SIMATIC S7-300

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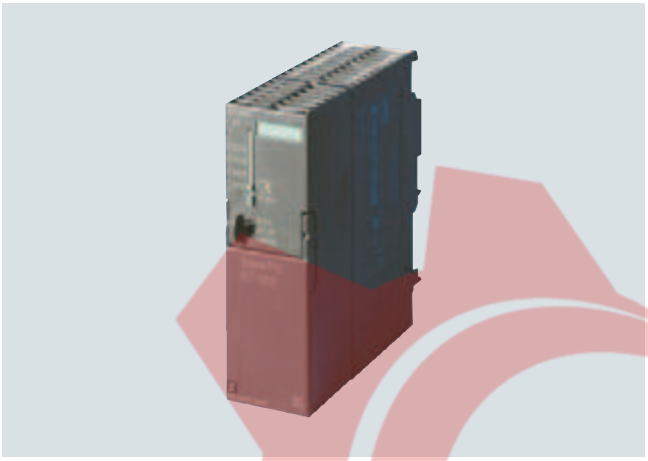
Brochures

For brochures serving as selection guides for SIMATIC products refer to:

http://www.siemens.com/simatic/printmaterial

Standard CPUs

Overview CPU 312



- The entry level CPU in Totally Integrated Automation (TIA)
- For smaller applications with moderate requirements for processing performance

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 315-2 DP

- The CPU with medium to large program memory and quantity structures for optional use of SIMATIC engineering tools
- High processing power in binary and floating-point arithmetic
- PROFIBUS DP master/slave interface
- For comprehensive I/O expansion
- For configuring distributed I/O structures

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 314

- For plants with medium requirements for program size
- High processing power in binary and floating-point arithmetic

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 315-2 PN/DP

- The CPU with mid-range program memory and quantity frameworks
- High processing power in binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- Component Based Automation (CBA) on PROFINET
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)
- PROFINET IO Controller for operating distributed I/O on PROFINET
- PROFINET interface with 2-port switch
- Combined MPI/PROFIBUS DP master/slave interface
- Isochronous mode on PROFIBUS

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 317-2 PN/DP

- The CPU with a large program memory and quantity framework for demanding applications
- For cross-sector automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- High processing power in binary and floating-point arithmetic
- Distributed intelligence in Component Based Automation (CBA) on PROFINET
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)
- PROFINET I/O Controller for operating distributed I/O on PROFINET
- PROFINET interface with 2-port switch
- Combined MPI/PROFIBUS DP master/slave interface
- For comprehensive I/O expansion
- For configuring distributed I/O structures
- Isochronous mode on PROFIBUS
- Optionally supports the use of SIMATIC engineering tools

SIMATIC Micro Memory Card required for operation of CPU.

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Technical specifications

	6ES7 312-1AE14-0AB0	6ES7 314-1AG14-0AB0	6ES7 315-2AH14-0AB0	6ES7 315-2EH14-0AB0	6ES7 317-2EK14-0AB0
Product-type designation	CPU 312	CPU 314	CPU 315-2 DP	CPU 315-2 PN/DP	CPU 317-2 PN/DP
Product version					
associated programming package	STEP 7 > V 5.4 + SP5 or STEP 7 as of V5.2 + SP1 with HSP 176	STEP 7 > V 5.4 + SP5 or STEP 7 as of V5.2 + SP1 with HSP 175	STEP 7 > V 5.4 + SP5 or STEP 7 as of V5.2 + SP1 with HSP 177	STEP 7 > V 5.4 + SP5 or STEP 7 as of V5.4 + SP4 with HSP 189	STEP 7 > V 5.4 + SP5 or STEP 7 as of V5.4 + SP4 with HSP 189
Supply voltages					
Rated value					
• 24 V DC	Yes	Yes	Yes	Yes	Yes
• permissible range, lower limit (DC)	20.4 V	20.4 V	20.4 V	20.4 V	20.4 V
• permissible range, upper limit (DC)	28.8 V	28.8 V	28.8 V	28.8 V	28.8 V
external protection for supply cables (recommendation)	Min. 2 A	Min. 2 A	Min. 2 A	Min. 2 A	Min. 2 A
Current consumption					
Current consumption (rated value)	650 mA	650 mA	850 mA	750 mA	750 mA
Current consumption (in no-load operation), typ.	140 mA	140 mA	150 mA	150 mA	150 mA
Inrush current, typ.	3.5 A	3.5 A	3.5 A	4 A	4 A
I^2t	1 $A^2 \cdot s$	1 $A^2 \cdot s$	1 $A^2 \cdot s$	1 $A^2 \cdot s$	1 $A^2 \cdot s$
from supply voltage L+, max.	650 mA	650 mA	900 mA		
Power loss					
Power loss, typ.	4 W	4 W	4.5 W		
Memory					
Work memory					
• integrated	32 Kibyte; For program and data	128 Kibyte; For program and data	256 Kibyte	384 Kibyte	1 Mbyte
• expandable	No	No	No	No	No

Technical specifications (continued)

	6ES7 312-1AE14-0AB0	6ES7 314-1AG14-0AB0	6ES7 315-2AH14-0AB0	6ES7 315-2EH14-0AB0	6ES7 317-2EK14-0AB0
Product-type designation	CPU 312	CPU 314	CPU 315-2 DP	CPU 315-2 PN/DP	CPU 317-2 PN/DP
Work memory					
• Size of retentive memory for retentive data blocks	32 Kibyte	64 Kibyte	128 Kibyte	128 Kibyte	256 Kibyte
Load memory					
• pluggable (MMC)	Yes	Yes	Yes	Yes	Yes
• pluggable (MMC), max.	8 Mbyte	8 Mbyte	8 Mbyte	8 Mbyte	8 Mbyte
Backup					
• present	Yes; guaranteed by MMC (maintenance-free)	Yes; guaranteed by MMC (maintenance-free)	Yes; guaranteed by MMC (maintenance-free)	Yes; guaranteed by MMC (maintenance-free)	Yes; guaranteed by MMC (maintenance-free)
• without battery	Yes; Program and data	Yes; Program and data	Yes; Program and data	Yes; Program and data	Yes; Program and data
CPU/ blocks					
DB					
• Number, max.	1 024; Number range: 1 to 16000	1 024; Number range: 1 to 16000	1 024; Number range: 1 to 16000	1 024; Number range: 1 to 16000	2 048; Number range: 1 to 16000
• Size, max.	32 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte
FB					
• Number, max.	1 024; Number range: 0 to 7999	1 024; Number range: 0 to 7999	1 024; Number range: 0 to 7999	1 024; Number range: 0 to 7999	2 048; Number range: 0 to 7999
• Size, max.	32 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte
FC					
• Number, max.	1 024; Number range: 0 to 7999	1 024; Number range: 0 to 7999	1 024; Number range: 0 to 7999	1 024; Number range: 0 to 7999	2 048; Number range: 0 to 7999
• Size, max.	32 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte
OB					
• Size, max.	32 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte
Nesting depth					
• per priority class	16	16	16	16	16
• additional within an error OB	4	4	4	4	4
CPU/ processing times					
for bit operations, min.	0.1 µs	0.06 µs	0.05 µs	0.05 µs	
for word operations, min.	0.24 µs	0.12 µs	0.09 µs	0.09 µs	0.03 µs
for fixed point arithmetic, min.	0.32 µs	0.16 µs	0.12 µs	0.12 µs	0.04 µs
for floating point arithmetic, min.	1.1 µs	0.59 µs	0.45 µs	0.45 µs	0.16 µs
Times/counters and their retentivity					
S7 counter					
• Number	256	256	256	256	512
• Retentivity					
- can be set	Yes	Yes	Yes	Yes	Yes
- lower limit	0	0	0	0	0
- upper limit	255	255	255	255	511
• Counting range					
- can be set	Yes	Yes	Yes	Yes	Yes
- lower limit	0	0	0	0	0
- upper limit	999	999	999	999	999
IEC counter					
• present	Yes	Yes	Yes	Yes	Yes
• Type	SFB	SFB	SFB	SFB	SFB

Technical specifications (continued)

	6ES7 312-1AE14-0AB0	6ES7 314-1AG14-0AB0	6ES7 315-2AH14-0AB0	6ES7 315-2EH14-0AB0	6ES7 317-2EK14-0AB0
Product-type designation	CPU 312	CPU 314	CPU 315-2 DP	CPU 315-2 PN/DP	CPU 317-2 PN/DP
S7 times					
• Number	256	256	256	256	512
• Retentivity					
- can be set	Yes	Yes	Yes	Yes	Yes
- lower limit	0	0	0	0	0
- upper limit	255	255	255	255	511
- preset	no retentivity	no retentivity	no retentivity	no retentivity	no retentivity
• Time range					
- lower limit	10 ms	10 ms	10 ms	10 ms	10 ms
- upper limit	9 990 s	9 990 s	9 990 s	9 990 s	9 990 s
IEC timer					
• present	Yes	Yes	Yes	Yes	Yes
• Type	SFB	SFB	SFB	SFB	SFB
Data areas and their retentivity					
Flag					
• Number, max.	256 byte	256 byte	2 048 byte	2 048 byte	4 096 byte
• Retentivity available	Yes; MB 0 to MB 255	Yes; MB 0 to MB 255	Yes; MB 0 to MB 2047	Yes; MB 0 to MB 2047	Yes; MB 0 to MB 4095
• Number of clock memories	8; 1 memory byte	8; 1 memory byte	8; 1 memory byte	8; 1 memory byte	8; 1 memory byte
Data blocks					
• Number, max.	1 024; Number range: 1 to 16000	1 024; Number range: 1 to 16000	1 024; Number range: 1 to 16000	1 024; Number range: 1 to 16000	2 048; Number range: 1 to 16000
• Size, max.	32 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte
• Retentivity adjustable	Yes; via non-retain property on DB	Yes; via non-retain property on DB	Yes; via non-retain property on DB	Yes; via non-retain property on DB	Yes; via non-retain property on DB
• Retentivity preset	yes	yes	yes	yes	yes
Local data					
• per priority class, max.	32 Kibyte; Max. 2 KB per block	32 Kibyte; Max. 2 KB per block	32 Kibyte; Max. 2 KB per block	32 Kibyte; Max. 2 KB per block	32 Kibyte; Max. 2 KB per block
Address area					
I/O address area					
• overall	1 024 byte	1 024 byte	2 048 byte	2 048 byte	8 192 byte
• Outputs	1 024 byte	1 024 byte	2 048 byte	2 048 byte	8 192 byte
• of which, distributed					
- Inputs			2 048 byte	2 048 byte	8 192 byte
- Outputs			2 048 byte	2 048 byte	8 192 byte
Process image					
• Inputs	1 024 byte	1 024 byte	2 048 byte	2 048 byte	8 192 byte
• Outputs	1 024 byte	1 024 byte	2 048 byte	2 048 byte	8 192 byte
• Inputs, adjustable	1 024 byte	1 024 byte	2 048 byte	2 048 byte	8 192 byte
• Outputs, adjustable	1 024 byte	1 024 byte	2 048 byte	2 048 byte	8 192 byte
• Inputs, default	128 byte	128 byte	128 byte	128 byte	256 byte
• Outputs, default	128 byte	128 byte	128 byte	128 byte	256 byte
Subprocess images					
• Number of subprocess images, max.			1	1	1
Digital channels					
• Inputs	256	1 024	16 384	16 384	65 536
• Outputs	256	1 024	16 384	16 384	65 536
• Inputs, of which central	256	1 024	1 024	1 024	1 024
• Outputs, of which central	256	1 024	1 024	1 024	1 024

Technical specifications (continued)

	6ES7 312-1AE14-0AB0	6ES7 314-1AG14-0AB0	6ES7 315-2AH14-0AB0	6ES7 315-2EH14-0AB0	6ES7 317-2EK14-0AB0
Product-type designation	CPU 312	CPU 314	CPU 315-2 DP	CPU 315-2 PN/DP	CPU 317-2 PN/DP
Analog channels					
• Inputs	64	256	1 024	1 024	4 096
• Outputs	64	256	1 024	1 024	4 096
• Inputs, of which central	64	256	256	256	256
• Outputs, of which central	64	256	256	256	256
Hardware configuration					
Central devices, max.	1	1	1	1	1
Expansion devices, max.	0	3	3	3	3
Racks, max.	1	4	4	4	4
Modules per rack, max.	8	8	8	8	8
Number of DP masters					
• integrated	0	0	1	1	1
• via CP	4	4	4	4	4
Number of operable FMs and CPs (recommended)					
• FM	8	8	8	8	8
• CP, point-to-point	8	8	8	8	8
• CP, LAN	4	10	10	10	10
Time of day					
Clock					
• Hardware clock (real-time clock)		Yes	Yes	Yes	Yes
• Software clock	Yes				
• battery-backed and synchronizable	Buffered: No Can be synchronized: Yes	Yes	Yes	Yes	Yes
• Behavior of the clock following POWER-ON	The clock continues at the time of day it had when power was switched off				
• Behavior of the clock following expiry of backup period		The clock continues at the time of day it had when power was switched off	The clock continues at the time of day it had when power was switched off	The clock continues at the time of day it had when power was switched off	The clock continues at the time of day it had when power was switched off
• Deviation per day, max.	10 s; Typ.: 2 s	10 s; Typ.: 2 s	10 s; Typ.: 2 s	10 s; Typ.: 2 s	10 s; Typ.: 2 s
Runtime meter					
• Number	1	1	1	1	4
• Number/Number range	0	0	0	0	0 to 3
• Range of values	0 to 2^31 hours (when using SFC 101)	0 to 2^31 hours (when using SFC 101)	0 to 2^31 hours (when using SFC 101)	0 to 2^31 hours (when using SFC 101)	0 to 2^31 hours (when using SFC 101)
• Granularity	1 hour	1 hour	1 hour	1 hour	1 hour
• retentive	Yes; Must be restarted at each restart	Yes; Must be restarted at each restart	Yes; Must be restarted at each restart	Yes; Must be restarted at each restart	Yes; Must be restarted at each restart
Clock synchronization					
• supported	Yes	Yes	Yes	Yes	Yes
• to MPI, master	Yes	Yes	Yes	Yes	Yes
• to MPI, slave	Yes	Yes	Yes	Yes	Yes
• to DP, master			Yes; on DP slave only time-of-day slave	Yes; on DP slave only time-of-day slave	Yes; on DP slave only time-of-day slave
• to DP, slave			Yes	Yes	Yes
• in AS, master	Yes	Yes	Yes	Yes	Yes
• in AS, slave				Yes	Yes
• on Ethernet via NTP				Yes; as client	Yes; as client

Technical specifications (continued)

	6ES7 312-1AE14-0AB0	6ES7 314-1AG14-0AB0	6ES7 315-2AH14-0AB0	6ES7 315-2EH14-0AB0	6ES7 317-2EK14-0AB0
Product-type designation	CPU 312	CPU 314	CPU 315-2 DP	CPU 315-2 PN/DP	CPU 317-2 PN/DP
S7 message functions					
Number of login stations for message functions, max.	6; Depending on the connections configured for PG/OP and S7 basic communication	12; Depending on the connections configured for PG/OP and S7 basic communication	16; Depending on the connections configured for PG/OP and S7 basic communication	16; Depending on the connections configured for PG/OP and S7 basic communication	32; Depending on the connections configured for PG/OP and S7 basic communication
Process diagnostic messages	Yes	Yes	Yes	Yes	Yes
simultaneously active Alarm-S blocks, max.	300	300	300	300	300
Test commissioning functions					
Status/control					
• Status/control variable	Yes	Yes	Yes	Yes	Yes
• Variables	Inputs, outputs, memory bits, DB, times, counters	Inputs, outputs, memory bits, DB, times, counters	Inputs, outputs, memory bits, DB, times, counters	Inputs, outputs, memory bits, DB, times, counters	Inputs, outputs, memory bits, DB, times, counters
• Number of variables, max.	30	30	30	30	30
• of which status variables, max.	30	30	30	30	30
• of which control variables, max.	14	14	14	14	14
Forcing					
• Forcing	Yes	Yes	Yes	Yes	Yes
• Force, variables	Inputs, outputs	Inputs, outputs	Inputs, outputs	Inputs, outputs	Inputs, outputs
• Number of variables, max.	10	10	10	10	10
Status block	Yes; Up to 2 simultaneously	Yes; Up to 2 simultaneously	Yes; Up to 2 simultaneously	Yes; Up to 2 simultaneously	Yes; Up to 2 simultaneously
Single step	Yes	Yes	Yes	Yes	Yes
Number of breakpoints	4	4	4	4	4
Diagnostic buffer					
• present	Yes	Yes	Yes	Yes	Yes
• Number of entries, max.	500	500	500	500	500
- can be set	No	No	No	No	No
- Of which powerfail-proof	100; Only the last 100 entries are retained	100; Only the last 100 entries are retained	100; Only the last 100 entries are retained	100; Only the last 100 entries are retained	100; Only the last 100 entries are retained
• Maximum number of entries that can be read in RUN					
- adjustable	Yes; from 10 to 499	Yes; from 10 to 499	Yes; from 10 to 499	Yes; from 10 to 499	Yes; from 10 to 499
- default	10	10	10	10	10
Service data					
• can be read out				Yes	Yes
Monitoring functions					
Status LEDs	Yes	Yes	Yes	Yes	Yes
Communication functions					
PG/OP communication	Yes	Yes	Yes	Yes	Yes
Data record routing			Yes	Yes	Yes
Routing	No	No	Yes; Max. 4	Yes	Yes
Global data communication					
• supported	Yes	Yes	Yes	Yes	Yes
• Size of GD packets, max.	22 byte	22 byte	22 byte	22 byte	22 byte
S7 basic communication					
• supported	Yes	Yes	Yes	Yes	Yes

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Technical specifications (continued)

	6ES7 312-1AE14-0AB0	6ES7 314-1AG14-0AB0	6ES7 315-2AH14-0AB0	6ES7 315-2EH14-0AB0	6ES7 317-2EK14-0AB0
Product-type designation	CPU 312	CPU 314	CPU 315-2 DP	CPU 315-2 PN/DP	CPU 317-2 PN/DP
S7 communication					
• supported	Yes	Yes	Yes	Yes	Yes
S5-compatible communication					
• supported	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC
Web server					
• Web server				Yes; Read-only function	Yes; Read-only function
• Number of HTTP clients				5	5
Open IE communication					
• TCP/IP				Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.				8	16
• ISO-on-TCP (RFC1006)				Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.				8	16
- Data length, max.				32 768 byte	32 768 byte
• UDP				Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.				8	16
- Data length, max.				1 472 byte	1 472 byte
Number of connections					
• overall	6	12	16	16	32
• usable for PG communication	5	11	15	15	31
• usable for OP communication	5	11	15	15	31
• usable for S7 basic communication	2	8	12	14	30
• usable for S7 communication				14	16
- reserved for S7 communication				0	0
- Adjustable for S7 communication, min.				0	0
- Adjustable for S7 communication, max.				14	16
• Max. total number of instances				32	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: max. 24	X1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave (active): max. 14; X2 as PROFINET: max. 24
PROFINET CBA (at set setpoint communication load)					
• Setpoint for the CPU communication load				50 %	50 %
• Number of remote interconnection partners				32	32

Technical specifications (continued)

	6ES7 312-1AE14-0AB0	6ES7 314-1AG14-0AB0	6ES7 315-2AH14-0AB0	6ES7 315-2EH14-0AB0	6ES7 317-2EK14-0AB0
Product-type designation	CPU 312	CPU 314	CPU 315-2 DP	CPU 315-2 PN/DP	CPU 317-2 PN/DP
PROFINET CBA (at set set-point communication load)					
• Number of functions, master/slave				30	30
• Total of all Master/Slave connections				1 000	1 000
• Data length of all incoming connections master/slave, max.				4 000 byte	4 000 byte
• Data length of all outgoing connections master/slave, max.				4 000 byte	4 000 byte
• Number of device-internal and PROFIBUS interconnections				500	500
• Data length of device-internal und PROFIBUS interconnections, max.				4 000 byte	4 000 byte
• Data length per connection, max.				1 400 byte	1 400 byte
• Remote interconnections with acyclic transmission					
- Sampling frequency: Sampling time, min.				500 ms	500 ms
- Number of incoming interconnections				100	100
- Number of outgoing interconnections				100	100
- Data length of all incoming interconnections, max.				2 000 byte	2 000 byte
- Data length of all outgoing interconnections, max.				2 000 byte	2 000 byte
- Data length per connection, max.				1 400 byte	1 400 byte
• Remote interconnections with cyclic transmission					
- Transmission frequency: Transmission interval, min.				10 ms	10 ms
- Number of incoming interconnections				200	200
- Number of outgoing interconnections				200	200
- Data length of all incoming interconnections, max.				2 000 byte	2 000 byte
- Data length of all outgoing interconnections, max.				2 000 byte	2 000 byte
- Data length per connection, max.				450 byte	450 byte
• HMI variables via PROFINET (acyclic)					
- Number of stations that can log on for HMI variables (PN OPC/iMap)				3; 2x PN OPC/1x iMap	3; 2x PN OPC/1x iMap
- HMI variable updating				500 ms	500 ms
- Number of HMI variables				200	200
- Data length of all HMI variables, max.				2 000 byte	2 000 byte

