SIEMENS

Data sheet

6ES7313-6BG04-0AB0



SIMATIC S7-300, CPU 313C-2 PTP Compact CPU with MPI, 16 DI/16 DO, 3 high-speed counters (30 kHz), integrated interface RS485, Integr. power supply 24 V DC, work memory 128 KB, Front connector (1x 40-pole) and Micro Memory Card required

General information	
Firmware version	V3.3
Engineering with	
 Programming package 	STEP 7 as of V5.5 + SP1 or STEP 7 V5.3 + SP2 or higher with HSP 204
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
external protection for power supply lines (recommendation)	Miniature circuit breaker, type C; min. 2 A; miniature circuit breaker type B, min. 4 A
Mains buffering	
 Mains/voltage failure stored energy time 	5 ms
Repeat rate, min.	1 s
Load voltage L+	
Digital inputs	
— Rated value (DC)	24 V
 Reverse polarity protection 	Yes
Digital outputs	
— Rated value (DC)	24 V
 Reverse polarity protection 	No
Input current	
Current consumption (rated value)	580 mA
Current consumption (in no-load operation), typ.	110 mA
Inrush current, typ.	5 A
l²t	0.7 A ² ·s
Digital inputs	
 from load voltage L+ (without load), max. 	80 mA
Digital outputs	
 from load voltage L+, max. 	50 mA
Power loss	
Power loss, typ.	9 W
Memory	
Work memory	
integrated	128 kbyte
• expandable	No
Load memory	
Plug-in (MMC)	Yes
- · · ·	

- Diversity (MMAC) move	
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.	0.07 µs
for word operations, typ. for fixed point arithmetic, typ.	0.15 μs 0.2 μs
for floating point arithmetic, typ.	0.2 μs 0.72 μs
CPU-blocks	0.72 µs
	4 004 (DDs. EQs. EDs.) the mentioner number of herdelik blacks are
Number of blocks (total)	1 024; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used.
DB	
Number, max.	1 024; Number range: 1 to 16000
• Size, max.	64 kbyte
FB	
Number, max.	1 024; Number range: 0 to 7999
• Size, max.	64 kbyte
FC	
• Number, max.	1 024; Number range: 0 to 7999
• Size, max.	64 kbyte
OB	
Number, max.	see instruction list
• Size, max.	64 kbyte
Number of free cycle OBs	1; OB 1
Number of time alarm OBs	1; OB 10
 Number of delay alarm OBs 	2; OB 20, 21
Number of cyclic interrupt OBs	4; OB 32, 33, 34, 35
Number of process alarm OBs	1; OB 40
Number of startup OBs	1; OB 100
Number of asynchronous error OBs	4; OB 80, 82, 85, 87
Number of synchronous error OBs	2; OB 121, 122
Nesting depth	
 per priority class 	16
additional within an error OB	4
Counters, timers and their retentivity	
S7 counter	
Number	256
Retentivity	
— adjustable	Yes
— lower limit	0
— upper limit	255
— preset	Z 0 to Z 7
Counting range	
— adjustable	Yes
— lower limit	0
— upper limit	999
IEC counter	
• present	Yes
• Type	SFB
Number	Unlimited (limited only by RAM capacity)
S7 times	
Number	256
Retentivity	
— adjustable	Yes
— lower limit	0

upper time - upper time - upper time - upper time • upper time • upper time • present • type • Unimited United only by RAM capacity) Data areas and their eternity Reservice data area (incl. timers, counters, flegs), max. Fige • Size, max. • Reservice data area (incl. timers, counters, flegs), max. Fige • Size, max. • Reservice data area (incl. timers, counters, flegs), max. Fige • Size, max. • Reservice data area (incl. timers, counters, flegs), max. Fige • Size, max. • Reservice data area (incl. timers, counters, flegs), max. Fige • Size, max. • Reservice data area (incl. timers, counters, flegs), max. Fige • Reservice data area (incl. timers, counters, flegs), max. Fige • Reservice data area (incl. timers, counters, flegs), max. Fige • Reservice data area (incl. timers, counters, flegs), max. • Reservice data data (incl. timers, counters, flegs), max. • Reservice data (incl. timers, co		055
