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

Technical data

Table 7- 5 Technical data for CPU 313C-2 PtP/ CPU 313C-2 DP

Technical data		
	CPU 313C-2 PtP	**CPU 313C-2 DP**
CPU and version	**CPU 313C-2 PtP**	**CPU 313C-2 DP**
Order no. [MLFB]	6ES7 313-6BF03-0AB0	6ES7 313-6CF03-0AB0
• Hardware version	01	01
• Firmware version	V2.6	V2.6
Associated programming package	STEP 7 V5.4 + SP3 and higher, or STEP 7 V5.3 + SP2 and higher with HSP 0123	STEP 7 V5.4 + SP3 and higher, or STEP 7 V5.3 + SP2 and higher with HSP 0123
Memory	**CPU 313C-2 PtP**	**CPU 313C-2 DP**
Work memory		
• Integrated	64 Kbytes	
• Expandable	No	
Load memory	Pluggable by means of Micro Memory Card (max. 8 MB)	
Data storage life on the Micro Memory Card (following final programming)	At least 10 years	
Buffering	Guaranteed by Micro Memory Card (maintenance-free)	
Execution times	**CPU 313C-2 PtP**	**CPU 313C-2 DP**
Processing times of		
• Bit operations	min. 0.1 µs	
• Word instructions	min. 0.2 µs	
• Fixed-point arithmetic	min. 2 µs	
• Floating-point arithmetic	min. 3 µs	
Timers/counters and their retentive address areas	**CPU 313C-2 PtP**	**CPU 313C-2 DP**
S7 counters	256	
• Retentivity	Configurable	
• Default	From C 0 to C 7	
• Counting range	0 to 999	
IEC Counters	Yes	
• Type	SFB	
• Number	unlimited (limited only by work memory size)	

Technical data		
	CPU 313C-2 PtP	**CPU 313C-2 DP**
S7 timers	256	
• Retentivity	Configurable	
• default	Not retentive	
• Timer range	10 ms to 9990 s	
IEC timers	Yes	
• Type	SFB	
• Number	unlimited (limited only by work memory size)	
Data areas and their retentive address areas	**CPU 313C-2 PtP**	**CPU 313C-2 DP**
Bit memory	256 bytes	
• Retentivity	Configurable	
• Preset retentive address areas	MB0 to MB15	
Clock flag bits	8 (1 memory byte)	
Data blocks	Max. 511 (in the 1 to 511 range of numbers)	
• Size	max. 16 KB	
• Non-retain support (configurable retentive address areas)	Yes	
Local data per priority class	max. 510 bytes	
Blocks	**CPU 313C-2 PtP**	**CPU 313C-2 DP**
Total	1024 (DBs, FCs, FBs) The maximum number of blocks that can be loaded may be reduced if you are using another Micro Memory Card.	
OBs	see the Instruction List	
• Size	max. 16 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	1 (OB 20)	
• Number of watchdog interrupts	1 (OB 35)	
• Number of process interrupt OBs	1 (OB 40)	
• Number of DPV1 interrupt OBs	-	3 (OB 55, 56, 57)
• Number of startup 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	8	
• Additional within an error OB	4	

Technical data		
	CPU 313C-2 PtP	**CPU 313C-2 DP**
FBs		
• Number, max.	1024 (in the 0 to 2047 range of numbers)	
• Size	max. 16 KB	
FCs		
• Number, max.	1024 (in the 0 to 2047 range of numbers)	
• Size	max. 16 KB	
Address areas (I/O)	**CPU 313C-2 PtP**	**CPU 313C-2 DP**
Total I/O address area		
• Inputs	1024 bytes (user-specific addressing)	1024 bytes (user-specific addressing)
• Outputs	1024 bytes (user-specific addressing)	1024 bytes (user-specific addressing)
• Distributed – Inputs – Outputs	 none none	 1006 bytes 1006 bytes
I/O process image		
• Inputs	128 bytes	128 bytes
• Outputs	128 bytes	128 bytes
Digital channels		
• Integrated channels (DI)	16	16
• Integrated channels (DO)	16	16
• Inputs	1008	8064
• Outputs	1008	8064
• Inputs, central	1008	1008
• Outputs, central	1008	1008
Analog channels		
• Integrated channels	None	None
• Integrated channels	None	None
• Inputs	248	503
• Outputs	248	503
• Inputs, central	248	248
• Outputs, central	248	248
Removal	**CPU 313C-2 PtP**	**CPU 313C-2 DP**
Racks	Max. 4	
Modules per rack	max. 8; max. 7 in rack 3	
Number of DP masters		
• Integrated	No	1
• Via CP	4	4