Technical specifications (continued)

	6ES7 312-1AE14-0AB0	6ES7 314-1AG14-0AB0	6ES7 315-2AH14-0AB0	6ES7 315-2EH14-0AB0	6ES7 317-2EK14-0AB0
Product-type designation	CPU 312	CPU 314	CPU 315-2 DP	CPU 315-2 PN/DP	CPU 317-2 PN/DP
PROFINET CBA (at set set-point communication load)					
• PROFIBUS proxy functionality					
- supported				Yes	Yes
- Number of linked PROFIBUS devices				16	16
- Data length per connection, max.				240 byte; Slave-dependent	240 byte; Slave-dependent
1st interface					
Type of interface	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485	RS 485	RS 485	RS 485	RS 485
Isolated	No	No	No	Yes	Yes
Power supply to interface (15 to 30 V DC), max.	200 mA	200 mA	200 mA	200 mA	200 mA
Functionality					
• MPI	Yes	Yes	Yes	Yes	Yes
• DP master	No	No	No	Yes	Yes
• DP slave	No	No	No	Yes	Yes
• Point-to-point connection	No	No	No	No	No
MPI					
• Number of connections	6	12	16	16	32
• Services					
- PG/OP communication	Yes	Yes	Yes	Yes	Yes
- Routing	No	No	Yes	Yes	Yes
- Global data communication	Yes	Yes	Yes	Yes	Yes
- S7 basic communication	Yes	Yes	Yes	Yes	Yes
- S7 communication	Yes	Yes	Yes	Yes	Yes
- S7 communication, as client	No	No	No	No; but via CP and loadable FB	No; but via CP and loadable FB
- S7 communication, as server	Yes	Yes	Yes	Yes	Yes
• Transmission speeds, max.	187.5 kbit/s	187.5 kbit/s	187.5 kbit/s	12 Mbit/s	12 Mbit/s
DP master					
• Services					
- PG/OP communication				Yes	Yes
- Routing				Yes	Yes
- Global data communication				No	No
- S7 basic communication				Yes; I blocks only	Yes; I blocks only
- S7 communication				Yes	Yes
- S7 communication, as client				No	No
- S7 communication, as server				Yes	Yes
- Equidistance mode support				Yes	Yes
- Isochronous mode				Yes; OB 61	Yes; OB 61
- SYNC/FREEZE				Yes	Yes
- Activation/deactivation of DP slaves				Yes	Yes
- Number of DP slaves that can be simultaneously activated/deactivated, max.				8	8
- DPV1				Yes	Yes

Technical specifications (continued)

	6ES7 312-1AE14-0AB0	6ES7 314-1AG14-0AB0	6ES7 315-2AH14-0AB0	6ES7 315-2EH14-0AB0	6ES7 317-2EK14-0AB0
Product-type designation	CPU 312	CPU 314	CPU 315-2 DP	CPU 315-2 PN/DP	CPU 317-2 PN/DP
DP master					
• Transmission speeds, max.				12 Mbit/s	12 Mbit/s
• Number of DP slaves, max.				124	124
• Address area					
- Inputs, max.				2 Kibyte	8 Kibyte
- Outputs, max.				2 Kibyte	8 Kibyte
• User data per DP slave					
- Inputs, max.				244 byte	244 byte
- Outputs, max.				244 byte	244 byte
DP slave					
• Services					
- PG/OP communication				Yes	Yes
- Routing				Yes; Only with active interface	Yes; Only with active interface
- Global data communication				No	No
- S7 basic communication				No	No
- S7 communication				Yes	Yes
- S7 communication, as client				No	No
- S7 communication, as server				Yes; Connection configured on one side only	Yes; Connection configured on one side only
- Direct data exchange (slave-to-slave communication)				Yes	Yes
- DPV1				No	No
• Transmission rate, max.				12 Mbit/s	12 Mbit/s
• Transfer memory					
- Inputs				244 byte	244 byte
- Outputs				244 byte	244 byte
• Address area, max.				32	32
• User data per address area, max.				32 byte	32 byte
2nd interface					
Type of interface			integrated RS 485 interface	PROFINET	PROFINET
Physics			RS 485	Ethernet RJ45	Ethernet RJ45
Isolated			Yes	Yes	Yes
Integrated switch				Yes	Yes
Number of ports				2	2
Power supply to interface (15 to 30 V DC), max.			200 mA		
automatic detection of transmission speed				Yes; 10/100 Mbit/s	Yes; 10/100 Mbit/s
Autonegotiation				Yes	Yes
Autocrossing				Yes	Yes
Functionality					
• MPI			No	No	No
• DP master			Yes	No	No
• DP slave			Yes	No	No
• PROFINET IO Controller				Yes	Yes
• PROFINET CBA				Yes	Yes
• Web server				Yes; only read function	Yes; only read function
- Number of HTTP clients				5	5
• Point-to-point connection			No	No	No

Technical specifications (continued)

	6ES7 312-1AE14-0AB0	6ES7 314-1AG14-0AB0	6ES7 315-2AH14-0AB0	6ES7 315-2EH14-0AB0	6ES7 317-2EK14-0AB0
Product-type designation	CPU 312	CPU 314	CPU 315-2 DP	CPU 315-2 PN/DP	CPU 317-2 PN/DP
DP master					
• Number of connections, max.			16		
• Services					
- PG/OP communication			Yes		
- Routing			Yes		
- Global data communication			No		
- S7 basic communication			Yes; I blocks only		
- S7 communication			Yes		
- S7 communication, as client			No		
- S7 communication, as server			Yes		
- Equidistance mode support			Yes		
- Isochronous mode			Yes; OB 61		
- SYNC/FREEZE			Yes		
- Activation/deactivation of DP slaves			Yes		
- Number of DP slaves that can be simultaneously activated/deactivated, max.			8		
- DPV1			Yes		
• Transmission speeds, max.			12 Mbit/s		
• Number of DP slaves, max.			124; Per station		
• Address area					
- Inputs, max.			2 048 byte		
- Outputs, max.			2 048 byte		
• User data per DP slave					
- Inputs, max.			244 byte		
- Outputs, max.			244 byte		
DP slave					
• Number of connections			16		
• Services					
- PG/OP communication			Yes		
- Routing			Yes; Only with active interface		
- Global data communication			No		
- S7 basic communication			No		
- S7 communication, as client			No		
- S7 communication, as server			Yes		
- Direct data exchange (slave-to-slave communication)			Yes		
- DPV1			No		
• GSD file			The current GSD file can be obtained from: http://www.siemens.com/profibus-gsd		
• Transmission rate, max.			12 Mbit/s		
• automatic baud rate search			Yes; only with passive interface		
• Transfer memory					
- Inputs			244 byte		
- Outputs			244 byte		

Technical specifications (continued)

	6ES7 312-1AE14-0AB0	6ES7 314-1AG14-0AB0	6ES7 315-2AH14-0AB0	6ES7 315-2EH14-0AB0	6ES7 317-2EK14-0AB0
Product-type designation	CPU 312	CPU 314	CPU 315-2 DP	CPU 315-2 PN/DP	CPU 317-2 PN/DP
DP slave					
• Address area, max.			32		
• User data per address area, max.			32 byte		
PROFINET IO Controller					
• Services					
- PG/OP communication				Yes	Yes
- Routing				Yes	Yes
- S7 communication				Yes; with loadable FBs, max. configurable connections: 14, max. number of instances: 32	Yes; with loadable FBs, max. configurable connections: 16, max. number of instances: 32
- Isochronous mode				No	No
- Open IE communication				Yes; via TCP/IP, ISO on TCP and UDP	Yes; via TCP/IP, ISO on TCP and UDP
• Transmission rate, max.				100 Mbit/s	100 Mbit/s
• Total number of connectable IO Devices, max.				128	128
• Max. number of connectable IO devices for RT				128	128
- of which in line, max.				128	128
• Number of IO Devices with IRT and the option "high flexibility"				128	128
- of which in line, max.				61	61
• IRT, supported				Yes	Yes
• Prioritized startup supported				Yes	Yes
- Number of IO Devices, max.				32	32
• Activation/deactivation of IO Devices				Yes	Yes
- Number of IO Devices that can be simultaneously activated/deactivated, max.				8	8
• IO Devices changing during operation (partner ports), supported				Yes	Yes
- Max. number of IO devices per tool				8	8
• Device replacement without swap medium				Yes	Yes
• Updating time				250 µs - 128 ms (with send cycle of 250 µs); 500 µs - 256 ms (with send cycle of 500 µs); 1 ms - 512 ms (with send cycle 1 ms); minimum value of the send cycle is also dependent on the set communication share for PROFINET IO, on the number of IO Devices	250 µs - 128 ms (with send cycle of 250 µs); 500 µs - 256 ms (with send cycle of 500 µs); 1 ms - 512 ms (with send cycle 1 ms); minimum value of the send cycle is also dependent on the set communication share for PROFINET IO, on the number of IO Devices
• Address area					
- Inputs, max.				2 Kibyte	8 Kibyte
- Outputs, max.				2 Kibyte	8 Kibyte

Technical specifications (continued)

	6ES7 312-1AE14-0AB0	6ES7 314-1AG14-0AB0	6ES7 315-2AH14-0AB0	6ES7 315-2EH14-0AB0	6ES7 317-2EK14-0AB0
Product-type designation	CPU 312	CPU 314	CPU 315-2 DP	CPU 315-2 PN/DP	CPU 317-2 PN/DP
PROFINET IO Controller					
• User data per address area, max.					
- User data consistency, max.				254 byte	254 byte
PROFINET CBA					
• acyclic transmission				Yes	Yes
• cyclic transmission				Yes	Yes
Open IE communication					
• Open IE communication, supported				Yes	Yes
• Number of connections, max.				8	8
• Local port numbers used at the system end				0, 20, 21, 25, 80, 102, 135, 161, 8 080, 34 962, 34 963, 34 964, 65 532, 65 533, 65 534, 65 535	0, 20, 21, 25, 80, 102, 135, 161, 8 080, 34 962, 34 963, 34 964, 65 532, 65 533, 65 534, 65 535
CPU/ programming					
Programming language					
• STEP 7	Yes; V5.2 SP1 or higher with HW update	Yes; V5.2 SP1 or higher with HW update	Yes; V5.2 SP1 or higher with HW update	Yes; V5.4 SP4 or higher with HW update	Yes; V5.4 SP4 or higher with HW update
• LAD	Yes	Yes	Yes	Yes	Yes
• FBD	Yes	Yes	Yes	Yes	Yes
• STL	Yes	Yes	Yes	Yes	Yes
• SCL	Yes	Yes	Yes	Yes	Yes
• CFC		Yes	Yes	Yes	Yes
• GRAPH	Yes	Yes	Yes	Yes	Yes
• HiGraph®	Yes	Yes	Yes	Yes	Yes
Command set	See instruction list	See instruction list	See instruction list	See instruction list	See instruction list
Nesting levels	8	8	8	8	8
User program protection/password protection	Yes	Yes	Yes	Yes	Yes
System functions (SFC)	see instruction list	see instruction list	see instruction list	see instruction list	see instruction list
System function blocks (SFB)	see instruction list	see instruction list	see instruction list	see instruction list	see instruction list
Environmental requirements					
Operating temperature					
• Min.				0 °C	0 °C
• max.				60 °C	60 °C
Dimensions and weight					
Dimensions					
• Width	40 mm	40 mm	40 mm	40 mm	40 mm
• Height	125 mm	125 mm	125 mm	125 mm	125 mm
• Depth	130 mm	130 mm	130 mm	130 mm	130 mm
Weight					
• Weight, approx.	270 g	280 g	290 g	340 g	340 g

Ordering data		Order No.
CPU 312	C	**6ES7 312-1AE14-0AB0**
Main memory 32 KB, power supply 24 V DC, MPI; MMC required		
CPU 314	C	**6ES7 314-1AG14-0AB0**
Main memory 128 KB, power supply 24 V DC, MPI; MMC required		
CPU 315-2 DP		**6ES7 315-2AH14-0AB0**
256 KB main memory, 24 V DC power supply, MPI, PROFIBUS DP master/slave interface, MMC required		
CPU 315-2 PN/DP		**6ES7 315-2EH14-0AB0**
384 KB main memory, 24 V DC power supply, combined MPI/PROFIBUS DP master/slave interface, Ethernet/PROFINET interface with 2-port switch; MMC required		
CPU 317-2 PN/DP		**6ES7 317-2EK14-0AB0**
Main memory 1 MB, power supply 24 V DC, combined MPI/PROFIBUS DP master/slave interface, Ethernet/PROFINET interface with 2-port switch; MMC required		
Accessories		
SIMATIC Micro Memory Card		
64 KB		**6ES7 953-8LF20-0AA0**
128 KB		**6ES7 953-8LG11-0AA0**
512 KB		**6ES7 953-8LJ20-0AA0**
2 MB		**6ES7 953-8LL20-0AA0**
4 MB		**6ES7 953-8LM20-0AA0**
8 MB		**6ES7 953-8LP20-0AA0**
MPI cable		**6ES7 901-0BF00-0AA0**
for connecting SIMATIC S7 and the PG through MPI; 5 m in length		
Slot number plates		**6ES7 912-0AA00-0AA0**
S7-300 manual		
Design, CPU data, module data, instruction list		
German		**6ES7 398-8FA10-8AA0**
English		**6ES7 398-8FA10-8BA0**
French		**6ES7 398-8FA10-8CA0**
Spanish		**6ES7 398-8FA10-8DA0**
Italian		**6ES7 398-8FA10-8EA0**
SIMATIC Manual Collection	A	**6ES7 998-8XC01-8YE0**
Electronic manuals on DVD, multilingual: S7-200, S7-300, C7, S7-400, SIMATIC DP (Distributed I/O), SIMATIC PC, SIMATIC PG (Programming device), STEP 7, Engineering Tools, Runtime Software, SIMATIC PCS 7, SIMATIC HMI (Human Machine Interface), SIMATIC NET (Industrial Communication), SIMATIC Machine Vision, SIMATIC Sensors		

		Order No.
SIMATIC Manual Collection update service for 1 year	D	**6ES7 998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates		
Power supply connector		**6ES7 391-1AA00-0AA0**
10 units, spare part		
Manual "Communication for SIMATIC S7-300/-400"		
German		**6ES7 398-8EA00-8AA0**
English		**6ES7 398-8EA00-8BA0**
French		**6ES7 398-8EA00-8CA0**
Spanish		**6ES7 398-8EA00-8DA0**
Italian		**6ES7 398-8EA00-8EA0**
SIMATIC S7 demo case		**6ES7 910-3AA00-0XA0**
with mounting components for mounting S7-200 and S7-300		
PC adapter USB		**6ES7 972-0CB20-0XA0**
for connecting a PC to SIMATIC S7-200/300/400 via USB; with USB cable (5 m)		
PROFIBUS bus components		
PROFIBUS DP bus connector RS 485		
• with 90° cable outlet, max. transmission rate 12 Mbit/s		
- without PG interface		**6ES7 972-0BA12-0XA0**
- with PG interface		**6ES7 972-0BB12-0XA0**
• with 90° cable outlet for Fast-Connect connection system, max. transmission rate 12 Mbit/s		
- without PG interface, 1 unit		**6ES7 972-0BA52-0XA0**
- without PG interface, 100 units		**6ES7 972-0BA52-0XB0**
- with PG interface, 1 unit		**6ES7 972-0BB52-0XA0**
- with PG interface, 100 units		**6ES7 972-0BB52-0XB0**
• with axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS		**6GK1 500-0EA02**
PROFIBUS Fast Connect bus cable		**6XV1 830-0EH10**
Standard type with special design for quick mounting, 2-core, shielded, sold by the meter, max. delivery unit 1000 m, minimum ordering quantity 20 m		
RS 485 repeater for PROFIBUS		**6ES7 972-0AA01-0XA0**
Data transfer rate up to 12 Mbit/s; 24 V DC; IP20 housing		

A: Subject to export regulations: AL: N and ECCN: EAR99S
C: Subject to export regulations: AL: N and ECCN: EAR99H
D: Subject to export regulations: AL: N and ECCN: 5D992

Standard CPUs

Ordering data	Order No.
PROFINET bus components	
IE FC TP standard cable GP 2x2 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; Sold by the meter	**6XV1 840-2AH10**
FO Standard Cable GP (50/125) Standard cable, splittable, UL approval, sold by the meter	**6XV1 873-2A**
SCALANCE X204-2 Industrial Ethernet Switch Industrial Ethernet Switches with integral SNMP access, web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; four 10/100 Mbit/s RJ45 ports and two FO ports	**6GK5 204-2BB10-2AA3**
Compact Switch Module CSM 377 Unmanaged switch for connecting a SIMATIC S7-300, ET 200M and up to three other participants to Industrial Ethernet with 10/100 Mbit/s; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module incl. electronic manual on CD-ROM	**6GK7 377-1AA00-0AA0**

	Order No.
IE FC RJ45 plugs RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables	
IE FC RJ45 plug 145 145° cable outlet	
1 unit	**6GK1 901-1BB30-0AA0**
10 units	**6GK1 901-1BB30-0AB0**
50 units	**6GK1 901-1BB30-0AE0**
IE FC RJ45 plug 180 180° cable outlet	
1 unit	**6GK1 901-1BB10-2AA0**
10 units	**6GK1 901-1BB10-2AB0**
50 units	**6GK1 901-1BB10-2AE0**
PROFIBUS/PROFINET bus components for establishing MPI/PROFIBUS/PROFINET communication	see catalogs IK PI, CA 01

Overview CPU 315F-2 DP

- Based on the SIMATIC CPU 315-2 DP
- For setting up a fail-safe automation system in plants with increased safety requirements
- Complies with safety requirements up to SIL 3 according to IEC 61508 and up to Cat. 4 according to EN 954-1
- Distributed fail-safe I/O modules can be connected through the integral PROFIBUS DP interface (PROFIsafe)
- Fail-safe I/O modules of the ET 200M range can also be centrally connected
- Central and distributed use of standard modules for non safety-oriented applications

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 315F-2 PN/DP

- Based on CPU 315-2 PN/DP
- The CPU with medium-sized program memory and quantity structures for setting up a fail-safe automation system in plants with increased safety requirements
- Complies with safety requirements up to SIL 3 according to IEC 61508, PL e according to ISO 13849, and up to Cat. 4 according to EN 954-1
- Fail-safe I/O modules in distributed stations can be connected through the integrated PROFINET interface (PROFIsafe) and/or through the integrated PROFIBUS DP interface (PROFIsafe);
- Fail-safe I/O modules of the ET 200M range can also be centrally connected
- Central and distributed use of standard modules for non safety-relevant applications
- Component Based Automation (CBA) on PROFINET
- PROFINET IO Controller for operating distributed I/O on PROFINET
- PROFINET interface with 2-port switch
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)

SIMATIC Micro Memory Card required for operation of CPU.

Fail-safe CPUs

Overview CPU 317F-2 PN/DP

- Based on CPU 317-2 PN/DP
- The fail-safe CPU with a large program memory and quantity framework for demanding applications; for setting up a fail-safe automation system in plants with increased safety requirements.
- Complies with safety requirements up to SIL 3 according to IEC 61508, PL e according to ISO 13849-1, and up to Cat. 4 according to EN 954-1
- Fail-safe I/O modules in distributed stations can be connected through the integrated PROFINET interface (PROFIsafe) and/or through the integrated PROFIBUS DP interface (PROFIsafe)
- Fail-safe I/O modules of the ET 200M range can also be centrally connected
- Central and distributed use of standard modules for non safety-relevant applications
- Component Based Automation (CBA) on PROFINET
- PROFINET IO Controller for operating distributed I/O on PROFINET
- PROFINET interface with 2-port switch
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)

SIMATIC Micro Memory Card required for operation of CPU.