Time: rangeImage: second s	— upper limit	255
 - Lower limit upper limit 9 980 s IEC timer rippe File Number Unlimited (limited only by RAM capacity) Data areas and their retentivity Retentivity available Siza, max. Siza, Siza, max. Siza, Siza, Siza,	· · · · · · · · · · · · · · · · · · ·	No retentivity
upper limit9 990 sIC timer• presentYes• TypeSFB• NumberUninimat (imited only by RAM capacity)Data areas and their releativityPatentive data area (incl. timers, counters, flags), max.64 byteFileFile• Size, max.25 byte• Retentivity availableYes: MB 0 to MB 255• Retentivity presetMB 0 to MB 15• Number of clock memoies8.1 memory byteOral datasVes: Van non-retain property on DB• Retentivity glustableYes: Van non-retain property on DB• Retentivity aguistableYes: Van non-retain property on DB• Retentivity glustableYes: Van non-retain property on DB• Retentivity aguistableYes: Van non-retain property on DB• Retentivity aguistableYes: Van non-retain property on DB• Retentivity aguistable1024 byte• Outputs1024 byte• Outputs1024 byte• Outputs1024 byte• Outputs1024 byte• Outputs1024 byte• Inputs1024 byte• Inputs1024 byte• Outputs1024 byte• Outputs1024 byte• Outputs1024 byte• Outputs1024 byte• Outputs, adjustable1024 byte• Outputs, adjustable1024 byte• Inputs124 0 byte• Outputs, adjustable1024 byte• Outputs, adjustable1024 byte• Outputs, adjustable1024 byte• Outputs, adjus	-	10
IEC stress Yes • present Yes • Type Unlimited (limited only by RAM capacity) Data areas and their retentivity Retentive data area (incl. timers. counters, flags), max. 64 byte Flag • Size, max. 256 byte • Retentivity available Yes: MB 0 to MB 255 • Retentivity preset MB 0 to MB 15 • Number of clock memories 8, 1 memory byte Data blocks Ves: Va non-retain property on DB • Retentivity preset Yes • Retentivity adjustable Yes • Inputs 1024 byte • Outputs, distable 1024 byte • Outputs, default 128 byte <t< td=""><td></td><td></td></t<>		
• presentYes• TypeSFB• NumberUnimited (limited only by RAM capacity)Data areas and their retentivity• Retentive data area (incl. theres, counters, flags), max.64 byteFlag• Size, max.256 byte• Retentivity availableYes: MB 0 to MB 255• Retentivity presetMB 0 to MB 15• Number of clock memories6.1 memory byteData blocks• Retentivity adjustableYes: Wa non-retain property on DB• Retentivity presetYes• Coldads1024 byte• Per profity class, max.32 kbyte; Max. 2048 bytes per blockAddress area• Outputs1024 byte• Outputsnone- Outputsnone• Outputs1024 byte• Outputs1008<		9 990 s
• TypeSFB• NumberUnimete (limited only by RAM capacity)Data area: and their retentivity64 kbyteRetentive data area (n.et. timers, counters, flags), max.64 kbyteFlag•• Star, max.256 byte• Retentivity availableYes, MB 0 to MB 255• Retentivity presetMB 0 to MB 15• Number of clock memories6, 1 memory byte• Retentivity presetYes• Retentivity presetYes• Retentivity presetYes• Retentivity presetYes• Retentivity presetYes• Pari priority class, max.32 kbyte; Max. 2048 bytes per blockAddress area•• Inputs1024 byte• Outputs1024 byte• Outputs124 byte• Outputs1024 byte• Outputs1024 byte• Outputs1024 byte• Outputs1008 O which central1008 O which central		
 Number Unlimited (limited only by FAM capacity) Data areas, and their retentivity Patherive data area (nct. liners, counters, flags), max. Efferity Size, max. Size, max.		
