SIEMENS

Data sheet

6ES7314-6EH04-0AB0



SIMATIC S7-300, CPU 314C-2PN/DP COMPACT CPU WITH 192 KBYTE WORKING MEMORY, 24 DI/16 DO, 4AI, 2AO, 1 PT100, 4 FAST COUNTERS (60 KHZ), 1. INTERFACE MPI/DP 12MBIT/S, 2. INTERFACE ETHERNET PROFINET, WITH 2 PORT SWITCH, INTEGRATED 24V DC POWER SUPPLY, FRONT CONNECTOR (2 X 40PIN) AND MICRO MEMORY CARD REQUIRED

General information	
HW functional status	01
Firmware version	V3.3
Engineering with	
 Programming package 	STEP 7 V5.5 or higher with HSP 191
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	
 Mains/voltage failure stored energy time 	5 ms
 Repeat rate, min. 	1 s
Load voltage L+	
Digital inputs	
— Rated value (DC)	24 V

— Reverse polarity protection	Yes
Digital outputs	
— Rated value (DC)	24 V
— Reverse polarity protection	No
Input current	
Current consumption (rated value)	850 mA
Current consumption (in no-load operation), typ.	190 mA
Inrush current, typ.	5 A
²t	0.7 A ^{2.} s
Digital inputs	00 m A
• from load voltage L+ (without load), max.	80 mA
Digital outputs	50 4
 from load voltage L+, max. 	50 mA
Power loss	
Power loss, typ.	14 W
Memory	
Work memory	
• integrated	192 kbyte
• expandable	No
 Size of retentive memory for retentive data 	64 kbyte
blocks	
Load memory	
• 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	1 024: (DDo ECo EDo); the maximum surplus of locately business
Number of blocks (total)	1 024; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used.
DB	
• Number, max.	1 024; Number range: 1 to 16000
● Size, max.	64 kbyte
FB	

	(00 / N) 0 / 7000
 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	
Description	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 isochronous mode OBs 	1; OB 61; only for PROFINET
 Number of startup OBs 	1; OB 100
 Number of asynchronous error OBs 	6; OB 80, 82, 83, 85, 86, 87 (OB83 only for PROFINET IO)
 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	
— can be set	Yes
— 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

