SIEMENS

Data sheet

6ES7412-1XJ05-0AB0

SIMATIC S7-400, CPU 412-1 Central processing unit with: work memory 288 KB (144 KB code, 144 KB data), interface MPI/DP 12 Mbit/s,



Consultinformation	
General information	
Product type designation	CPU 412-1
HW functional status	03
Firmware version	V5.3
Engineering with	
Programming package	STEP 7 V5.3 SP2 or higher with HW update
CiR – Configuration in RUN	
CiR synchronization time, basic load	100 ms
CiR synchronization time, time per I/O byte	30 µs
Supply voltage	
Rated value (DC)	
• 24 V DC	No; Power supply via system power supply
Input current	
from backplane bus 5 V DC, typ.	0.5 A
from backplane bus 5 V DC, max.	0.6 A
from backplane bus 24 V DC, max.	150 mA; 150 mA per DP interface
from interface 5 V DC, max.	90 mA

Power loss	
Power loss, typ.	2.5 W
Power loss, max.	3 W
Memory	
Type of memory	RAM
Work memory	
• integrated	288 kbyte
• integrated (for program)	144 kbyte
• integrated (for data)	144 kbyte
• expandable	No
Load memory	
expandable FEPROM	Yes; with Memory Card (FLASH)
• expandable FEPROM, max.	64 Mbyte
• integrated RAM, max.	512 kbyte
• expandable RAM	Yes; with Memory Card (RAM)
• expandable RAM, max.	64 Mbyte
Backup	
• present	Yes
with battery	Yes; all data
without battery	No
Battery	
Backup battery	
 Backup current, typ. 	125 μA; up to 40 °C
Backup current, max.	300 μΑ
 Backup time, max. 	See reference manual, module data, Chapter 3.3
 Feeding of external backup voltage to CPU 	5 V DC to 15 V DC
CPU processing times	
for bit operations, typ.	75 ns
for word operations, typ.	75 ns
for fixed point arithmetic, typ.	75 ns
for floating point arithmetic, typ.	225 ns
CPU-blocks	
DB Number may	1.500: Number range: 1 to 16000
• Number, max.	1 500; Number range: 1 to 16000
Size, max.	64 kbyte
FB	750: Number range: 0 to 7000
FB ● Number, max.	750; Number range: 0 to 7999
FBNumber, max.Size, max.	750; Number range: 0 to 7999 64 kbyte
FB ● Number, max.	