Data areas and their retentivity EVEN VEXA Retentive data area (nct, timers, counters, flags), max. E4 kbyte Flag 256 byte • Size, max. 256 byte • Retentivity available Yes, MB 0 to MB 255 • Retentivity preset MB 0 to MB 15 • Number of clock memories 8; 1 memory byte Data blocks Yes • Retentivity preset Yes • Local data 32 kbyte; Max. 2048 bytes per block Address area • • Inputs 1024 byte • Outputs 1024 byte • Outputs 1024 byte • Inputs 1024 byte • Inputs 1024 byte • Inputs 1024 byte • Inputs 1024 byte • Outputs, adjustable 1024 byte • Inputs, adjustable 1024 byte •		SFB
Renetive data area (incl. timers, counters, flags), max. 64 kbyte Flag 256 byte • Ster, max. 256 byte • Retentivity varialishe Yes; MB 0 to MB 255 • Retentivity opeset MB 0 to MB 15 • Number of clock memories 8; 1 memory byte Data blocks • • Petentivity adjustable Yes; via non-retain property on DB • Retentivity opeset Yes Local data • • oper priority class, max. 32 kbyte; Max. 2048 bytes per block Address area • • Inputs 1 024 byte • Outputs 1 024 byte • Outputs 1 024 byte • Inputs, adjustable 1 024 byte • Outputs 1 024 byte • Inputs, adjustable 1 024 byte • Outputs 1 024 byte • Outputs 1 024 byte • Outputs 1 024 byte • Outputs, adjustable 1 024 byte • Outputs, adjustable </td <td>Number</td> <td>Unlimited (limited only by RAM capacity)</td>	Number	Unlimited (limited only by RAM capacity)
Flag • Size, max, 256 byte • Retentivity available Yes; MB 0 to MB 255 • Retentivity preset MB 0 to MB 15 • Number of clock memories 8; in memory byte Data blocks • • Retentivity preset Yes; • Retentivity preset Yes Local data • • per priority class, max, 32 kbyte; Max, 2048 bytes per block Address area • • Inputs 1 024 byte • Inputs 1 024 byte • Outputs none - Outputs none - Outputs 1 024 byte • Output	Data areas and their retentivity	
Size, max.256 byłeRetentivity availableYes; MB 0 to MB 255Retentivity presetMB 0 to MB 15• Number of clock memories8; 1 memory byteData blocksYes- Retentivity djustableYes; via non-retain property on DB• Retentivity presetYes• Cocal dataYes• Cocal dataYes• Inputs32 kbyte; Max. 2048 bytes per blockAddress area1024 byte• Inputs1024 byte• Outputs1024 byte• Outputs124 byte• Outputs1008- Outputs1008- Outputs1008- Outputs248• of which central248•	Retentive data area (incl. timers, counters, flags), max.	64 kbyte
• Retentivity valiableYes: MB 0 to MB 255• Rundber of clock memories8; 1 memory byteData blocksYes: Van non-retain property on DB• Retentivity adjustableYes: Van non-retain property on DB• Retentivity presetYesLocal dataYes• per priority class, max.32 kbyte; Max. 2048 bytes per blockAddress area1024 byte• Inputs1 024 byte• Outputs1 024 byte• Outputs1 024 byte• Outputsnone- Outputs1 024 byte• Inputs1 024 byte• Outputs1 024 byte• Outputs, adjustable1 024 byte• Outputs1 008• Outputs1 008• Outputs1 008• Outputs1 008• of which central248• of which central248<	Flag	
• Retentivity preset MB 0 to MB 15 • Number of clock memories 8; 1 memory byte Deta block • • Retentivity adjustable Yes; via non-retain property on DB • Retentivity preset Yes Local data 32 kbyte; Max. 2048 bytes per block Address area 1024 byte • Inputs 1024 byte • Outputs 1024 byte of which distributed none - Outputs none - Outputs 1024 byte • Unputs 1024 byte • Inputs 1024 byte • Outputs none - Outputs none - Outputs 1024 byte • Inputs, adjustable 1024 byte • Outputs, adjustable 1024 byte • Outputs 124 0 to 125.7 • Diglital inputs <t< td=""><td>• Size, max.</td><td>256 byte</td></t<>	• Size, max.	256 byte
• Retentivity preset MB 0 to MB 15 • Number of clock memories 8; 1 memory byte Deta block • • Retentivity adjustable Yes; via non-retain property on DB • Retentivity preset Yes Local data 32 kbyte; Max. 2048 bytes per block Address area 1024 byte • Inputs 1024 byte • Outputs 1024 byte of which distributed none - Outputs none - Outputs 1024 byte • Unputs 1024 byte • Inputs 1024 byte • Outputs none - Outputs none - Outputs 1024 byte • Inputs, adjustable 1024 byte • Outputs, adjustable 1024 byte • Outputs 124 0 to 125.7 • Diglital inputs <t< td=""><td> Retentivity available </td><td>Yes; MB 0 to MB 255</td></t<>	 Retentivity available 	Yes; MB 0 to MB 255