Time range lower limit 990 s IEC time • present • present Yes • Type SFB • Number Unlimited (limited only by RAM capacity) Data areas and their retentivity retentive data area in total retentive data area in total All, max. 64 KB Flag - • Number, max. 256 byte • Retentivity available Yes; MB 0 to MB 255 • Retentivity preset MB 10 to MB 15 • Number of clock memories 8: 1 memory byte Data blocks - • Retentivity preset Yes Local data - • per priority class, max. 32 kbyte; Max. 2048 bytes per block Address area - • Inputs 2 048 byte • Outputs 2 048 byte • Outputs 2 048 byte • Inputs 2 048 byte • Outputs 2 048 byte •	— preset	No retentivity
upper limit9 990 sIEC timer• presentYes• TypeSFB• NumberVulnitied (limited only by RAM capacity)Data areas and their retentivedTelentive data area in totalAll, max. 64 KBFlag• Number, max.256 byte• Retentivity availableYes; MB 0 to MB 255• Retentivity availableYes; MB 0 to MB 15• Number of clock memories8; 1 memory byteData blocksUta areasVes; Via non-retain property on DB• Retentivity presetYes; Via non-retain property on DB• Retentivity presetYesLocal data• per priority class, max.32 kbyte; Max. 2048 bytes per blockAddress area• Ioputs2 048 byte• Inputs2 048 byte• Outputs2 048 byte• Outputs2 048 byte• Outputs2 048 byte• Outputs2 048 byte• Outputs, adjustable2 048 byte• Ou	Time range	
Ves • present Yes • Type SFB • Number Unlimited (limited only by RAM capacity) Data areas and their retentively retentive data area in total retentive data area in total All, max. 64 KB Flag . • Number, max. 256 byte • Retentivity available Yes; MB 0 to MB 255 • Retentivity preset Ves • Number of clock memories 8, 1 memory byte Data blocks . • Retentivity adjustable Yes; via non-retain property on DB • Retentivity adjustable Yes; via non-retain property on DB • Retentivity adjustable Yes; via non-retain property on DB • Retentivity adjustable Yes; via non-retain property on DB • Retentivity adjustable Yes; via non-retain property on DB • Retentivity adjustable 2 048 byte • Outputs 2 048 byte • Outputs 2 048 byte • Outputs 2 048 byte • Outputs, adjustable 2 048 byte • Outputs, adjustable 2 048 byte • Inputs, ad	— lower limit	10 ms
• presentYesTypeSFB• NumberUnlimited (limited only by RAM capacity)Data arcess and their retentivityreferitive data arce in totalAll, max. 64 KBFlag• Number, max.256 byte• Retentivity availableYes: MB 0 to MB 255• Retentivity presetMB 0 to MB 15• Number of clock memories8; Homory byteData blocks• Retentivity presetYes: via non-retain property on DB• Retentivity presetYesLocal data• Profess area• Inputs2 048 byte; Max. 2048 bytes per blockAddress area• Inputs2 048 byte• Outputs2 003 byte- Outputs2 003 byte• Outputs2 048 byte• Outputs, adjustable2 048 byte• Outputs, adjustab	— upper limit	9 990 s
TypeSFBNumberUnlimited (limited only by RAM capacity)Deta areas and their retentivityImage: Capacityretentive data area in totalAll, max. 64 KBFlagS66 byte• Number, max.256 byte• Retentivity availableYes; MB 0 to MB 255• Retentivity presetMB 0 to MB 15• Number of clock memories8; 1 memory byteDate blocksVes; via non-retain property on DB• Retentivity adjustableYes; via non-retain property on DB• Retentivity presetYes• Date blocksVes• Retentivity presetYes• Per priority class, max.32 kbyte; Max. 2048 bytes per blockAddress areaImputs• Inputs2 048 byte• Outputs2 003 byte• Outputs2 003 byte• Outputs2 003 byte• Outputs2 004 byte• Inputs2 048 byte• Outputs2 048 byte• Outputs, adjustable2 048 byte• Outputs, default2 66 byte• Digital inputs136.0 to 138.7• Digital inputs36.0 to 138.7• Digital inputs36.0 to 138.7• Digital out	IEC timer	
NumberUnlimited (limited only by RAM capacity)Detail and their releativityTelentive data area in totalAll, max. 64 KBFlagInternational Colspan="2">International Colspan="2">Internatio	● present	Yes
Data areas and their retentivity retentive data area in total All, max. 64 KB Flag . • 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 . • Retentivity adjustable Yes; via non-retain property on DB • Retentivity preset Yes Local data . • per priority class, max. 32 kbyte; Max. 2048 bytes per block Address area . // O address area . • Inputs 2 048 byte • O utputs 2 048 byte • Outputs 2 048 byte • Outputs 2 048 byte • Outputs, adjustable 2 048 byte • Outputs, default 266 byte • Outputs, default	• Туре	SFB
retentive data area in total All, max. 64 KB Flag 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 Retentivity adjustable Yes; via non-retain property on DB Retentivity preset Yes Local data IVO address area	• Number	Unlimited (limited only by RAM capacity)
retentive data area in total All, max. 64 KB Flag 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 Retentivity adjustable Yes; via non-retain property on DB Retentivity preset Yes Local data Comparison of the second	Data areas and their retentivity	
• Number, max.256 byte• Retentivity availableYes; MB 0 to MB 255• Retentivity presetMB 0 to MB 15• Number of clock memories8; 1 memory byteData blocks• Retentivity adjustableYes; via non-retain property on DB• Retentivity presetYes• Der priority class, max.32 kbyte; Max. 2048 bytes per blockAddress area• Inputs2 048 byte• Outputs2 048 byte• Outputs2 003 byte- Outputs2 003 byte- Outputs2 010 byteProcess image• Inputs2 048 byte• Outputs2 048 byte• Outputs2 048 byte• Outputs2 003 byte- Outputs2 004 byte• Outputs2 048 byte• Outputs, adjustable2 048 byte• Outputs, default256 byte• Outputs, default256 byte• Outputs, default256 byte• Digital outputs136.0 to 138.7• Digital outputs136.0 to 138.7• Digital outputs136.0 to 138.7• Digital outputs136.0 to 138.7• Digital outputs800 to 803• Analog outputs<		All, max. 64 KB
• Retentivity availableYes; MB 0 to MB 255• Retentivity presetMB 0 to MB 15• Number of clock memories8; 1 memory byteData blocks• Retentivity adjustableYes; via non-retain property on DB• Retentivity presetYesLocal data• per priority class, max.32 kbyte; Max. 2048 bytes per blockAddress areaI/O address area2 048 byte• Outputs2 048 byte• Outputs2 048 byte• Outputs2 010 byteProcess image• Inputs2 048 byte• Outputs2 048 byte• Outputs, adjustable2 048 byte• Digital inputs136.0 to 138.7• Digital inputs136.0 to 138.7• Digital inputs136.0 to 138.7	Flag	
Number of clock memoriesMB 0 to MB 15• Retentivity preset8; 1 memory byteData blocks• Retentivity adjustableYes; via non-retain property on DB• Retentivity presetYesLocal data• per priority class, max.32 kbyte; Max. 2048 bytes per blockAddress areaI/O address area• Outputs2 048 byte• Outputs2 048 byte• Outputs2 003 byte- Inputs2 003 byte- Outputs2 010 byteProcess image2 048 byte• Inputs2 048 byte• Outputs2 048 byteOutputs2 048 byte• Outputs2 048 byte• Outputs2 048 byte• Outputs2 048 byte• Outputs2 048 byte• Digital stable2 048 byte• Dutputs, adjustable2 048 byte• Outputs, adjustable2 048 byte• Outputs, default256 byte• Dutputs, default256 byte• Digital inputs136.0 to 138.7• Digital inputs136.0 to 137.7• Analog inputs800 to 809• Analog outputs800 to 803	• Number, max.	256 byte
Number of clock memories8; 1 memory byteData blocks• Retentivity adjustableYes; via non-retain property on DB• Retentivity presetYesLocal data• per priority class, max.32 kbyte; Max. 2048 bytes per blockAddress areaI/O address area• liputs2 048 byte• Outputs2 048 byte• Outputs2 048 byteof which distributed- Inputs2 003 byte- Outputs2 010 byteProcess image• Inputs, adjustable2 048 byte• Outputs2 048 byte• Outputs, adjustable2 048 byte• Digital inputs136.0 to 138.7- Digital inputs136.0 to 137.7- Analog inputs800 to 809- Analog outputs800 to 803	Retentivity available	Yes; MB 0 to MB 255
Data blocks• Retentivity adjustableYes; via non-retain property on DB• Retentivity presetYesLocal data• per priority class, max.32 kbyte; Max. 2048 bytes per blockAddress areaI/O address area• Inputs2 048 byte• Outputs2 048 byte• Outputs2 048 byte• Outputs2 003 byte- Inputs2 003 byte- Outputs2 010 byteProcess image• Inputs, adjustable2 048 byte• Outputs, default256 byte• Default addresses of the integrated channels- Digital inputs136.0 to 138.7- Digital outputs136.0 to 137.7- Analog inputs800 to 809- Analog outputs800 to 803	Retentivity preset	MB 0 to MB 15
• Retentivity adjustableYes; via non-retain property on DB• Retentivity presetYesLocal data• per priority class, max.32 kbyte; Max. 2048 bytes per blockAddress areaI/O address areaI/O address area• Inputs2 048 byte• Outputs2 048 byte• Outputs2 048 byte• Outputs2 003 byte- Outputs2 010 byteProcess image• Inputs2 048 byte• Outputs2 048 byte• Outputs, adjustable2 048 byte• Outputs, adjustable2 048 byte• Outputs, adjustable2 048 byte• Outputs, default256 byte• Outputs, default256 byte• Outputs, default136.0 to 138.7- Digital inputs136.0 to 137.7- Analog inputs800 to 809- Analog outputs800 to 803	 Number of clock memories 	8; 1 memory byte
Retentivity presetYesLocal data• per priority class, max.32 kbyte; Max. 2048 bytes per blockAddress areaI/O address area• Inputs2 048 byte• Outputs2 048 byte• Outputs2 048 byteof which distributed- Inputs2 003 byte- Outputs2 010 byteProcess image• Inputs2 048 byte• Outputs2 048 byte• Outputs, adjustable2 048 byte• Outputs, default256 byte• Outputs, default256 byte• Outputs, default256 byte• Digital inputs136.0 to 138.7• Digital outputs136.0 to 138.7• Digital outputs360 to 809• Analog outputs800 to 803	Data blocks	
Local data• per priority class, max.32 kbyte; Max. 2048 bytes per blockAddress area//O address area• Inputs2 048 byte• Outputs2 048 byte• Outputs2 048 byteof which distributed- Inputs2 003 byte- Outputs2 010 byteProcess image• Inputs2 048 byte• Outputs2 048 byte• Outputs, adjustable2 048 byte• Outputs, default256 byte• Default addresses of the integrated channels Digital inputs136.0 to 138.7- Digital outputs136.0 to 137.7- Analog inputs800 to 809- Analog outputs800 to 803	Retentivity adjustable	Yes; via non-retain property on DB
• per priority class, max.32 kbyte; Max. 2048 bytes per blockAddress areaI/O address area• Inputs2 048 byte• Outputs2 048 byteof which distributed Inputs2 003 byte Outputs2 010 byteProcess image• Inputs, adjustable2 048 byte• Outputs, adjustable2 6 byte• Dutputs, default256 byte• Dutputs, default36.0 to 138.7- Digital inputs136.0 to 137.7- Analog inputs800 to 809- Analog outputs800 to 803	Retentivity preset	Yes
Address areaI/O address area• Inputs2 048 byte• Outputs2 048 byteof which distributed- Inputs2 003 byte- Outputs2 010 byteProcess image• Inputs2 048 byte• Outputs2 048 byte• Outputs, adjustable2 048 byte• Outputs3 0.0 to 138.7• Digital inputs136.0 to 137.7• Analog outputs800 to 803• Analog outputs800 to 803 <td>Local data</td> <td></td>	Local data	
I/O address area• Inputs2 048 byte• Outputs2 048 byteof which distributed2 048 byte- Inputs2 003 byte- Outputs2 010 byteProcess image• Inputs2 048 byte• Outputs2 048 byte• Outputs, adjustable2 048 byte• Outputs, adjustable2 048 byte• Outputs, adjustable2 048 byte• Outputs, default256 byte• Outputs, default256 byte• Default addresses of the integrated channels136.0 to 138.7- Digital inputs136.0 to 137.7- Analog inputs800 to 809- Analog outputs800 to 803	• per priority class, max.	32 kbyte; Max. 2048 bytes per block
I/O address area• Inputs2 048 byte• Outputs2 048 byteof which distributed2 048 byte- Inputs2 003 byte- Outputs2 010 byteProcess image• Inputs2 048 byte• Outputs2 048 byte• Outputs, adjustable2 048 byte• Outputs, adjustable2 048 byte• Outputs, adjustable2 048 byte• Outputs, default256 byte• Outputs, default256 byte• Default addresses of the integrated channels136.0 to 138.7- Digital inputs136.0 to 137.7- Analog inputs800 to 809- Analog outputs800 to 803	Address area	
• Outputs2 048 byteof which distributed2 003 byte- Inputs2 003 byte- Outputs2 010 byteProcess image2 048 byte• Inputs2 048 byte• Outputs2 048 byte• Outputs, adjustable2 048 byte• Outputs, adjustable2 048 byte• Outputs, adjustable2 048 byte• Outputs, adjustable2 048 byte• Outputs, default256 byte• Outputs, default256 byte• Default addresses of the integrated channels136.0 to 138.7- Digital inputs136.0 to 137.7- Analog inputs800 to 809- Analog outputs800 to 803		
of which distributed- Inputs2 003 byte- Outputs2 010 byteProcess image• Inputs2 048 byte• Outputs2 048 byte• Outputs, adjustable2 048 byte• Inputs, adjustable2 048 byte• Outputs, default256 byte• Outputs, default256 byte• Default addresses of the integrated channels136.0 to 138.7- Digital outputs136.0 to 137.7- Digital outputs800 to 809- Analog outputs800 to 803	Inputs	2 048 byte
Inputs2 003 byte Outputs2 010 byteProcess image2 048 byte• Inputs2 048 byte• Outputs2 048 byte• Inputs, adjustable2 048 byte• Outputs, default256 byte• Outputs, default256 byte• Default addresses of the integrated channels136.0 to 138.7- Digital inputs136.0 to 137.7- Analog inputs800 to 809- Analog outputs800 to 803	Outputs	2 048 byte
- Outputs2 010 byteProcess image• Inputs2 048 byte• Outputs2 048 byte• Outputs, adjustable2 048 byte• Outputs, adjustable2 048 byte• Outputs, adjustable2 048 byte• Outputs, adjustable2 048 byte• Outputs, default2 56 byte• Outputs, default2 56 byte• Default addresses of the integrated channels136.0 to 138.7- Digital inputs136.0 to 137.7- Analog inputs800 to 809- Analog outputs800 to 803	of which distributed	
Process image• Inputs2 048 byte• Outputs2 048 byte• Outputs, adjustable2 048 byte• Outputs, adjustable2 048 byte• Outputs, adjustable2 048 byte• Outputs, default256 byte• Outputs, default256 byte• Outputs, default256 byte• Default addresses of the integrated channels136.0 to 138.7- Digital inputs136.0 to 137.7- Analog inputs800 to 809- Analog outputs800 to 803		
• Inputs2 048 byte• Outputs2 048 byte• Inputs, adjustable2 048 byte• Outputs, adjustable2 048 byte• Outputs, adjustable2 048 byte• Inputs, default256 byte• Outputs, default256 byte• Default addresses of the integrated channels136.0 to 138.7- Digital inputs136.0 to 137.7- Analog inputs800 to 809- Analog outputs800 to 803	— Inputs	2 003 byte
• Outputs 2 048 byte • Inputs, adjustable 2 048 byte • Outputs, adjustable 2 048 byte • Outputs, adjustable 2 048 byte • Inputs, default 2 048 byte • Outputs, default 2 056 byte • Outputs, default 3 60 to 138.7 • Outputs 136.0 to 137.7 • Analog inputs 800 to 809 • Analog outputs 800 to 803		
• Inputs, adjustable2 048 byte• Outputs, adjustable2 048 byte• Inputs, default256 byte• Outputs, default256 byte• Default addresses of the integrated channels256 byte- Digital inputs136.0 to 138.7- Digital outputs136.0 to 137.7- Analog inputs800 to 809- Analog outputs800 to 803	— Outputs	
 Outputs, adjustable Outputs, default Outputs, default Outputs, default 256 byte 256 byte Default addresses of the integrated channels Default addresses of the integrated channels I addresses o	— Outputs Process image	2 010 byte
• Inputs, default256 byte• Outputs, default256 byte• Outputs, default256 byteDefault addresses of the integrated channels256 byte- Digital inputs136.0 to 138.7- Digital outputs136.0 to 137.7- Analog inputs800 to 809- Analog outputs800 to 803	 Outputs Process image Inputs 	2 010 byte 2 048 byte
• Outputs, default256 byteDefault addresses of the integrated channels— Digital inputs136.0 to 138.7— Digital outputs136.0 to 137.7— Analog inputs800 to 809— Analog outputs800 to 803	 — Outputs Process image Inputs Outputs 	2 010 byte 2 048 byte 2 048 byte
Default addresses of the integrated channels — Digital inputs 136.0 to 138.7 — Digital outputs 136.0 to 137.7 — Analog inputs 800 to 809 — Analog outputs 800 to 803	 — Outputs Process image Inputs Outputs Inputs, adjustable 	2 010 byte 2 048 byte 2 048 byte 2 048 byte
Default addresses of the integrated channels - Digital inputs 136.0 to 138.7 - Digital outputs 136.0 to 137.7 - Analog inputs 800 to 809 - Analog outputs 800 to 803	 — Outputs Process image Inputs Outputs Inputs, adjustable Outputs, adjustable 	2 010 byte 2 048 byte 2 048 byte 2 048 byte 2 048 byte
— Digital inputs 136.0 to 138.7 — Digital outputs 136.0 to 137.7 — Analog inputs 800 to 809 — Analog outputs 800 to 803	 — Outputs Process image Inputs Outputs Inputs, adjustable Outputs, adjustable Inputs, default 	2 010 byte 2 048 byte 2 048 byte 2 048 byte 2 048 byte 2 048 byte 256 byte
— Analog inputs 800 to 809 — Analog outputs 800 to 803	 — Outputs Process image Inputs Outputs Inputs, adjustable Outputs, adjustable Inputs, default Outputs, default 	2 010 byte 2 048 byte 2 048 byte 2 048 byte 2 048 byte 2 048 byte 256 byte
— Analog inputs 800 to 809 — Analog outputs 800 to 803	 — Outputs Process image Inputs Outputs Inputs, adjustable Outputs, adjustable Inputs, default Outputs, default Default addresses of the integrated channels 	2 010 byte 2 048 byte 2 048 byte 2 048 byte 2 048 byte 256 byte 256 byte
- Analog outputs 800 to 803	 — Outputs Process image Inputs Outputs Inputs, adjustable Outputs, adjustable Inputs, default Outputs, default Default addresses of the integrated channels — Digital inputs 	2 010 byte 2 048 byte 2 048 byte 2 048 byte 2 048 byte 2 048 byte 2 048 byte 2 56 byte 256 byte 136.0 to 138.7
	 — Outputs Process image Inputs Outputs Inputs, adjustable Outputs, adjustable Inputs, default Outputs, default Default addresses of the integrated channels — Digital inputs — Digital outputs 	2 010 byte 2 048 byte 2 048 byte 2 048 byte 2 048 byte 2 048 byte 2 048 byte 2 56 byte 256 byte 136.0 to 138.7 136.0 to 137.7
	 — Outputs Process image Inputs Outputs Inputs, adjustable Outputs, adjustable Inputs, default Outputs, default Default addresses of the integrated channels — Digital inputs — Digital outputs — Analog inputs 	2 010 byte 2 048 byte 3 048 byte 2 048 byte 2 048 byte 3 048 byte 2 048 byte 3 048 byte 2 048 byte 3 048 byte