Technical specifications

	6ES7 315-6FF04-0AB0	6ES7 315-2FJ14-0AB0	6ES7 317-2FK14-0AB0
Product-type designation	CPU 315F-2 DP	CPU 315F-2 PN/DP	CPU 317F-2 PN/DP
Product version			
associated programming package	STEP 7 > V 5.4 + SP5 or STEP 7 as of V5.2 + SP1 with HSP 177, S7 Distributed Safety as of V5.4		
Supply voltages			
Rated value			
• 24 V DC	Yes	Yes	Yes
• permissible range, lower limit (DC)	20.4 V	20.4 V	20.4 V
• permissible range, upper limit (DC)	28.8 V	28.8 V	28.8 V
external protection for supply cables (recommendation)	Min. 2 A	Min. 2 A	Min. 2 A
Current consumption			
Current consumption (rated value)	850 mA	750 mA	750 mA
Current consumption (in no-load operation), typ.	150 mA	150 mA	150 mA
Inrush current, typ.	3.5 A	4 A	4 A
I^2t	1 $A^2 \cdot s$	1 $A^2 \cdot s$	1 $A^2 \cdot s$
from supply voltage L+, max.	900 mA		
Power loss			
Power loss, typ.	4.5 W		
Memory			
Work memory			
• integrated	384 Kibyte	512 Kibyte	1.5 Mbyte
• expandable	No	No	No
• Size of retentive memory for retentive data blocks	128 Kibyte	128 Kibyte	256 Kibyte
Load memory			
• pluggable (MMC)	Yes	Yes	Yes
• pluggable (MMC), max.	8 Mbyte	8 Mbyte	8 Mbyte

Technical specifications (continued)

	6ES7 315-6FF04-0AB0	6ES7 315-2FJ14-0AB0	6ES7 317-2FK14-0AB0
Product-type designation	CPU 315F-2 DP	CPU 315F-2 PN/DP	CPU 317F-2 PN/DP
Backup			
• present	Yes; guaranteed by MMC (maintenance-free)	Yes; guaranteed by MMC (maintenance-free)	Yes; guaranteed by MMC (maintenance-free)
• without battery	Yes; Program and data	Yes; Program and data	Yes; Program and data
CPU/ blocks			
DB			
• Number, max.	1 024; Number range: 1 to 16000	1 024; Number range: 1 to 16000	2 048; Number range: 1 to 16000
• Size, max.	64 Kibyte	64 Kibyte	64 Kibyte
FB			
• Number, max.	1 024; Number range: 0 to 7999	1 024; Number range: 0 to 7999	2 048; Number range: 0 to 7999
• Size, max.	64 Kibyte	64 Kibyte	64 Kibyte
FC			
• Number, max.	1 024; Number range: 0 to 7999	1 024; Number range: 0 to 7999	2 048; Number range: 0 to 7999
• Size, max.	64 Kibyte	64 Kibyte	64 Kibyte
OB			
• Size, max.	64 Kibyte	64 Kibyte	64 Kibyte
Nesting depth			
• per priority class	16	16	16
• additional within an error OB	4	4	4
CPU/ processing times			
for bit operations, min.	0.05 µs	0.05 µs	
for word operations, min.	0.09 µs	0.09 µs	0.03 µs
for fixed point arithmetic, min.	0.12 µs	0.12 µs	0.04 µs
for floating point arithmetic, min.	0.45 µs	0.45 µs	0.16 µs
Times/counters and their retentivity			
S7 counter			
• Number	256	256	512
• Retentivity			
- can be set	Yes	Yes	Yes
- lower limit	0	0	0
- upper limit	255	255	511
• Counting range			
- can be set	Yes	Yes	Yes
- lower limit	0	0	0
- upper limit	999	999	999
IEC counter			
• present	Yes	Yes	Yes
• Type	SFB	SFB	SFB
S7 times			
• Number	256	256	512
• Retentivity			
- can be set	Yes	Yes	Yes
- lower limit	0	0	0
- upper limit	255	255	511
- preset	no retentivity	no retentivity	no retentivity
• Time range			
- lower limit	10 ms	10 ms	10 ms
- upper limit	9 990 s	9 990 s	9 990 s

Technical specifications (continued)

	6ES7 315-6FF04-0AB0	6ES7 315-2FJ14-0AB0	6ES7 317-2FK14-0AB0
Product-type designation	CPU 315F-2 DP	CPU 315F-2 PN/DP	CPU 317F-2 PN/DP
IEC timer			
• present	Yes	Yes	Yes
• Type	SFB	SFB	SFB
Data areas and their retentivity			
Flag			
• Number, max.	2 048 byte	2 048 byte	4 096 byte
• Retentivity available	Yes; MB 0 to MB 2047	Yes; MB 0 to MB 2047	Yes; MB 0 to MB 4095
• Number of clock memories	8; 1 memory byte	8; 1 memory byte	8; 1 memory byte
Data blocks			
• Number, max.	1 024; Number range: 1 to 16000	1 024; Number range: 1 to 16000	2 048; Number range: 1 to 16000
• Size, max.	64 Kibyte	64 Kibyte	64 Kibyte
• Retentivity adjustable	Yes; via non-retain property on DB	Yes; via non-retain property on DB	Yes; via non-retain property on DB
• Retentivity preset	yes	yes	yes
Local data			
• per priority class, max.	32 Kibyte; Max. 2 KB per block	32 Kibyte; Max. 2 KB per block	32 Kibyte; Max. 2 KB per block
Address area			
I/O address area			
• overall	2 048 byte	2 048 byte	8 192 byte
• Outputs	2 048 byte	2 048 byte	8 192 byte
• of which, distributed			
- Inputs	2 048 byte	2 048 byte	8 192 byte
- Outputs	2 048 byte	2 048 byte	8 192 byte
Process image			
• Inputs	2 048 byte	2 048 byte	8 192 byte
• Outputs	2 048 byte	2 048 byte	8 192 byte
• Inputs, adjustable	2 048 byte	2 048 byte	8 192 byte
• Outputs, adjustable	2 048 byte	2 048 byte	8 192 byte
• Inputs, default	384 byte	384 byte	1 024 byte
• Outputs, default	384 byte	384 byte	1 024 byte
Subprocess images			
• Number of subprocess images, max.	1	1	1
Digital channels			
• Inputs	16 384	16 384	65 536
• Outputs	16 384	16 384	65 536
• Inputs, of which central	1 024	1 024	1 024
• Outputs, of which central	1 024	1 024	1 024
Analog channels			
• Inputs	1 024	1 024	4 096
• Outputs	1 024	1 024	4 096
• Inputs, of which central	256	256	256
• Outputs, of which central	256	256	256
Hardware configuration			
Central devices, max.	1	1	1
Expansion devices, max.	3	3	3
Racks, max.	4	4	4
Modules per rack, max.	8	8	8

Technical specifications (continued)

	6ES7 315-6FF04-0AB0	6ES7 315-2FJ14-0AB0	6ES7 317-2FK14-0AB0
Product-type designation	CPU 315F-2 DP	CPU 315F-2 PN/DP	CPU 317F-2 PN/DP
Number of DP masters			
• integrated	1	1	1
• via CP	4	4	4
Number of operable FMs and CPs (recommended)			
• FM	8	8	8
• CP, point-to-point	8	8	8
• CP, LAN	10	10	10
Time of day			
Clock			
• Hardware clock (real-time clock)	Yes	Yes	Yes
• battery-backed and synchronizable	Yes	Yes	Yes
• Behavior of the clock following expiry of backup period	The clock continues at the time of day it had when power was switched off	The clock continues at the time of day it had when power was switched off	The clock continues at the time of day it had when power was switched off
• Deviation per day, max.	10 s; Typ.: 2 s	10 s; Typ.: 2 s	10 s; Typ.: 2 s
Runtime meter			
• Number	1	1	4
• Number/Number range	0	0	0 to 3
• Range of values	0 to 2^31 hours (when using SFC 101)	0 to 2^31 hours (when using SFC 101)	0 to 2^31 hours (when using SFC 101)
• Granularity	1 hour	1 hour	1 hour
• retentive	Yes; Must be restarted at each restart	Yes; Must be restarted at each restart	Yes; Must be restarted at each restart
Clock synchronization			
• supported	Yes	Yes	Yes
• to MPI, master	Yes	Yes	Yes
• to MPI, slave	Yes	Yes	Yes
• to DP, master	Yes; on DP slave only time-of-day slave	Yes; on DP slave only time-of-day slave	Yes; on DP slave only time-of-day slave
• to DP, slave	Yes	Yes	Yes
• in AS, master	Yes	Yes	Yes
• in AS, slave		Yes	Yes
• on Ethernet via NTP		Yes; as client	Yes; as client
S7 message functions			
Number of login stations for message functions, max.	16; Depending on the connections configured for PG/OP and S7 basic communication	16; Depending on the connections configured for PG/OP and S7 basic communication	32; Depending on the connections configured for PG/OP and S7 basic communication
Process diagnostic messages	Yes	Yes	Yes
simultaneously active Alarm-S blocks, max.	300	300	300
Test commissioning functions			
Status/control			
• Status/control variable	Yes	Yes	Yes
• Variables	Inputs, outputs, memory bits, DB, times, counters	Inputs, outputs, memory bits, DB, times, counters	Inputs, outputs, memory bits, DB, times, counters
• Number of variables, max.	30	30	30
• of which status variables, max.	30	30	30
• of which control variables, max.	14	14	14
Forcing			
• Forcing	Yes	Yes	Yes
• Force, variables	Inputs, outputs	Inputs, outputs	Inputs, outputs
• Number of variables, max.	10	10	10

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Technical specifications (continued)

	6ES7 315-6FF04-0AB0	6ES7 315-2FJ14-0AB0	6ES7 317-2FK14-0AB0
Product-type designation	CPU 315F-2 DP	CPU 315F-2 PN/DP	CPU 317F-2 PN/DP
Status block	Yes; Up to 2 simultaneously	Yes; Up to 2 simultaneously	Yes; Up to 2 simultaneously
Single step	Yes	Yes	Yes
Number of breakpoints	4	4	4
Diagnostic buffer			
• present	Yes	Yes	Yes
• Number of entries, max.	500	500	500
- can be set	No	No	No
- Of which powerfail-proof	100; Only the last 100 entries are retained	100; Only the last 100 entries are retained	100; Only the last 100 entries are retained
• Maximum number of entries that can be read in RUN			
- adjustable	Yes; from 10 to 499	Yes; from 10 to 499	Yes; from 10 to 499
- default	10	10	10
Service data			
• can be read out		Yes	Yes
Monitoring functions			
Status LEDs	Yes	Yes	Yes
Communication functions			
PG/OP communication	Yes	Yes	Yes
Data record routing	Yes	Yes	Yes
Routing	Yes; Max. 4	Yes	Yes
Global data communication			
• supported	Yes	Yes	Yes
• Size of GD packets, max.	22 byte	22 byte	22 byte
S7 basic communication			
• supported	Yes	Yes	Yes
S7 communication			
• supported	Yes	Yes	Yes
S5-compatible communication			
• supported	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC
Web server			
• Web server		Yes; Read-only function	Yes; Read-only function
• Number of HTTP clients		5	5
Open IE communication			
• TCP/IP		Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.		8	16
• ISO-on-TCP (RFC1006)		Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.		8	16
- Data length, max.		32 768 byte	32 768 byte
• UDP		Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.		8	16
- Data length, max.		1 472 byte	1 472 byte
Number of connections			
• overall	16	16	32
• usable for PG communication	15	15	31
• usable for OP communication	15	15	31
• usable for S7 basic communication	12	14	30
• usable for S7 communication		14	16
- reserved for S7 communication		0	0
- Adjustable for S7 communication, min.		0	0
- Adjustable for S7 communication, max.		14	16

Technical specifications (continued)

	6ES7 315-6FF04-0AB0	6ES7 315-2FJ14-0AB0	6ES7 317-2FK14-0AB0
Product-type designation	CPU 315F-2 DP	CPU 315F-2 PN/DP	CPU 317F-2 PN/DP
Number of connections			
• Max. total number of instances		32	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: max. 24	X1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave (active): max. 14; X2 as PROFINET: max. 24
PROFINET CBA (at set setpoint communication load)			
• Setpoint for the CPU communication load		50 %	50 %
• Number of remote interconnection partners		32	32
• Number of functions, master/slave		30	30
• Total of all Master/Slave connections		1 000	1 000
• Data length of all incoming connections master/slave, max.		4 000 byte	4 000 byte
• Data length of all outgoing connections master/slave, max.		4 000 byte	4 000 byte
• Number of device-internal and PROFIBUS interconnections		500	500
• Data length of device-internal and PROFIBUS interconnections, max.		4 000 byte	4 000 byte
• Data length per connection, max.		1 400 byte	1 400 byte
• Remote interconnections with acyclic transmission			
- Sampling frequency: Sampling time, min.		500 ms	500 ms
- Number of incoming interconnections		100	100
- Number of outgoing interconnections		100	100
- Data length of all incoming interconnections, max.		2 000 byte	2 000 byte
- Data length of all outgoing interconnections, max.		2 000 byte	2 000 byte
- Data length per connection, max.		1 400 byte	1 400 byte
• Remote interconnections with cyclic transmission			
- Transmission frequency: Transmission interval, min.		10 ms	10 ms
- Number of incoming interconnections		200	200
- Number of outgoing interconnections		200	200
- Data length of all incoming interconnections, max.		2 000 byte	2 000 byte
- Data length of all outgoing interconnections, max.		2 000 byte	2 000 byte
- Data length per connection, max.		450 byte	450 byte
• HMI variables via PROFINET (acyclic)			
- Number of stations that can log on for HMI variables (PN OPC/iMap)		3; 2x PN OPC/1x iMap	3; 2x PN OPC/1x iMap
- HMI variable updating		500 ms	500 ms
- Number of HMI variables		200	200
- Data length of all HMI variables, max.		2 000 byte	2 000 byte
• PROFIBUS proxy functionality			
- supported		Yes	Yes
- Number of linked PROFIBUS devices		16	16
- Data length per connection, max.		240 byte; Slave-dependent	240 byte; Slave-dependent
1st interface			
Type of interface	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485	RS 485	RS 485
Isolated	No	Yes	Yes
Power supply to interface (15 to 30 V DC), max.	200 mA	200 mA	200 mA

5

Technical specifications (continued)

	6ES7 315-6FF04-0AB0	6ES7 315-2FJ14-0AB0	6ES7 317-2FK14-0AB0
Product-type designation	CPU 315F-2 DP	CPU 315F-2 PN/DP	CPU 317F-2 PN/DP
Functionality			
• MPI	Yes	Yes	Yes
• DP master	No	Yes	Yes
• DP slave	No	Yes	Yes
• Point-to-point connection	No	No	No
MPI			
• Number of connections	16	16	32
• Services			
- PG/OP communication	Yes	Yes	Yes
- Routing	Yes	Yes	Yes
- Global data communication	Yes	Yes	Yes
- S7 basic communication	Yes	Yes	Yes
- S7 communication	Yes	Yes	Yes
- S7 communication, as client	No	No; but via CP and loadable FB	No; but via CP and loadable FB
- S7 communication, as server	Yes	Yes	Yes
• Transmission speeds, max.	187.5 kbit/s	12 Mbit/s	12 Mbit/s
DP master			
• Services			
- PG/OP communication		Yes	Yes
- Routing		Yes	Yes
- Global data communication		No	No
- S7 basic communication		Yes; I blocks only	Yes; I blocks only
- S7 communication		Yes	Yes
- S7 communication, as client		No	No
- S7 communication, as server		Yes	Yes
- Equidistance mode support		Yes	Yes
- Isochronous mode		Yes; OB 61	Yes; OB 61
- SYNC/FREEZE		Yes	Yes
- Activation/deactivation of DP slaves		Yes	Yes
- Number of DP slaves that can be simultaneously activated/deactivated, max.		8	8
- DPV1		Yes	Yes
• Transmission speeds, max.		12 Mbit/s	12 Mbit/s
• Number of DP slaves, max.		124	124
• Address area			
- Inputs, max.		2 Kibyte	8 Kibyte
- Outputs, max.		2 Kibyte	8 Kibyte
• User data per DP slave			
- Inputs, max.		244 byte	244 byte
- Outputs, max.		244 byte	244 byte
DP slave			
• Services			
- PG/OP communication		Yes	Yes
- Routing		Yes; Only with active interface	Yes; Only with active interface
- Global data communication		No	No
- S7 basic communication		No	No
- S7 communication		Yes	Yes
- S7 communication, as client		No	No
- S7 communication, as server		Yes; Connection configured on one side only	Yes; Connection configured on one side only
- Direct data exchange (slave-to-slave communication)		Yes	Yes
- DPV1		No	No
• Transmission rate, max.		12 Mbit/s	12 Mbit/s
• Transfer memory			
- Inputs		244 byte	244 byte
- Outputs		244 byte	244 byte
• Address area, max.		32	32
• User data per address area, max.		32 byte	32 byte

Technical specifications (continued)

	6ES7 315-6FF04-0AB0	6ES7 315-2FJ14-0AB0	6ES7 317-2FK14-0AB0
Product-type designation	CPU 315F-2 DP	CPU 315F-2 PN/DP	CPU 317F-2 PN/DP
2nd interface			
Type of interface	integrated RS 485 interface	PROFINET	PROFINET
Physics	RS 485	Ethernet RJ45	Ethernet RJ45
Isolated	Yes	Yes	Yes
Integrated switch		Yes	Yes
Number of ports		2	2
Power supply to interface (15 to 30 V DC), max.	200 mA		
automatic detection of transmission speed		Yes; 10/100 Mbit/s	Yes; 10/100 Mbit/s
Autonegotiation		Yes	Yes
Autocrossing		Yes	Yes
Functionality			
• MPI	No	No	No
• DP master	Yes	No	No
• DP slave	Yes	No	No
• PROFINET IO Controller		Yes	Yes
• PROFINET CBA		Yes	Yes
• Web server		Yes; only read function	Yes; only read function
- Number of HTTP clients		5	5
• Point-to-point connection	No	No	No
DP master			
• Number of connections, max.	16		
• Services			
- PG/OP communication	Yes		
- Routing	Yes		
- Global data communication	No		
- S7 basic communication	Yes; I blocks only		
- S7 communication	Yes		
- S7 communication, as client	No		
- S7 communication, as server	Yes		
- Equidistance mode support	Yes		
- Isochronous mode	Yes; OB 61		
- SYNC/FREEZE	Yes		
- Activation/deactivation of DP slaves	Yes		
- Number of DP slaves that can be simultaneously activated/deactivated, max.	8		
- DPV1	Yes		
• Transmission speeds, max.	12 Mbit/s		
• Number of DP slaves, max.	124; Per station		
• Address area			
- Inputs, max.	2 048 byte		
- Outputs, max.	2 048 byte		
• User data per DP slave			
- Inputs, max.	244 byte		
- Outputs, max.	244 byte		
DP slave			
• Number of connections	16		
• Services			
- PG/OP communication	Yes		
- Routing	Yes; Only with active interface		
- Global data communication	No		
- S7 basic communication	No		

Technical specifications (continued)

	6ES7 315-6FF04-0AB0	6ES7 315-2FJ14-0AB0	6ES7 317-2FK14-0AB0
Product-type designation	CPU 315F-2 DP	CPU 315F-2 PN/DP	CPU 317F-2 PN/DP
DP slave			
• Services			
- S7 communication, as client	No		
- S7 communication, as server	Yes		
- Direct data exchange (slave-to-slave communication)	Yes		
- DPV1	No		
• GSD file	The current GSD file can be obtained from: http://www.siemens.com/profibus-gsd		
• Transmission rate, max.	12 Mbit/s		
• automatic baud rate search	Yes; only with passive interface		
• Transfer memory			
- Inputs	244 byte		
- Outputs	244 byte		
• Address area, max.	32		
• User data per address area, max.	32 byte		
PROFINET IO Controller			
• Services			
- PG/OP communication		Yes	Yes
- Routing		Yes	Yes
- S7 communication		Yes; with loadable FBs, max. configurable connections: 14, max. number of instances: 32	Yes; with loadable FBs, max. configurable connections: 16, max. number of instances: 32
- Isochronous mode		No	No
- Open IE communication		Yes; via TCP/IP, ISO on TCP and UDP	Yes; via TCP/IP, ISO on TCP and UDP
• Transmission rate, max.		100 Mbit/s	100 Mbit/s
• Total number of connectable IO Devices, max.		128	128
• Max. number of connectable IO devices for RT		128	128
- of which in line, max.		128	128
• Number of IO Devices with IRT and the option "high flexibility"		128	128
- of which in line, max.		61	61
• IRT, supported		Yes	Yes
• Prioritized startup supported		Yes	Yes
- Number of IO Devices, max.		32	32
• Activation/deactivation of IO Devices		Yes	Yes
- Number of IO Devices that can be simultaneously activated/deactivated, max.		8	8
• IO Devices changing during operation (partner ports), supported		Yes	Yes
- Max. number of IO devices per tool		8	8
• Device replacement without swap medium		Yes	Yes
• Updating time		250 µs - 128 ms (with send cycle of 250 µs); 500 µs - 256 ms (with send cycle of 500 µs); 1 ms - 512 ms (with send cycle 1 ms); minimum value of the send cycle is also dependent on the set communication share for PROFINET IO, on the number of IO Devices	250 µs - 128 ms (with send cycle of 250 µs); 500 µs - 256 ms (with send cycle of 500 µs); 1 ms - 512 ms (with send cycle 1 ms); minimum value of the send cycle is also dependent on the set communication share for PROFINET IO, on the number of IO Devices