Data blocks Yes; via non-retain property on DB Retentivity adjustable Yes; via non-retain property on DB • per priority class, max. 32 kbyte; Max. 2048 bytes per block: Address area 1024 byte • Inputs 1 024 byte • Outputs 1 024 byte of which distributed none - Outputs none - Outputs none - Outputs 1 024 byte of which distributed none - Outputs none - Outputs 1 024 byte • Inputs, distributed none - Outputs 1 024 byte • Outputs, adjustable 1 024 byte • Outputs, default 1 28 byte • Default addresses of the integrated channels - - Digital inputs 1 24 0 to 125.7 - Digital inputs 1 008 - of which central 1 008 - of which central 1 008 - of which central 248 - of which central 248		MB 0 to MB 15
• Retentivity adjustable Yes; via non-retain property on DB • Retentivity preset Yes • ber priority class, max. 32 kbyte; Max. 2048 bytes per block Address area - • Inputs 1 024 byte • Outputs 1 024 byte • Outputs 1 024 byte • Inputs 1 024 byte • Outputs 1 024 byte • Outputs none - Outputs none • Outputs 1 024 byte • Outputs, adjustable 1 024 byte • Outputs, default 1 28 byte • Default addresses of the Integrated channels - - Digital outputs 1 24.0 to 125.7 - Digital outputs 1 008 - or which central 1 008 - or which central 1 008 - or which central 248 - of which central 248 - of which central <t< td=""><td>Number of clock memories</td><td>8; 1 memory byte</td></t<>	Number of clock memories	8; 1 memory byte
• Retentivity preset Yes Local data - • per priority class, max. 32 kbyte; Max. 2048 bytes per block Address area - I/D address area - 0 Inputs 1 024 byte 0 ubputs 1 024 byte 0 which distributed -	Data blocks	
• Retentivity preset Yes Local data - • per priority class, max. 32 kbyte; Max. 2048 bytes per block Address area - I/D address area - 0 Inputs 1 024 byte 0 ubputs 1 024 byte 0 which distributed -		Yes; via non-retain property on DB
Local data • per priority class, max. 32 kbyte; Max. 2048 bytes per block Address area 1024 byte • Inputs 1 024 byte • Outputs 1 024 byte • Outputs 1 024 byte • Outputs 1 024 byte • Inputs 1 024 byte • Uputs 1 024 byte • Outputs none - Outputs none • Inputs, aljustable 1 024 byte • Unputs, aljustable 1 024 byte • Outputs, aljustable 1 024 byte • Outputs, aljustable 1 024 byte • Outputs, default 1 28 byte Default addresses of the integrated channels - - Digital outputs 1 24.0 to 125.7 - Digital outputs 1 008 - Of which central 1 008 - of which central 1 008 - of which central 248 - of which central 248 <td></td> <td></td>		
• per priority class, max. 32 kbyte; Max. 2048 bytes per block Address area //O address area • Inputs • Inputs • Outputs Outputs Outputs • Inputs		
Address area • Inputs 1 024 byte • Outputs 1 024 byte of which distributed none - Inputs none - Outputs none Process image none • Outputs 1 024 byte • Outputs, adjustable 1 024 byte • Outputs, adjustable 1 024 byte • Outputs, adjustable 1 024 byte • Outputs, default 1 28 byte • Outputs, default 1 28 byte • Default addresses of the integrated channels 1 024 byte • Digital outputs 1 24.0 to 125.7 - Digital outputs 1 24.0 to 125.7 Digital channels 1 008 • of which central 1 008 • of which central 1 008 • outputs 1 008 • outputs 1 008 • of which central 248 • of which central 248 • of which central 248 • of which central 248<		32 kbyte: Max, 2048 bytes per block
I/O address area I nputs 1 024 byte • Inputs 1 024 byte • Outputs 1 024 byte of which distributed none - Inputs none - Outputs none Process image 1 024 byte • Inputs, adjustable 1 024 byte • Outputs, default 1 28 byte • Outputs, default 1 28 byte • Outputs, default 1 28 byte Default addresses of the integrated channels		