 Number of subprocess images, max. 	1; With PROFINET IO, the length of the user data is limited to 1600 bytes
Digital channels	
Inputs	16 048
— of which central	1 016
Outputs	16 096
— of which central	1 008
Analog channels	
Inputs	1 006
— of which central	253
Outputs	1 007
— of which central	250
Hardware configuration	
Number of expansion units, max.	3
Number of DP masters	
• integrated	1
• via CP	4
Number of operable FMs and CPs (recommended)	
• FM	8
• CP, PtP	8
• CP, LAN	10
Rack	
• Racks, max.	4
 Modules per rack, max. 	8; In rack 3 max. 7
Time of day	
Clock	Yes
Hardware clock (real-time)	Yes
retentive and synchronizable	6 wk; At 40 °C ambient temperature
Backup time Deviation per dev. may	10 s; Typ.: 2 s
Deviation per day, max. Behavior of the clock following DOW/ED ON	Clock continues running after POWER OFF
Behavior of the clock following POWER-ON Behavior of the clock following evening of healtype	Clock continues to run with the time at which the power failure
 Behavior of the clock following expiry of backup period 	occurred
Operating hours counter	
• Number	1
Number/Number range	0
Range of values	0 to 2^31 hours (when using SFC 101)
Granularity	1 hour
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	Yes
 on Ethernet via NTP 	Yes; As client

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
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 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
 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	
 for signal "1" rated value 	500 mA
 for signal "1" permissible range, min. 	5 mA
 for signal "1" permissible range, max. 	0.6 A
 for signal "1" minimum load current 	5 mA
 for signal "0" residual current, max. 	0.5 mA
Parallel switching of two outputs	
● for uprating	No
 for redundant control of a load 	Yes
Switching frequency	
 with resistive load, max. 	100 Hz
• with inductive load, max.	0.5 Hz
● on lamp load, max.	100 Hz
 of the pulse outputs, with resistive load, max. 	2.5 kHz
Total current of the outputs (per group)	
horizontal installation	
— up to 40 °C, max.	3 A
— up to 60 °C, max.	2 A
vertical installation	
— up to 40 °C, max.	2 A
Cable length	
• shielded, max.	1 000 m
• unshielded, max.	600 m
Analog inputs	
Number of analog inputs	5
 For voltage/current measurement 	4

 For resistance/resistance thermometer measurement 	1
integrated channels (AI)	5; 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, 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	
Voltage	Yes; ±10 V / 100 kΩ; 0 V to 10 V / 100 kΩ
Current	Yes; ±20 mA / 100 $\Omega;$ 0 mA to 20 mA / 100 $\Omega;$ 4 mA to 20 mA / 100 Ω
 Resistance thermometer 	Yes; Pt 100 / 10 MΩ
Resistance	Yes; 0 Ω to 600 Ω / 10 $M\Omega$
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 MΩ
Input ranges (rated values), resistors	
• 0 to 600 ohms	Yes
 Input resistance (0 to 600 ohms) 	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
 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 an	d currents
 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
 permissible input frequency, max. 	400 Hz
• Time constant of the input filter	0.38 ms
 Basic execution time of the module (all channels released) 	1 ms

Analog value generation for the outputs	
Integration and conversion time/resolution per channel	
 Resolution with overrange (bit including sign), 	12 bit
max.	
 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
	1.5 mA
sensor), max.	
Errors/accuracies	
Temperature error (relative to input range), (+/-)	0.006 %/K
Crosstalk between the inputs, min.	60 dB
Repeat accuracy in steady state at 25 °C (relative to input 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 %