Technical specifications (continued)

	6ES7 315-6FF04-0AB0	6ES7 315-2FJ14-0AB0	6ES7 317-2FK14-0AB0
Product-type designation	CPU 315F-2 DP	CPU 315F-2 PN/DP	CPU 317F-2 PN/DP
PROFINET IO Controller			
• Address area			
- Inputs, max.		2 Kibyte	8 Kibyte
- Outputs, max.		2 Kibyte	8 Kibyte
• User data per address area, max.			
- User data consistency, max.		254 byte	254 byte
PROFINET CBA			
• acyclic transmission		Yes	Yes
• cyclic transmission		Yes	Yes
Open IE communication			
• Open IE communication, supported		Yes	Yes
• Number of connections, max.		8	8
• Local port numbers used at the system end		0, 20, 21, 25, 80, 102, 135, 161, 8 080, 34 962, 34 963, 34 964, 65 532, 65 533, 65 534, 65 535	0, 20, 21, 25, 80, 102, 135, 161, 8 080, 34 962, 34 963, 34 964, 65 532, 65 533, 65 534, 65 535
CPU/ programming			
Programming language			
• STEP 7	Yes; V5.2 SP1 or higher with HW update	Yes; V5.4 SP4 or higher with HW update	Yes; V5.4 SP4 or higher with HW update
• LAD	Yes	Yes	Yes
• FBD	Yes	Yes	Yes
• STL	Yes	Yes	Yes
• SCL	Yes	Yes	Yes
• CFC	Yes	Yes	Yes
• GRAPH	Yes	Yes	Yes
• HiGraph®	Yes	Yes	Yes
Command set	See instruction list	See instruction list	See instruction list
Nesting levels	8	8	8
User program protection/ password protection	Yes	Yes	Yes
System functions (SFC)	see instruction list	see instruction list	see instruction list
System function blocks (SFB)	see instruction list	see instruction list	see instruction list
Environmental requirements			
Operating temperature			
• Min.		0 °C	0 °C
• max.		60 °C	60 °C
Dimensions and weight			
Dimensions			
• Width	40 mm	40 mm	40 mm
• Height	125 mm	125 mm	125 mm
• Depth	130 mm	130 mm	130 mm
Weight			
• Weight, approx.	290 g		

Fail-safe CPUs

Ordering data	Order No.
CPU 315F-2 DP CPU for SIMATIC S7-300F; main memory 384 KB, power supply 24 V DC, MPI/PROFIBUS DP master/slave interface, incl. slot number plates	**6ES7 315-6FF04-0AB0**
CPU 315F-2 PN/DP CPU for SIMATIC S7-300F; main memory 512 KB, power supply 24 V DC, MPI/PROFIBUS DP master/slave interface; Industrial Ethernet/PROFINET interface; incl. slot number labels	**6ES7 315-2FJ14-0AB0**
CPU 317F-2 PN/DP Main memory 1.5 MB, power supply 24 V DC, MPI/PROFIBUS DP master/slave interface; Industrial Ethernet/PROFINET interface; MMC required	**6ES7 317-2FK14-0AB0**
Accessories	
Distributed Safety V5.4 programming tool Task: Software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, ET 200S Requirement: STEP 7 V5.3 SP3 and higher	
Floating license	**6ES7 833-1FC02-0YA5**
Software Update Service	**6ES7 833-1FC00-0YX2**
Distributed Safety Upgrade From V5.x to V5.4; Floating license for 1 user	**6ES7 833-1FC02-0YE5**
SIMATIC Micro Memory Card	
64 KB	**6ES7 953-8LF20-0AA0**
128 KB	**6ES7 953-8LG11-0AA0**
512 KB	**6ES7 953-8LJ20-0AA0**
2 MB	**6ES7 953-8LL20-0AA0**
4 MB	**6ES7 953-8LM20-0AA0**
8 MB	**6ES7 953-8LP20-0AA0**
MPI cable For connecting SIMATIC S7 and the PG through MPI; 5 m in length	**6ES7 901-0BF00-0AA0**
Slot number plates	**6ES7 912-0AA00-0AA0**
S7-300 manual Design, CPU data, module data, instruction list	
German	**6ES7 398-8FA10-8AA0**
English	**6ES7 398-8FA10-8BA0**
French	**6ES7 398-8FA10-8CA0**
Spanish	**6ES7 398-8FA10-8DA0**
Italian	**6ES7 398-8FA10-8EA0**

		Order No.
SIMATIC Manual Collection Electronic manuals on DVD, multilingual: S7-200, S7-300, C7, S7-400, SIMATIC DP (Distributed I/O), SIMATIC PC, SIMATIC PG (Programming device), STEP 7, Engineering Tools, Runtime Software, SIMATIC PCS 7, SIMATIC HMI (Human Machine Interface), SIMATIC NET (Industrial Communication), SIMATIC Machine Vision, SIMATIC Sensors	A	**6ES7 998-8XC01-8YE0**
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	D	**6ES7 998-8XC01-8YE2**
Power supply connector 10 units, spare part		**6ES7 391-1AA00-0AA0**
Manual "Communication for SIMATIC S7-300/-400"		
German		**6ES7 398-8EA00-8AA0**
English		**6ES7 398-8EA00-8BA0**
French		**6ES7 398-8EA00-8CA0**
Spanish		**6ES7 398-8EA00-8DA0**
Italian		**6ES7 398-8EA00-8EA0**
PC adapter USB for connecting a PC to SIMATIC S7-200/300/400 via USB; with USB cable (5 m)		**6ES7 972-0CB20-0XA0**
PROFIBUS bus components		
PROFIBUS DP bus connector RS 485		
• with 90° cable outlet, max. transmission rate 12 Mbit/s		
- without PG interface		**6ES7 972-0BA12-0XA0**
- with PG interface		**6ES7 972-0BB12-0XA0**
• with 90° cable outlet for FastConnect connection system, max. transmission rate 12 Mbit/s		
- without PG interface, 1 unit		**6ES7 972-0BA52-0XA0**
- without PG interface, 100 units		**6ES7 972-0BA52-0XB0**
- with PG interface, 1 unit		**6ES7 972-0BB52-0XA0**
- with PG interface, 100 units		**6ES7 972-0BB52-0XB0**
• with axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS		**6GK1 500-0EA02**
PROFIBUS Fast Connect bus cable Standard type with special design for quick mounting, 2-core, shielded, sold by the meter, max. delivery unit 1000 m, minimum ordering quantity 20 m		**6XV1 830-0EH10**
RS 485 repeater for PROFIBUS Data transfer rate up to 12 Mbit/s; 24 V DC; IP20 housing		**6ES7 972-0AA01-0XA0**

A: Subject to export regulations: AL: N and ECCN: EAR99S
D: Subject to export regulations: AL: N and ECCN: 5D992

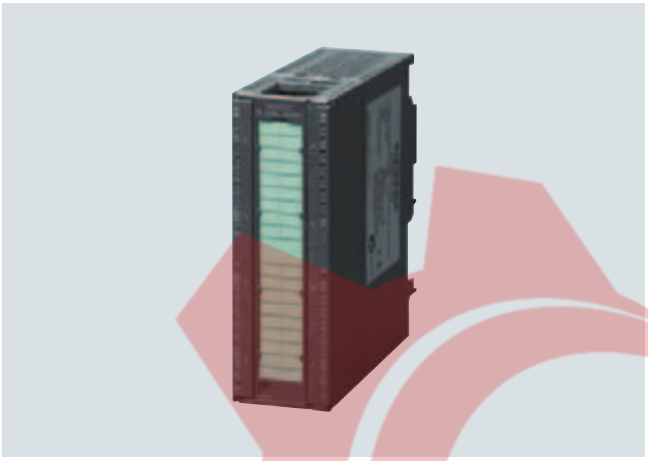
Ordering data	Order No.
PROFINET bus components	
IE FC TP standard cable GP 2x2 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; Sold by the meter	**6XV1 840-2AH10**
FO Standard Cable GP (50/125) Standard cable, splittable, UL approval, sold by the meter	**6XV1 873-2A**
SCALANCE X204-2 Industrial Ethernet Switch Industrial Ethernet Switches with integral SNMP access, Web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; four 10/100 Mbit/s RJ45 ports and two FO ports	**6GK5 204-2BB10-2AA3**
Compact Switch Module CSM 377 Unmanaged switch for connecting a SIMATIC S7-300, ET 200M and up to three other participants to Industrial Ethernet with 10/100 Mbit/s; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module incl. electronic manual on CD-ROM	**6GK7 377-1AA00-0AA0**

	Order No.
IE FC RJ45 plugs RJ45 plug connector for Industrial Ethernet with a rugged metal housing and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables	
IE FC RJ45 plug 145 145° cable outlet	
1 unit	**6GK1 901-1BB30-0AA0**
10 units	**6GK1 901-1BB30-0AB0**
50 units	**6GK1 901-1BB30-0AE0**
IE FC RJ45 plug 180 180° cable outlet	
1 unit	**6GK1 901-1BB10-2AA0**
10 units	**6GK1 901-1BB10-2AB0**
50 units	**6GK1 901-1BB10-2AE0**
PROFIBUS/PROFINET bus components for establishing MPI/PROFIBUS/PROFINET communication	see catalogs IK PI, CA 01

5

SIPLUS SM 322 digital output module

Overview



- Digital outputs
- For connecting solenoid valves, contactors, small-power motors, lamps and motor starters

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme/techdoku

Environmental conditions	SIPLUS extreme	
Ambient temperature range	-40/-25 to +60/+70°C[1]	
Relative humidity	100% Dewing, condensation and icing permissible	
Contaminant concentration	EN60721-3-3 3C4 and ISA S71.04 G1, G2, G3, GX	
	Constant load	Limit value[2]
	SO_2 4.8 ppm	17.8 ppm
	H_2S 9.9 ppm	49.7 ppm
	Cl 0.2 ppm	1.0 ppm
	HCl 0.66 ppm	3.3 ppm
	HF 0.12 ppm	2.4 ppm
	NH 49 ppm	247 ppm
	O_3 0.1 ppm	1.0 ppm
	NO_x 5.2 ppm	10.4 ppm
	At RH < 75%, condensation permitted	
Saline fog	Saline fog test (EN 60068-2-52)	
Mechanically active substances	EN60721-3-3 3S4	
• Dust (suspended substance content)	4.0 mg/m²h	
• Dust (precipitation)	40 mg/m²h incl. conductive sand/dust ("Arizona dust")	
Biologically active substances	EN60721-3-3 3B2 Mildew growth, Fungus, excluding fauna	

1) Depends on the product family
2) 30 min/day

SIPLUS SM 322	8 DO, 48 ... 125 V DC
Order No.	**6AG1 322-1CF00-7AA0**
Order No. based on	**6ES7 322-1CF00-0AA0**
Ambient temperature range	-25 ... +70 °C, condensation permissible
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX. For further information, refer to Environmental conditions of SIPLUS extreme (on this page) or go to www.siemens.com/siplus-extreme
Conforms with standard for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	Yes
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.

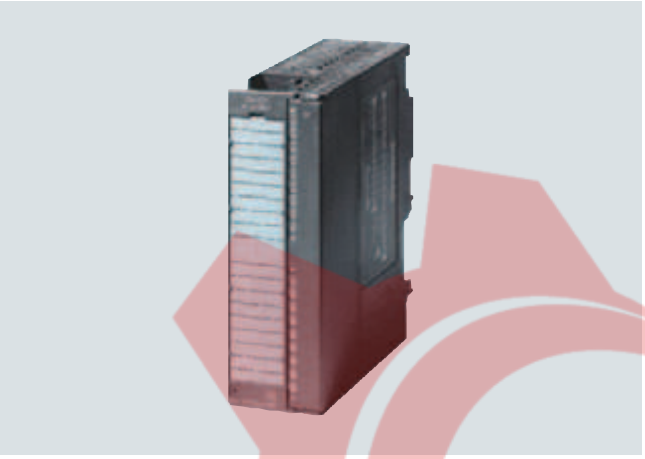
Ordering data

Ordering data	Order No.
SIPLUS SM 322 digital output module	
(extended temperature range and medial exposure)	
incl. labeling strips, bus connector	
8 outputs, 48 … 125 V DC, 1.5 A C	**6AG1 322-1CF00-7AA0**
Accessories	see catalog ST 70 · 2009, S7-300 digital output modules, page 4/82

C: Subject to export regulations: AL: N and ECCN: EAR99H

SM 331 analog input module

Overview



- Analog inputs
- For connection of voltage and current sensors, thermocouples, resistors and resistance thermometers

Technical specifications

	6ES7 331-1KF02-0AB0	6ES7 331-7PE10-0AB0
Current consumption		
from backplane bus 5 V DC, max.	90 mA	100 mA
Power loss		
Power loss, typ.	0.4 W	2.2 W
Connection method		
required front connector	40-pin	1x 40-pin
Isochronous mode		
Isochronous mode	No	No
Analog inputs		
Number of analog inputs	8	6
Number of analog inputs for resistance measurement	8	
Cable length, shielded, max.	200 m; max. 50 m at 50 mV	200 m
Input ranges (rated values), voltages		
• 0 to +10 V	Yes	
• 1 to 5 V	Yes	
• 1 to 10 V	No	
• -1 V to +1 V	Yes	Yes
• -10 V to +10 V	Yes	
• -2.5 V to +2.5 V	No	
• -250 mV to +250 mV	No	Yes
• -5 V to +5 V	Yes	
• -50 mV to +50 mV	Yes	Yes
• -500 mV to +500 mV	Yes	Yes
• -80 mV to +80 mV	No	Yes
Input ranges (rated values), currents		
• 0 to 20 mA	Yes	
• -10 to +10 mA	No	
• -20 to +20 mA	Yes	
• -3.2 to +3.2 mA	No	
• 4 to 20 mA	Yes	
Input ranges (rated values), thermoelements		
• Type B	No	Yes
• Type E	No	Yes
• Type J	No	Yes
• Type K	No	Yes
• Type L	No	Yes
• Type N	No	Yes
• Type R	No	Yes
• Type S	No	Yes
• Type T	No	Yes
• Type U	No	Yes
• Type TXK/TXK(L) to GOST	No	Yes
• Input resistance (Type TXK/TXK(L) to GOST)		10 MΩ
Input ranges (rated values), resistance thermometers		
• Cu 10	No	
• Ni 100	Yes; Standard/climate	
• Ni 1000	Yes	
• LG-Ni 1000	Yes; Standard /climate	
• Ni 120	No	
• Ni 200	No	
• Ni 500	No	
• Pt 100	Yes; Standard /climate	
• Pt 1000	No	
• Pt 200	No	
• Pt 500	No	
Input ranges (rated values), resistors		
• 0 to 150 ohms	No	
• 0 to 300 ohms	No	
• 0 to 600 ohms	Yes	
• 0 to 6000 ohms	Yes	
Voltage input		
• permissible input voltage for voltage input (destruction limit), max.	30 V; 12 V continuous, 30 V for max. 1 s	35 V; 35 V continuous, 75 V for max. 1 s (mark to space ratio 1:20)
Current input		
• permissible input current for current input (destruction limit), max.	40 mA	
Characteristic linearization		
• parameterizable	Yes	Yes

Technical specifications (continued)

	6ES7 331-1KF02-0AB0	6ES7 331-7PE10-0AB0
Characteristic linearization		
• for current measurement		
- for thermocouples		Type B, E, J, K, L, N, R, S. T, U, C, TXK, XK(L)
- for resistance thermometer	yes; Pt100 standard/air con.; Ni100 standard/air con.; Ni1000 standard/air con.; LG-Ni1000 standard/air con.	
Temperature compensation		
• Temperature compensation parameterizable		Yes
• internal temperature compensation		Yes
• external temperature compensation with compensations socket		Yes
• external temperature compensation with Pt100		Yes
Analog value creation		
Measurement principle	integrating	integrating
Integrations and conversion time/ resolution per channel		
• Resolution with overrange (bit including sign), max.	13 bit	16 bit; Two's complement
• Integration time, parameterizable	Yes; 60 / 50 ms	Yes
• Basic conversion time, ms	66 / 55 ms	30 / 50 / 60 / 300
• Integration time, ms		10 / 16,67 / 20 / 100
• Basic conversion time, including integration time, ms	66 / 55 ms	
• Interference voltage suppression for interference frequency f1 in Hz	50 / 60 Hz	
Encoder		
Connection of signal encoders		
• for current measurement as 2-wire transducer	Yes; with external supply	
• for current measurement as 4-wire transducer	Yes	
• for resistance measurement with 2-conductor connection	Yes	
• for resistance measurement with 3-conductor connection	Yes	
• for resistance measurement with 4-conductor connection	Yes	
Errors/accuracies		
Operational limit in overall temperature range		
• Voltage, relative to input area	+/- 0,6 %; +/-0.6% (+/-5 V, 10 V, 1 to 5 V, 0 to 10 V); +/-0.5% (+/-50 mV, 500 mV, 1 V)	+/- 1 %/K

	6ES7 331-1KF02-0AB0	6ES7 331-7PE10-0AB0
Errors/accuracies		
Operational limit in overall temperature range		
• Current, relative to input area	+/- 0,5 %; +/-20 mA, 0 to 20 mA, 4 to 20 mA	
• Impedance, relative to input area	+/- 0,5 %; 0 to 6 kohms, 0 to 600 kohms	
• Resistance-type thermometer, relative to input area	1 Kelvin (Pt100, Ni100, climatic; Ni1000, LG-Ni1000, standard; Ni1000, LG-Ni1000, climatic); 1.2 Kelvin (Pt100, Ni100, standard)	
Basic error limit (operational limit at 25 °C)		
• Voltage, relative to input area	+/- 0,4 %; 0.4% (+/-5 V, 10 V, 1 to 5 V, 0 to 10 V); 0.3% (+/-50 mV, 500 mV, 1 V)	
• Current, relative to input area	+/- 0,3 %; +/-20 mA, 0 to 20 mA, 4 to 20 mA	
• Impedance, relative to input area	+/- 0,3 %; 0 to 6 kohms, 0 to 600 kohms	
• Resistance-type thermometer, relative to input area	1 Kelvin (Pt100, Ni100, standard); 0.8 Kelvin (Pt100, Ni100, climatic; Ni1000, LG-Ni1000, standard; Ni1000, LG-Ni1000, climatic)	
Interrupts/diagnostics/ status information		
Alarms		
• Diagnostic alarm	No	Yes; Channel by channel
• Limit value alarm	No	Yes; Parameterizable
Diagnoses		
• Diagnostic information readable	No	Yes
Isolation		
Isolation checked with	500 V DC	
Galvanic isolation		
Galvanic isolation analog inputs		
• between the channels	No	Yes
• between the channels, in groups of		1
• between the channels and the backplane bus	Yes	Yes

Technical specifications (continued)

	6ES7 331-1KF02-0AB0	6ES7 331-7PE10-0AB0
Dimensions and weight		
Dimensions		
• Width	40 mm	40 mm
• Height	125 mm	125 mm
• Depth	117 mm	120 mm
Weight		
• Weight, approx.	250 g	272 g

Ordering data

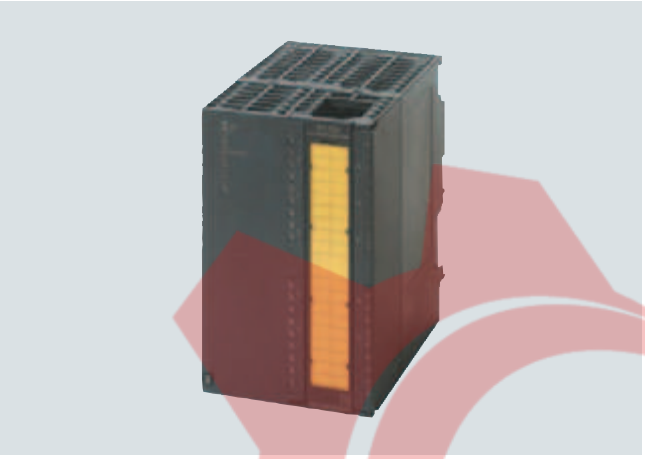
		Order No.
SM 331 analog input modules		
Including labeling strips, bus connector, measuring range modules		
8 inputs, 13-bit resolution	C	**6ES7 331-1KF02-0AB0**
6 inputs, for thermal resistors, resolution 16 bits	C	**6ES7 331-7PE10-0AB0**
Accessories		
Measuring range module for analog inputs		**6ES7 974-0AA00-0AA0**
1 module for 2 analog inputs; 2 units (spare part)		
Front connectors		
20-pin, with screw contacts		
• 1 unit		**6ES7 392-1AJ00-0AA0**
• 100 units		**6ES7 392-1AJ00-1AB0**
20-pin, with spring-loaded contacts		
• 1 unit		**6ES7 392-1BJ00-0AA0**
• 100 units		**6ES7 392-1BJ00-1AB0**
20-pin, with FastConnect		
• 1 unit		**6ES7 392-1CJ00-0AA0**
40-pin, with screw contacts		
• 1 unit		**6ES7 392-1AM00-0AA0**
• 100 units		**6ES7 392-1AM00-1AB0**
40-pin with spring-loaded contacts		
• 1 unit		**6ES7 392-1BM01-0AA0**
• 100 units		**6ES7 392-1BM01-1AB0**
40-pin, with FastConnect		
• 1 unit		**6ES7 392-1CM00-0AA0**
Front door, elevated design		**6ES7 328-0AA00-7AA0**
e.g. for 32-channel modules; for connecting 1.3 mm^2/16 AWG wires		
SIMATIC TOP connect		see Catalog ST 70, page 4/218
Bus connectors		**6ES7 390-0AA00-0AA0**
1 unit (spare part)		
Shield connecting element		**6ES7 390-5AA00-0AA0**
80 mm wide, with 2 rows for 4 terminal elements each		
Terminal elements		
2 units		
for 2 cables with 2 … 6 mm diameter		**6ES7 390-5AB00-0AA0**
for 1 cable with 3 … 8 mm diameter		**6ES7 390-5BA00-0AA0**