 Inputs 1024 byte Outputs 1024 byte Outputs Inputs none Outputs none Process image Inputs 1024 byte Outputs 1024 byte Outputs, adjustable 1024 byte Outputs, adjustable 1024 byte Outputs, adjustable 1024 byte Outputs, adjustable 1024 byte Outputs, default 128 byte Outputs, default 128 byte Outputs, default 128 byte Default addresses of the integrated channels — Digital inputs 124.0 to 125.7 Digital channels — of which central 1008 — of which central 1008 Anatog channels — of which central 1008 Anatog channels — of which central 1008 Anatog channels — of which central 248 Outputs 248 Outputs 248 Outputs 248 Outputs 248 Outputs 248 Outputs 248 Vanber of expansion units, max. 3 Number of operable FMs and CPs (recommended) FM CP, PP 8 CP, LAN 6 		
• Outputs 1 024 byte of which distributed none - Inputs none - Outputs none Process image 1024 byte • Unputs 1024 byte • Outputs 1024 byte • Outputs, adjustable 1024 byte • Unputs, adjustable 1024 byte • Outputs, default 128 byte • Outputs, default 128 byte • Default addresses of the integrated channels - - Digital inputs 124.0 to 125.7 • Digital outputs 124.0 to 125.7 Digital channels - • Inputs 1008 - of which central 1008 - of which central 1008 - of which central 248 - of whi		4.004 bits
of which distributednone- Inputsnone- OutputsnoneProcess image1024 byte• Inputs1024 byte• Inputs, adjustable1024 byte• Outputs, default128 byte• Default addresses of the integrated channels124.0 to 125.7- Digital inputs124.0 to 125.7- Digital outputs1008- of which central1008- of which central1008- of which central1008- of which central1008- of which central248- of which centra		
		1 024 byte
Outputs none Process image		
Process image • Inputs 1 024 byte • Outputs 1 024 byte • Inputs, adjustable 1 024 byte • Outputs, adjustable 1 024 byte • Outputs, adjustable 1 024 byte • Outputs, default 1 028 byte • Default addresses of the integrated channels		
• Inputs 1 024 byte • Outputs 1 024 byte • Inputs, adjustable 1 024 byte • Outputs, default 1 28 byte • Outputs, default 1 28 byte • Default addresses of the integrated channels		none
• Outputs1 024 byte• Inputs, adjustable1 024 byte• Outputs, adjustable1 024 byte• Outputs, default1 024 byte• Outputs, default1 024 byte• Outputs, default1 028 byte• Outputs, default1 28 byte• Default addresses of the integrated channels Digital outputs1 24.0 to 125.7- Digital outputs1 008- of which central1 008- of which central248- of proble central248- of which central248- of which central248- of which central248- of which central3Number of openaters3- integratednone• via CP4Number of Openators8• CP, PIP8• CP, LAN6		
• Inputs, adjustable1 024 byte• Outputs, adjustable1 024 byte• Inputs, default128 byte• Outputs, default128 byteDefault addresses of the integrated channels Digital inputs124.0 to 125.7- Digital outputs124.0 to 125.7Digital channels-• Inputs1 008- of which central1 008- of which central248- Number of expansion units, max.3Number of DP masters3• integratednone• via CP4Number of operable FMs and CPs (recommended)8• CP, PIP8• CP, LAN6		
• Outputs, adjustable1 024 byte• Inputs, default128 byte• Outputs, default128 byte• Default addresses of the integrated channels Digital inputs124.0 to 125.7- Digital outputs124.0 to 125.7Digital channels1 008- of which central1 008- of which central1 008- of which central1 008- of which central1 008- of which central248- of which central3- of which central3 <t< td=""><td></td><td></td></t<>		
• Inputs, default128 byte• Outputs, default128 byteDefault addresses of the integrated channels Digital inputs124.0 to 125.7- Digital outputs124.0 to 125.7Digital channels124.0 to 125.7• Inputs1 008- of which central1 008• Outputs1 008- of which central1 008- of which central1 008- of which central1 008- of which central248- of which central3Number of operation3Number of OP masters4- with CP4Number of operative FMs and CPs (recommended)- FM8- OP, PIP8- OP, LAN6		