 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 % 0.8 % Current, relative to output range, (+/-) 0.8 % Corrent relative to output range, (+/-) 0.8 % Corrent relative to output range, (+/-) 0.8 % Common mode interference (peak value of input range), min. Common mode interference, (peak value of input range), min. Common mode interference, (peak value of input range), min. Common mode interference, (peak value of input range), transet (+/-) Number of RoPiNET interfaces 1: 2 ports (switch) RJ45 Number of RS 485 interfaces 1: Combined MPI / PROFIBUS DP Number of RS 422 interfaces Q 00 mA Functionality PROFIBUS DP master PROFIBUS DP master PROFIBUS DP fave PROFIBUS DP fave PROFIBUS DP fave	Basic error limit (operational limit at 25 °C)		
• 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 % • Voltage, relative to output range, (+/-) 0.8 % • Current, relative to output range, (+/-) 0.8 % • Current, relative to output range, (+/-) 0.8 % • Current, relative to output range, (+/-) 0.8 % • Current, relative to output range, (+/-) 0.8 % • Current, relative to output range, (+/-) 0.8 % • Current, relative to output range, (+/-) 0.8 % • Current, relative to output range, (+/-) 0.8 % • Current, relative to output range, (+/-) 0.8 % • Current, relative to output range, (+/-) 0.8 % • Current, relative to output range, (+/-) 0.8 % • Corrent, mode interference (peak value of input range), min. 40 dB • Number of Industrial Ethernet interfaces 1:2 ports (switch) RJ45 Number of RS 485 interfaces 1:2 ports (switch) RJ45 Number of RS 422 interfaces RS 485 Interface Yes • ProofBUS DP master Yes • PROFIBUS DP master Yes		0.8 %; Linearity error ±0.06 %	
• Resistance thermometer, relative to input range, (+/) 0.8 % • Voltage, relative to output range, (+/) 0.8 % • Current, relative to output range, (+/) 0.8 % • Series mode interference (peak value of interference <rated input="" min.<="" of="" range),="" td="" value=""> 30 dB • Series mode interference (peak value of interference <rated input="" min.<="" of="" range),="" td="" value=""> 40 dB • Common mode interference, min. 40 dB Interfaces 1; 2 ports (switch) RJ45 Number of RS 455 interfaces 1; 2 ports (switch) RJ45 Number of RS 455 interfaces 1; 2 conts (switch) RJ45 Number of RS 455 interfaces 0 Number of RS 455 interfaces 0 Interface type Integrated RS 485 interface Physics RS 485 Isolated Yes • PROFIBUS DP master Yes • PROFIBUS DP slave Yes • PROFIBUS DP slave Yes • PROFIBUS DP slave Yes • PRO/PC communication Yes • PR/OP communication Yes • PR/OP communication Yes • PR/OP communication Yes • PR/OP communication Yes • Routing Yes • Calobal data communication Yes • S7 communication, as client No: but via CP and loada</rated></rated>	 Current, relative to input range, (+/-) 	0.8 %; Linearity error ±0.06 %	
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 %). I = interference frequency Series mode interference (peak value of input range), min. • Series mode interference (peak value of input range), min. 30 dB • Common mode interference, min. 40 dB Interfaces 1: 2 ports (switch) RJ45 Number of Routsrial Ethernet interfaces 1: 2 ports (switch) RJ45 Number of RS 485 interfaces 0 Number of RS 485 interfaces 1: Combined MPI / PROFIBUS DP Number of RS 485 interfaces 0 Interface type Integrated RS 485 interface Power supply to interface (15 to 30 V DC), max. 20 MA Power supply to interface (15 to 30 V DC), max. 20 MA ProFIBUS DP master Yes • PROFIBUS DP slave Yes • PROFIBUS DP slave Yes • PROFIBUS DP slave Yes • PROFOC communication Yes • PRO/PC communication Yes • PRO/PC communication Yes • PRO/PC communication Yes	 Resistance, relative to input range, (+/-) 	0.8 %; Linearity error ±0.2 %	
• Voltage, relative to output range, (+/-)0.8 %• Current, relative to output range, (+/-)0.8 %Interference voltage suppression for f = n x (11 +/- 1 %). I = interference frequency30 B• Series mode interference (paek value of input range), min. • Commo mode interference, min.40 dB• Interfaces1:2 ports (switch) RJ45Number of Industrial Ethernet interfaces1:2 ports (switch) RJ45Number of PROFINET interfaces1:2 ports (switch) RJ45Number of RS 485 interfaces1: Combined MPI / PROFIBUS DPNumber of RS 422 interfaces0Interface typeIntegrated RS 485 interfacePhysicsRS 485Power supply to interface (15 to 30 V DC), max.200 mAPower supply to interface (15 to 30 V DC), max.200 mA• PROFIBUS DP masterYes• PROFIBUS DP masterYes• PROFIBUS DP masterYes• PROFIBUS DP masterYes• PROFIBUS DP slaveYes• ContonnectionNoMPIServices- Colobal data communicationYes- RoutingYes- RoutingYes- S7 communication, as clientNo; but via CP and loadable FB- S7 communication, as serverYes	 Resistance thermometer, relative to input 	0.8 %	
• Current, relative to output range, (+/-) 0.8 % Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency 30 dB • Series mode interference (peak value of interference (requency relative to output range), min. 30 dB • Common mode interference, min. 40 dB Interfaces 1: 2 ports (switch) RJ45 Number of industrial Ethernet interfaces 1: 2 ports (switch) RJ45 Number of RS 485 interfaces 1: Combined MPI / PROFIBUS DP Number of RS 422 interfaces 0 Interface res 485 Interface type Integrated RS 485 interface Physics RS 485 Isolated Yes Power supply to interface (15 to 30 V DC), max. 200 mA Functionality Yes • PROFIBUS DP master Yes • PROFIBUS DP master Yes • PROFIBUS DP slave Yes • PG/OP communication Yes • Colobal data communication Yes • Global data co	-		
Interference voltage support of response o	 Voltage, relative to output range, (+/-) 	0.8 %	
• Series mode interference (peak value of interference < rated value of input range), min.30 dB• Common mode interference, min.40 dBInterfaces1; 2 ports (switch) RJ45Number of industrial Ethernet interfaces1; 2 ports (switch) RJ45Number of ROFINET interfaces1; 2 ports (switch) RJ45Number of RS 485 interfaces1; Combined MPI / PROFIBUS DPNumber of RS 422 interfaces01InterfacePhysicsRS 485IsolatedYesPower supply to interface (15 to 30 V DC), max.200 mAFunctionalityYes• PROFIBUS DP masterYes• PROFIBUS DP slaveYes• PROFIBUS DP slaveYes• PROFIBUS DP slave12 Mbit/sServices12 Mbit/s• PROFIBUS DP slaveYes• Clobal data communicationYes- RoutingYes- S7 basic communicationYes- S7 communication, as clientNo, but via CP and loadable FB- S7 communication, as serverYes	 Current, relative to output range, (+/-) 	0.8 %	
interference < rated value of input range), min.40 dB• Common mode interference, min.40 dBInterfaces1,2 ports (switch) RJ45Number of Industrial Ethernet interfaces1,2 ports (switch) RJ45Number of RS 435 interfaces1,2 ports (switch) RJ45Number of RS 435 interfaces1, Combined MPI / PROFIBUS DPNumber of RS 422 interfaces0Interface1Interface typeIntegrated RS 435 interfacePhysicsRS 435IsolatedYesPower supply to interface (15 to 30 V DC), max.200 mAFunctionalityYes• MPIYes• PROFIBUS DP masterYes• PROFIBUS DP slaveYes• PROFIBUS DP slaveYes• PROFIBUS DP slave12 Mbit/s• PROFIBUS DP communicationYes• Clobal data communicationYes• RoutingYes• Static communicationYes• Static communicationYes	Interference voltage suppression for f = n x (f1 +/- 1 %),	f1 = interference frequency	
• Common mode interference, min.40 dBInterfaces1: 2 ports (switch) RJ45Number of Industrial Ethernet interfaces1: 2 ports (switch) RJ45Number of RS 485 interfaces1: Combined MPI / PROFIBUS DPNumber of RS 422 interfaces0Interface0Interface typeIntegrated RS 485 interfacePhysicsRS 485IsolatedYesPower supply to interface (15 to 30 V DC), max.200 mAFunctionalityYes• MPIYes• PROFIBUS DP masterYes• PROFIBUS DP masterYes• PROFIBUS DP slaveYes• PROFIBUS DP slaveYes• Doint-to-point connectionNoMPIServices- RoutingYes- RoutingYes- S7 basic communicationYes- S7 communication, as serverYes- S7 communication, as serverYes		30 dB	
Interfaces Interfaces Number of industrial Ethernet interfaces 1; 2 ports (switch) RJ45 Number of RS 485 interfaces 1; Combined MPI / PROFIBUS DP Number of RS 485 interfaces 0 Interface Integrated RS 485 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 Yes • MPI Yes • PROFIBUS DP master Yes • PROFIBUS DP slave Yes • PROFIBUS OP communication Yes • PG/OP communication Yes • PG/OP communication Yes • Stories - • ST communication Yes • ST communication Yes			
Number of industrial Ethernet interfaces 1; 2 ports (switch) RJ45 Number of PROFINET interfaces 1; 2 ports (switch) RJ45 Number of RS 485 interfaces 1; Combined MPI / PROFIBUS DP Number of RS 422 interfaces 0 1 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	 Common mode interference, min. 	40 dB	
Number of industrial Ethernet interfaces 1; 2 ports (switch) RJ45 Number of PROFINET interfaces 1; 2 ports (switch) RJ45 Number of RS 485 interfaces 1; Combined MPI / PROFIBUS DP Number of RS 422 interfaces 0 1 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	Interfaces		
Number of RS 485 interfaces1; Combined MPI / PROFIBUS DPNumber of RS 422 interfaces0InterfaceIntegrated RS 485 interfacePhysicsRS 485IsolatedYesPower supply to interface (15 to 30 V DC), max.200 mAFunctionalityYes• MPIYes• PROFIBUS DP masterYes• PROFIBUS DP masterYes• PROFIBUS DP slaveYes• Profitor to connectionNoMPIYes• Transmission rate, max.12 Mbit/sServicesYes- RoutingYes- RoutingYes- S7 basic communicationYes- S7 communication, as clientYes- S7 communication, as serverYes		1; 2 ports (switch) RJ45	
Number of RS 422 interfaces0Interface typeIntegrated RS 485 interfacePhysicsRS 485IsolatedYesPower supply to interface (15 to 30 V DC), max.200 mAFunctionalityYes• MPIYes• PROFIBUS DP masterYes• PROFIBUS DP slaveYes• PROFIBUS DP slaveYes• Protificon connectionNoMPIServices- PG/OP communicationYes- RoutingYes- RoutingYes- S7 communicationYes- S7 communication, as clientNo; but via CP and loadable FB- S7 communication, as serverYes	Number of PROFINET interfaces	1; 2 ports (switch) RJ45	
InterfaceInterface typeIntegrated RS 485 interfacePhysicsRS 485IsolatedYesPower supply to interface (15 to 30 V DC), max.200 mAFunctionalityYes• MPIYes• PROFIBUS DP masterYes• PROFIBUS DP slaveYes• Point-to-point connectionNoMPIServices- PG/OP communicationYes- RoutingYes- RoutingYes- S7 basic communicationYes- S7 basic communicationYes- S7 communication, as clientNo; but via CP and loadable FB- S7 communication, as serverYes	Number of RS 485 interfaces	1; Combined MPI / PROFIBUS DP	
Interface typeIntegrated RS 485 interfacePhysicsRS 485IsolatedYesPower supply to interface (15 to 30 V DC), max.200 mAFunctionality200 mA• MPIYes• PROFIBUS DP masterYes• PROFIBUS DP slaveYes• Point-to-point connectionNoMPI12 Mbit/s• Transmission rate, max.12 Mbit/sServices PG/OP communicationYes- RoutingYes- Global data communicationYes- S7 basic communicationYes- S7 communication, as clientNo; but via CP and loadable FB- S7 communication, as serverYes	Number of RS 422 interfaces	0	
Interface typeIntegrated RS 485 interfacePhysicsRS 485IsolatedYesPower supply to interface (15 to 30 V DC), max.200 mAFunctionality200 mA• MPIYes• PROFIBUS DP masterYes• PROFIBUS DP slaveYes• Point-to-point connectionNoMPI12 Mbit/s• Transmission rate, max.12 Mbit/sServices PG/OP communicationYes- RoutingYes- Global data communicationYes- S7 basic communicationYes- S7 communication, as clientNo; but via CP and loadable FB- S7 communication, as serverYes	1. Interface		
IsolatedYesPower supply to interface (15 to 30 V DC), max.200 mAFunctionality200 mAFunctionalityYes• MPIYes• PROFIBUS DP masterYes• PROFIBUS DP slaveYes• Point-to-point connectionNoMPI12 Mbit/sServicesYes- PG/OP communicationYes- RoutingYes- Global data communicationYes- S7 basic communicationYes- S7 communication, as clientNo; but via CP and loadable FB- S7 communication, as serverYes		Integrated RS 485 interface	
Power supply to interface (15 to 30 V DC), max.200 mAFunctionalityFunctionality• MPIYes• PROFIBUS DP masterYes• PROFIBUS DP slaveYes• Point-to-point connectionNoMPIYes• Transmission rate, max.12 Mbit/sServicesYes- PG/OP communicationYes- RoutingYes- Global data communicationYes- S7 basic communicationYes- S7 communication, as clientNo; but via CP and loadable FB- S7 communication, as serverYes	Physics	RS 485	
Functionality• MPIYes• PROFIBUS DP masterYes• PROFIBUS DP slaveYes• Point-to-point connectionNoMPI• Transmission rate, max.12 Mbit/sServices• PG/OP communicationYes• RoutingYes- RoutingYes- Global data communicationYes- S7 basic communicationYes- S7 communication, as clientNo; but via CP and loadable FB- S7 communication, as serverYes	Isolated	Yes	
• MPIYes• PROFIBUS DP masterYes• PROFIBUS DP slaveYes• Point-to-point connectionNoMPI12 Mbit/s• Transmission rate, max.12 Mbit/sServices PG/OP communicationYes- RoutingYes- RoutingYes- Global data communicationYes- S7 basic communicationYes- S7 communicationYes- S7 communication, as clientNo; but via CP and loadable FB- S7 communication, as serverYes	Power supply to interface (15 to 30 V DC), max.	200 mA	
 PROFIBUS DP master PROFIBUS DP slave PROFIBUS DP slave Proof to connection No MPI Transmission rate, max. 12 Mbit/s Services PG/OP communication PG/OP communication Services Services<	Functionality		
 PROFIBUS DP slave PROFIBUS DP slave Point-to-point connection No MPI Transmission rate, max. 12 Mbit/s Services PG/OP communication PG/OP communication Yes Global data communication Yes Global data communication Yes S7 basic communication Yes S7 communication, as client No; but via CP and loadable FB S7 communication, as server 	• MPI	Yes	
 Point-to-point connection No MPI Transmission rate, max. 12 Mbit/s Services PG/OP communication Yes Routing Global data communication Yes Global data communication Yes S7 basic communication Yes S7 communication, as client No; but via CP and loadable FB S7 communication, as server Yes 	PROFIBUS DP master	Yes	
MPI • Transmission rate, max. 12 Mbit/s Services - PG/OP communication Yes - Routing Yes - Global data communication Yes - S7 basic communication Yes - S7 communication, as client No; but via CP and loadable FB - S7 communication, as server Yes	PROFIBUS DP slave	Yes	
• Transmission rate, max.12 Mbit/sServices- PG/OP communicationYes- RoutingYes- Global data communicationYes- S7 basic communicationYes- S7 communicationYes- S7 communication, as clientNo; but via CP and loadable FB- S7 communication, as serverYes	 Point-to-point connection 	No	
Services - PG/OP communication Yes - Routing Yes - Global data communication Yes - S7 basic communication Yes - S7 communication Yes - S7 communication Yes - S7 communication Yes - S7 communication, as client No; but via CP and loadable FB - S7 communication, as server Yes	MPI		
PG/OP communicationYes RoutingYes Global data communicationYes S7 basic communicationYes S7 communicationYes S7 communication, as clientNo; but via CP and loadable FB S7 communication, as serverYes	 Transmission rate, max. 	12 Mbit/s	
- RoutingYes- Global data communicationYes- S7 basic communicationYes- S7 communicationYes- S7 communication, as clientNo; but via CP and loadable FB- S7 communication, as serverYes	Services		
Global data communicationYes S7 basic communicationYes S7 communicationYes S7 communication, as clientNo; but via CP and loadable FB S7 communication, as serverYes	— PG/OP communication	Yes	
- S7 basic communicationYes- S7 communicationYes- S7 communication, as clientNo; but via CP and loadable FB- S7 communication, as serverYes	— Routing	Yes	
	— Global data communication	Yes	
— S7 communication, as client No; but via CP and loadable FB — S7 communication, as server Yes	— S7 basic communication	Yes	
— S7 communication, as server Yes	— S7 communication	Yes	
	- S7 communication, as client	No; but via CP and loadable FB	
DP master	- S7 communication, as server	Yes	
	DP master		
• Transmission rate, max. 12 Mbit/s	Transmission rate, max.	12 Mbit/s	
• Number of DP slaves, max. 124	 Number of DP slaves, max. 	124	
Services	Services		

