present</li> <li>Number of entries, max.</li> <li>— adjustable</li> <li>— of which powerfail-proof</li> <li>Number of entries readable in RUN, max.</li> <li>— can be set</li> <li>— preset</li> <li>Service data</li> </ul>	Forcing	
<ul> <li>Number of variables, max.</li> <li>Diagnostic buffer</li> <li>present</li> <li>Number of entries, max.</li> <li>adjustable</li> <li>of which powerfail-proof</li> <li>Number of entries readable in RUN, max.</li> <li>can be set</li> <li>preset</li> <li>Service data</li> </ul>	• Forcing	Yes
Diagnostic buffer   ● present Yes   ● 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   — can be set Yes; From 10 to 499   — preset 10   Service data	• Forcing, variables	Inputs, outputs
<ul> <li>present</li> <li>Number of entries, max.</li> <li>adjustable</li> <li>of which powerfail-proof</li> <li>Number of entries readable in RUN, max.</li> <li>can be set</li> <li>preset</li> </ul> Yes <ul> <li>100; Only the last 100 entries are retained</li> <li>499</li> <li>yes; From 10 to 499</li> <li>preset</li> </ul> Service data Yes <ul> <li>From 10 to 499</li> </ul> Service data	<ul> <li>Number of variables, max.</li> </ul>	10
<ul> <li>Number of entries, max.</li> <li>— adjustable</li> <li>— of which powerfail-proof</li> <li>Number of entries readable in RUN, max.</li> <li>— can be set</li> <li>— preset</li> <li>Service data</li> </ul>	Diagnostic buffer	
<ul> <li>— adjustable</li> <li>— of which powerfail-proof</li> <li>● Number of entries readable in RUN, max.</li> <li>— can be set</li> <li>— preset</li> <li>Service data</li> </ul> No <ul> <li>100; Only the last 100 entries are retained</li> <li>499</li> <li>Yes; From 10 to 499</li> <li>10</li> </ul>	• present	Yes
<ul> <li>— of which powerfail-proof</li> <li>■ Number of entries readable in RUN, max.</li> <li>— can be set</li> <li>— preset</li> <li>Service data</li> <li>100; Only the last 100 entries are retained</li> <li>499</li> <li>Yes; From 10 to 499</li> <li>10</li> </ul>	Number of entries, max.	500
<ul> <li>Number of entries readable in RUN, max.</li> <li>— can be set</li> <li>— preset</li> <li>Service data</li> </ul> 499  Yes; From 10 to 499  10	— adjustable	No
<ul> <li>Number of entries readable in RUN, max.</li> <li>— can be set</li> <li>— preset</li> <li>Yes; From 10 to 499</li> <li>— preset</li> <li>Service data</li> </ul>	— of which powerfail-proof	100; Only the last 100 entries are retained
<ul> <li>— can be set</li> <li>— preset</li> <li>Service data</li> </ul> Yes; From 10 to 499  10		499
— preset 10 Service data		Yes; From 10 to 499
Service data		
······································	• can be read out	Yes

Interru	nte/diac	incetice	/etatile	: into	ormation
IIIICIIU	pto/ulag	11031103/	วเผเนอ		Jillialion

Status indicator digital input (green)Status indicator digital output (green)Yes

## Integrated Functions

Number of counters 4; See "Technological Functions" manual

Counting frequency (counter) 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	
<ul> <li>Potential separation digital inputs</li> </ul>	Yes
<ul><li>between the channels</li></ul>	No
<ul> <li>between the channels and backplane bus</li> </ul>	Yes
Potential separation digital outputs	
Potential separation digital outputs	Yes
<ul><li>between the channels</li></ul>	Yes
<ul><li>between the channels, in groups of</li></ul>	8
<ul> <li>between the channels and backplane bus</li> </ul>	Yes
Potential separation analog inputs	
Potential separation analog inputs	Yes; common for analog I/O
<ul><li>between the channels</li></ul>	No
<ul> <li>between the channels and backplane bus</li> </ul>	Yes
Potential separation analog outputs	
Potential separation analog outputs	Yes; common for analog I/O
<ul><li>between the channels</li></ul>	No
• between the channels and backplane bus	Yes
Permissible potential difference	
between different circuits	75 V DC/60 V AC
Between the inputs and MANA (UCM)	8 V DC
between MANA and M internally (UISO)	75 V DC/60 V AC
Isolation	
Isolation tested with	600 V DC
Ambient conditions	
Ambient temperature during operation	
• min.	0 °C
• max.	60 °C
Configuration	
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
Programming	
Command set	see instruction list
Nesting levels	8
<ul><li>System functions (SFC)</li></ul>	see instruction list
<ul> <li>System function blocks (SFB)</li> </ul>	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
<ul> <li>Block encryption</li> </ul>	Yes; With S7 block Privacy
Dimensions	
Width	120 mm
Height	125 mm
Depth	130 mm
Weights	
Weight, approx.	680 g
last modified:	04/12/2018