• Outputs, default128 byteDefault addresses of the integrated channels Digital inputs124.0 to 125.7- Digital outputs124.0 to 125.7Digital channels1008- of which central1008- of which central248- of which central3Number of operable FMs and CPs (recommended)		
Default addresses of the integrated channels 124.0 to 125.7 — Digital outputs 124.0 to 125.7 Digital channels 124.0 to 125.7 Digital channels 1008 • Inputs 1 008 — of which central 1 008 Analog channels 248 — of which central 248 Hardware configuration 3 Number of operasities 0 • integrated none • via CP 4 Number of operable FMs and CPs (recommended) 8 • CP, PtP 8 • CP, LAN 6	 Inputs, default 	
- Digital inputs124.0 to 125.7- Digital outputs124.0 to 125.7Digital channels1008- of which central1008- of which central1008- of which central1008- of which central1008- of which central1008Analog channels1008- of which central248- of which central3Number of operable fMs and CPs (recommended)4Number of operable FMs and CPs (recommended)8• CP, PtP8• CP, LAN6	 Outputs, default 	128 byte
Digital outputs 124.0 to 125.7 Digital channels 1008 of which central 1008 - of which central 1008 - of which central 1008 - of which central 1008 Analog channels 1008 - of which central 248 Hardware configuration 3 Number of DP masters 4 • integrated none • via CP 4 Number of operable FMs and CPs (recommended) 5 • FM 8 • CP, LAN 6	Default addresses of the integrated channels	
Digital channels 1008 - of which central 1008 • Outputs 1008 - of which central 1008 Analog channels 248 • Inputs 248 - of which central 248 Mumber of expansion units, max. 3 Number of DP masters • • integrated none • via CP 4 Number of operable FMs and CPs (recommended) • • FM 8 • CP, PtP 8 • CP, LAN 6	— Digital inputs	124.0 to 125.7
• Inputs1 008- of which central1 008• Outputs1 008- of which central1 008Analog channels248- of which central248- of which central3Number of expansion units, max.3Number of DP masters	— Digital outputs	124.0 to 125.7
- of which central1 008• Outputs1 008- of which central1 008Analog channels248- of which central248- of which central3Number of expansion units, max.3Number of expansion units, max.3Number of operable FMs and CPs (recommended)4• FM • CP, PtP • CP, LAN8• CP, LAN6	Digital channels	
of which central1 008• Outputs1 008 of which central1 008Analog channels248 of which central248 of which central248• Outputs248 of which central248Hardware configuration248Number of expansion units, max.3Number of DP mastersnone• integratednone• via CP4Number of operable FMs and CPs (recommended)• FM8• CP, PtP8• CP, LAN6	Inputs	1 008
• Outputs1 008- of which central1 008Analog channels248- of which central248- of which central248- of which central248- of which central248- of which central248Mumber of expansion units, max.3Number of PD masters1• integratednone• via CP4Number of operable FMs and CPs (recommended)8• FM8• CP, PtP8• CP, LAN6		1 008
- of which central1 008Analog channels248- of which central248- of which central248- of which central248- of which central248Hardware configuration3Number of expansion units, max.3Number of DP mastersintegrated• integratednone• via CP4Number of operable FMs and CPs (recommended)8• CP, PtP8• CP, PtP8• CP, LAN6		
Analog channels 248 - of which central 248 Hardware configuration 248 Number of expansion units, max. 3 Number of DP masters 0 • integrated none • via CP 4 Number of operable FMs and CPs (recommended) 8 • FM 8 • CP, PtP 8 • CP, LAN 6	•	
• Inputs248- of which central248• Outputs248- of which central248Hardware configuration3Number of expansion units, max.3Number of DP masters3• integratednone• via CP4Number of operable FMs and CPs (recommended)8• FM8• CP, PtP8• CP, LAN6		
of which central248• Outputs248 of which central248Hardware configuration248Number of expansion units, max.3Number of DP masters3• integratednone• via CP4Number of operable FMs and CPs (recommended)8• FM8• CP, PtP8• CP, LAN6	-	248