• Size, max.	64 kbyte
OB	
Number, max.	see instruction list
• Size, max.	64 kbyte
 Number of free cycle OBs 	1; OB 1
 Number of time alarm OBs 	2; OB 10, 11
 Number of delay alarm OBs 	2; OB 20, 21
 Number of cyclic interrupt OBs 	2; OB 32, 35 (shortest cycle that can be set = $500 \mu s$)
 Number of process alarm OBs 	2; OB 40, 41
 Number of DPV1 alarm OBs 	3; OB 55-57
 Number of isochronous mode OBs 	2; OB 61-62
 Number of multicomputing OBs 	1; OB 60
 Number of background OBs 	1; OB 90
 Number of startup OBs 	3; OB 100-102
 Number of asynchronous error OBs 	9; OB 80-88
 Number of synchronous error OBs 	2; OB 121, 122
Nesting depth	
per priority class	24
 additional within an error OB 	1
Counters, timers and their retentivity	
Counters, timers and their retentivity S7 counter	
	2 048
S7 counter	2 048
S7 counter • Number	2 048 Yes
S7 counter • Number Retentivity	
S7 counter • Number Retentivity — adjustable	Yes
S7 counter • Number Retentivity — adjustable — lower limit	Yes 0
S7 counter ● Number Retentivity — adjustable — lower limit — upper limit	Yes 0 2 047
S7 counter • Number Retentivity — adjustable — lower limit — upper limit — preset	Yes 0 2 047
S7 counter ● Number Retentivity — adjustable — lower limit — upper limit — preset Counting range	Yes 0 2 047 Z 0 to Z 7
S7 counter ● Number Retentivity — adjustable — lower limit — upper limit — preset Counting range — lower limit	Yes 0 2 047 Z 0 to Z 7
S7 counter ● Number Retentivity — adjustable — lower limit — upper limit — preset Counting range — lower limit — upper limit — upper limit	Yes 0 2 047 Z 0 to Z 7
S7 counter ● Number Retentivity — adjustable — lower limit — upper limit — preset Counting range — lower limit — upper limit — upper limit	Yes 0 2 047 Z 0 to Z 7 0 999
S7 counter ● Number Retentivity — adjustable — lower limit — upper limit — preset Counting range — lower limit — upper limit IEC counter ● present ● Type ● Number	Yes 0 2 047 Z 0 to Z 7 0 999
S7 counter ● Number Retentivity — adjustable — lower limit — upper limit — preset Counting range — lower limit — upper limit — upper limit	Yes 0 2 047 Z 0 to Z 7 0 999 Yes SFB Unlimited (limited only by RAM capacity)
S7 counter ● Number Retentivity — adjustable — lower limit — upper limit — preset Counting range — lower limit — upper limit IEC counter ● present ● Type ● Number S7 times ● Number	Yes 0 2 047 Z 0 to Z 7 0 999 Yes SFB
S7 counter ● Number Retentivity — adjustable — lower limit — upper limit — preset Counting range — lower limit — upper limit IEC counter ● present ● Type ● Number S7 times	Yes 0 2 047 Z 0 to Z 7 0 999 Yes SFB Unlimited (limited only by RAM capacity) 2 048
S7 counter ● Number Retentivity — adjustable — lower limit — upper limit — preset Counting range — lower limit — upper limit IEC counter ● present ● Type ● Number S7 times ● Number	Yes 0 2 047 Z 0 to Z 7 0 999 Yes SFB Unlimited (limited only by RAM capacity)

— upper limit

— preset

No times retentive

2 047

Time range	
— lower limit	10 ms
— upper limit	9 990 s
IEC timer	
• present	Yes
	SFB
TypeNumber	Unlimited (limited only by RAM capacity)
Number	Offinitilled (infinited offity by NAWI Capacity)
Data areas and their retentivity	
retentive data area in total	Total working and load memory (with backup battery)
Flag	
Number, max.	4 kbyte; Size of bit memory address area
 Retentivity preset 	MB 0 to MB 15
 Number of clock memories 	8; in 1 memory byte
Local data	
● adjustable, max.	8 kbyte
• preset	4 kbyte
Address area	
I/O address area	
• Inputs	4 kbyte
Outputs	4 kbyte
Process image	
Inputs, adjustable	4 kbyte
Outputs, adjustable	4 kbyte
• Inputs, default	128 byte
Outputs, default	128 byte
• consistent data, max.	244 byte
Access to consistent data in process image	Yes
Subprocess images	
Number of subprocess images, max.	15
Digital channels	
• Inputs	32 768
— of which central	32 768
Outputs	32 768
— of which central	32 768
Analog channels	
• Inputs	2 048
— of which central	2 048
Outputs	2 048
— of which central	2 048
Hardware configuration	

Number of expansion units, max.	21
connectable OPs	31
Multicomputing	Yes; 4 CPUs max. (with UR1 or UR2)
Interface modules	
 Number of connectable IMs (total), max. 	6
 Number of connectable IM 460s, max. 	6
 Number of connectable IM 463s, max. 	4; IM 463-2
Number of DP masters	
● integrated	1
• via CP	10; CP 443-5 Extended
● via IM 467	4
Mixed mode IM + CP permitted	No; IM 467 not suitable for use with CP 443-5 Ext. and CP 443-1 EX4x, EX20, GX20 (in PROFINET IO mode)
• via interface module	0
 Number of pluggable S5 modules (via adapter capsule in central device), max. 	6
Number of IO Controllers	
• integrated	0
• via CP	4; No mixed operation of CP443-1 EX40 and CP443-1 EX 41/EX20/GX20, max. 4 in central controller
Number of operable FMs and CPs (recommended)	
• FM	Limited by number of slots and number of connections
• CP, PtP	CP 440: Limited by number of slots; CP 441: Limited by number of slots and number of connections
PROFIBUS and Ethernet CPs	14; Of which 10 CPs max. or IMs as DP master, 4 PROFINET controller maximum
Slots	
• required slots	1
Fime of day	
Clock	
Hardware clock (real-time)	Yes
 retentive and synchronizable 	Yes
Resolution	1 ms
 Deviation per day (buffered), max. 	1.7 s; Power off
 Deviation per day (unbuffered), max. 	8.6 s; For power On
Operating hours counter	
Number	16
Number/Number range	0 to 15
Range of values	SFCs 2, 3 and 4: 0 to 32767 hours SFC 101: 0 to 2^31 - 1 hours
Granularity	1 h
• retentive	Yes
Clock synchronization	