		Order No.
Terminal elements		
for 1 cable with 4 … 13 mm diameter		**6ES7 390-5CA00-0AA0**
Label cover		**6ES7 392-2XY00-0AA0**
10 units (spare part), for modules with 20-pin front connector		
Labeling strips		**6ES7 392-2XX00-0AA0**
10 units (spare part), for modules with 20-pin front connector		
S7 SmartLabel V3.0		
Software for automatic labeling of modules based on data of the STEP 7 project		
Single license	A	**2XV9 450-1SL03-0YX0**
Upgrade single license	A	**2XV9 450-1SL03-0YX4**
Labeling sheets for machine labeling		
For 16-channel signal modules, DIN A4, for printing with laser printer; 10 units		
petrol		**6ES7 392-2AX00-0AA0**
light-beige		**6ES7 392-2BX00-0AA0**
yellow		**6ES7 392-2CX00-0AA0**
red		**6ES7 392-2DX00-0AA0**
For 32-channel signal modules, DIN A4, for printing with laser printer; 10 units		
petrol		**6ES7 392-2AX10-0AA0**
light-beige		**6ES7 392-2BX10-0AA0**
yellow		**6ES7 392-2CX10-0AA0**
red		**6ES7 392-2DX10-0AA0**
SIMATIC Manual Collection	A	**6ES7 998-8XC01-8YE0**
Electronic manuals on DVD, multilingual		
SIMATIC Manual Collection update service for 1 year	D	**6ES7 998-8XC01-8YE2**
Current S7 Manual Collection DVD and the three subsequent updates		
S7-300 manual		
Design, CPU data, module data, instruction list		
German		**6ES7 398-8FA10-8AA0**
English		**6ES7 398-8FA10-8BA0**
French		**6ES7 398-8FA10-8CA0**
Spanish		**6ES7 398-8FA10-8DA0**
Italian		**6ES7 398-8FA10-8EA0**

A: Subject to export regulations: AL: N and ECCN: EAR99S
C: Subject to export regulations: AL: N and ECCN: EAR99H
D: Subject to export regulations: AL: N and ECCN: 5D992

SM 326 F digital input module - Safety Integrated

Overview



- Digital inputs for the fail-safe SIMATIC S7 systems
- They are suitable for connecting:
  - Switches and 2-wire proximity switches (BEROs)
  - Sensors according to NAMUR and mechanical contacts, also for signals from hazardous areas
- With integral safety functions for fail-safe operation
- Can be used in fail-safe mode
  - Centrally: With S7-31xF-2 DP
  - Distributed in ET 200M: With SIMATIC IM 151-7 F-CPU, S7-31xF-2 DP, S7-416F-2 and S7-400F/FH
- Can be used in standard mode as an S7-300 module

5

Technical specifications

	6ES7 326-1BK02-0AB0
Supply voltages	
Supply voltage of electronics and encoders 1L+/2L+	
• Rated value (DC)	24 V
Current consumption	
from load voltage L+ (without load), max.	450 mA
from backplane bus 5 V DC, max.	100 mA
Power loss	
Power loss, typ.	10 W
Connection method	
required front connector	40-pin
Digital inputs	
Number of digital inputs	24
Number of simultaneously controllable inputs	
• all mounting positions	
- Concurrently controllable inputs, up to 40 °C	24
- Concurrently controllable inputs, up to 60 °C	24; (at 24 V) or 18 (at 28.8 V)
Input voltage	
• Rated value, DC	24 V
• for signal "0"	-30 to +5 V
• for signal "1"	11 to 30 V
Input current	
• for signal "0", max. (permissible quiescent current)	2 mA
• for signal "1", typ.	10 mA
Input delay (for rated value of input voltage)	
• for standard inputs	
- at "0" to "1", max.	3.4 ms
- at "1" to "0", max.	3.4 ms
Cable length	
• Cable length, shielded, max.	200 m
• Cable length unshielded, max.	100 m

	6ES7 326-1BK02-0AB0
Encoder supply	
Number of outputs	4; Isolated
Output current, rated value	400 mA
Encoder	
Connectable encoders	
• 2-wire BEROS	Yes; if short-circuit test is deactivated
- permissible quiescent current (2-wire BEROS), max.	2 mA
Ex(i) characteristics	
Max. values of input circuits (per channel)	
• Ta (permissible ambient temperature), max.	60 °C
Interrupts/diagnostics/status information	
Alarms	
• Diagnostic alarm	Yes
Diagnoses	
• Diagnostic information readable	Yes
Isolation	
Isolation checked with	500 V DC / 350 V AC
Galvanic isolation	
Galvanic isolation digital inputs	
• between the channels	Yes
• between the channels, in groups of	12
• between the channels and the backplane bus	Yes
Standards, approvals, certificates	
Highest safety class achievable in safety mode	
• to DIN VDE 0801	AK 6
• acc. to EN 954	Cat. 4
• acc. to IEC 61508	SIL 3

Technical specifications (continued)

	6ES7 326-1BK02-0AB0
Dimensions and weight	
Dimensions	
• Width	80 mm
• Height	125 mm
• Depth	120 mm

	6ES7 326-1BK02-0AB0
Weight	
• Weight, approx.	442 g

Ordering data

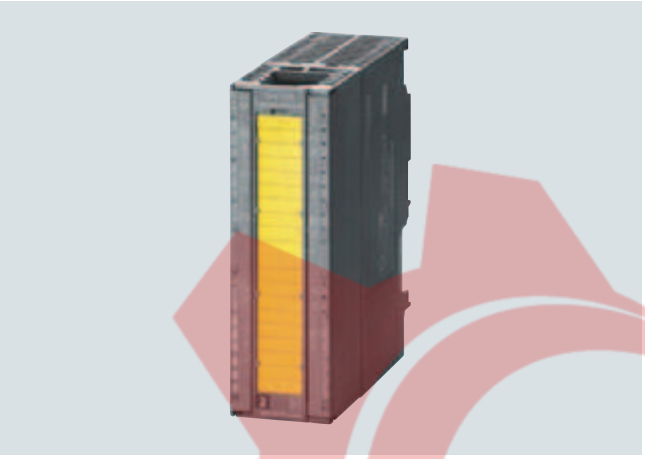
	Order No.
F digital input module SM 326	
24 inputs, 24 V DC	**6ES7 326-1BK02-0AB0**
Accessories	
Distributed Safety V5.4 programming tool	
Task: Software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, ET 200S Requirement: STEP 7 V5.3 SP3 and higher	
Floating license	**6ES7 833-1FC02-0YA5**
Software Update Service	**6ES7 833-1FC00-0YX2**
Distributed Safety Upgrade	
From V5.x to V5.4; Floating license for 1 user	**6ES7 833-1FC02-0YE5**
Labeling sheet with strips for 10 electronic blocks	
• For 16-channel electronic blocks incl. add-on terminals	**6ES7 193-1BH00-0XA0**
• For 32-channel electronic blocks incl. add-on terminals	**6ES7 193-1BL00-0XA0**
Connecting cable for PROFIBUS	**6ES7 901-4BD00-0XA0**
12 Mbit/s, for connecting PG to PROFIBUS DP, pre-assembled with 2 x 9-pin Sub-D connector, 3 m	
PROFIBUS bus connector	
• 90° cable outlet, terminating resistor with isolating function, without PG socket, up to 12 Mbit/s	**6ES7 972-0BA12-0XA0**
• 90° cable outlet, terminating resistor with isolating function, without PG socket, up to 12 Mbit/s	**6ES7 972-0BB12-0XA0**
• 90° cable outlet, FastConnect terminating resistor with isolating function, without PG socket, up to 12 Mbit/s	
- 1 unit	**6ES7 972-0BA52-0XA0**
- 100 units	**6ES7 972-0BA52-0XB0**
• 90° cable outlet, FastConnect terminating resistor with isolating function, with PG socket, up to 12 Mbit/s;	
- 1 unit	**6ES7 972-0BB52-0XA0**
- 100 units	**6ES7 972-0BB52-0XB0**

	Order No.
DIN rail for active bus modules	
for max. 5 active bus modules for hot swapping function	
• 483 mm (19") long	**6ES7 195-1GA00-0XA0**
• 530 mm long	**6ES7 195-1GF30-0XA0**
• 620 mm long	**6ES7 195-1GG30-0XA0**
• 2000 mm long	**6ES7 195-1GC00-0XA0**
Active bus module	**6ES7 195-7HC00-0XA0**
BM 1 x 80 for 1 module with 80 mm width	
SITOP power supply module	**6ES7 307-1EA00-0AA0**
for ET 200M; 120/230 V AC, 24 V DC, 5 A; Type PS 307-1E	
Front connectors	
40-pin, with screw contacts	
• 1 unit	**6ES7 392-1AM00-0AA0**
• 100 units	**6ES7 392-1AM00-1AB0**
40-pin with spring-loaded contacts	
• 1 unit	**6ES7 392-1BM01-0AA0**
• 100 units	**6ES7 392-1BM01-1AB0**
40-pin, with FastConnect	
• 1 unit	**6ES7 392-1CM00-0AA0**
Labeling strips	**6ES7 392-2XX20-0AA0**
For fail-safe modules (spare part); 10 units	
Label cover	**6ES7 392-2XY20-0AA0**
For fail-safe modules (spare part); 10 units	
LK 393 cable guide	**6ES7 393-4AA10-0AA0**
For F modules; L+ and M connections; 5 units	
S7-300 manual	
Design, CPU data, module data, instruction list	
German	**6ES7 398-8FA10-8AA0**
English	**6ES7 398-8FA10-8BA0**
French	**6ES7 398-8FA10-8CA0**
Spanish	**6ES7 398-8FA10-8DA0**
Italian	**6ES7 398-8FA10-8EA0**
SIMATIC Manual Collection A	**6ES7 998-8XC01-8YE0**
Electronic manuals on DVD, multilingual	
SIMATIC Manual Collection update service for 1 year D	**6ES7 998-8XC01-8YE2**
Current S7 Manual Collection DVD and the three subsequent updates	

A: Subject to export regulations: AL: N and ECCN: EAR99S
D: Subject to export regulations: AL: N and ECCN: 5D992

SM 326 F digital output module - Safety Integrated

Overview



- Digital outputs for the fail-safe SIMATIC S7 systems
- Two versions (1 x current sourcing, 1 x current sinking)
- For connecting solenoid valves, DC contactors and indicator lights
- With integral safety functions for fail-safe operation
- Can be used in fail-safe operation
  - Centrally: with S7-31xF DP, S7-31xF PN/DP
  - Distributed in ET 200M: with SIMATIC IM 151-7 F-CPU, S7-31xF-2 DP, S7-41xF-2 and S7-400F/FH

Technical specifications

	6ES7 326-2BF10-0AB0	6ES7 326-2BF41-0AB0
Supply voltages		
Load voltage L+		
• Rated value (DC)	24 V; 1L+, 2L+, 3L+	24 V; 1L+, 2L+, 3L+
Current consumption		
from load voltage1L+, max.	100 mA; from supply voltage	75 mA; from supply voltage
from load voltage 2L+ (without load), max.	100 mA	100 mA
from load voltage 3L+ (without load), max.	100 mA	100 mA
from backplane bus 5 V DC, max.	100 mA	100 mA
Power loss		
Power loss, typ.	6 W	12 W
Connection method		
required front connector	40-pin	40-pin
Digital outputs		
Number of digital outputs	10	8
Short-circuit protection	Yes; Electronic	Yes; Electronic
Limitation of inductive shutdown voltage to		L+ (-33 V)
Lamp load, max.	5 W	5 W
Output voltage		
• for signal "1" without series diode, min.		L+ (-1.0 V)
Output current		
• for signal "1" rated value	2 A	2 A
• for signal "1" permissible range for 0 to 40 °C, min.	7 mA	7 mA
• for signal "1" permissible range for 0 to 40 °C, max.		2 A; 2 A for horizontal installation, 1 A for vertical installation

	6ES7 326-2BF10-0AB0	6ES7 326-2BF41-0AB0
Output current		
• for signal "1" permissible range for 40 to 60 °C, min.	7 mA	7 mA
• for signal "1" permissible range for 40 to 60 °C, max.		1 A; for horizontal installation
• for signal "0" residual current, max.	0.5 mA	0.5 mA
Switching frequency		
• with resistive load, max.	25 Hz	30 Hz
• with inductive load, max.	25 Hz	2 Hz
• on lamp load, max.	10 Hz	10 Hz
Aggregate current of outputs (per group)		
• horizontal installation		
- up to 40 °C, max.	10 A	7.5 A
- up to 60 °C, max.	6 A	5 A
• vertical installation		
- up to 40 °C, max.	5 A	5 A
Cable length		
• Cable length, shielded, max.	1 000 m	200 m; 200 m for SIL3, AK 6, Cat 4
• Cable length unshielded, max.	600 m	
Interrupts/diagnostics/ status information		
Alarms		
• Diagnostic alarm	Yes	Yes; Parameterizable
Diagnoses		
• Diagnostic information readable	Yes	Yes
Isolation		
Isolation checked with	370 V for 1 min	500 V DC / 350 V AC

Technical specifications (continued)

	6ES7 326-2BF10-0AB0	6ES7 326-2BF41-0AB0
Galvanic isolation		
Galvanic isolation digital outputs		
• between the channels	Yes	Yes
• between the channels, in groups of	5	4
• between the channels and the backplane bus	Yes	Yes
• between the channels and the power supply of the electronics	Yes	Yes

	6ES7 326-2BF10-0AB0	6ES7 326-2BF41-0AB0
Standards, approvals, certificates		
Highest safety class achievable in safety mode		
• to DIN VDE 0801	AK 5 and 6	
• acc. to EN 954	Cat. 4	Cat. 4
• acc. to IEC 61508	SIL 3	SIL 3
Dimensions and weight		
Dimensions		
• Width	40 mm	80 mm
• Height	125 mm	125 mm
• Depth	120 mm	120 mm
Weight		
• Weight, approx.	330 g	465 g

Ordering data

	Order No.
F digital output module SM 326	
10 outputs, 24 V DC, 2 A PP; width 40 mm C	**6ES7 326-2BF10-0AB0**
8 outputs, 24 V DC, 2 A PM; width 80 mm	**6ES7 326-2BF41-0AB0**
Accessories	
Distributed Safety V5.4 programming tool	
Task: Software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, ET 200S Requirement: STEP 7 V5.3 SP3 and higher	
Floating license	**6ES7 833-1FC02-0YA5**
Software Update Service	**6ES7 833-1FC00-0YX2**
Distributed Safety Upgrade	
From V5.x to V5.4; Floating license for 1 user	**6ES7 833-1FC02-0YE5**
Labeling sheet with strips for 10 electronic blocks	
• For 16-channel electronic blocks incl. add-on terminals	**6ES7 193-1BH00-0XA0**
• For 32-channel electronic blocks incl. add-on terminals	**6ES7 193-1BL00-0XA0**
Connecting cable for PROFIBUS	**6ES7 901-4BD00-0XA0**
12 Mbit/s, for connecting PG to PROFIBUS DP, pre-assembled with 2 x 9-pin Sub-D connector, 3 m	
PROFIBUS bus connector	
• 90° cable outlet, terminating resistor with isolating function, without PG socket, up to 12 Mbit/s	**6ES7 972-0BA12-0XA0**
• 90° cable outlet, terminating resistor with isolating function, without PG socket, up to 12 Mbit/s	**6ES7 972-0BB12-0XA0**

	Order No.
PROFIBUS bus connector	
• 90° cable outlet, FastConnect terminating resistor with isolating function, without PG socket, up to 12 Mbit/s;	
- 1 unit	**6ES7 972-0BA52-0XA0**
- 100 units	**6ES7 972-0BA52-0XB0**
• 90° cable outlet, FastConnect terminating resistor with isolating function, with PG socket, up to 12 Mbit/s;	
- 1 unit	**6ES7 972-0BB52-0XA0**
- 100 units	**6ES7 972-0BB52-0XB0**
DIN rail for active bus modules	
for max. 5 active bus modules, for function "Insertion and removal"	
• 483 mm (19") long	**6ES7 195-1GA00-0XA0**
• 530 mm long	**6ES7 195-1GF30-0XA0**
• 620 mm long	**6ES7 195-1GG30-0XA0**
• 2000 mm long	**6ES7 195-1GC00-0XA0**
Active bus module	**6ES7 195-7HC00-0XA0**
BM 1 x 80 for 1 module with 80 mm width	
SITOP power supply module	**6ES7 307-1EA00-0AA0**
for ET 200M; 120/230 V AC, 24 V DC, 5 A; Type PS 307-1E	

C: Subject to export regulations: AL: N and ECCN: EAR99H

SM 326 F digital output module - Safety Integrated

Ordering data		Order No.
Front connectors		
40-pin, with screw contacts		
• 1 unit		**6ES7 392-1AM00-0AA0**
• 100 units		**6ES7 392-1AM00-1AB0**
40-pin with spring-loaded contacts		
• 1 unit		**6ES7 392-1BM01-0AA0**
• 100 units		**6ES7 392-1BM01-1AB0**
40-pin, with FastConnect		
• 1 unit		**6ES7 392-1CM00-0AA0**
Labeling strips		**6ES7 392-2XX20-0AA0**
For fail-safe modules (spare part); 10 units		
Label cover		**6ES7 392-2XY20-0AA0**
For fail-safe modules (spare part); 10 units		
LK 393 cable guide		**6ES7 393-4AA10-0AA0**
For F modules; L+ and M connections; 5 units		

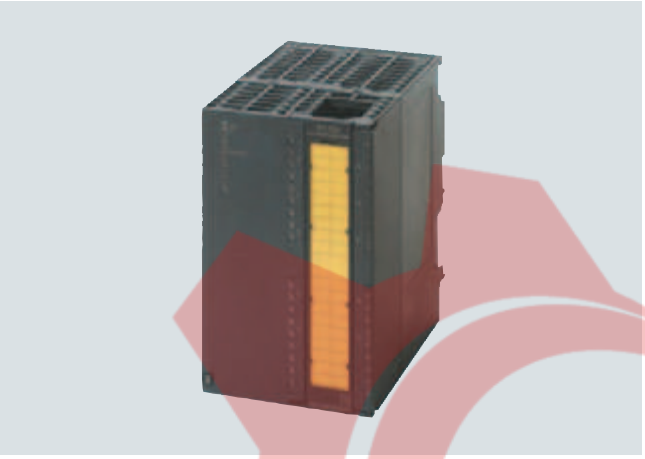
		Order No.
S7-300 manual		
Design, CPU data, module data, instruction list		
German		**6ES7 398-8FA10-8AA0**
English		**6ES7 398-8FA10-8BA0**
French		**6ES7 398-8FA10-8CA0**
Spanish		**6ES7 398-8FA10-8DA0**
Italian		**6ES7 398-8FA10-8EA0**
SIMATIC Manual Collection	A	**6ES7 998-8XC01-8YE0**
Electronic manuals on DVD, multilingual: S7-200, S7-300, C7, S7-400, SIMATIC DP (Distributed I/O), SIMATIC PC, SIMATIC PG (programming device), STEP 7, Engineering Tools, Runtime Software, SIMATIC PCS 7, SIMATIC HMI (Human Machine Interface), SIMATIC NET (Industrial Communication), SIMATIC Machine Vision, SIMATIC Sensors		
SIMATIC Manual Collection update service for 1 year	D	**6ES7 998-8XC01-8YE2**
Current S7 Manual Collection DVD and the three subsequent updates		

A: Subject to export regulations: AL: N and ECCN: EAR99S

D: Subject to export regulations: AL: N and ECCN: 5D992

SIPLUS SM 326 F digital input module

Overview



- Digital inputs for the fail-safe SIMATIC S7 systems
- They are suitable for connecting:
  - switches and 2-wire proximity switches (BEROs)
  - Sensors according to NAMUR and mechanical contacts, also for signals from hazardous areas
- With integral safety functions for fail-safe operation
- Can be used in fail-safe mode
  - Centrally: With S7-31xF-2 DP
  - Distributed in ET 200M: With SIMATIC IM 151-7 F-CPU, S7-31xF-2 DP, S7-416F-2 and S7-400F/FH
- Can be used in standard mode as an S7-300 module

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme/techdoku

SIPLUS SM 326 F digital input module	
Order No.	**6AG1 326-1BK02-2AB0**
Order No. based on	**6ES7 326-1BK02-0AB0**
Ambient temperature range	-25 ... +60 °C, condensation permissible
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX. For further information, refer to Environmental conditions of SIPLUS extreme (on pg. 5/30) or go to www.siemens.com/siplus-extreme
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.