• Outputs248- of which central248Hardware configuration248Number of expansion units, max.3Number of DP masters3• integratednone• via CP4Number of operable FMs and CPs (recommended)4• FM8• CP, PtP8• CP, LAN6		
of which central248Hardware configurationNumber of expansion units, max.3Number of DP masters3• integratednone• via CP4Number of operable FMs and CPs (recommended)8• FM8• CP, PtP8• CP, LAN6		
Hardware configuration Number of expansion units, max. 3 Number of DP masters 3 • integrated none • via CP 4 Number of operable FMs and CPs (recommended) 4 • FM 8 • CP, PtP 8 • CP, LAN 6		
Number of expansion units, max. 3 Number of DP masters integrated • integrated none • via CP 4 Number of operable FMs and CPs (recommended) 6 • FM 8 • CP, PtP 8 • CP, LAN 6		
Number of DP masters • integrated none • via CP 4 Number of operable FMs and CPs (recommended) • FM 8 • CP, PtP 8 • CP, LAN 6		
• integratednone• via CP4Number of operable FMs and CPs (recommended)• FM8• CP, PtP8• CP, LAN6		3
• via CP 4 Number of operable FMs and CPs (recommended) 5 • FM 8 • CP, PtP 8 • CP, LAN 6		
Number of operable FMs and CPs (recommended) • FM 8 • CP, PtP 8 • CP, LAN 6	-	
• FM 8 • CP, PtP 8 • CP, LAN 6		4
• CP, PtP 8 • CP, LAN 6		
• CP, LAN 6		
		8
Rack	• CP, LAN	6
	Rack	

Racks, max.	4
Modules per rack, max.	* 8: In rack 3 max. 7
Time of day	o, in fact 5 max. 7
Clock	Vee
Hardware clock (real-time)	Yes
retentive and synchronizable	Yes
Backup time	6 wk; At 40 °C ambient temperature
Deviation per day, max.	10 s; Typ.: 2 s
Behavior of the clock following POWER-ON	Clock continues running after POWER OFF
 Behavior of the clock following expiry of backup period 	Clock continues to run with the time at which the power failure occurred
Operating hours counter	
Number	1
 Range of values 	0 to 2^31 hours (when using SFC 101)
Granularity	1 h
retentive	Yes; Must be restarted at each restart
Clock synchronization	
supported	Yes
• to MPI, master	Yes
• to MPI, slave	Yes
• in AS, master	Yes
• in AS, slave	No
Digital inputs	
Number of digital inputs	16
 of which inputs usable for technological functions 	12
integrated channels (DI)	16
Input characteristic curve in accordance with IEC 61131, type 1	Yes
Number of simultaneously controllable inputs	
horizontal installation	
— up to 40 °C, max.	16
— up to 60 °C, max.	8
vertical installation	
— up to 40 °C, max.	8
Input voltage	
Rated value (DC)	24 V
 for signal "0" 	-3 to +5V
• for signal "1"	+15 to +30 V
Input current	
 for signal "1", typ. 	8 mA
Input delay (for rated value of input voltage)	
for standard inputs	
— parameterizable	Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.)
— Rated value	3 ms
for technological functions	
— at "0" to "1", max.	16 μs; Minimum pulse width/minimum pause between pulses at maximum counting frequency
Cable length	
• shielded, max.	1 000 m; 100 m for technological functions
• unshielded, max.	600 m; for technological functions: No
for technological functions	
— shielded, max.	100 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	165
• on lamp load, max.	5 W
	5 W
Load resistance range olower limit	48 Ω
upper limit	4ο Ω 4 kΩ
Output voltage	4 612
	1 + (0 8 \)
for signal "1", min. Output current	L+ (-0.8 V)
•	500 mA
• for signal "1" rated value	5 mA
• for signal "1" permissible range, min.	
• for signal "1" permissible range, max.	0.6 A
• for signal "1" minimum load current	5 mA
for signal "0" residual current, max.	0.5 mA
Parallel switching of two outputs	
• for uprating	No
for redundant control of a load	Yes
Switching frequency	400.11
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	0
integrated channels (AI)	0
Analog outputs	
Number of analog outputs	0
integrated channels (AO)	0
Encoder	
Connectable encoders	
2-wire sensor	Yes
— permissible quiescent current (2-wire sensor),	1.5 mA
max.	