• supported	Yes
● to MPI, master	Yes
• to MPI, slave	Yes
• in AS, master	Yes
• in AS, slave	Yes
• to IF 964 DP	No
Time difference in system when synchronizing via	
● MPI, max.	200 ms

Interfaces/bus type	1 x MPI/PROFIBUS DP
Number of RS 485 interfaces	1; Combined MPI / PROFIBUS DP
1. Interface	
Interface type	Integrated
Physics	RS 485 / PROFIBUS + MPI
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	150 mA
Number of connection resources	MPI: 32, DP: 16
Protocols	
• MPI	Yes
 PROFIBUS DP master 	Yes
 PROFIBUS DP slave 	Yes
MPI	
Number of connections	32; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1
 Transmission rate, max. 	12 Mbit/s
Services	
— PG/OP communication	Yes
— Routing	Yes
 Global data communication 	Yes
 — S7 basic communication 	Yes
— S7 communication	Yes
 S7 communication, as client 	Yes
 S7 communication, as server 	Yes
PROFIBUS DP master	
Number of connections, max.	16; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1
Transmission rate, max.	12 Mbit/s
Number of DP slaves, max.	32
Services	
— PG/OP communication	Yes
— Routing	Yes; S7 routing

S7 basic communication S7 communication S7 communication, as client S7 communication, as client S7 communication, as client S7 communication, as server Equidistance S7 communication of P slaves SYNC/FREEZE Activation/deactivation of DP slaves Uper data exchange (slave-to-slave communication) DPV1 Address area Inputs, max. Stayte User data per DP slave Slots, max. Slots, max. Slots, max. Slots, max. Slots max. Sl	 Global data communication 	No
Soft communication Yes Soft communication, as client Soft communication, as client Soft communication, as server Equidistance Isochronous mode Yes Soft data exchange (slave-to-slave communication) DPV1 Yes Address area Inputs, max. Outputs, max. Vebyte User data per DP slave, max. Inputs, max. Soft data exchange Sof		
- S7 communication, as client - S7 communication, as server - Equidistance - Isochronous mode - SYNC/FREEZE - Activation/deactivation of DP slaves - Direct data exchange (slave-to-slave communication) - DPV1 - Yes - Address area - Inputs, max Outputs, max User data per DP slave, max Slots, max Per slot, max Per slot, max Per slot, max Per slot, max SSD file - Transmission rate, max automatic baud rate search - Address area, max Iser data per address area, max Juser data per d		Yes
- S7 communication, as server - Equidistance - Isochronous mode - Isochronous mode - SYNC/FREZE - Activation/deactivation of DP slaves - Direct data exchange (slave-to-slave communication) - DPV1 - Address area - Inputs, max Outputs, max Outputs, max User data per DP slave, max User data per DP slave, max User data per DP slave, max User data per Stok, max Per slot, max Per slot, max Per slot, max Par slot, max Inputs, max Per slot, max Per slot, max Per slot, max Slots, max Per slot, max Per slot, max Slots, max Per slot, max Slots, max Per slot, max Per slot, max Per slot, max Per slot, max Slots, max Slots, max Per slot, max Per slot, max Slots,		
- Equidistance - Isochronous mode - SYNC/FREEZE - Activation/deactivation of DP slaves - Direct date exchange (slave-to-slave communication) - DPV1 - Yes Address area - Inputs, max Outputs, max Outputs, max User data per DP slave, max Inputs, max User data per DP slave, max 244 byte - User data per DP slave - Vutputs, max 244 byte - Slots, max 244 byte - Slots, max 245 byte PROFIBUS DP slave • Number of connections • GSD file • Transmission rate, max User data per address area, max 32 byte - Virtual slots - Address area, max User data per address area, max User data per address area, max Outputs, max User data per address area, max Services - PG/OP communication - S7 routing - Global data communication - S7 routing - Global data communication - S7 communication, as server - Direct data exchange (slave-to-slave communication) - DPV1 - No		Yes
- Isochronous mode - SYNC/FREZE - Activation/deactivation of DP slaves - Direct data exchange (slave-to-slave communication) - DPV1 - Yes - Address area - Inputs, max Outputs, max Outputs, max User data per DP slave - User data per DP slave - User data per DP slave, max Unputs, max User data per DP slave, max User data per DP slave, max User data per DP slave, max User data per DP slave - User data per DP slave, max User data per DP slave - User data per DP slave, max User data per DP slave - User data per DP slave, max User data per DP slave - User data per DP slave, max User data per DP slave - User data per DP slave, max Slots, max Slots, max Yes byte - Number of connections - GSD file - http://support.automation.siemens.com/WW/view/en/113652 - 12 Mbit/s - Variant slots -		Yes