DO/OD service time	Yes
— PG/OP communication	Yes
- Routing	No
— Global data communication	Yes; I blocks only
— S7 basic communication	
— S7 communication	Yes
— S7 communication, as client	No
— S7 communication, as server	Yes
— Equidistance	Yes
— Isochronous mode	No
— SYNC/FREEZE	Yes
 Activation/deactivation of DP slaves 	Yes
 — Number of DP slaves that can be simultaneously activated/deactivated, max. 	8
 — Direct data exchange (slave-to-slave communication) 	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	
• Transmission rate, max.	12 Mbit/s
 automatic baud rate search 	Yes; only with passive interface
 Address area, max. 	32
• User data per address area, max.	32 byte
Services	
— PG/OP communication	Yes
— Routing	Yes; Only with active interface
— Global data communication	No
— S7 basic communication	No
— S7 communication	Yes
— S7 communication, as client	No
— S7 communication, as server	Yes; Connection configured on one side only
 — Direct data exchange (slave-to-slave communication) 	Yes
— DPV1	No
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte

2. Interface	
Interface type	PROFINET
Physics	Ethernet RJ45
Isolated	Yes
automatic detection of transmission rate	Yes; 10/100 Mbit/s
Autonegotiation	Yes
Autocrossing	Yes
Change of IP address at runtime, supported	Yes
Interface types	
 Number of ports 	2
 integrated switch 	Yes
Media redundancy	
• supported	Yes
 Switchover time on line break, typ. 	200 ms; PROFINET MRP
 Number of stations in the ring, max. 	50
Functionality	
• MPI	No
PROFINET IO Controller	Yes; Also simultaneously with IO-Device functionality
PROFINET IO Device	Yes; Also simultaneously with IO Controller functionality
PROFINET CBA	Yes
PROFIBUS DP master	No
PROFIBUS DP slave	No
Open IE communication	Yes; Via TCP/IP, ISO on TCP, and UDP
Web server	Yes
PROFINET IO Controller	
• Transmission rate, max.	100 Mbit/s
Services	
— PG/OP communication	Yes
— Routing	Yes
— S7 communication	Yes; With loadable FBs, max. configurable connections: 10, max. number of instances: 32
— Isochronous mode	Yes; OB 61
— Open IE communication	Yes; Via TCP/IP, ISO on TCP, and UDP
— IRT	Yes
— Shared device	Yes
— Prioritized startup	Yes
— Number of IO devices with prioritized	32
startup, max.	
— Number of connectable IO Devices, max.	128
— Of which IO devices with IRT, max.	64
— of which in line, max.	64