Interfaces	
Number of industrial Ethernet interfaces	0
Number of PROFINET interfaces	0
Number of RS 485 interfaces	1; MPI
Number of RS 422 interfaces	1; RS 422 / 485 combined
Point-to-point connection	
Cable length, max.	1 200 m
Integrated protocol driver	
— 3964 (R)	Yes
— ASCII	Yes
— RK 512	No
Transmission rate, RS 422/485	

— with 3964 (R) protocol, max.	19.2 kbit/s; 38.4 kbit/s half duplex; 19.2 kbit/s full duplex
— with ASCII protocol, max.	19.2 kbit/s; 38.4 kbit/s half duplex; 19.2 kbit/s full duplex
1. Interface	
	Integrated DC 495 interface
Interface type	Integrated RS 485 interface
Isolated	No
Interface types	200
Output current of the interface, max.	200 mA
Protocols	
• MPI	Yes
PROFIBUS DP master	No
PROFIBUS DP slave	No
Point-to-point connection	No
MPI	
Transmission rate, max.	187.5 kbit/s
Services	
— PG/OP communication	Yes
— Routing	No
 Global data communication 	Yes
 — S7 basic communication 	Yes
— S7 communication	Yes; Only server, configured on one side
 — S7 communication, as client 	No; but via CP and loadable FB
- S7 communication, as server	Yes
2. Interface	
Interface type	Integrated RS 422/ 485 interface
Isolated	Yes
Interface types	
• RS 485	Yes; RS 422 / 485 (X.27)
 Output current of the interface, max. 	No
Protocols	
• MPI	No
PROFINET IO Controller	No
PROFINET IO Device	No
PROFINET CBA	No
PROFIBUS DP master	No
PROFIBUS DP slave	No
Point-to-point connection	
 Transmission rate, max. 	19.2 kbit/s; 38.4 kbit/s half duplex; 19.2 kbit/s full duplex
 Interface controllable from the user program 	Yes
 Interface can trigger alarm/interrupt in the user 	Yes; Message on break - identification
program	· · · · · · · · · · · · · · · · · · ·
Communication functions	
PG/OP communication	Yes
Data record routing	No
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; Server
 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 client Yes; Via CP and loadable FB • User data per job, max. 180 byte; With PUT/GET • User data per job (of which consistent), max. 240 byte; as server S5 compatible communication supported • supported Yes; via CP and loadable FC	
User data per job (of which consistent), max. 240 byte; as server S5 compatible communication	
S5 compatible communication	
Number of connections	
• overall 8	
usable for PG communication	
— reserved for PG communication 1	
— adjustable for PG communication, min. 1	
— adjustable for PG communication, max. 7	
usable for OP communication	
— reserved for OP communication 1	
— adjustable for OP communication, min. 1	
— adjustable for OP communication, max. 7	
usable for S7 basic communication	
— reserved for S7 basic communication 0	
— adjustable for S7 basic communication, min. 0	
— adjustable for S7 basic communication, max. 4	
S7 message functions	
Number of login stations for message functions, max. 8; Depending on the configured con	onnections for PG/OP and S7 basic
communication	
Process diagnostic messages Yes	
simultaneously active Alarm-S blocks, max. 300	
Test commissioning functions	
Status block Yes; Up to 2 simultaneously	
Single step Yes	
Number of breakpoints 4	
Status/control	
Status/control variable Yes	
Variables Inputs, outputs, memory bits, DB, t	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.	
Diagnostic buffer	
• present Yes	
Number of entries, max.	
— adjustable No	
— of which powerfail-proof 100; Only the last 100 entries are n	retained
Number of entries readable in RUN, max.	
- adjustable Yes; From 10 to 499	
— preset 10	
Service data	
can be read out Yes	
Interrupts/diagnostics/status information	
Diagnostics indication LED	
Status indicator digital input (green) Yes	
Status indicator digital output (green) Yes	
Integrated Functions	
Frequency measurement Yes	
Number of frequency meters 3; up to 30 kHz (see "Technological")	al Functions" manual)
controlled positioning No	
integrated function blocks (closed-loop control) Yes; PID controller (see "Technolog	gical Functions" manual)

PID controller	Yes
Number of pulse outputs	3; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual)
Limit frequency (pulse)	2.5 kHz
Potential separation	
Potential separation digital inputs	
 Potential separation digital inputs 	Yes
 between the channels 	No
 between the channels and backplane bus 	Yes
Potential separation digital outputs	
 Potential separation digital outputs 	Yes
 between the channels 	Yes
 between the channels, in groups of 	8
between the channels and backplane bus	Yes
Isolation	
Isolation tested with	600 V DC
Ambient conditions	
Ambient temperature during operation min. 	0 °C
• max.	00 °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
 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	80 mm
Height	125 mm
Depth	130 mm
Weights	
Weights Weight, approx.	500 g
troight, applox.	500 g
last modified:	3/31/2021 🖸