- SYNC/FREEZE - Activation/deactivation of DP slaves - Direct data exchange (slave-to-slave communication) - DPV1 - Yes Address area - Inputs, max. 2 kbyte - User data per DP slave, max. 244 byte - Unputs, max. 244 byte - User data per DP slave, max. 244 byte - Unputs, max. 244 byte - Unputs, max. 244 byte - User data per DP slave, max. 244 byte - Unputs, max. 244 byte - Slots, max. 244 byte - Number of connections - Subject of connections - Subject of connections - Subject of connections - Address area, max. 32; Virtual slots - User data per address area, max. 32; Virtual slots - Services - PG/OP communication - S7 routing - Global data communication - S7 communication, as server - Direct data exchange (slave-to-slave communication) - DPV1 - No	·	Yes
— Activation/deactivation of DP slaves — Direct data exchange (slave-to-slave communication) — DPV1 Address area — Inputs, max. — Outputs, max. — Outputs, max. — User data per DP slave, max. — Inputs, max. — Per slot, max. — Per slot, max. — Per slot, max. — Number of connections — ST communication — S7 communication — S7 communication, as client — S7 communication — S7 communication, as client — S7 communication — DPV1 Yes Address area Yes Yes Yes Yes Yes Yes Yes Y		Yes
communication) — DPV1 Address area — Inputs, max. — Outputs, max. — User data per DP slave — User data per DP slave, max. — Inputs, max. — Outputs, max. — Slots, max. — per slot, max. — per slot, max. — 128 byte PROFIBUS DP slave • Number of connections • GSD file • Interpretation of the state of the search • Address area, max. • automatic baud rate search • Address area, max. • User data per address area, max. — of which consistent, max. 9 byte Services — PG/OP communication — S7 routing — Global data communication — S7 communication — S7 communication — S7 communication, as client — S7 communication, as server — Direct data exchange (slave-to-slave communication) — DPV1 No		Yes
Address area Inputs, max. Outputs, max. 2 kbyte User data per DP slave User data per DP slave, max. 244 byte Outputs, max. 244 byte Outputs, max. 244 byte Outputs, max. 244 byte Slots, max. 244 per slot, max. 244 per slot, max. 128 byte PROFIBUS DP slave Number of connections 6 GSD file Number of connections 16 Address area, max. 12 kbit/s Address area, max. 22 byte PROFIBUS DP slave PROFIBUS DP slave No Sprices Fransmission rate, max. 25 byte 25 byte 26 byte 27 byte 28 byte Services PG/OP communication Sprices PG/OP communication No Sprices PG/OP communication No Sprices PG/OP communication No Sprices PG/OP communication No Sprices No Sprices No Direct data exchange (slave-to-slave communication) No DPV1 No		Yes
Address area Inputs, max. Outputs, max. 2 kbyte User data per DP slave User data per DP slave, max. 244 byte Outputs, max. 244 byte Outputs, max. 244 byte Slots, max. 244 byte PROFIBUS DP slave Number of connections GSD file Transmission rate, max. Address area, max. Address area, max. Address area, max. Services PROFO Communication Services No Service	·	Yes
- Inputs, max Outputs, max Outputs, max Outputs, max User data per DP slave - User data per DP slave, max Inputs, max Inputs, max Outputs, max Outputs, max Outputs, max Slots, max Slots, max per slot, max per slot, max per slot, max. PROFIBUS DP slave • Number of connections • GSD file • Transmission rate, max. • automatic baud rate search • Address area, max. • User data per address area, max of which consistent, max. Services - PG/OP communication - S7 routing - Global data communication - S7 basic communication - S7 communication, as client - S7 communication, as server - Direct data exchange (slave-to-slave communication) - DPV1 - No		163
Outputs, max. Outputs, max. User data per DP slave 244 byte Outputs, max. 244 byte Slots, max. Per slot, max. 128 byte PROFIBUS DP slave Number of connections GSD file Transmission rate, max. 12 Mbit/s Address area, max. User data per address area, max. Of which consistent, max. Services PG/OP communication Ser routing Global data communication Sor communication, as client Sor communication, as server Direct data exchange (slave-to-slave communication) DDV1 No		2 khyte
User data per DP slave - User data per DP slave, max. 244 byte - Inputs, max. 244 byte - Outputs, max. 244 byte - Outputs, max. 244 byte - Slots, max. 244 - per slot, max. 244 - per slot, max. 128 byte PROFIBUS DP slave • Number of connections 16 • GSD file http://support.automation.siemens.com/WW/view/en/113652 • Transmission rate, max. 12 Mbit/s • automatic baud rate search No • Address area, max. 32; Virtual slots • User data per address area, max. 32 byte - of which consistent, max. 32 byte Services - PG/OP communication Yes; with interface active - S7 routing Yes; with interface active - S7 routing No - S7 basic communication No - S7 basic communication Yes - S7 communication, as client Yes - S7 communication, as server Yes - Direct data exchange (slave-to-slave communication) - DPV1 No	·	