	400
 — Number of IO Devices with IRT and the option "high flexibility" 	128
— of which in line, max.	61
— Number of connectable IO Devices for RT,	128
max.	
— of which in line, max.	128
- Activation/deactivation of IO Devices	Yes
 — Number of IO Devices that can be simultaneously activated/deactivated, max. 	8
 — IO Devices changing during operation (partner ports), supported 	Yes
— Number of IO Devices per tool, max.	8
— Device replacement without swap medium	Yes
— Send cycles	250 $\mu s,500$ $\mu s,1$ ms; 2 ms, 4 ms (not in the case of IRT with "high flexibility" option)
— Updating time	250 μs to 512 ms (depending on the operating mode, see Manual "S7-300 CPU 31xC and CPU 31x, Technical Data" for more details)
Address area	
— Inputs, max.	2 kbyte
— Outputs, max.	2 kbyte
— User data consistency, max.	1 024 byte
PROFINET IO Device	
Services	
Services — PG/OP communication	Yes
	Yes Yes
— PG/OP communication	
— PG/OP communication — Routing	Yes Yes; With loadable FBs, max. configurable connections: 10, max.
 — PG/OP communication — Routing — S7 communication 	Yes Yes; With loadable FBs, max. configurable connections: 10, max. number of instances: 32
 — PG/OP communication — Routing — S7 communication — Isochronous mode 	Yes Yes; With loadable FBs, max. configurable connections: 10, max. number of instances: 32 No
 PG/OP communication Routing S7 communication Isochronous mode Open IE communication 	Yes Yes; With loadable FBs, max. configurable connections: 10, max. number of instances: 32 No Yes; Via TCP/IP, ISO on TCP, and UDP
 PG/OP communication Routing S7 communication Isochronous mode Open IE communication IRT 	Yes Yes; With loadable FBs, max. configurable connections: 10, max. number of instances: 32 No Yes; Via TCP/IP, ISO on TCP, and UDP Yes Yes; With SFB 73 / 74 prepared for loadable PROFlenergy
 PG/OP communication Routing S7 communication Isochronous mode Open IE communication IRT PROFlenergy 	Yes Yes; With loadable FBs, max. configurable connections: 10, max. number of instances: 32 No Yes; Via TCP/IP, ISO on TCP, and UDP Yes Yes; With SFB 73 / 74 prepared for loadable PROFlenergy standard FB for I-Device
 PG/OP communication Routing S7 communication Isochronous mode Open IE communication IRT PROFlenergy Shared device 	Yes Yes; With loadable FBs, max. configurable connections: 10, max. number of instances: 32 No Yes; Via TCP/IP, ISO on TCP, and UDP Yes Yes; With SFB 73 / 74 prepared for loadable PROFlenergy standard FB for I-Device Yes
 PG/OP communication Routing S7 communication Isochronous mode Open IE communication IRT PROFlenergy Shared device Number of IO Controllers with shared 	Yes Yes; With loadable FBs, max. configurable connections: 10, max. number of instances: 32 No Yes; Via TCP/IP, ISO on TCP, and UDP Yes Yes; With SFB 73 / 74 prepared for loadable PROFlenergy standard FB for I-Device Yes
 PG/OP communication Routing S7 communication Isochronous mode Open IE communication IRT PROFlenergy Shared device Number of IO Controllers with shared device, max. 	Yes Yes; With loadable FBs, max. configurable connections: 10, max. number of instances: 32 No Yes; Via TCP/IP, ISO on TCP, and UDP Yes Yes; With SFB 73 / 74 prepared for loadable PROFlenergy standard FB for I-Device Yes
 PG/OP communication Routing S7 communication Isochronous mode Open IE communication IRT PROFlenergy Shared device Number of IO Controllers with shared device, max. 	Yes Yes; With loadable FBs, max. configurable connections: 10, max. number of instances: 32 No Yes; Via TCP/IP, ISO on TCP, and UDP Yes Yes; With SFB 73 / 74 prepared for loadable PROFlenergy standard FB for I-Device Yes 2
 PG/OP communication Routing S7 communication Isochronous mode Open IE communication IRT PROFlenergy Shared device Number of IO Controllers with shared device, max. Transfer memory Inputs, max. 	Yes Yes; With loadable FBs, max. configurable connections: 10, max. number of instances: 32 No Yes; Via TCP/IP, ISO on TCP, and UDP Yes Yes; With SFB 73 / 74 prepared for loadable PROFIenergy standard FB for I-Device Yes 2
 PG/OP communication Routing S7 communication Isochronous mode Open IE communication IRT PROFlenergy Shared device Number of IO Controllers with shared device, max. Transfer memory Inputs, max. Outputs, max. 	Yes Yes; With loadable FBs, max. configurable connections: 10, max. number of instances: 32 No Yes; Via TCP/IP, ISO on TCP, and UDP Yes Yes; With SFB 73 / 74 prepared for loadable PROFlenergy standard FB for I-Device Yes 2
 PG/OP communication Routing S7 communication Isochronous mode Open IE communication IRT PROFlenergy Shared device Number of IO Controllers with shared device, max. Transfer memory Inputs, max. Outputs, max. 	Yes Yes; With loadable FBs, max. configurable connections: 10, max. number of instances: 32 No Yes; Via TCP/IP, ISO on TCP, and UDP Yes Yes; With SFB 73 / 74 prepared for loadable PROFlenergy standard FB for I-Device Yes 2 1 440 byte; Per IO Controller with shared device 1 440 byte; Per IO Controller with shared device

• acyclic transmission	Yes
cyclic transmission	Yes
Open IE communication	
Number of connections, max.	8
Local port numbers used at the system end	0, 20, 21, 23, 25, 80, 102, 135, 161, 443, 8080, 34962, 34963, 34964, 65532, 65533, 65534, 65535
 Keep-alive function, supported 	Yes
Protocols	
Open IE communication	
• TCP/IP	Yes; via integrated PROFINET interface and loadable FBs
— Data length for connection type 01H, max.	1 460 byte
— Data length for connection type 11H, max.	32 768 byte
 — several passive connections per port, supported 	Yes
 ISO-on-TCP (RFC1006) 	Yes; via integrated PROFINET interface and loadable FBs
— Data length, max.	32 768 byte
• UDP	Yes; via integrated PROFINET interface and loadable FBs
— Data length, max.	1 472 byte
Web server	
User-defined websites	Yes
Number of HTTP clients	5
Isochronous mode	
Isochronous operation (application synchronized up	Yes; For PROFINET only
to terminal)	
Communication functions	
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 integrated PROFINET interface and loadable FB or via CP and loadable FB
• User data per job, max.	See online help of STEP 7 (shared parameters of the SFBs/FBs and of the SFCs/FCs of S7 Communication)
S5 compatible communication	
• supported	Yes; via CP and loadable FC
Web server	
• supported	Yes
PROFINET CBA (at set setpoint communication load)	
 Setpoint for the CPU communication load 	50 %
 Number of remote interconnection partners 	32
 Number of functions, master/slave 	30
 Total of all master/slave connections 	1 000
 Data length of all incoming connections master/slave, max. 	4 000 byte
 Data length of all outgoing connections master/slave, max. 	4 000 byte
 Number of device-internal and PROFIBUS interconnections 	500
 Data length of device-internal und PROFIBUS interconnections, max. 	4 000 byte
 Data length per connection, max. 	1 400 byte
Remote interconnections with acyclic transmission	
 — Sampling frequency: Sampling time, min. 	500 ms
 — Number of incoming interconnections 	100
 Number of outgoing interconnections 	100
 — Data length of all incoming interconnections, max. 	2 000 byte
 — Data length of all outgoing interconnections, max. 	2 000 byte
— Data length per connection, max.	1 400 byte
Remote interconnections with cyclic transmission	
— Transmission frequency: Transmission interval, min.	10 ms
— Number of incoming interconnections	200
 — Number of outgoing interconnections 	200
 — Data length of all incoming interconnections, max. 	2 000 byte
 — Data length of all outgoing interconnections, max. 	2 000 byte
— Data length per connection, max.	450 byte