Ordering data

		Order No.
SIPLUS SM 326 F digital input module		
(extended temperature range and medial exposure)		
24 inputs, 24 V DC	C	**6AG1 326-1BK02-2AB0**
Accessories		see SM 326 F digital input module, page 5/35

C: Subject to export regulations: AL: N and ECCN: EAR99H

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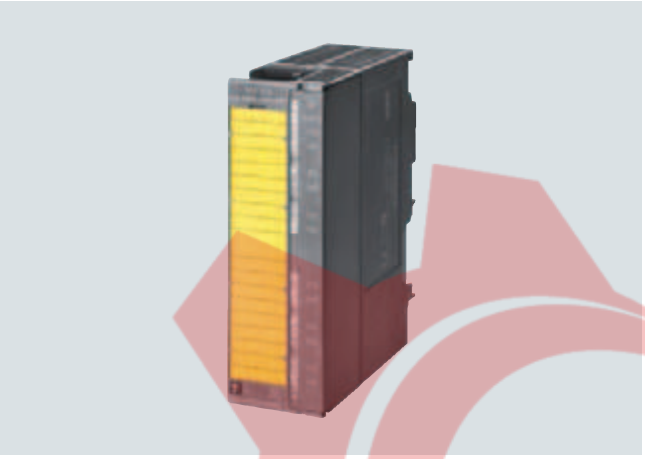
SIPLUS SM 336 F analog input module

Overview



- Analog inputs for the fail-safe SIMATIC S7 systems
- Applicable in the ET 200M distributed I/O device with IM 153-2 HF as well as centrally with SIMATIC S7-31xF-2 DP
- Properties of the SM 336; F-AI 6 x 0/4 ... 20 mA HART:
  - 6 analog inputs with galvanic isolation between channels and backplane bus
  - Input ranges: 0 mA to 20 mA, 4 mA to 20 mA
  - Short-circuit proof power supply from 2 or 4-wire transmitter via the module
  - External encoder supply possible
  - Applicable in safety mode
  - HART communication
  - Firmware update using HW Config
  - Identification data

SIPLUS SM 336 F analog input module	
Order No.	**6AG1 336-4GE00-4AB0**
Order No. based on	**6ES7 336-4GE00-0AB0**
Ambient temperature range	0 ... +60 °C, condensation permissible
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX. For further information, refer to Environmental conditions of SIPLUS extreme (on pg. 5/30) or go to www.siemens.com/siplus-extreme
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme/techdoku

Ordering data

		Order No.
SIPLUS SM 336 F analog input module		
(extended temperature range and medial exposure)		
6 inputs, 15 bit, 0/4 ... 20 mA HART	C	**6AG1 336-4GE00-4AB0**
Accessories		see SM 336 F analog input module, catalog ST 70 · 2009, page 4/118

C: Subject to export regulations: AL: N and ECCN: EAR99H

Overview

- For connecting up to 4 drives with analog setpoint interface or pulse-direction interface to a controller
- Operation with isochronous PROFIBUS DP
- Connectable drives:
  - Electrical drives
  - Hydraulic drives
  - Stepper drives
- Can be used with:
  - SIMATIC CPU 41x-2 DP, CPU 31x-2 DP, CPU 31xT-2 DP, WinAC RTX 2008
  - SIMOTION C2xx, SIMOTION P350, SIMOTION D4x5
- Can also be used with external encoders

Technical specifications

	6ES7 174-0AA10-0AA0
Supply voltages	
Rated value	
• 24 V DC	Yes
• permissible range, lower limit (DC)	20.4 V
• permissible range, upper limit (DC)	28.8 V
Current consumption	
Current consumption, max.	500 mA
from backplane bus 5 V DC, max.	100 mA
Power loss	
Power loss, typ.	12 W
Connection method	
required front connector	40-pin
Isochronous mode	
Isochronous mode	Yes
shortest clock pulse	1.5 ms
Digital inputs	
Number of digital inputs	10
Input voltage	
• for signal "0"	-3 to +5 V
• for signal "1"	11 to 30 V
Input current	
• for signal "0", max. (permissible quiescent current)	2 mA
• for signal "1", typ.	8 mA
Input delay (for rated value of input voltage)	
• for standard inputs - at "0" to "1", min.	15 µs
Cable length	
• Cable length, shielded, max.	100 m
Digital outputs	
Number of digital outputs	8
Short-circuit protection	Yes

	6ES7 174-0AA10-0AA0
Switching capacity of the outputs	
• with resistive load, max.	1 A
• on lamp load, max.	30 W
Lamp load, max.	30 W
Output voltage	
• Rated value (DC)	24 V; L+
• for signal "1", min.	L+ (-3 V)
• for signal "1" (DC), max.	3 V
Output current	
• for signal "1" permissible range for 0 to 55 °C, min.	5 mA
• for signal "1" permissible range for 0 to 55 °C, max.	300 mA
• for signal "0" residual current, max.	0.4 mA
Output delay with resistive load	
• 0 to "1", max.	500 µs
Switching frequency	
• with resistive load, max.	500 Hz
• with inductive load, max.	0.5 Hz
Cable length	
• Cable length, shielded, max.	600 m
Relay outputs	
Number of relay outputs	4
Number of operating cycles	50 000
Switching capacity of contacts	
• with resistive load, max.	1 A
Analog outputs	
Number of analog outputs	4
Output ranges, voltage	
• -10 to +10 V	Yes

IM 174 PROFIBUS module

Technical specifications (continued)

	6ES7 174-0AA10-0AA0
Analog value creation	
Integrations and conversion time/ resolution per channel	
• Resolution with overrange (bit including sign), max.	15 bit
Encoder supply	
5 V encoder supply	
• 5 V	Yes
• Output current, max.	1.2 A
• Cable length, max.	25 m
24 V encoder supply	
• 24 V	Yes
• Output current, max.	1.4 A
• Cable length, max.	100 m
Absolute encoder (SSI) encoder supply	
• Absolute encoder (SSI)	Yes
• Short-circuit protection	Yes
Encoder	
Number of connectable encoders, max.	4
Connectable encoders	
• Incremental encoder (symmetrical)	Yes
• Absolute encoder (SSI)	Yes
• 2-wire BEROS	Yes
- permissible quiescent current (2-wire BEROS), max.	2 mA
Encoder signals, incremental encoder (symmetrical)	
• Trace mark signals	A, notA, B, notB
• Zero mark signal	N, notN
• Input signal	5 V difference signal (phys. RS 422)
• Input frequency, max.	1 MHz
• Cable length, shielded, max.	35 m; 35 m at max. 500 kHz; 10 m at max. 1 MHz
Encoder signals, absolute encoder (SSI)	
• Input signal	5 V difference signal (phys. RS 422)
• Data signal	DATA, notDATA
• Clock signal	CL, notCL
• Telegram length	13, 21, 24 bit
• Clock frequency, max.	187.5 KHz 1.5 MHz (parameterizable)
• Binary code	1
• Gray code	1
• Cable length, shielded, max.	250 m; 250 m at 187.5 kHz, 10 m at 1.5 MHz

	6ES7 174-0AA10-0AA0
Number of drive interfaces	4
Analog drive	
• Setpoint signal	
- Short circuit proof	Yes; max. 45 mA, min. 3.3 kOhm load impedance
- Range of rated voltage	-10.5 V to +10.5 V
- Output current	-3 to +3 mA
• Output controller release	
- Number of relay contacts	4
- Switching voltage, max.	30 V
- Switching current, max.	1 A
- Switching capacity, max.	30 V·A
- Number of switching cycles, min.	50 000; at 30 V DC, 1 A
- Cable length (shielded), max.	35 m
Signal output I	
• Type	
- Number of relay contacts	2
• Differential output voltage, min.	
- Switching voltage, max.	30 V
• Differential output voltage for signal "0", max.	
- Switching current, max.	1 A
• Differential output voltage, for signal "1", min.	
- Switching capacity, max.	30 V·A
- Number of switching cycles, min.	at 30 V DC, 1 A
• Load impedance	
- Cable length (shielded), max.	35 m
Signal output II	
• Differential output voltage, min.	2 V; R = 100 Ohm
• Differential output voltage for signal "1", min.	3.7 V; 3.7 V at I = -20 mA; 4.5 V at I = -100 µA,
• Differential output voltage for signal "0", max.	1 V; if I = -20 mA
• Load resistance, min.	55 Ω
• Output current, max.	60 mA
Signal output III	
• Pulse frequency	750 kHz
• Cable length (shielded), max.	50 m; in hybrid operation with analog axes 35 m, in asymmetrical transmission 10 m
Interrupts/diagnostics/ status information	
Alarms	
• Diagnostic alarm	Yes

Technical specifications (continued)

	6ES7 174-0AA10-0AA0
Galvanic isolation	
Galvanic isolation digital inputs	
• Galvanic isolation digital inputs	Yes; to encoders, analog outputs, DP interface; no to other DI/DOs
Galvanic isolation digital outputs	
• Galvanic isolation digital outputs	Yes; to encoders, analog outputs, DP interface; no to other DI/DOs
Dimensions and weight	
Dimensions	
• Width	160 mm
• Height	125 mm
• Depth	118 mm
Weight	
• Weight, approx.	1 kg

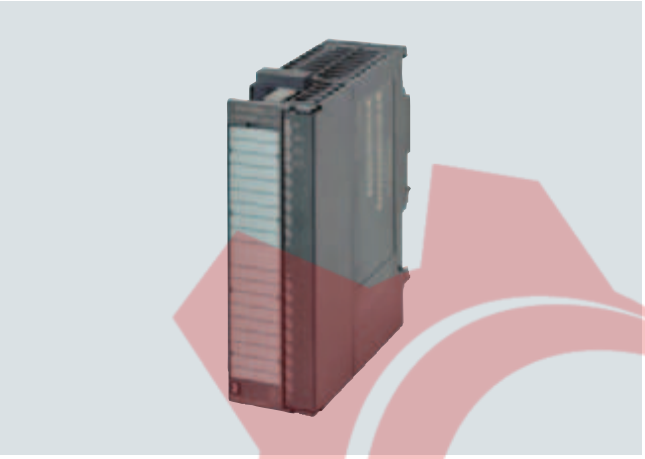
Ordering data

		Order No.
IM 174 PROFIBUS module	C	**6ES7 174-0AA10-0AA0**
PROFIBUS module for connecting analog drives and stepper drives to a controller		
Accessories		
Setpoint cable		
for the connection between IM 174 and SIMODRIVE 611-A		**6FX2 002-3AD01-** ■ ■ ■ ■
for the connection between IM 174 with 3 stepper drives and one SIMODRIVE (end of cable cut off)		**6FX2 002-3AD02-** ■ ■ ■ ■
0 m		**1**
100 m		**2**
200 m		**3**
0 m		**A**
10 m		**B**
20 m		**C**
30 m		**D**
40 m		**E**
50 m		**F**
60 m		**G**
70 m		**H**
80 m		**J**
90 m		**K**
0 m		**A**
1 m		**B**
2 m		**C**
3 m		**D**
4 m		**E**
5 m		**F**
6 m		**G**
7 m		**H**
8 m		**J**
0 m		**K**
0,0 m		**0**
0,1 m		**1**
0,2 m		**2**
0,3 m		**3**
0,4 m		**4**
0,5 m		**5**
0,6 m		**6**
0,7 m		**7**
0,8 m		**8**

C: Subject to export regulations: AL: N and ECCN: EAR99H

SIPLUS SIWAREX U

Overview



SIPLUS electronic weighing system SIWAREX U

SIPLUS SIWAREX U is a flexible weighing module for all simple weighing and force measuring tasks. The compact module can be integrated into SIMATIC automation systems without any problems. Complete data access is possible via the SIMATIC.

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme/techdoku

SIPLUS SIWAREX U electronic weighing system	
Order No.	**6AG1 950-2AA01-4AA0**
Order No. based on	**7MH4 950-2AA01**
Ambient temperature range	0 ... +60 °C, condensation permissible
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX. For further information, refer to Environmental conditions of SIPLUS extreme (on pg. 5/30) or go to www.siemens.com/siplus-extreme
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.

Ordering data

		Order No.
SIPLUS SIWAREX U		
(Medial exposure)		
for SIMATIC S7 and ET 200M, incl. bus connector		
Two-channel version for connecting two scales	C	**6AG1 950-2AA01-4AA0**
Accessories		see SIWAREX U, catalog ST 70 · 2009, page 4/169

C: Subject to export regulations: AL: N and ECCN: EAR99H

Overview

- The low-cost, complete solution for serial communication over a point-to-point connection
- RS 232C (V.24) and RS 422/485 (X.27)
- Implemented protocols:
  - ASCII
  - 3964 (R) (not for RS 485)
  - Printer driver
- Simple parameterization using tool integrated in STEP 7

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme/techdoku

SIPLUS CP 340 version	RS 422/485 (X.27)	RS 232 (V.24)	
Order No.	**6AG1 340-1CH02-2AE0**	**6AG1 340-1AH02-2AE0**	**6AG1 340-1AH02-2AY0**
Order No. based on	**6ES7 340-1CH02-0AE0**	**6ES7 340-1AH02-0AE0**	**6ES7 340-1AH02-0AE0**
Ambient temperature range	-25 ... +60 °C, condensation permissible		
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX. For further information, refer to Environmental conditions of SIPLUS extreme (on pg. 5/30) or go to www.siemens.com/siplus-extreme		
Conforms with standard for electronic equipment used on rolling stock (EN 50155, temperature T1, category 1).	No	No	Yes
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.		

Ordering data

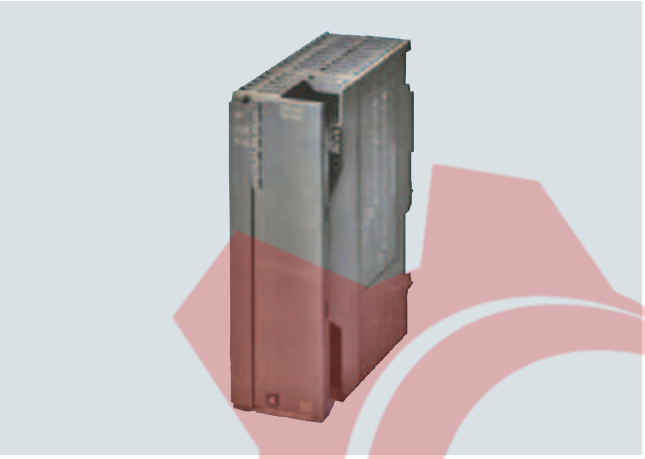
	Order No.
SIPLUS CP 340 communications processor RS 232 C	
(extended temperature range and medial exposure)	
with one RS 232C interface (V.24)	**6AG1 340-1AH02-2AE0**
acc. to EN 50155 C	**6AG1 340-1AH02-2AY0**
RS 232 connecting cable	
For linking to SIMATIC S7	
5 m	**6ES7 902-1AB00-0AA0**
10 m	**6ES7 902-1AC00-0AA0**
15 m	**6ES7 902-1AD00-0AA0**

C: Subject to export regulations: AL: N and ECCN: EAR99H

	Order No.
SIPLUS CP 340 communications processor RS 422/485	
(extended temperature range and medial exposure)	
With 1 RS 422/485 (X.27) interface	**6AG1 340-1CH02-2AE0**
RS 422/485 connecting cable	
for linking to SIMATIC S7	
5 m	**6ES7 902-3AB00-0AA0**
10 m	**6ES7 902-3AC00-0AA0**
50 m	**6ES7 902-3AG00-0AA0**

CP 341

Overview



- For quick, high-performance data exchange via point-to-point coupling
- 3 versions with different transmission physics:
  - RS 232C (V.24),
  - 20 mA (TTY),
  - RS 422/RS 485 (X.27)
- Implemented protocols: ASCII, 3964 (R), RK 512
- The following protocols can also be loaded: Modbus RTU
- Easy configuration using a parameterizing tool integrated in STEP 7

Technical specifications

	6ES7 341-1AH02-0AE0	6ES7 341-1BH02-0AE0	6ES7 341-1CH02-0AE0
Product type designation	CP 341 V2 RS232	CP 341 V2 TTY	CP 341 V2 RS422/485
Supply voltages			
Rated value			
• 24 V DC	Yes	Yes	Yes
Current consumption			
from backplane bus 5 V DC, max.	70 mA	70 mA	70 mA
from supply voltage L+, max.	100 mA	100 mA	100 mA
Power loss			
Power loss, max.	2.4 W	2.4 W	2.4 W
Power loss, typ.	1.6 W	1.6 W	1.6 W
Interfaces			
Number of interfaces	1; Isolated	1; Isolated	1; Isolated
Interface physics, 20 mA (TTY)		Yes	
Interface physics, RS 232C (V.24)	Yes		
Interface physics, RS 422/RS 485 (X.27)			Yes
Transmission rate, max.	115.2 kbit/s	19.2 kbit/s	115.2 kbit/s
Transmission rate, min.	0.3 kbit/s	0.3 kbit/s	0.3 kbit/s
Connection method			
PtP	9-pin sub D connector	9-pin sub D socket	15-pin sub D socket
Power supply	3 screw terminals: L+, M, GND	3 screw terminals: L+, M, GND	3 screw terminals: L+, M, GND
Point-to-point			
Cable length, max.	15 m	1 000 m	1 200 m
supported printers	Serial printers	Serial printers	Serial printers
Integrated protocol driver			
• 3964 (R)	Yes	Yes	Yes; not with RS 485
• ASCII	Yes	Yes	Yes
• RK512	Yes	Yes	Yes; not with RS 485
Telegram length, max.			
• 3964 (R)	4 096 byte	4 096 byte	4 096 byte
• ASCII	4 096 byte	4 096 byte	4 096 byte
• RK 512	4 096 byte	4 096 byte	4 096 byte

Technical specifications (continued)

	6ES7 341-1AH02-0AE0	6ES7 341-1BH02-0AE0	6ES7 341-1CH02-0AE0
Product type designation	CP 341 V2 RS232	CP 341 V2 TTY	CP 341 V2 RS422/485
Transmission speed, 20 mA (TTY)			
• with 3964 (R) protocol, max.		19.2 kbit/s	
• with ASCII protocol, max.		19.2 kbit/s	
• with printer driver, max.		19.2 kbit/s	
• with RK 512 protocol, max.		19.2 kbit/s	
Transmission speed, RS 422/485			
• with 3964 (R) protocol, max.			115.2 kbit/s
• with ASCII protocol, max.			115.2 kbit/s
• with printer driver, max.			115.2 kbit/s
• with RK 512 protocol, max.			115.2 kbit/s
Transmission speed, RS232			
• with 3964 (R) protocol, max.	115.2 kbit/s		
• with ASCII protocol, max.	115.2 kbit/s		
• with printer driver, max.	115.2 kbit/s		
• with RK 512 protocol, max.	115.2 kbit/s		
Software			
Block			
• FB length in RAM, max.	6 100 byte; Data communication, sending and receiving	6 100 byte; Data communication, sending and receiving	6 100 byte; Data communication, sending and receiving
Dimensions and weight			
Dimensions and weight			
• Width	40 mm	40 mm	40 mm
• Height	125 mm	125 mm	125 mm
• Depth	120 mm	120 mm	120 mm
Weight			
• Weight, approx.	300 g	300 g	300 g

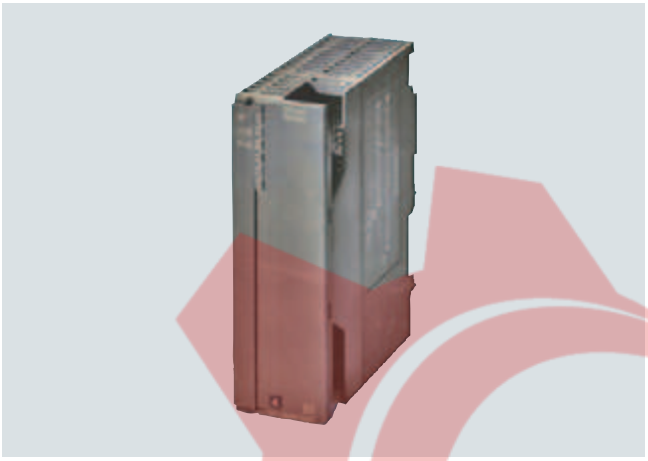
Ordering data

	Order No.
CP 341 communication module	**6ES7 341-1AH02-0AE0**
With one RS 232 C (V.24) interface	
RS 232 connecting cable	
For linking to SIMATIC S7	
5 m	**6ES7 902-1AB00-0AA0**
10 m	**6ES7 902-1AC00-0AA0**
15 m	**6ES7 902-1AD00-0AA0**
CP 341 communication module	**6ES7 341-1BH02-0AE0**
With one 20 mA (TTY) interface	
20 mA (TTY) connecting cable	
For linking to SIMATIC S7	
5 m	**6ES7 902-2AB00-0AA0**
10 m	**6ES7 902-2AC00-0AA0**
50 m	**6ES7 902-2AG00-0AA0**

	Order No.
CP 341 communication module	**6ES7 341-1CH02-0AE0**
With one RS 422/485 (X.27) interface	
RS 422/485 connecting cable	
For linking to SIMATIC S7	
5 m	**6ES7 902-3AB00-0AA0**
10 m	**6ES7 902-3AC00-0AA0**
50 m	**6ES7 902-3AG00-0AA0**
Loadable drivers for CP 341	
MODBUS master (RTU format)	
• Single license	**6ES7 870-1AA01-0YA0**
• Single license, without software or documentation	**6ES7 870-1AA01-0YA1**
MODBUS slave (RTU format)	
• Single license	**6ES7 870-1AB01-0YA0**
• Single license, without software or documentation	**6ES7 870-1AB01-0YA1**

SIPLUS CP 341

Overview



- For fast, high-performance serial data exchange via point-to-point coupling
- 3 versions with different physical transmission characteristics:
  - RS 232C (V.24),
  - 20 mA (TTY),
  - RS 422/RS 485 (X.27)
- Implemented protocols: ASCII, 3964 (R), RK 512, customized protocols (can be reloaded)
- Simple parameterization using tool integrated in STEP 7

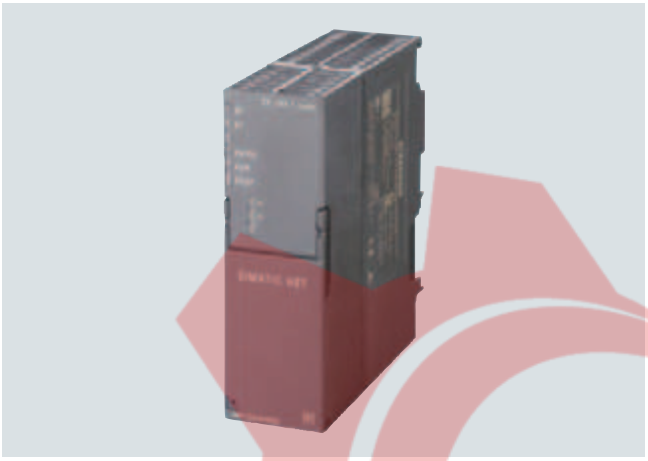
SIPLUS CP 341	RS 232C interface (V.24)	RS 422/485 (X.27) interface
Order No.	**6AG1 341-1AH02-7AE0**	**6AG1 341-1CH02-7AE0**
Order No. based on	**6ES7 341-1AH02-0AE0**	**6ES7 341-1CH02-0AE0**
Ambient temperature range	- 25 ... +70 °C, condensation permissible	
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX. For further information, refer to Environmental conditions of SIPLUS extreme (on pg. 5/30) or go to www.siemens.com/siplus-extreme.	
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.	

Ordering data

		Order No.			Order No.
SIPLUS CP 341 communication module (extended temperature range and medial exposure) With one RS 232 C (V.24) interface	C	**6AG1 341-1AH02-7AE0**	**SIPLUS CP 341 communication module** (extended temperature range and medial exposure) With one RS 422/485 (X.27) interface	C	**6AG1 341-1CH02-7AE0**
			Accessories		see CP 341, page 5/47

C: Subject to export regulations: AL: N and ECCN: EAR99H

Overview



ISO	TCP/ UDP	PN	MRP	IT	IP-R	PG/OP	S7/S5
	●	●	●			●	●

- Interface for the SIMATIC S7-300 to Industrial Ethernet (not for SINUMERIK)
  - 2 x RJ45 interface for 10/100 Mbit/s full/half duplex connection (with autosensing for automatic switchover and autocrossover function)
  - Integral 2-port real-time switch ERTEC
  - Multi-protocol operation with TCP and UDP transport protocol and PROFINET I/O
  - Keep Alive function
- Communication services:
  - Open communication (TCP/IP and UDP)
  - PG/OP communication
  - S7 communication (server)
  - PROFINET IO Device
- Multicast for UDP
- Remote programming and initial start-up is possible exclusively over Industrial Ethernet
- IT communication
  - Web function
- Integration into network management through SNMP
- Configuring with STEP 7
- Cross-network programming device/operator panel communication through S7 routing
- Diagnostic possibilities in STEP 7 and with web browser

For further technical documentation on SIPLUS, see:
http://www.siemens.com/siplus-extreme/techdoku

	SIPLUS CP 343-1 Lean	
Order No.	**6AG1 343-1CX10-4XE0**	**6AG1 343-1CX10-2XE0**
Order No. based on	**6GK7 343-1CX10-0XE0**	**6GK7 343-1CX10-0XE0**
Ambient temperature range	0 ... +60 °C, condensation permissible	-25 ... +60 °C, condensation permissible
Ambient conditions	Resistant in accordance with EN60721 to chemically (-3C4), mechanically (-3S4) and biologically (-3B2) active substances and compliant with ISA S71.04 G1, G2, G3, GX. For further information, refer to Environmental conditions of SIPLUS extreme (on pg. 5/30) or go to www.siemens.com/siplus-extreme.	
Technical data	The technical data of the standard product apply with the exception of the environmental conditions.	

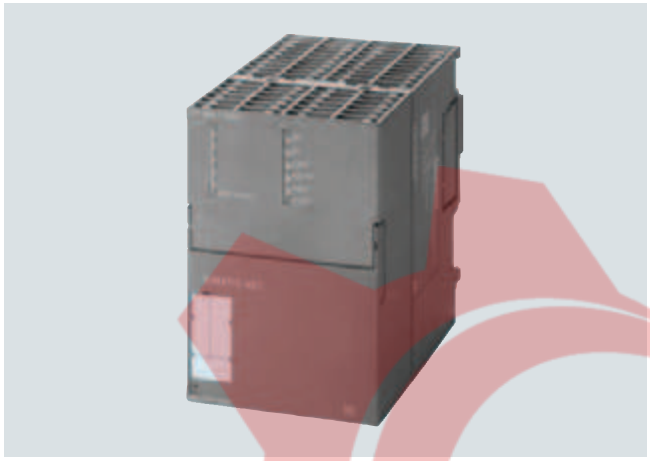
Ordering data

	Order No.
SIPLUS CP 343-1 Lean communications processor (extended temperature range and medial exposure) For connecting SIMATIC S7-300 to Industrial Ethernet through TCP/IP and UDP, Multicast, S7 communication, open communication (SEND/RECEIVE), FETCH/WRITE, PROFINET IO device, integral 2-port switch ERTEC, comprehensive diagnostics facilities, module replacement without PG, SNMP, initial commissioning over LAN; with electronic manual on CD-ROM	
0 ... +60 °C, condensation permissible	**6AG1 343-1CX10-4XE0**
-25 ... +60 °C, condensation permissible	**6AG1 343-1CX10-2XE0**

	Order No.
Accessories	see CP 343-1 Lean, catalog ST 70 · 2009, page 4/207

CP 343-1 ERPC

Overview



ISO	TCP/ UDP	PN	MRP	IT	IP-R	PG/OP	S7/S5
	●					●	●

- The CP 343-1 ERPC (Enterprise Connect) is a communications processor for connecting the SIMATIC S7-300 to an Industrial Ethernet

- Support of a connection of the SIMATIC S7-300 to various database systems for the vertical integration by means of a firmware expansion from ILS-Technology to be ordered separately
- RJ45 interface for 10/100/1000 Mbit/s full/half duplex with autosensing/autonegotiation/autocrossover and sleeve
- Communication services
  - Open communication (SEND/RECEIVE)
  - PG/OP communication
  - S7 communication (client, server, multiplexing) incl. routing
- Access protection by means of a configurable IP access list
- Remote programming and first commissioning via Industrial Ethernet
- Configuring with STEP 7
- Time synchronization by means of NTP or SIMATIC procedure
- Support of module replacement without programming device; all configuration data is stored on the C-PLUG.
  When using the database function, the CP 343-1 ERPC must be prepared for the exchange, i.e. the firmware extension from ILS Technology must already be installed on the replacement module.
- Extensive diagnostics functions via STEP 7 or web browser
- Integration into network management systems through the support of SNMP V1 MIB-II

Technical specifications

	6GK7 343-1FX00-0XE0
Product type designation	**CP 343-1 ERPC**
Data transmission rate	
Transmission rate at interface 1	10 … 1 000 Mbit/s
Interfaces	
Number of electrical connections	
• at interface 1 in accordance with Industrial Ethernet	1
• For power supply	1
Design of electrical connection	
• at interface 1 in accordance with Industrial Ethernet	RJ45 port
• For power supply	2-pin plug-in terminal strip
Design of the swap medium C-Plug	Yes
Supply voltage, current consumption, power loss	
Type of power supply	DC
Power supply	
• 1 from backplane bus	5 V
• External	24 V
Relative positive tolerance at 24 V DC	20 %
Relative negative tolerance at 24 V DC	15 %

	6GK7 343-1FX00-0XE0
Product type designation	**CP 343-1 ERPC**
Current consumed	
• Typical from backplane bus at 5 V DC	0.3 A
• Maximum from external power supply for 24 V DC	0.6 A
Effective power loss	14.7 W
Permitted ambient conditions	
Ambient temperature	
• During operating phase	0 … 60 °C
• During storage	-40 … +70 °C
• During transport	-40 … +70 °C
Relative humidity at 25 °C without condensation during operating phase, maximum	95 %
IP degree of protection	IP 20
Design, dimensions and weights	
Module format	Compact module S7-300 double width
Width	80 mm
Height	125 mm
Depth	120 mm
Net weight	0.8 kg

Technical specifications (continued)

	6GK7 343-1FX00-0XE0
Product type designation	**CP 343-1 ERPC**
Performance data	
Performance data Open communication	
Number of possible connections for open communication by means of SEND/RECEIVE blocks, maximum	8
Data volume	
• As user data per connection for open communication by means of SEND/RECEIVE blocks, maximum	8 Kibyte
• As user data per ISO on TCP connection for open communication by means of SEND/RECEIVE blocks, maximum	8 Kibyte
• As user data per TCP connection for open communication by means of SEND/RECEIVE blocks, maximum	8 Kibyte
• As user data per UDP connection for open IE communication by means of SEND/RECEIVE blocks, maximum	2 Kibyte
Number of multicast stations	8
Performance data S7 communication	
Number of possible connections for S7 communication	
• Maximum	8
• For PG/OP connections, maximum	8
Performance data Multiprotocol operation	
Number of active connections for multiprotocol operation	32
Performance data IT functions	
Number of possible connections as server with HTTP, maximum	1
Number of possible write cycles of the flash memory cells	100 000

	6GK7 343-1FX00-0XE0
Product type designation	**CP 343-1 ERPC**
Performance data ERPC functions	
Number of configurable ERPC symbols for database access	
• Per CPU, maximum	2 000
• Per logical trigger, maximum	255
Data quantity as user data and header information per logical trigger	8 Kibyte
Product functions Management, configuration, programming	
Product function: MIB support	Yes
Protocol is supported	
• SNMP v1	Yes
• DCP	Yes
• LLDP	Yes
Configuration software required	NCM S7 for Industrial Ethernet (is delivered with STEP 7 V5.x)
Product functions Diagnostics	
Product function: Web-based diagnostics	Yes
Product functions Redundancy	
Product function	
• Ring redundancy	No
Product functions Security	
Product function	
• ACL - IP-based	Yes
• Switching-off non-required services	Yes
• Blocking of communication via physical ports	Yes
Product functions Time	
Product function	
• SICLOCK support	No
• Passing-on of time synchronization	Yes
NTP protocol is supported	Yes

CP 343-1 ERPC

Ordering data		Order No.
CP 343-1 communications processor ERPC (Enterprise Connect)		**6GK7 343-1FX00-0XE0**
For the connection of SIMATIC S7-300 to Industrial Ethernet and for the support of the database connection of the SIMATIC S7-300 to various databases; TCP/UDP, S7 communication, open communication (SEND/RECEIVE), with and without RFC 1006, multicast, web server, setting of CPU's clock using SIMATIC procedures and NTP, access protection via IP access list, SNMP, DHCP, initialization over LAN 10/100/1000 Mbit/s; with electronic manual on DVD, C-PLUG included in scope of delivery		
Accessories		
C-PLUG		**6GK1 900-0AB00**
Swap medium for simple replacement of devices in the event of a fault; for recording configuration or engineering and application data; can be used for SIMATIC NET products with C-PLUG slot		
SOFTNET Edition 2008 for Industrial Ethernet		
Software for S7 and open communication, incl. OPC server, PG/OP communication and NCM PC, runtime software, software and electronic manual on CD-ROM, license key on USB flash drive, Class A, for 32-bit Windows XP Professional SP2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1; Windows 2008 Server; German/English		
SOFTNET-S7 Edition 2008 for Industrial Ethernet		
up to 64 connections		
• Single license for 1 installation	D	**6GK1 704-1CW71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: current software version		**6GK1 704-1CW00-3AL0**
• Upgrade from Edition 2006 and higher to Edition 2008	D	**6GK1 704-1CW00-3AE0**
• Upgrade from V6.0, V6.1, V6.2 or V6.3 to Edition 2008	D	**6GK1 704-1CW00-3AE1**

		Order No.
SOFTNET Edition 2008 for Industrial Ethernet		
SOFTNET-S7 Lean Edition 2008 for Industrial Ethernet		
up to 8 connections		
• Single license for 1 installation	D	**6GK1 704-1LW71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: current software version		**6GK1 704-1LW00-3AL0**
• Upgrade from Edition 2006 and higher to Edition 2008	D	**6GK1 704-1LW00-3AE0**
• Upgrade from V6.0, V6.1, V6.2 or V6.3 to Edition 2008	D	**6GK1 704-1LW00-3AE1**
S7-1613 Edition 2008		
Software for S7 and open communication, incl. PG/OP communication, OPC server and NCM PC; up to 120 connections, runtime software, software and electronic manual on CD-ROM, license key on USB stick, Class A, for 32-bit Windows XP Professional SP2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1; Windows 2008 Server; for CP 1613/CP 1613 A2/ CP 1623; German/English		
• Single license for 1 installation	D	**6GK1 716-1CB71-3AA0**
• Software Update Service for 1 year, with automatic extension; requirement: current software version		**6GK1 716-1CB00-3AL0**
• Upgrade S7-1613, Edition 2006 or higher, to S7-1613 Edition 2008	D	**6GK1 716-1CB00-3AE0**
• Upgrade S7-1613 from V6.0, V6.1, V6.2 or V6.3 to S7-1613 Edition 2008	D	**6GK1 716-1CB00-3AE1**
IE FC RJ45 Plug 180		
RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface		
• 1 pack = 1 unit		**6GK1 901-1BB10-2AA0**
• 1 pack = 10 units		**6GK1 901-1BB10-2AB0**
• 1 pack = 50 units		**6GK1 901-1BB10-2AE0**

D: Subject to export regulations: AL: N and ECCN: 5D992

Ordering data	Order No.
IE FC TP Standard Cable GP 2 x 2 (Type A) 4-core, shielded TP installation cable for connection to IE FC outlet RJ45/ IE FC RJ45 plug; PROFINET-compatible; with UL approval; sold by the meter; max. length 1 000 m, minimum order 20 m	**6XV1 840-2AH10**
SCALANCE X308-2 Industrial Ethernet Switch 2 x 1000 Mbit/s multimode fiber-optic cable ports (SC sockets), 1 x 10/100/1000 Mbit/s RJ45 port, 7 x 10/100 Mbit/s RJ45 ports; for glass fiber-optic cable (multimode) up to 750 m long	**6GK5 308-2FL00-2AA3**
IE FC RJ45 Plug 4 x 2 RJ45 plug connector for Industrial Ethernet (10/100/1000 Mbit/s) with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface	
• 1 pack = 1 unit	**6GK1 901-1BB11-2AA0**
• 1 pack = 10 units	**6GK1 901-1BB11-2AB0**
• 1 pack = 50 units	**6GK1 901-1BB11-2AE0**
IE FC TP standard cable GP 4 x 2 8-core, shielded TP installation cable for universal use; with UL approval; sold by the meter; max. length 1 000 m; minimum order 20 m	
• AWG 22, for connection to IE FC RJ45 Modular Outlet	**6XV1 870-2E**
• AWG 24, for connection to IE FC RJ45 Plug 4 x 2	**6XV1 878-2A**

	Order No.
IE FC TP Flexible Cable GP 4 x 2 8-core, shielded TP installation cable for occasional movement; with UL approval; sold by the meter; max. length 1 000 m; minimum order 20 m	
• AWG 24, for connection to IE FC RJ45 Plug 4 x 2	**6XV1 878-2B**
STEP 7 Version 5.4 *Target system:* SIMATIC S7-300/400, SIMATIC C7, SIMATIC WinAC *Requirements:* Windows XP Prof., Vista Ultimate, Vista Business *Type of delivery:* German, English, French, Spanish, Italian; incl. license key on USB stick, with electronic documentation	
Floating license on DVD	**6ES7 810-4CC08-0YA5**
Rental license for 50 hours	**6ES7 810-4CC08-0YA6**
Software Update Service on DVD (requires current software version)	**6ES7 810-4BC01-0YX2**
Upgrade Floating License 3.x/4.x/5.x to V5.4; on DVD	**6ES7 810-4CC08-0YE5**
Trial License STEP 7 V5.4; on DVD, 14 day trial	**6ES7 810-4CC08-0YA7**
deviceWISE Embedded Edition for SIMATIC S7 Firmware extension for connection to various database systems	See deviceWISE Embedded Edition for SIMATIC S7 ILS Technology LLC; 5300 Broken Sound Blvd. Suite 150 Boca Raton, FL, USA, 33487 Tel.: +1-561-982-9898 x124 Fax.: +1-561-982-8638 E-Mail: devicewise@ilstechnology.com

5

CP 343-1 BACnet

Overview

BACnet	TCP/ UDP	PN	MRP	IT	IP-R	PG/OP	S7/S5
●	●					●	●

BACnet (**B**uilding **A**utomation and **C**ontrol **Net**works) is a communication protocol for data networks in building automation and control developed by ASHRAE (American Society of Heating, Refrigeration and Air Conditioning Engineers Inc.). It is equally suitable for both the management and automation level and is recognized as an ANSI, CEN and ISO standard.