Technical data		
	CPU 313C-2 PtP	**CPU 313C-2 DP**
Operable function modules and communication processors		
• FM	Max. 8	
• CP (PtP)	Max. 8	
• CP (LAN)	Max. 6	
Time	**CPU 313C-2 PtP**	**CPU 313C-2 DP**
Clock	Yes (HW clock)	
• Buffered	Yes	
• Buffered period	Typically 6 weeks (at an ambient temperature of 40 °C)	
• Behavior of the clock on expiration of the buffered period	The clock keeps running, continuing at the time-of-day it had when power was switched off.	
• Accuracy	Deviation per day < 10 s	
Operating hours counter	1	
• Number	0	
• Range of values	2^{31} hours (if SFC 101 is used)	
• Granularity	1 hour	
• Retentive	Yes; must be manually restarted after every restart	
Clock synchronization	Yes	
• In the AS	Master	
• On MPI	Master/slave	
• On DP	-	Master/slave (only time slave if DP slave)
S7 message functions	**CPU 313C-2 PtP**	**CPU 313C-2 DP**
Number of stations that can log in for signaling functions (e.g. OS)	Max. 8 (depends on the number of connections configured for PG / OP and S7 basic communication)	
Process diagnostics messages	Yes	
• Simultaneously enabled interrupt S blocks	Max. 20	
Test and startup functions	**CPU 313C-2 PtP**	**CPU 313C-2 DP**
Status/control variables	Yes	
• Variable	Inputs, outputs, memory bits, DBs, timers, counters	
• Number of variables – Of those as status variable – Of those as control variable	Max. 30 Max. 30 Max. 14	
Force	Yes	
• Variable	Inputs, outputs	
• Number of variables	Max. 10	
Block status	Yes	

Technical data		
	CPU 313C-2 PtP	**CPU 313C-2 DP**
Single-step	Yes	
Breakpoint	2	
Diagnostics buffer	Yes	
• Number of entries (not configurable)	Max. 100	
Communication functions	**CPU 313C-2 PtP**	**CPU 313C-2 DP**
PG/OP communication	Yes	
Global Data Communication	Yes	
• Number of GD circuits	4	
• Number of GD packets – Sending stations – Receiving stations	Max. 4 Max. 4 Max. 4	
• Length of GD packets – Consistent data	max. 22 bytes 22 bytes	
S7 basic communication	Yes (server)	
• User data per job – Consistent data	max. 76 bytes 76 bytes (for X_SEND or X_RCV) 64 bytes (for X_PUT or X_GET as the server)	
S7 communication		
• As server	Yes	
• As client	Yes (via CP and loadable FBs)	
• User data per job – Consistent data	max. 180 bytes (with PUT/GET) 64 bytes	
S5-compatible communication	Yes (via CP and loadable FCs)	
Number of connections	Max. 8	
can be used for		
• PG communication – Reserved (default) – Configurable	Max. 7 1 from 1 to 7	
• OP communication – Reserved (default) – Configurable	max. 7 1 from 1 to 7	
• S7-based communication – Reserved (default) – Configurable	Max. 4 0 From 0 to 4	
Routing	No	Max. 4
Interfaces	**CPU 313C-2 PtP**	**CPU 313C-2 DP**
1st interface		
Type of interface	Integrated RS485 interface	
Physics	RS 485	
electrically isolated	No	
Interface power supply (15 to 30 VDC)	Max. 200 mA	

Technical data		
	CPU 313C-2 PtP	**CPU 313C-2 DP**
Functionality		
• MPI	Yes	
• PROFIBUS DP	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 – As server – As client	• • Yes • No (but via CP and loadable FBs)	
• Transmission rates	Max. 187.5 kbps	
2nd interface		
Type of interface	Integrated RS422/RS485 interface	Integrated RS485 interface
Physics	RS 422/485	RS 485
Electrically isolated	Yes	Yes
Interface power supply (15 to 30 VDC)	No	Max. 200 mA
Number of connections	None	8
Functionality		
• MPI	No	No
• PROFIBUS DP	No	Yes
• Point-to-point connection	Yes	No
DP master		
Number of connections	–	8
Services		
• PG/OP communication	–	Yes
• Routing	–	Yes
• Global data communication	–	No
• S7 basic communication	–	Yes (only I blocks)
• S7 communication	–	Yes (only server; configured unilateral connection)
• Constant bus cycle time	–	No
• Isochronous mode	–	No
• SYNC/FREEZE	–	Yes

Technical data		
	CPU 313C-2 PtP	**CPU 313C-2 DP**
System function blocks (SFB)	see the Instruction List	
User program protection	Yes	
Integrated I/O	**CPU 313C-2 PtP**	**CPU 313C-2 DP**
• Default addresses of the integrated – Digital inputs – Digital outputs	 124.0 to 125.7 124.0 to 125.7	
Integrated functions		
Counters	3 channels (see the *Technological Functions* manual)	
Frequency counters	3 channels up to max. 30 kHz (see the *Technological Functions* manual)	
Cycle duration measurement	3 channels (see the Manual *Technological Functions*)	
Pulse outputs	3 channels pulse-width modulation up to max. 2.5 kHz (see the manual *Technological Functions*)	
Controlled positioning	No	
Integrated "Controlling" SFB	PID controller (see the manual *Technological Functions*)	
Dimensions	**CPU 313C-2 PtP**	**CPU 313C-2 DP**
Mounting dimensions W x H x D (mm)	120 x 125 x 130	
Weight	approx. 566 g	
Voltages and currents	**CPU 313C-2 PtP**	**CPU 313C-2 DP**
Power supply (rated value)	24 VDC	
• Permissible range	20.4 V to 28.8 V	
Current consumption (no-load operation)	Typically 100 mA	
Inrush current	Typically. 11 A	
Power consumption (nominal value)	700 mA	900 mA
I^2t	0.7 A^2s	
External fusing of power supply lines (recommended)	LS switch type B: min. 4 A, type C: min. 2 A	
Power loss	Typically 10 W	

Reference

In Chapter *Specifications of the integrated I/O* you can find

- under *Digital inputs of CPUs 31xC* and *Digital outputs of CPUs 31xC* the technical data of integrated I/Os.
- the block diagrams of the integrated I/Os under *Arrangement and usage of integrated I/Os*.