Hill variables via PROFINET (acyclic) - Number of stations that can tog on for HMI variables (PN OPC/MAp) - HMI variable updating 500 ms - Data length of all HMI variables 2000 byte PROFIBUS proxy functionality - supported - Supported - Data length of all HMI variables, max. 2000 byte PROFIBUS proxy functionality - supported - Data length per connection, max. - Data length per connection, max. 12 • usable for PG communication 1 - adjustable for S7 basic communication - reserved for S7 basic communication, max. - adjustable for S7 basic communication, max. - adjustable for S7 basic communication, max. - adjustable for S7 communication, max. - adjustable for		
variables (PN OPC/iMap) 500 ms - Number of HMI variables 200 - Data length of all HMI variables, max. 2000 byte PROFIBUS proxy functionality - - supported Yes - Number of Imixed PROFIBUS devices 16 - Data length of all HMI variables 240 byte; Slave-dependent Number of connection 11 - reserved for PG communication 11 - adjustable for PG communication, min. 1 - adjustable for SP basic communication 8 - reserved for S7 basic communication 0 - adjustable for S7 basic communication, min. 10 - reserved for S7 communication, min. 10 - reserved for S7 communication, min. 10 - adjustable for S7 communication, min. 10 - adjus	HMI variables via PROFINET (acyclic)	
	-	3; 2x PN OPC/1x iMap
- Number of HMI variables 200 - Data length of all HMI variables, max. 2 000 byte PROFIBUS proxy functionality - - supported Yes - Number of linked PROFIBUS devices 16 - Data length per connection, max. 240 byte; Slave-dependent Number of connections 12 • overall 12 • usable for PG communication 1 - adjustable for PG communication, min. 1 - adjustable for OP communication 11 - reserved for OP communication 11 - adjustable for OP communication 1 - adjustable for OP communication, min. 1 - adjustable for S7 basic communication, mix. 11 - reserved for S7 basic communication, min. 1 - reserved for S7 basic communication, min. 8 - reserved for S7 cost communication, min. 0 - adjustable for S7 communication, min. 0 -	variables (PN OPC/iMap)	
- Data length of all HM variables, max. 2 000 byte PROFIBUS proxy functionality Yes - supported Yes - Number of linked PROFIBUS devices 16 - Data length of all HM variables, max. 240 byte; Slave-dependent Number of connections 12 • usable for PG communication 11 - reserved for PG communication, min. 1 - adjustable for PG communication, min. 1 - adjustable for OP communication, min. 1 - adjustable for OP communication, min. 1 - adjustable for OP communication, min. 1 - adjustable for ST basic communication 11 - reserved for OP communication 11 - adjustable for ST basic communication 8 - reserved for ST basic communication 0 - adjustable for ST basic communication, min. 1 - adjustable for ST basic communication, min. 10 - reserved for ST communication, min. 0 - adjustable for ST communication, min. 10 - reserved for ST communication, min. 12 <	— HMI variable updating	500 ms
PROFIBUS proxy functionality Yes - Number of linked PROFIBUS devices 16 - Data length per connection, max. 240 byte; Slave-dependent Number of connections 12 • overall 12 • usable for PG communication 1 - reserved for PG communication, min. 1 - adjustable for PC communication, max. 11 - reserved for OP communication, max. 11 - adjustable for S7 basic communication 8 - reserved for S7 basic communication 0 - adjustable for S7 basic communication, min. 10 - reserved for S7 communication, min. 0 - adjustable for S7 communication, min. 10 - reserved for S7 communication, min. 0 - adjustable for S7 communication, max. 10 - reserved for S7 communication, max. 10 - stable for S7 communication, max. 12	— Number of HMI variables	200
- supported Yes - Number of linked PROFIBUS devices 16 - Data length per connection, max. 240 byte; Slave-dependent Number of connections 12 • overall 12 • usable for PG communication 1 - adjustable for PG communication, min. - - adjustable for PG communication, max. 11 - adjustable for PG communication, max. 11 - adjustable for OP communication, max. 11 - reserved for OP communication 1 - reserved for OP communication, max. 11 - reserved for OP communication, max. 11 - adjustable for OP communication, max. 11 - reserved for S7 basic communication, max. 11 - adjustable for S7 basic communication 0 - reserved for S7 basic communication, max. 10 - reserved for S7 communication 0 - adjustable for S7 communication, max. 10 - reserved for S7 communication, max. 10 - reserved for S7 communication, max. 10 - reserved for S7 communication, max. 12 - usable for S7 communication, max. 12 <	 Data length of all HMI variables, max. 	2 000 byte
Number of linked PROFIBUS devices 16 Data length per connection, max. 240 byte; Slave-dependent Number of connections 12 • overall 12 • usable for PG communication 1 adjustable for PG communication, min. 1 adjustable for PG communication, max. 11 adjustable for OP communication, max. 11 reserved for OP communication, max. 11 reserved for OP communication, max. 11 adjustable for OP communication, max. 11 adjustable for OP communication, max. 11 adjustable for OP communication, max. 11 served for S7 basic communication, max. 11 served for S7 basic communication 8 reserved for S7 basic communication, max. 10 adjustable for S7 basic communication, max. 10 reserved for S7 communication 0 adjustable for S7 communication, min. 0 adjustable for S7 communication, min. 0 adjustable for S7 communication, max. 10 served for S7 communication, max. 10 adjustable for S7 communication, max.	PROFIBUS proxy functionality	
— Data length per connection, max. 240 byte; Slave-dependent Number of connections 12 • overall 12 • usable for PG communication 11 - reserved for PG communication, min. 1 - adjustable for PG communication, max. 11 - adjustable for PG communication, min. 1 - adjustable for PG communication, max. 11 - reserved for OP communication, max. 11 - adjustable for S7 basic communication 8 - adjustable for S7 basic communication 0 - adjustable for S7 basic communication, 8 - adjustable for S7 communication 0 - adjustable for S7 communication 0 - reserved for S7 communication, min. 0 - adjustable for S7 communication, max. 10 - reserved for S7 communication, max. 10 - reserved for S7 communication, max. 12 - usable for roting X1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave: (active): max. 14; X2 as PROFINET: 24 max. S7 message functions 12; Depending on the configured connections for PG	— supported	Yes
Number of connections • overall 12 • usable for PG communication 11 - reserved for PG communication, min. 1 - adjustable for PG communication, max. 11 • usable for OP communication, max. 11 • usable for OP communication, max. 11 • usable for OP communication 1 - adjustable for OP communication, max. 11 - adjustable for OP communication, max. 11 - adjustable for OP communication, max. 11 - adjustable for S7 basic communication 8 - reserved for S7 basic communication 0 - adjustable for S7 basic communication, max. 10 - reserved for S7 basic communication, max. 10 - adjustable for S7 communication 0 - adjustable for S7 communication, min. 10 - reserved for S7 communication, max. 10 - reserved for S7 communication, max. 12 - usable for routing X1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave (active): max. 14; X2 as PROFINET: 24 max. S7 message functions 12; Depending on the configured connections for PG/OP and S7 basic communication Number of login stations for message function	 — Number of linked PROFIBUS devices 	16
• overall 12 • usable for PG communication 11 - reserved for PG communication, min. 1 - adjustable for PG communication, min. 1 - adjustable for PG communication, max. 11 • usable for OP communication, max. 11 - adjustable for OP communication, max. 11 - reserved for OP communication, min. 1 - adjustable for OP communication, max. 11 - usable for S7 basic communication, max. 11 • usable for S7 basic communication 8 - reserved for S7 basic communication 0 - adjustable for S7 basic communication, max. 10 - reserved for S7 communication 0 - adjustable for S7 communication, min. 0 - adjustable for S7 communication, min. 0 - adjustable for S7 communication, min. 0 - adjustable for S7 communication, max. 10 • usable for routing X1 as MPI: max. 10; X1 as DP master; max. 24; X1 as DP slave (active): max. 14; X2 as PROFINET: 24 max. 27 message functions 12; Depending on the configured connections for PG/OP and S7 basic communication Process diagnostic messages Yes simultaneously a	— Data length per connection, max.	240 byte; Slave-dependent
• Usballs 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, max. 11 - adjustable for OP communication, min. 1 - adjustable for OP communication, min. 1 - adjustable for OP communication, max. 11 - adjustable for S7 basic communication, max. 11 - usable for S7 basic communication 8 - reserved for S7 basic communication, 0 - min. - adjustable for S7 basic communication, - adjustable for S7 communication 0 - reserved for S7 communication, 8 - reserved for S7 communication, min. 10 - reserved for S7 communication, min. 0 - adjustable for S7 communication, min. 10 - reserved for S7 communication, min. 10 - reserved for S7 communication, min. 10 - adjustable for S7 communication, max. 10 - usable for routing X1 as MPI: max. 10, X1 as DP master: max. 24; X1 as DP slave (active): max. 14; X2 as PROFINET: 24 max.	Number of connections	
- reserved for PG communication 1 - adjustable for PG communication, min. 1 - adjustable for PG communication, max. 11 - reserved for OP communication 1 - adjustable for OP communication, max. 1 - adjustable for S7 basic communication, max. 1 - adjustable for S7 basic communication, max. 0 - reserved for S7 basic communication, min. - adjustable for S7 basic communication, min. - adjustable for S7 communication, min. 0 - adjustable for S7 communication, max. 10 - reserved for S7 communication, max. 10 - adjustable for S7 communication, max. 10 - adjustable for S7 communication, max. 10 - usable for routing X1 as MPI: max. 10, X1 as DP master: max. 24, X1 as DP slave (active): max. 14; X2 as PROFINET: 24 max.	• overall	12
	 usable for PG communication 	11
	 reserved for PG communication 	1
• 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. 10 - reserved for S7 communication, max. 10 - reserved for S7 communication, min. 0 - adjustable for S7 communication, min. 0 - adjustable for S7 communication, min. 0 - adjustable for S7 communication, max. 10 • usable for routing X1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave (active): max. 14; X2 as PROFINET: 24 max. S7 message functions 12; Depending on the configured connections for PG/OP and S7 basic communication Process diagnostic messages Yes simultaneously active Alarm-S blocks, max. 300 Test commissioning functions Yes; Up to 2 simultaneously Single step Yes <	 adjustable for PG communication, min. 	1
	— adjustable for PG communication, max.	11
- 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 communication, 10 - reserved for S7 communication 0 - reserved for S7 communication, 0 - adjustable for S7 communication, 0 - adjustable for S7 communication, 0 - adjustable for S7 communication, min. 0 - adjustable for S7 communication, min. 0 - adjustable for S7 communication, max. 10 - usable for routing X1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave (active): max. 14; X2 as PROFINET: 24 max. S7 message functions 12; Depending on the configured connections for PG/OP and S7 basic communication Process diagnostic messages Yes simultaneously active Alarm-S blocks, max. 300 Test commissioning functions Yes; Up to 2 simultaneously <td> usable for OP communication </td> <td>11</td>	 usable for OP communication 	11
Adjustable for OP communication, max. adjustable for OP communication adjustable for S7 basic communication - reserved for S7 basic communication - adjustable for S7 basic communication, min. - adjustable for S7 basic communication, max. usable for S7 communication - reserved for S7 communication - reserved for S7 communication - reserved for S7 communication - adjustable for S7 communication, - adjustable for S7 communication, - adjustable for S7 communication, min. - adjustable for S7 communication, min. - adjustable for S7 communication, max. 10 - reserved for S7 communication, max. 10 - adjustable for S7 communication, max. 12 - usable for routing X1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave (active): max. 14; X2 as PROFINET: 24 max. 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 Alarn-S blocks, max. 300 Test commissioning functions Status block Yes; Up to 2 simultaneously Single step Yes	— reserved for OP communication	1
• usable for S7 basic communication 8 - reserved for S7 basic communication 0 - adjustable for S7 basic communication, 0 min. - adjustable for S7 basic communication, 8 - adjustable for S7 basic communication, 8 max. - 10 - reserved for S7 communication 0 - adjustable for S7 communication, 0 - adjustable for S7 communication, min. 0 - adjustable for S7 communication, max. 10 - adjustable for S7 communication, max. 10 - adjustable for S7 communication, max. 10 - usable for row instances, max. 32 - usable for routing X1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave (active): max. 14; X2 as PROFINET: 24 max. S7 message functions 12; Depending on the configured connections for PG/OP and S7 basic communication Process diagnostic messages Yes simultaneously active Alarm-S blocks, max. 300 Test commissioning functions Yes; Up to 2 simultaneously Single step Yes	— adjustable for OP communication, min.	1
	— adjustable for OP communication, max.	11
	 usable for S7 basic communication 	8
min.	- reserved for S7 basic communication	0
	— adjustable for S7 basic communication,	0
max. 10 • usable for S7 communication 0 - reserved for S7 communication, min. 0 - adjustable for S7 communication, max. 10 • total number of instances, max. 32 • usable for routing X1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave (active): max. 14; X2 as PROFINET: 24 max. S7 message functions 12; Depending on the configured connections for PG/OP and S7 basic communication Process diagnostic messages Yes simultaneously active Alarm-S blocks, max. 300 Test commissioning functions Yes; Up to 2 simultaneously Status block Yes; Up to 2 simultaneously Single step Yes	min.	
• usable for S7 communication10- reserved for S7 communication0- adjustable for S7 communication, min.0- adjustable for S7 communication, max.10• total number of instances, max.32• usable for routingX1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave (active): max. 14; X2 as PROFINET: 24 max.S7 message functions12; Depending on the configured connections for PG/OP and S7 basic communicationProcess diagnostic messagesYessimultaneously active Alarm-S blocks, max.300Test commissioning functionsStatus blockYes; Up to 2 simultaneouslySingle stepYes	 adjustable for S7 basic communication, 	8
	max.	
adjustable for S7 communication, min.0 adjustable for S7 communication, max.10• total number of instances, max.32• usable for routingX1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave (active): max. 14; X2 as PROFINET: 24 max.S7 message functions12; Depending on the configured connections for PG/OP and S7 basic communicationProcess diagnostic messagesYessimultaneously active Alarm-S blocks, max.300Status blockYes; Up to 2 simultaneouslySingle stepYes		10
— adjustable for S7 communication, max. 10 • total number of instances, max. 32 • usable for routing X1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave (active): max. 14; X2 as PROFINET: 24 max. S7 message functions 12; Depending on the configured connections for PG/OP and S7 basic communication Process diagnostic messages Yes simultaneously active Alarm-S blocks, max. 300 Test commissioning functions Yes; Up to 2 simultaneously Status block Yes; Up to 2 simultaneously Single step Yes	— reserved for S7 communication	0
• total number of instances, max. 32 • usable for routing X1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave (active): max. 14; X2 as PROFINET: 24 max. S7 message functions 12; Depending on the configured connections for PG/OP and S7 basic communication Process diagnostic messages Yes simultaneously active Alarm-S blocks, max. 300 Test commissioning functions Yes; Up to 2 simultaneously Status block Yes; Up to 2 simultaneously Single step Yes	 — adjustable for S7 communication, min. 	0
• usable for routing X1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave (active): max. 14; X2 as PROFINET: 24 max. S7 message functions 12; Depending on the configured connections for PG/OP and S7 basic communication Process diagnostic messages Yes simultaneously active Alarm-S blocks, max. 300 Test commissioning functions Yes; Up to 2 simultaneously Status block Yes; Up to 2 simultaneously Single step Yes	— adjustable for S7 communication, max.	10
S7 message functionsNumber of login stations for message functions, max.12; Depending on the configured connections for PG/OP and S7 basic communicationProcess diagnostic messagesYessimultaneously active Alarm-S blocks, max.300Test commissioning functionsStatus blockYes; Up to 2 simultaneouslySingle stepYes	 total number of instances, max. 	
S7 message functions 12; Depending on the configured connections for PG/OP and S7 basic communication Process diagnostic messages Yes simultaneously active Alarm-S blocks, max. 300 Test commissioning functions Yes; Up to 2 simultaneously Status block Yes; Up to 2 simultaneously Single step Yes	 usable for routing 	
Number of login stations for message functions, max. 12; Depending on the configured connections for PG/OP and S7 basic communication Process diagnostic messages Yes simultaneously active Alarm-S blocks, max. 300 Test commissioning functions Yes; Up to 2 simultaneously Status block Yes; Up to 2 simultaneously Single step Yes		(active): max. 14; X2 as PROFINET: 24 max.
Process diagnostic messagesbasic communicationProcess diagnostic messagesYessimultaneously active Alarm-S blocks, max.300Test commissioning functionsStatus blockStatus blockYes; Up to 2 simultaneouslySingle stepYes		
Process diagnostic messages Yes simultaneously active Alarm-S blocks, max. 300 Test commissioning functions Status block Yes; Up to 2 simultaneously Single step Yes	Number of login stations for message functions, max.	
simultaneously active Alarm-S blocks, max. 300 Test commissioning functions Single step Yes; Up to 2 simultaneously Yes		
Test commissioning functions Status block Yes; Up to 2 simultaneously Single step Yes		
Status block Yes; Up to 2 simultaneously Single step Yes	Simultaneously active Alarm-S DIOCKS, Max.	500
Single step Yes	Test commissioning functions	
Number of breakpoints 4		
	Number of breakpoints	4

