



SIMATIC

S7-300 CPU 31xC and CPU 31x: Technical specifications

Manual

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8.4 CPU 313C-2 PtP and CPU 313C-2 DP

Technical specifications

Table 8- 5 Technical specifications of the CPU 313C-2 PtP/ CPU 313C-2 DP

Technical specifications		
	CPU 313C-2 PtP	CPU 313C-2 DP
CPU and version	CPU 313C-2 PtP	CPU 313C-2 DP
• MLFB	6ES7313-6BG04-0AB0	6ES7313-6CG04-0AB0
• Hardware version	01	01
• Firmware version	V3.3	V3.3
• Associated programming package	STEP 7 as of V5.5 + SP1 or STEP 7 as of V5.3 + SP2 with HSP 204	STEP 7 as of V5.5 + SP1 or STEP 7 as of V5.3 + SP2 with HSP 203
Memory	CPU 313C-2 PtP	CPU 313C-2 DP
Main memory		
• Integrated	128 KB	
• Expandable	No	
• Maximum size of non-volatile memory for retentive data blocks	64 KB	
Load memory		
• Pluggable (MMC)	Yes	
• Pluggable (MMC), max.	8 MB	
• Data retention on the Micro Memory Card (after the last programming action), min.	10 years	
Backup		
• Available	Yes (ensured with Micro Memory Card - maintenance-free)	
• Without battery	Yes (program and data)	
Execution times	CPU 313C-2 PtP	CPU 313C-2 DP
• For bit operation, min.	0.07 μs	
• For word operations, min.	0.15 μs	
• For fixed-point arithmetic, min.	0.2 μs	
• Minimum for floating-point arithmetic	0.72 μs	
Timers/counters and their retentivity	CPU 313C-2 PtP	CPU 313C-2 DP
S7 counters		
• Number	256	

Technical specifications		
	CPU 313C-2 PtP	CPU 313C-2 DP
Retentivity		
• Configurable	Yes	
• Default	From C 0 to C 7	
Counting range		
• Low limit	0	
• High limit	999	
IEC counter		
• Available	Yes	
• Type	SFB	
• Number	Unlimited (limited only by main memory size)	
S7 timers		
• Number	256	
Retentivity		
• Configurable	Yes	
• Default	No retentivity	
Time setting range		
• Low limit	10 ms	
• High limit	9990 s	
IEC timer		
• Available	Yes	
• Type	SFB	
• Number	Unlimited (limited only by main memory size)	
Data areas and their retentivity	CPU 313C-2 PtP	CPU 313C-2 DP
Bit memory		
• Number, max.	256 bytes	
• Retentivity, available	Yes (MB 0 to MB 255)	
• Retentivity, default	MB 0 to MB15	
• Number of clock memories	8 (1 memory byte)	
Data blocks		
• Number, max.	1024 (in the number range 1 to 16000)	
• Size, max.	64 KB	
• Retentivity, configurable	Yes, via non-retain feature on the DB	
• Retentivity, default	Yes	

Technical specifications		
	CPU 313C-2 PtP	CPU 313C-2 DP
Local data		
• Per priority class, max.	32 kByte, Max. 2048 bytes per block	
Blocks	CPU 313C-2 PtP	CPU 313C-2 DP
• Number of blocks (total)	1024 (DBs, FCs, FBs) The maximum number of blocks that can be loaded may be reduced due to the Micro Memory Card you are using.	
OB	See instruction list	
• Size, max.	64 KB	
• Number of free cycle OBs	1 (OB 1)	
• Number of time-of-day interrupt OBs	1 (OB 10)	
• Number of time-delay interrupt OBs	2 (OB 20, 21)	
• Number of cyclic interrupt OBs	4 (OB 32, 33, 34, 35)	
• Number of hardware interrupt OBs	1 (OB 40)	
• Number of DPV1 interrupt OBs	-	3 (OB 55, 56, 57)
• Number of restart OBs	1 (OB 100)	
• Number of asynchronous error OBs	4 (OB 80, 82, 85, 87)	5 (OB 80, 82, 85, 86, 87)
• Number of synchronous error OBs	2 (OB 121, 122)	
Nesting depth		
• Per priority class	16	
• Additionally within an error OB	4	
FB	See instruction list	
• Number, max.	1024 (in the number range 0 to 7999)	
• Size	64 KB	
FC	See instruction list	
• Number, max.	1024 (in the number range 0 to 7999)	
• Size	64 KB	
Address ranges (inputs/outputs)	CPU 313C-2 PtP	CPU 313C-2 DP
I/O address area		
• Inputs	1024 bytes	2048 bytes
• Outputs	1024 bytes	2048 bytes
Distributed		
• Inputs	-	2030 bytes
• Outputs	-	2030 bytes