- User data per DP slave, max Inputs, max Outputs, max Outputs, max Slots, max Slots, max per slot, max 128 byte PROFIBUS DP slave • Number of connections • Assign for the slots of		Zillayto
- Inputs, max Outputs, max Outputs, max Slots, max per slot, max per slot, max PROFIBUS DP slave • Number of connections • GSD file • Transmission rate, max. • automatic baud rate search • Address area, max. • User data per address area, max of which consistent, max. Services - PG/OP communication - S7 routing - Global data communication - S7 communication - S7 communication - S7 communication - S7 communication, as client - S7 communication, as server - Direct data exchange (slave-to-slave communication) - DPV1 No	·	244 byte
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— Slots, max. — per slot, max. PROFIBUS DP slave • Number of connections • GSD file • Transmission rate, max. • automatic baud rate search • Address area, max. • User data per address area, max. — of which consistent, max. Services — PG/OP communication — S7 routing — Global data communication — S7 basic communication — S7 communication, as client — S7 communication, as server — Direct data exchange (slave-to-slave communication) — DPV1 No	·	
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GSD file Ittp://support.automation.siemens.com/WW/view/en/113652 Transmission rate, max. 12 Mbit/s automatic baud rate search No Address area, max. User data per address area, max. Of which consistent, max. 32 byte Services PG/OP communication PS7 routing PGlobal data communication PS7 basic communication No S7 basic communication PS7 communication PS8 Services PG/OP communication No PS9 basic communication PS9 basic communication PS9 basic communication PS9 communicat	PROFIBLIS DP slave	
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 Address area, max. User data per address area, max. — of which consistent, max. 32 byte Services — PG/OP communication — S7 routing — Global data communication — S7 basic communication — S7 communication — S7 communication — S7 communication, as client — S7 communication, as server — Direct data exchange (slave-to-slave communication) — DPV1 No 32; Virtual slots 32 byte 32 byt	Number of connections	
User data per address area, max. — of which consistent, max. Services PG/OP communication — S7 routing — Global data communication — S7 basic communication — S7 communication, as client — S7 communication, as server — Direct data exchange (slave-to-slave communication) — DPV1 No	Number of connectionsGSD file	http://support.automation.siemens.com/WW/view/en/113652
- of which consistent, max. Services - PG/OP communication - S7 routing - Global data communication - S7 basic communication - S7 communication, as client - S7 communication, as server - Direct data exchange (slave-to-slave communication) - DPV1 No	Number of connectionsGSD fileTransmission rate, max.	http://support.automation.siemens.com/WW/view/en/113652 12 Mbit/s
Services - PG/OP communication Yes; with interface active - S7 routing Yes; with interface active - Global data communication No - S7 basic communication No - S7 communication Yes - S7 communication, as client Yes - S7 communication, as server Yes - Direct data exchange (slave-to-slave communication) - DPV1 No	 Number of connections GSD file Transmission rate, max. automatic baud rate search 	http://support.automation.siemens.com/WW/view/en/113652 12 Mbit/s No
 — PG/OP communication — S7 routing — Global data communication — S7 basic communication — S7 communication — S7 communication — S7 communication, as client — S7 communication, as server — S7 communication, as server — Direct data exchange (slave-to-slave communication) — DPV1 No 	 Number of connections GSD file Transmission rate, max. automatic baud rate search Address area, max. 	http://support.automation.siemens.com/WW/view/en/113652 12 Mbit/s No 32; Virtual slots
 S7 routing Global data communication S7 basic communication S7 communication S7 communication S7 communication, as client S7 communication, as server Direct data exchange (slave-to-slave communication) DPV1 Yes; with interface active No No 	 Number of connections GSD file Transmission rate, max. automatic baud rate search Address area, max. User data per address area, max. 	http://support.automation.siemens.com/WW/view/en/113652 12 Mbit/s No 32; Virtual slots 32 byte
- Global data communication No - S7 basic communication No - S7 communication Yes - S7 communication, as client Yes - S7 communication, as server Yes - Direct data exchange (slave-to-slave communication) - DPV1 No	 Number of connections GSD file Transmission rate, max. automatic baud rate search Address area, max. User data per address area, max. — of which consistent, max. 	http://support.automation.siemens.com/WW/view/en/113652 12 Mbit/s No 32; Virtual slots 32 byte