Status/control	
Status/control variable	Yes
Variables	Inputs, outputs, memory bits, DB, times, counters
 Number of variables, max. 	30
— of which status variables, max.	30
— of which control variables, max.	14
Forcing	
Forcing	Yes
 Forcing, variables 	Inputs, outputs
 Number of variables, max. 	10
Diagnostic buffer	
• present	Yes
 Number of 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	
• can be read out	Yes
Interrupts/diagnostics/status information	
Diagnostics indication LED	
 Status indicator digital input (green) 	Yes
 Status indicator digital output (green) 	Yes
Integrated Functions	
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	2.5 KHZ
Potential separation Potential separation digital inputs	2.5 KHZ
	2.5 KHZ Yes
Potential separation digital inputs	
Potential separation digital inputsPotential separation digital inputs	Yes

 Potential separation digital outputs 	Yes
 between the channels 	Yes
 between the channels, in groups of 	8
 between the channels and backplane bus 	Yes
Potential separation analog inputs	
 Potential separation analog inputs 	Yes; common for analog I/O
• between the channels	No
 between the channels and backplane bus 	Yes
Potential separation analog outputs	
 Potential separation analog outputs 	Yes; common for analog I/O
 between the channels 	No
 between the channels and backplane bus 	Yes
Permissible potential difference	
Between the inputs and MANA (UCM)	8 V DC
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; V5.5 or higher
Programming	
Command set	see instruction list
Nesting levels	8
 System functions (SFC) 	see instruction list
 System function blocks (SFB) 	see instruction list
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes
— CFC	Yes
— GRAPH	Yes
— HiGraph®	Yes
Know-how protection	
 User program protection/password protection 	Yes
Block encryption	Yes; With S7 block Privacy
Dimensions	

Width	120 mm	
Height	125 mm	
Depth	130 mm	
Weights		
Weight	730 g	