Technical specifications		
	CPU 313C-2 PtP	CPU 313C-2 DP
I/O process image		
• Inputs	1024 bytes	2048 bytes
• Outputs	1024 bytes	2048 bytes
• Inputs, adjustable	1024 bytes	2048 bytes
• Outputs, adjustable	1024 bytes	2048 bytes
• Inputs, preset	128 bytes	128 bytes
• Outputs, preset	128 bytes	128 bytes
Digital channels		
• Integrated channels (DI)	16	
• Integrated channels (DO)	16	
• Inputs	1008	16256
• Outputs	1008	16256
• Inputs, of those central	1008	1008
• Outputs, of those central	1008	1008
Analog channels		
• Integrated channels	-	-
• Integrated channels	-	-
• Inputs	248	1015
• Outputs	248	1015
• Inputs, of those central	248	248
• Outputs, of those central	248	248
Hardware configuration	CPU 313C-2 PtP	CPU 313C-2 DP
• Racks, max.	4	
• Modules per rack, max.	8; max. 7 in rack ER 3	
Number of DP masters		
• Integrated	No	1
• Via CP	4	4
Number of usable FMs and CPs (recommended)		
• FM	8	
• CP, point-to-point	8	
• CP, LAN	6	

Technical specifications		
	CPU 313C-2 PtP	CPU 313C-2 DP
Time	CPU 313C-2 PtP	CPU 313C-2 DP
Clock		
• Hardware clock (real-time)	Yes	
• Buffered, can be synchronized	Yes	
• Factory setting	DT#1994-01-01-00:00:00	
• Buffered period	Typically 6 weeks (at an ambient temperature of 40 °C)	
• Behavior of the real-time clock after POWER ON	The clock continues running after POWER OFF	
• Behavior after expiration of the buffered period	The clock continues at the time of day it had when power was switched off.	
• Deviation per day, max.	10 s, typ.: 2 s	
Runtime meter		
• Number	1	
• Number/number range	0	
• Range of values	0 to 2 ³¹ hours (using the SFC 101)	
• Granularity	1 hour	
• Retentive	Yes; must be manually restarted after every restart	
Clock synchronization		
• Supported	Yes	
• On MPI, master	Yes	Yes
• On MPI, slave	Yes	Yes
• On DP, master	-	Yes, DP slave must be time slave
• On DP, slave	-	Yes
• On the AS, master	Yes	Yes
• On the AS, slave	No	No
S7 signaling functions	CPU 313C-2 PtP	CPU 313C-2 DP
• Number of stations that can be logged on for signaling functions (e.g. OS)	8	
• Process error diagnostic messages	Yes	
• Simultaneously enabled interrupt S blocks, max.	300	

Technical specifications		
	CPU 313C-2 PtP	CPU 313C-2 DP
Test and startup functions	CPU 313C-2 PtP	CPU 313C-2 DP
Status/modify		
• Status/modify variable	Yes	
• Variable	Inputs, outputs, bit memories, DBs, timers, counters	
• Maximum number of variables	30	
• Status variables, max.	30	
• Modify variables, max.	14	
Forcing		
• Forcing	Yes	
• Variables	Inputs, outputs	
• Maximum number of tags	10	
Status block	Yes, up to 2 at the same time	
Single step	Yes	
• Number of breakpoints	4	
Diagnostic buffer		
• Available	Yes	
• Maximum number of entries (not configurable)	500	
• Configurable	No	
• Of which are power-failure-proof	100, only the last 100 entries are retentive	
• Maximum number of entries that can be read in RUN	499	
• Number of entries that can be set in RUN	Yes, from 10 to 499	
• Number of preset entries in RUN	10	
Service data		
• Can be read out	Yes	
Monitoring functions	CPU 313C-2 PtP	CPU 313C-2 DP
• Status LEDs	Yes	
Communication functions	CPU 313C-2 PtP	CPU 313C-2 DP
PG/OP communication	Yes	Yes
Prioritized OCM communication		
• Supported	No	
Routing	No	Yes
• Number of routing connections	-	Max. 4
• Data record routing	No	Yes

Technical specifications		
	CPU 313C-2 PtP	CPU 313C-2 DP
Global data communication		
• Supported	Yes	
• Number of GD circles, max.	8	
• Number of GD packets, max.	8	
• Number of GD packets, sender, max.	8	
• Number of GD packets, receiver, max.	8	
• Size of GD packets, max.	22 bytes	
• Size of GD packets, of those consistent, max.	22 bytes	
S7 basic communication		
• Supported	Yes	
• User data per job, max.	76 bytes	
• User data per job, consistent, max.	76 bytes (for X_SEND or X_RCV) 64 bytes (for X_PUT or X_GET as the server)	
S7 communication		
• Supported	Yes	
• As server	Yes	
• As client	Yes, via CP and loadable FBs	
• User data per job, max.	180 bytes for PUT/GET	
• User data per job, consistent, max.	240 bytes (as server)	
S5-compatible communication		
• Supported	Yes, via CP and loadable FCs	
Number of connections		
• Total	8	
Suitable for PG communication		
• PG communication, reserved	1	
• PG communication, configurable, min.	1	
• PG communication, configurable, max.	7	
Suitable for OP communication		
• OP communication, reserved	1	
• OP communication, configurable, min.	1	
• OP communication, configurable, max.	7	

Technical specifications		
	CPU 313C-2 PtP	CPU 313C-2 DP
Suitable for S7 basic communication	4	
• S7 basic communication, reserved	0	
• S7 basic communication, configurable, min.	0	
• S7 basic communication, configurable, max.	4	
Connection system		
• Required front connector	1 X 40-pin	
Interfaces	CPU 313C-2 PtP	CPU 313C-2 DP
1st interface		
Interface designation	X1	
Type of interface	Integrated RS 485 interface	
Hardware	RS 485	
• electrically disconnected	No	
• Interface power supply (15 V DC to 30 V DC), max.	200 mA	
Functionality		
• MPI	Yes	
• DP master	No	
• DP slave	No	
• Point-to-point connection	No	
MPI		
Services		
• PG/OP communication	Yes	
• Routing	No	Yes
• Global data communication	Yes	
• S7 basic communication	Yes	
• S7 communication	Yes (only server; connection configured at one end)	
• S7 communication, as client	No (but via CP and loadable FBs)	
• S7 communication, as server	Yes	
Transmission rate, max.	187.5 kbps	

Technical specifications		
	CPU 313C-2 PtP	CPU 313C-2 DP
2nd interface		
Interface designation	X2	
Type of interface	Integrated RS 422/485 interface	Integrated RS 485 interface
Hardware	RS 422/485	RS 485
• electrically disconnected	Yes	Yes
• Interface power supply (15 V DC to 30 V DC), max.	No	200 mA
Functionality		
• MPI	No	No
• DP master	No	Yes
• DP slave	No	Yes
• PROFINET IO controller	No	No
• PROFINET IO device	No	No
• PROFINET CBA	No	No
• Point-to-point connection	Yes	No
DP master		
Services		
• PG/OP communication	-	Yes
• Routing	-	Yes
• Global data communication	-	No
• S7 basic communication	-	Yes (intelligent blocks only)
• S7 communication	-	Yes (only server; connection configured at one end)
• S7 communication, as client	-	No
• S7 communication, as server	-	Yes
• Constant bus cycle time supported	-	Yes
• Isochronous mode	-	No
• SYNC/FREEZE	-	Yes
• Activate/deactivate DP slaves – Max. number of DP slaves that can be enabled / disabled simultaneously	-	Yes 8
• Direct data exchange (cross-traffic)	-	Yes, as subscriber
• DPV1	-	Yes
Transmission rate, max.	-	Up to 12 mbps

Technical specifications		
	CPU 313C-2 PtP	CPU 313C-2 DP
Number of DP slaves, max.	-	124
Address range		
• Inputs, max.	-	2 KB
• Outputs, max.	-	2 KB
User data per DP slave		
• Inputs, max.	-	244 bytes
• Outputs, max.	-	244 bytes
DP slave		
Services		
• PG/OP communication	-	Yes
• Routing	-	Yes (only if interface is active)
• Global data communication	-	No
• S7 basic communication	-	No
• S7 communication	-	Yes (only server; connection configured at one end)
• S7 communication, as client	-	No
• S7 communication, as server	-	Yes
• Direct data exchange (cross-traffic)	-	Yes
• DPV1	-	No
Transmission rate, max.	-	12 mbps
Automatic baud rate detection	-	Yes (only if interface is passive)
GSD file	-	The current GSD file is available for download at GSD file (http://www.siemens.com/profibus-gsd)
Transfer memory		
• Inputs, max.	-	244 bytes
• Outputs, max.	-	244 bytes
• Address areas, max.	-	32
• User data per address range, max.	-	32 bytes

Technical specifications		
	CPU 313C-2 PtP	CPU 313C-2 DP
Point-to-point connection		
• Transmission rates	38.4kbps half duplex 19.2 kbps full duplex	-
• Max. cable length	1200 m	-
• The user program can control the interface	Yes	-
• The interface can trigger an alarm or interrupt in the user program	Yes (message with break ID)	-
• Protocol driver	3964 (R); ASCII	-
Programming	CPU 313C-2 PtP	CPU 313C-2 DP
Programming language		
• LAD	Yes	
• FBD	Yes	
• STL	Yes	
• SCL	Yes	
• CFC	Yes	
• GRAPH	Yes	
• HiGraph®	Yes	
Instruction set		
• Nesting levels	8	
Know-how protection		
• User program/ password security	Yes	
• Block encryption	Yes, using S7-Block Privacy	
System functions (SFC)	See instruction list	
System function blocks (SFB)	See instruction list	
Integrated inputs/outputs	CPU 313C-2 PtP	CPU 313C-2 DP
Default addresses of the integrated		
Digital inputs	124.0 to 125.7	
Digital outputs	124.0 to 125.7	