 — S7 basic communication — S7 communication — S7 communication, as client — S7 communication, as server — S7 communication, as server — Direct data exchange (slave-to-slave communication) — DPV1 No 	 Number of connections GSD file Transmission rate, max. automatic baud rate search Address area, max. User data per address area, max. — of which consistent, max. Services	http://support.automation.siemens.com/WW/view/en/113652 12 Mbit/s No 32; Virtual slots 32 byte 32 byte
 S7 communication S7 communication, as client S7 communication, as server Direct data exchange (slave-to-slave communication) DPV1 Yes Yes Yes No No 	 Number of connections GSD file Transmission rate, max. automatic baud rate search Address area, max. User data per address area, max. — of which consistent, max. Services — PG/OP communication 	http://support.automation.siemens.com/WW/view/en/113652 12 Mbit/s No 32; Virtual slots 32 byte 32 byte Yes; with interface active
 — S7 communication, as client — S7 communication, as server — Direct data exchange (slave-to-slave communication) — DPV1 No 	 Number of connections GSD file Transmission rate, max. automatic baud rate search Address area, max. User data per address area, max. — of which consistent, max. Services PG/OP communication S7 routing 	http://support.automation.siemens.com/WW/view/en/113652 12 Mbit/s No 32; Virtual slots 32 byte 32 byte Yes; with interface active Yes; with interface active
 — S7 communication, as server — Direct data exchange (slave-to-slave communication) — DPV1 Yes No No 	 Number of connections GSD file Transmission rate, max. automatic baud rate search Address area, max. User data per address area, max. — of which consistent, max. Services — PG/OP communication — S7 routing — Global data communication 	http://support.automation.siemens.com/WW/view/en/113652 12 Mbit/s No 32; Virtual slots 32 byte 32 byte Yes; with interface active Yes; with interface active No
 — Direct data exchange (slave-to-slave communication) — DPV1 No 	 Number of connections GSD file Transmission rate, max. automatic baud rate search Address area, max. User data per address area, max. — of which consistent, max. Services — PG/OP communication — S7 routing — Global data communication — S7 basic communication 	http://support.automation.siemens.com/WW/view/en/113652 12 Mbit/s No 32; Virtual slots 32 byte 32 byte Yes; with interface active Yes; with interface active No No
communication) — DPV1 No	 Number of connections GSD file Transmission rate, max. automatic baud rate search Address area, max. User data per address area, max. — of which consistent, max. Services — PG/OP communication — S7 routing — Global data communication — S7 basic communication — S7 communication 	http://support.automation.siemens.com/WW/view/en/113652 12 Mbit/s No 32; Virtual slots 32 byte Yes; with interface active Yes; with interface active No No Yes
	 Number of connections GSD file Transmission rate, max. automatic baud rate search Address area, max. User data per address area, max. — of which consistent, max. Services — PG/OP communication — S7 routing — Global data communication — S7 basic communication — S7 communication — S7 communication, as client 	http://support.automation.siemens.com/WW/view/en/113652 12 Mbit/s No 32; Virtual slots 32 byte Yes; with interface active Yes; with interface active No No Yes Yes Yes
Transfer memory	 Number of connections GSD file Transmission rate, max. automatic baud rate search Address area, max. User data per address area, max. — of which consistent, max. Services — PG/OP communication — S7 routing — Global data communication — S7 basic communication — S7 communication — S7 communication, as client — S7 communication, as server — Direct data exchange (slave-to-slave 	http://support.automation.siemens.com/WW/view/en/113652 12 Mbit/s No 32; Virtual slots 32 byte Yes; with interface active Yes; with interface active No No Yes Yes Yes
	 Number of connections GSD file Transmission rate, max. automatic baud rate search Address area, max. User data per address area, max. — of which consistent, max. Services — PG/OP communication — S7 routing — Global data communication — S7 basic communication — S7 communication — S7 communication, as client — S7 communication, as server — Direct data exchange (slave-to-slave communication) 	http://support.automation.siemens.com/WW/view/en/113652 12 Mbit/s No 32; Virtual slots 32 byte Yes; with interface active Yes; with interface active No No Yes Yes Yes Yes No