- The CP 343-1 BACnet is a communications processor for the connection of the SIMATIC S7-300 to the Industrial Ethernet and via the BACnet protocol it also permits the integration in systems that support the BACnet protocol
- 2 x RJ45 interfaces for 10/100 Mbit/s full/half duplex connection with autosensing/autonegotiation/autocrossover functionality
- Integrated 2-port switch
- Communication services
  - Open communication (SEND/RECEIVE)
  - PG/OP communication (TCP/IP)
  - S7 communication (server)
  - BACnet communication based on TCP/IP, BACnet server according to EN 16484, Part 5
- Extensive diagnostics functions via STEP 7
- Integration into network management systems through the support of SNMP V1 MIB-II

Technical specifications

	6FL4 343-1CX10-0XE0
Product type designation	**CP 343-1 BACnet**
Transmission rate	
Transmission rate at interface 1	10 … 100 Mbit/s
Interfaces	
Number of electrical connections	
• at interface 1 in accordance with Industrial Ethernet	2
• For power supply	1
Design of electrical connection	
• at interface 1 in accordance with Industrial Ethernet	RJ45 port
• For power supply	2-pin plug-in terminal strip
Supply voltage, current consumption, power loss	
Type of power supply	DC
Power supply	
• 1 from backplane bus	5 V
• External	24 V
Relative positive tolerance at 24 V DC	20%
Relative negative tolerance at 24 V DC	15%
Current consumed	
• from backplane bus at 5 V DC, typical	0.2 A
• Maximum from external power supply for 24 V DC	0.2 A
Effective power loss	5.8 W

	6FL4 343-1CX10-0XE0
Product type designation	**CP 343-1 BACnet**
Permitted ambient conditions	
Ambient temperature	
• During operating phase	0 … 60 °C
• During storage	-40 … +70 °C
• During transport	-40 … +70 °C
Relative humidity at 25 °C without condensation during operating phase, maximum	95%
IP degree of protection	IP20
Design, dimensions and weights	
Module format	Compact module S7-300, single-width
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.22 kg
Product properties, functions, components General	
Maximum number of modules per CPU	1
Number of modules - Note	Without BACnet protocol: Max. 8 per station
Performance data	
Performance data Open communication	
Number of possible connections for open communication by means of SEND/RECEIVE blocks, maximum	8

Technical specifications (continued)

	6FL4 343-1CX10-0XE0
Product type designation	**CP 343-1 BACnet**
Data volume	
• As user data per TCP connection for open communication by means of SEND/RECEIVE blocks, maximum	8 Kibyte
• As user data per UDP connection for open IE communication by means of SEND/RECEIVE blocks, maximum	2 Kibyte
Number of multicast stations	8
Performance data S7 communication	
Number of possible connections for S7 communication	
• Maximum	4
• Maximum with PG connections	2
• Maximum with PG/OP connections	2
Performance data Multiprotocol operation	
Number of active connections in multiprotocol mode	12
Performance data BACnet	
BACnet/IP protocol is supported	Yes
Product function	
• BACnet device type AAC (Advanced Application Controller)	Yes
• Peer-to-peer between BACnet automation stations	Yes
• BBMD (BACnet Broadcast Management Device)	Yes
Maximum number of BACnet I/O objects	800
Maximum number of BACnet objects, total	1 500
Influence on the cycle time of the automation system	No effect
Required storage capacity of S7 CPU's main memory	4 Kibyte
Standard for BACnet	Communication based on TCP/IP, BACnet server in accordance with EN 16484, Part 5

	6FL4 343-1CX10-0XE0
Product type designation	**CP 343-1 BACnet**
Product functions Management, configuration, programming	
Product function: MIB support	Yes
Protocol is supported	
• SNMP v1	Yes
• DCP	Yes
• LLDP	Yes
Configuration software required	STEP 7 version V5.4 SP5 and higher plus HSP. An additional runtime license "Building Integration" (reference number S55372-C107) is required to use the BACnet protocol on the module. To order the license, please contact your regional Siemens partner.
Product functions Diagnostics	
Product function: Web-based diagnostics	No
Product functions Switch	
Product function: Switch	Yes
Product function	
• Switch-managed	No
• Configuration with STEP 7	Yes
Product functions Time	
Product function	
• SICLOCK support	Yes
• Passing-on of time synchronization	Yes
Protocol is supported NTP	Yes

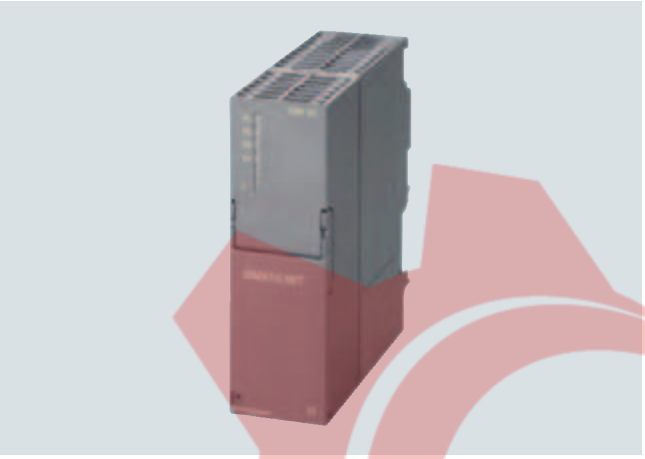
CP 343-1 BACnet

Ordering data	Order No.
CP 343-1 BACnet communications processor	**6FL4 343-1CX10-0XE0**
for the connection of SIMATIC S7-300 to Industrial Ethernet and for the integration of the SIMATIC S7 into BACnet systems; BACnet protocol, S7 communication, open communication (SEND/RECEIVE), with/without RFC 1006; UDP, PG/OP communication	
Accessories	
IE FC TP Standard Cable GP 2 x 2 (Type A)	
4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/IE FC RJ45 Plug; PROFINET-compatible; with UL approval;	
Sold by the meter; max. length 1 000 m, minimum order 20 m	**6XV1 840-2AH10**
IE FC RJ45 Plug 145	
RJ45 plug connector 2 x 2 for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 145° cable outlet	
• 1 pack = 1 unit	**6GK1 901-1BB30-0AA0**
• 1 pack = 10 units	**6GK1 901-1BB30-0AB0**
• 1 pack = 50 units	**6GK1 901-1BB30-0AE0**

	Order No.
SCALANCE X204-2 Industrial Ethernet switch	
Industrial Ethernet switches with integrated SNMP access, online diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; with integrated redundancy manager; incl. operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM; four 10/100 Mbit/s RJ45 ports and two FO ports	**6GK5 204-2BB10-2AA3**
STEP 7 Version 5.4	
Target system: SIMATIC S7-300/400, SIMATIC C7, SIMATIC WinAC *Requirements:* Windows XP Prof., Vista Ultimate, Vista Business *Type of delivery:* German, English, French, Spanish, Italian; incl. license key on USB stick, with electronic documentation	
Floating license on DVD	**6ES7 810-4CC08-0YA5**
Rental license for 50 hours	**6ES7 810-4CC08-0YA6**
Software Update Service on DVD (requires current software version)	**6ES7 810-4BC01-0YX2**
Upgrade Floating License 3.x/4.x/5.x to V5.4; on DVD	**6ES7 810-4CC08-0YE5**
Trial License STEP 7 V5.4; on DVD, 14 day trial	**6ES7 810-4CC08-0YA7**

CSM 377 unmanaged

Overview



- Unmanaged switch for the connection of a SIMATIC S7-300 with integral PROFINET interface or with an Industrial Ethernet CP or ET 200M to an Industrial Ethernet in an electrical linear, tree or star structure
- As many as three additional nodes can be connected
- As an unmanaged switch, the CSM 377 is used for integrating small machines into existing automation networks or for the standalone operation of the machines
- Simple, space-saving attachment to S7-300 mounting rail due to design as single-width module in S7-300 format
- Low-cost solution for implementing small, local Ethernet networks
- Rugged, industry-standard node connections with PROFINET-compliant RJ45 connectors that latch onto the enclosure to offer additional strain and bending relief

Technical specifications

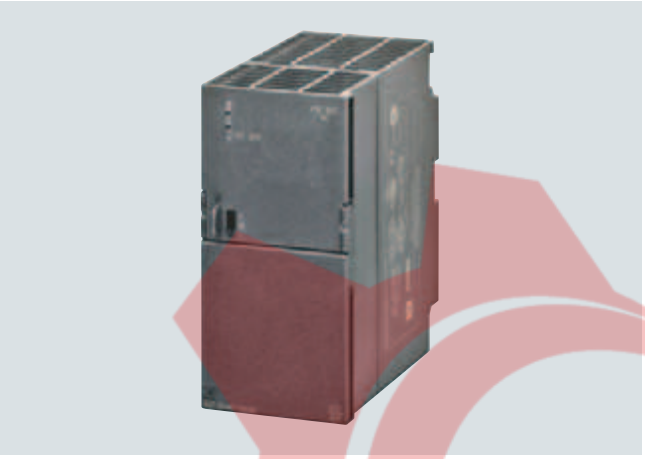
	6GK7 377-1AA00-0AA0
Product type designation	**CSM 377**
Transmission rate	
Transmission rate 1	10 Mbit/s
Transmission rate 2	100 Mbit/s
Interfaces	
Number of electrical/optical connections for network components or terminal equipment, maximum	4
Number of electrical connections	
• for network components or terminal equipment	4
• for power supply	1
Design of electrical connection	
• for network components or terminal equipment	RJ45 port
• for signaling contact	-
• for power supply	2-pin terminal block
Supply voltage, current consumption, power loss	
Type of voltage	
• of power supply	DC
External power supply	24 V
• Minimum	19.2 V
• Maximum	28.8 V
Current consumed, maximum	0.07 A
Product component: fusing at power supply input	Yes
Design of fusing at input for power supply	0.5 A / 60 V
Effective power loss at 24 V with DC	1.6 W
Permissible ambient conditions	
Ambient temperature	
• During operating phase	0 … 60 °C
• During storage	-40 … +70 °C
• During transport	-40 … +70 °C
Relative humidity at 25 °C without condensation during operating phase, maximum	95%
IP degree of protection	IP 20
Design, dimensions and weights	
Design	SIMATIC S7-300 design
Width	40 mm
Height	125 mm
Depth	118 mm
Net weight	0.2 kg
Type of mounting	
• 35 mm DIN rail mounting	No
• Wall mounting	No
• S7-300 rail mounting	Yes
Product properties, functions, components General	
Cascading with star topology	-
Product function: Switch-managed	No
Standards, specifications, approvals	
Standard	
• for EMC of FM	FM3611: Class 1, Division 2, Group A, B, C, D / T.., CL.1, Zone 2, GP. IIC, T.. Ta
• For hazardous zone	EN 60079-15, II 3 G Ex nA II T.., KEMA 06 ATEX 0021 X
• For CSA and UL safety	UL 508, CSA C22.2 No. 142
• for hazardous zone of CSA and UL	UL 1604 and UL 2279-15 (Hazardous Location)
• For emitted interference	EN 61000-6-4
• For noise immunity	EN 61000-6-2
Certificate of suitability	EN 61000-6-2, EN 61000-6-4
• CE mark	Yes
• C-Tick	Yes

CSM 377 unmanaged

Ordering data	Order No.
CSM 377 Compact Switch Module Unmanaged switch for the connection of a SIMATIC S7-300, ET200M and as many as three other nodes to an Industrial Ethernet operating at 10/100 Mbit/s; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module incl. electronic equipment manual on CD-ROM	**6GK7 377-1AA00-0AA0**
Accessories	
IE TP cord RJ45/RJ45 TP cable 4 x 2 with 2 RJ45 connectors	
• 0.5 m	**6XV1 870-3QE50**
IE FC TP Standard Cable GP 2 x 2 (Type A) 4-core, shielded TP installation cable for connection to IE FC outlet RJ45/ IE FC RJ45 plug; PROFINET-compliant; with UL approval; sold by the meter; max. quantity 1 000 m, minimum order 20 m	**6XV1 840-2AH10**
IE FC Trailing Cable 2 x 2 (Type C) 4-core, shielded TP installation cable for connection to IE FC outlet RJ45/ IE FC RJ45 plug 180/90 for tow chain use; PROFINET-compliant; with UL approval; sold by the meter; max. quantity 1 000 m, minimum order 20 m	**6XV1 840-3AH10**

	Order No.
IE FC RJ45 Plug 180 RJ45 plug connector for Industrial Ethernet with a rugged metal housing and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface	
• 1 pack = 1 item	**6GK1 901-1BB10-2AA0**
• 1 pack = 10 items	**6GK1 901-1BB10-2AB0**
• 1 pack = 50 items	**6GK1 901-1BB10-2AE0**
IE FC stripping tool Pre-adjusted stripping tool for the fast stripping of Industrial Ethernet FC cables	**6GK1 901-1GA00**
IE FC RJ45 outlet For connecting Industrial Ethernet FC cables and TP Cords; block pricing for quantities of more than 10 or 50 units	**6GK1 901-1FC00-0AA0**
SIMATIC NET Manual Collection Electronic manuals for communication systems, communication protocols, and communication products; on DVD; German/English	**6GK1 975-1AA00-3AA0**

Overview



- Load current supplies for S7-300/ET 200M
- To convert the line voltage to the required operating voltage (24 V DC)
- Output current 2 A, 5 A or 10 A

Technical specifications

Power supply, type	2 A	5 A	10 A
Order number	**6ES7 307-1BA01-0AA0**	**6ES7 307-1EA01-0AA0**	**6ES7 307-1KA02-0AA0**
Input	1-phase AC	1-phase AC	1-phase AC
Rated voltage $V_{in\ rated}$	**120/230 V AC** automatic range switching	**120/230 V AC** automatic range switching	**120/230 V AC** automatic range switching
Voltage range	85 ... 132 V/170 ... 264 V	85 ... 132 V/170 ... 264 V	85 ... 132 V/170 ... 264 V
Overvoltage resistance	2.3 x V_{in} rated, 1.3 ms	2.3 x V_{in} rated, 1.3 ms	2.3 x V_{in} rated, 1.3 ms
Line buffering at $I_{out\ rated}$	> 20 ms at V_{in} = 93/187 V	> 20 ms at V_{in} = 93/187 V	> 20 ms at V_{in} = 93/187 V
Rated line frequency; rated line-frequency range	50/60 Hz, 47 ... 63 Hz	50/60 Hz; 47 ... 63 Hz	50/60 Hz; 47 ... 63 Hz
Rated current $I_{in\ rated}$	0.9/0.5 A	2.3/1.2 A	4.2/1.9 A
Switch-on current limit (+25 °C)	< 22 A, < 3 ms	< 20 A, < 3 ms	< 55 A, < 3 ms
I^2t	< 1.0 A^2s	< 1.2 A^2s	< 3.3 A^2s
Built-in line-side fuse	T 1.6 A/250 V (inaccessible)	T 3.15 A/250 V (inaccessible)	T 6.3 A/250 V (inaccessible)
Recommended miniature circuit-breaker (IEC 898) in the supply line	3 A, C Characteristic	At and above 6 A, C characteristic	At and above 10 A, C characteristic
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage $V_{out\ rated}$	**24 V DC**	**24 V DC**	**24 V DC**
Total tolerance	±3 %	±3 %	±3 %
• Static line smoothing	approx. 0.1 %	approx. 0.1 %	approx. 0.1 %
• Static load smoothing	approx. 0.2 %	approx. 0.5 %	approx. 0.5 %
Ripple content	< 50 m Vpp (typ. < 5 m Vpp)	< 50 mV_{pp} (typ. 10 mV_{pp})	< 50 mV_{pp} (typ. 15 mV_{pp})
Spikes (bandwidth: 20 MHz)	< 150 mV_{pp} (typ. < 20 mV_{pp})	< 150 mV_{pp} (typ. 20 mV_{pp})	< 150 mV_{pp} (typ. 60 mV_{pp})
Adjustment range	-	-	-
Status indicator	Green LED for 24 V OK	Green LED for 24 V OK	Green LED for 24 V OK
Response on activation/deactivation	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)
Startup delay/voltage rise	< 2 s/typ. 10 ms	< 2 s/typ. 10 ms	< 2 s/typ. 10 ms
Rated current $I_{out\ rated}$	**2 A**	**5 A**	**10 A**
Current range			
• Up to +60 °C	0 ... 2 A	0 ... 5 A	0 ... 10 A
• Derating	-	-	-

Power supplies

Technical specifications (continued)

Power supply, type	2 A	5 A	10 A
Order number	**6ES7 307-1BA01-0AA0**	**6ES7 307-1EA01-0AA0**	**6ES7 307-1KA02-0AA0**
Dynamic overcurrent on			
• Power-up on short-circuit	Typ. 9 A for 90 ms	typ. 20 A for 100 ms	typ. 38 A for 80 ms
• Short-circuit during operation	Typ. 9 A for 90 ms	typ. 20 A for 100 ms	typ. 38 A for 80 ms
Parallel switching for enhanced performance	Yes	Yes	Yes
Efficiency			
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$	approx. 84 %	approx. 87 %	approx. 90 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$	approx. 9 W	approx. 18 W	approx. 27 W
Closed-loop control			
Dynamic line smoothing ($V_{in\ rated}$ ±15 %)	typ. ±0.1 % V_{out}	typ. ±0.1 % V_{out}	typ. ± 0.1 % V_{out}
Dynamic load smoothing (I_{out}: 50/100/50 %)	typ. ±0.8 % V_{out}	typ. ±1 % V_{out}	typ. ± 2 % V_{out}
Load-step settling time			
• 50 at 100 %	< 1 ms (typ. 0.5 ms)	typ. 0.3 ms	< 0.1 ms
• 100 at 50%	< 1 ms (typ. 0.5 ms)	typ. 0.3 ms	< 0.1 ms
Protection and monitoring			
Output overvoltage protection	Additional control loop, shutdown at approx. 28.8 V, automatic restart	Additional control loop, shutdown at approx. 28.8 V, automatic restart	Additional control loop, shutdown at approx. 28.8 V, automatic restart
Current limit	2.2 ... 2.6 A	5.5 ... 6.5 A	11 ... 12 A
Short-circuit protection	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart
Sustained-short-circuit-current rms value	< 2 A	< 7 A	< 12 A
Overload/short-circuit indicator	-	-	-
Safety			
Primary/secondary galvanic isolation	Yes, safety extra-low output voltage Vout to EN 60950-1 and EN 50178	Yes, safety extra-low output voltage Vout to EN 60950-1 and EN 50178	Yes, safety extra-low output voltage $V_{out}$to EN 60950-1 and EN 50178
Protection class	Class I	Class I	Class I
Leakage current	< 3.5 mA (typ. 0.5 mA)	< 3.5 mA (typ. 0.5 mA)	< 3.5 mA (typ. 0.6 mA)
Safety test	Yes	Notified body	Yes
CE label	Yes	Yes	Yes
UL/cUL (CSA) approval	cULus-listed (UL 508, CSA C22.2 No. 142), file E143289	cULus-listed (UL 508, CSA C22.2 No. 142), file E143289	cULus-listed (UL 508, CSA C22.2 No. 142), file E143289
Explosion protection	ATEX 94/9/EC EX II 3G; EEx, nA, II, T4 U UL 1604 Class I Div. 2 Group A, B, C, D	ATEX 94/9/EC EX II 3G; EEx, nA, II, T4 U UL 1604 Class I Div. 2 Group A, B, C, D	ATEX 94/9/EC EX II 3G; EEx, nA, II, T4 U; UL 1604 Class I Div. 2 Group A, B, C, D
FM approval	Class I Div. 2 Group A, B, C, D T4	Class I Div. 2 Group A, B, C, D, T 4	Class I Div. 2, Group A, B, C, D, T4
Marine type approval	in S7-300 system	in S7-300 system	in S7-300 system
Degree of protection (EN 60529)	IP20	IP20	IP20
EMC			
Emitted interference	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B
Supply-harmonics limitation	Not applicable	EN 61000-3-2	EN 61000-3-2
Noise immunity	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2
Operating data			
Ambient temperature range	0 ... +60 °C with natural convection	0 ... +60 °C with natural convection	0 ... +60 °C with natural convection
Transport/storage temperature range	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Humidity class	Climate class 3K3 to EN 60721, no condensation	Climate class 3K3 to EN 60721, no condensation	Climate class 3K3 to EN 60721, no condensation

Technical specifications (continued)

Power supply, type	2 A	5 A	10 A
Order number	**6ES7 307-1BA01-0AA0**	**6ES7 307-1EA01-0AA0**	**6ES7 307-1KA02-0AA0**
Mechanical system			
Ports			
• Supply input L, N, PE (DC input: L+1, M1, PE)	Solid/finely-stranded per screw-type terminal for 0.5 mm to 2.5 mm^2	Solid/finely-stranded per screw-type terminal for 0.5 mm to 2.5 mm^2	Solid/finely-stranded per screw-type terminal for 0.5 mm to 2.5 mm^2
• Output +	2 screw-type terminals for 0.5 mm to 2.5 mm^2	3 screw-type terminals for 0.5 mm to 2.5 mm^2	4 screw-type terminals for 0.5 mm to 2.5 mm^2
• Output -	2 screw-type terminals for 0.5 mm to 2.5 mm^2	3 screw-type terminals for 0.5 mm to 2.5 mm^2	4 screw-type terminals for 0.5 mm to 2.5 mm^2
Dimensions (W x H x D) in mm	40 x 125 x 120	60 x 125 x 120	80 x 125 x 120
Weight, approx.	0.4 kg	0.6 kg	0.8 kg
Assembly	Can be mounted onto S7 rail	Can be mounted onto S7 rail	Can be mounted onto S7 rail
Accessories	Mounting adapter for DIN rail (6EP1 971-1BA00)	Mounting adapter for DIN rail (6EP1 971-1BA00)	Mounting adapter for DIN rail (6EP1 971-1BA00)

Ordering data

	Order No.		Order No.
PS 307 load power supply		**Installation adapter**	**6EP1 971-1BA00**
incl. power connector		For snapping the PS 307 onto a 35 mm DIN rail (EN 50022)	
120/230 V AC / 24 V DC; 2 A	**6ES7 307-1BA01-0AA0**		
120/230 V AC / 24 V DC; 5 A	**6ES7 307-1EA01-0AA0**		
120/230 V AC / 24 V DC; 10 A	**6ES7 307-1KA02-0AA0**		