— Inputs	244 byte
— Outputs	244 byte

Protocols	
Open IE communication	
• ISO-on-TCP (RFC1006)	Via CP 443-1 Adv. and loadable FB
— Data length, max.	1452 bytes via CP 443-1 Adv.
Web server	
• supported	No

Isochronous mode	
Isochronous operation (application synchronized up	Yes; For PROFIBUS only
to terminal)	
Equidistance	Yes
Number of DP masters with isochronous mode	1
User data per isochronous slave, max.	244 byte
shortest clock pulse	1.5 ms; 0.5 ms without use of SFC 126, 127
max. cycle	32 ms

PG/OP communication	Yes
 Number of connectable OPs without message 	31
processing	
 Number of connectable OPs with message 	31; When using Alarm_S/SQ and Alarm_D/DQ
processing	
Data record routing	Yes
Global data communication	
• supported	Yes
 Number of GD loops, max. 	8
 Number of GD packets, transmitter, max. 	8
 Number of GD packets, receiver, max. 	16
 Size of GD packets, max. 	54 byte
 Size of GD packet (of which consistent), max. 	1 variable
S7 basic communication	
• supported	Yes
 User data per job, max. 	76 byte
• User data per job (of which consistent), max.	1 variable
S7 communication	
• supported	Yes
• as server	Yes
• as client	Yes
 User data per job, max. 	64 kbyte
 User data per job (of which consistent), max. 	462 byte
S5 compatible communication	

Communication functions

• supported	Yes; Via FC AG_SEND and AG_RECV, max. via 10 CP 443-1 or
	443-5
User data per job, max.	8 kbyte
 User data per job (of which consistent), max. 	240 byte
Number of simultaneous AG-SEND/AG-RECV	24/24
orders per CPU, max.	
Standard communication (FMS)	
• supported	Yes; Via CP and loadable FB
Number of connections	
• overall	32
usable for PG communication	31
 reserved for PG communication 	1
 adjustable for PG communication, max. 	0
usable for OP communication	31
 reserved for OP communication 	1
 adjustable for OP communication, max. 	0
 usable for S7 basic communication 	30
 reserved for S7 basic communication 	0
 adjustable for S7 basic communication, 	0
max.	
usable for S7 communication	30
 reserved for S7 communication 	0
 adjustable for S7 communication, max. 	0
usable for routing	15
— reserved for routing	0
 adjustable for routing, max. 	0
S7 message functions	
Number of login stations for message functions, max.	31; Max. 31 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8
	with Alarm_8 and Alarm_P (e.g. WinCC)
Symbol-related messages	Yes
SCAN procedure	Yes
Program alarms	Yes
Process diagnostic messages	Yes
simultaneously active Alarm-S blocks, max.	250; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ blocks
Alarm 8-blocks	Yes

300

150

Yes

4

• Number of instances for alarm 8 and S7

Number of archives that can log on simultaneously

communication blocks, max.

• preset, max.

Process control messages

(SFB 37 AR_SEND)

Number of messages

• overall, max.	256	
● in 100 ms grid, max.	0	
● in 500 ms grid, max.	256	
● in 1000 ms grid, max.	256	
Number of additional values		
• with 100 ms grid, max.	0	
• with 500, 1000 ms grid, max.	1	
Test commissioning functions		

Test commissioning functions	
Status block	Yes; Up to 2 simultaneously
Single step	Yes
Number of breakpoints	4
Status/control	
Status/control variable	Yes; Up to 16 variable tables
 Variables 	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
 Number of variables, max. 	70; Status/control
Forcing	
• Forcing	Yes
• Forcing, variables	Inputs/outputs, bit memories, distributed I/Os
 Number of variables, max. 	64
Diagnostic buffer	
• present	Yes
 Number of entries, max. 	200
— adjustable	Yes
— preset	120
Service data	
• can be read out	Yes

Standards, approvals, certificates	
CE mark	Yes
CSA approval	Yes
UL approval	Yes
cULus	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes
EAC (formerly Gost-R)	Yes
Use in hazardous areas	
• ATEX	ATEX II 3G Ex nA IIC T4 Gc

Ambient conditions	
Ambient temperature during operation	
• min.	0 °C

• max. 60 °C

Configuration	
Configuration Configuration software	
• STEP 7	Yes
Programming	100
Command set	see instruction list
Nesting levels	7
Access to consistent data in process image	Yes
System functions (SFC)	see instruction list
System functions (SFB)	see instruction list
Programming language	
— LAD	Yes
— FBD	Yes
— FBD — STL	Yes
	Yes
— SCL — CFC	Yes
	Yes
— GRAPH	Yes
— HiGraph®	res
Number of simultaneously active SFCs	2. SEC 11. nor interfere
— DPSYC_FR	2; SFC 13; per interface
— D_ACT_DP	8; SFC 12; per interface
— RD_REC	8; SFC 59; per interface
— WR_REC	8; SFC 58; per interface
— WR_PARM	8; SFC 55; per interface
— PARM_MOD	1; SFC 57; per interface
— WR_DPARM	2; SFC 56; per interface
— DPNRM_DG	8; SFC 13; per interface
— RDSYSST	8; SFC 51
— DP_TOPOL	1; SFC 103; per interface
Number of simultaneously active SFBs	0.050.50
— RDREC	8; SFB 52; per interface, but not more than 32 across all external interfaces
— WRREC	8; SFB 53; per interface, but not more than 32 across all external interfaces
Know-how protection	
User program protection/password protection	Yes
Dimensions	
Width	25 mm
Height	290 mm
Depth	219 mm
Weights	

Weight, approx. 700 g	

11/19/2019 last modified: