SIEMENS

Data sheet

6ES7414-3XM07-0AB0



SIMATIC S7-400, CPU 414-3 Central processing unit with: Work memory 4 MB, (2 MB code, 2 MB data), 1st interface MPI/DP 12 Mbit/s, 2nd interface PROFIBUS DP, 3rd interface plug-in IFM module

General information	
Product type designation	CPU 414-3
HW functional status	01
Firmware version	V7.0
Product function	
 Isochronous mode 	Yes; For PROFIBUS only
Engineering with	
 Programming package 	STEP 7 V5.4 or higher with HSP 261
CiR - Configuration in RUN	
CiR synchronization time, basic load	100 ms
CiR synchronization time, time per I/O byte	15 µs
Supply voltage	
Rated value (DC)	Power supply via system power supply
Input current	
from backplane bus 5 V DC, typ.	1.1 A
from backplane bus 5 V DC, max.	1.3 A
from backplane bus 24 V DC, max.	450 mA; 150 mA per DP interface
from interface 5 V DC, max.	90 mA; At each DP interface
Power loss	
Power loss, typ.	5.5 W
Power loss, max.	6.5 W
Memory	
Type of memory	RAM
Work memory	
integrated	4 Mbyte
integrated (for program)	2 Mbyte
integrated (for data)	2 Mbyte
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.	180 μΑ
Backup current, max.	850 μA
Backup time, max.	Dealt with in the module data manual with the secondary conditions and
•	the factors of influence
 Feeding of external backup voltage to CPU 	5 V DC to 15 V DC
CPU processing times	
for bit operations, typ.	18.75 ns
for word operations, typ.	18.75 ns
for fixed point arithmetic, typ.	18.75 ns
for floating point arithmetic, typ.	37.5 ns
CPU-blocks	
DB	
Number, max.	6 000; Number range: 1 to 16000
• Size, max.	64 kbyte
FB	
Number, max.	3 000; Number range: 0 to 7999
• Size, max.	64 kbyte
FC Number was	0.000 North
Number, max.	3 000; Number range: 0 to 7999
• Size, max.	64 kbyte
OB	age instruction list
Number, max. Size may.	see instruction list
Size, max. Number of free evels OPs	64 kbyte
Number of free cycle OBs Number of fires player OBs	1; OB 1
Number of time alarm OBs	4; OB 10-13
Number of delay alarm OBs	4; OB 20-23
Number of cyclic interrupt OBs	4; OB 32-35 (shortest cycle that can be set = 500 μs)
Number of process alarm OBs	4; OB 40-43
 Number of DPV1 alarm OBs 	3; OB 55-57
 Number of isochronous mode OBs 	3; OB 61-63
 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	
S7 counter	
• Number	2 048
Retentivity	
— adjustable	Yes
— lower limit	0
— upper limit	2 047
— preset	Z 0 to Z 7
Counting range	
— lower limit	0
— upper limit	999
IEC counter	
• present	Yes
• Type	SFB
Number	Unlimited (limited only by RAM capacity)
S7 times	
Number	2 048
Retentivity	
— adjustable	Yes
— lower limit	0
— upper limit	2 047

— preset	No times retentive
Time range	NO times retentive
— lower limit	10 ms
— upper limit	9 990 s
IEC timer	3 330 3
• present	Yes
• Type	SFB
Number	Unlimited (limited only by RAM capacity)
Data areas and their retentivity	Chiminios (illinios chij by Fu illi capacity)
Retentive data area (incl. timers, counters, flags), max.	Total working and load memory (with backup battery)
Flag	Total Working and load memory (With backap battery)
• Size, max.	8 kbyte; Size of bit memory address area
Retentivity available	Yes
Retentivity preset	MB 0 to MB 15
Number of clock memories	8; in 1 memory byte
Local data	,
adjustable, max.	16 kbyte
• preset	8 kbyte
Address area	
I/O address area	
• Inputs	8 kbyte
Outputs	8 kbyte
Process image	
Inputs, adjustable	8 kbyte
Outputs, adjustable	8 kbyte
• Inputs, default	256 byte
Outputs, default	256 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	65 536
— of which central	65 536
Outputs	65 536
— of which central	65 536
Analog channels	·
Inputs	4 096
— of which central	4 096
Outputs	4 096
— of which central	4 096
Hardware configuration	
Number of expansion units, max.	21
connectable OPs	63
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	2
• via CP	10; CP 443-5 Extended
via IM 467	4
 Mixed mode IM + CP permitted 	No; IM 467 cannot be used jointly with CP 443-5 Ext. or CP 443-1 in PROFINET IO mode
 via interface module 	1
Number of pluggable S5 modules (via adapter capsule in central device), max.	6
Number of IO Controllers	
integrated	0

• via CP	4; Max. 4 in the central controller; no mixed operation of different CP
	443-1 types in PROFINET IO mode
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 connections
PROFIBUS and Ethernet CPs	14; In total max. 10 CPs as DP master and PROFINET controller, of which up to 10 IMs or CPs as DP master and up to 4 CPs as PROFINET controller
Slots	
required slots	2
Time 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
• to DP, master	Yes
• to DP, slave	Yes
	Yes
• in AS, master	
• in AS, slave	Yes
on Ethernet via NTP	No; Via CP
• to IF 964 DP	Yes
Time difference in system when synchronizing via	000
MPI, max.	200 ms
Interfaces	
Interfaces/bus type	1 x MPI/PROFIBUS DP, 1 x PROFIBUS DP, 1 x PROFIBUS DP (optionally pluggable)
Number of RS 485 interfaces	2; Combined MPI / PROFIBUS DP and PROFIBUS DP
Number of other interfaces	1; PROFIBUS DP with IF 964-DP (plug-in option; MLFB: 6ES7964-
Number of other interfaces	2AA04-0AB0)
1. Interface	
Interface type	MPI/PROFIBUS DP
Isolated	Yes
Interface types	
• RS 485	Yes
 Output current of the interface, max. 	150 mA
Protocols	
• MPI	Yes
PROFIBUS DP master	Yes
PROFIBUS DP slave	Yes
MPI	
	32; If a diagnostics repeater is used on the line, the number of
Number of connections	connection resources on the line is reduced by 1
Number of connectionsTransmission rate, max.	
	connection resources on the line is reduced by 1
Transmission rate, max.	connection resources on the line is reduced by 1
Transmission rate, max. Services — PG/OP communication	connection resources on the line is reduced by 1 12 Mbit/s
Transmission rate, max. Services	connection resources on the line is reduced by 1 12 Mbit/s Yes

— S7 communication	Von
	Yes Yes
— S7 communication, as client— S7 communication, as server	Yes
PROFIBUS DP master	res
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 12 Mbit/s
Transmission rate, max. Number of DD players may.	32
Number of DP slaves, max.	32
Services	Vee
— PG/OP communication	Yes
— Routing	Yes; S7 routing
Global data communication	No
— S7 basic communication	Yes
— S7 communication	Yes
 S7 communication, as client 	Yes
 S7 communication, as server 	Yes
— Equidistance	Yes
— Isochronous mode	Yes
— SYNC/FREEZE	Yes
 Activation/deactivation of DP slaves 	Yes
 Direct data exchange (slave-to-slave 	Yes
communication)	
— DPV1	Yes
Address area	
— Inputs, max.	2 kbyte
— Outputs, max.	2 kbyte
User data per DP slave	
 User data per DP slave, max. 	244 byte
— Inputs, max.	244 byte
— Outputs, max.	244 byte
Clata may	244
— Slots, max.	244
— Siots, max. — per slot, max.	128 byte
— per slot, max.	
— per slot, max. PROFIBUS DP slave	128 byte
— per slot, max. PROFIBUS DP slave • Number of connections	128 byte 16
— per slot, max. PROFIBUS DP slave • Number of connections • GSD file	128 byte 16 http://support.automation.siemens.com/WW/view/en/113652
— per slot, max. PROFIBUS DP slave • Number of connections • GSD file • Transmission rate, max.	128 byte 16 http://support.automation.siemens.com/WW/view/en/113652 12 Mbit/s No
 — per slot, max. PROFIBUS DP slave Number of connections GSD file Transmission rate, max. automatic baud rate search Address area, max. 	128 byte 16 http://support.automation.siemens.com/WW/view/en/113652 12 Mbit/s No 32; Virtual slots
 — per slot, max. PROFIBUS DP slave Number of connections GSD file Transmission rate, max. automatic baud rate search 	16 http://support.automation.siemens.com/WW/view/en/113652 12 Mbit/s No 32; Virtual slots 32 byte
— 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.	128 byte 16 http://support.automation.siemens.com/WW/view/en/113652 12 Mbit/s No 32; Virtual slots
 — 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. 	16 http://support.automation.siemens.com/WW/view/en/113652 12 Mbit/s No 32; Virtual slots 32 byte 32 byte
 — 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 	16 http://support.automation.siemens.com/WW/view/en/113652 12 Mbit/s No 32; Virtual slots 32 byte 32 byte Yes; with interface active
 — 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 — Routing 	128 byte 16 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
 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 Routing Global data communication 	128 byte 16 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
 — 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 — Routing — Global data communication — S7 basic communication 	16 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
 — 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 — Routing — Global data communication — S7 basic communication — S7 communication 	16 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 No Yes
 — 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 — Routing — Global data communication — S7 basic communication — S7 communication, as client 	16 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 Yes Yes
 — 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 — Routing — Global data communication — S7 basic communication — S7 communication, as client — S7 communication, as server 	16 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 Yes Yes Yes
 — 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 — Routing — Global data communication — S7 basic communication — S7 communication, as client 	16 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 Yes Yes
 — 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 — Routing — Global data communication — S7 basic communication — S7 communication — S7 communication, as client — S7 communication, as server — Direct data exchange (slave-to-slave) 	16 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 Yes Yes Yes
 — 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 — Routing — Global data communication — S7 basic communication — S7 communication — S7 communication, as client — S7 communication, as server — Direct data exchange (slave-to-slave communication) 	16 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 Yes Yes Yes Yes No
 — 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 — Routing — Global data communication — S7 basic communication — S7 communication — S7 communication, as client — S7 communication, as server — Direct data exchange (slave-to-slave communication) — DPV1 	16 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 Yes Yes Yes Yes No
 — 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 — Routing — Global data communication — S7 basic communication — S7 communication — S7 communication, as client — S7 communication, as server — Direct data exchange (slave-to-slave communication) — DPV1 Transfer memory 	16 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 No Yes Yes Yes Yes No No No
 — 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 — Routing — Global data communication — S7 basic communication — S7 communication — S7 communication, as client — S7 communication, as server — Direct data exchange (slave-to-slave communication) — DPV1 Transfer memory — Inputs 	16 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 Yes Yes Yes Yes Yes Yes No No No
— 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 — 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 Transfer memory — Inputs — Outputs 1. Interface	16 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 Yes
 — 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 — Routing — Global data communication — S7 basic communication — S7 communication — S7 communication, as client — S7 communication, as server — Direct data exchange (slave-to-slave communication) — DPV1 Transfer memory — Inputs — Outputs 	16 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 Yes Yes Yes Yes Yes Yes No No No
- 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 - 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 Transfer memory - Inputs - Outputs Interface Interface type Isolated	16 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 Yes
— 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 — 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 Transfer memory — Inputs — Outputs Interface Interface type Isolated Number of connection resources	16 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 Yes
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 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 Transfer memory Inputs Outputs 1. Interface Interface type Isolated Number of connection resources Interface types	16 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 No Yes Yes Yes Yes Yes Yes No No POFIBUS DP Yes 16
— 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 — 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 Transfer memory — Inputs — Outputs Interface Interface type Isolated Number of connection resources	128 byte 16 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

Protocols	
PROFIBUS DP master	Yes
PROFIBUS DP slave	Yes
PROFIBUS DP master	100
Number of connections, max.	16
Transmission rate, max.	12 Mbit/s
Number of DP slaves, max.	96
Services	
— PG/OP communication	Yes
— Routing	Yes; S7 routing
— Global data communication	No
 S7 basic communication 	Yes
— S7 communication	Yes
 — S7 communication, as client 	Yes
 S7 communication, as server 	Yes
— Equidistance	Yes
— Isochronous mode	Yes
— SYNC/FREEZE	Yes
 Activation/deactivation of DP slaves 	Yes
 Direct data exchange (slave-to-slave communication) 	Yes
— DPV1	Yes
Address area	AU .
— Inputs, max.	6 kbyte
— Outputs, max.	6 kbyte
User data per DP slave	OAA buda
— User data per DP slave, max.	244 byte
— Inputs, max.	244 byte
— Outputs, max.	244 byte
— Slots, max.	244 139 byte
— per slot, max. PROFIBUS DP slave	128 byte
Number of connections	16
GSD file	http://support.automation.siemens.com/WW/view/en/113652
Transmission rate, max.	12 Mbit/s
Address area, max.	32
User data per address area, max.	32 byte
— of which consistent, max.	32 byte
Services	
— Routing	Yes; with interface active
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte
3. Interface	
Interface type	pluggable interface module (IF), technical data as for 2nd interface
Plug-in interface modules	IF 964-DP (MLFB: 6ES7964-2AA04-0AB0)
Isolated	Yes
automatic detection of transmission rate	No
Number of connection resources	16
Interface types	
• RS 485	Yes
Output current of the interface, max.	150 mA
Protocols	
● MPI	No
PROFIBUS DP master	Yes
 PROFIBUS DP slave 	Yes
PROFIBUS DP slave PROFIBUS DP master	Yes
	Yes 16
PROFIBUS DP master	

- PGOP communication Yes S routing	Sarvicas	
- Routing - Global data communication No	Services — PG/OP communication	Vac
Global data communication S7 basic communication S7 communication S7 communication sellent S7 communication, as server S7 communication, as server Equidistance S7 communication S		
— \$7 basic communication	5	
Equidistance		
Isochronous mode SYNC/FREEZE Activation/deactivation of DP slaves Direct data exchange (slave-to-slave communication) DPV0 DPV1 DPV1 Yes Inputs, max Outputs, max Outputs, max Outputs, max User data per DP slave User data per dores area, max User data per address area, max User data p		
- SYNC/FREEZE - Activation/deactivation of DP slaves - Direct data exchange (slave-to-slave communication) - DPV0 - DPV1 - DPV1 - Yes - Address area - Inputs, max. 6 kbyte - User data per DP slave, max. 244 byte - Inputs, max. 244 byte - User data per DP slave, max. 244 byte - User data per DP slave, max. 244 byte - Slots, max. 244 byte - Slots, max. 244 byte - Number of connections - SSO file - Transmission rate, max. 128 byte - Very data per address area, max. 244 - Address area, max. 244 - Slots data per address area, max. 245 - Address area, max. 32 byte - Slots data per address area, max. 32 byte - PROFO communication - ST communication, as selent - ST communication, as selent - Outputs - St communication - ST communication - ST communication - ST communication, as selent - Outputs - St outputs - Outputs		
- Direct data exchange (slave-to-slave communication) - DPV0 - DPV1 - DPV1 - Yes - DPV1 - Yes - Address area - Inputs, max Outputs, max Outputs, max User data per DP slave, max User data per dDP slave, max User data per dDP slave - Number of connections - GSD file - Transmission rate, max User data per address area, max User data per address area, max User data per address area, max Of which consistent, max User data per address area, max Of which consistent, max PC/OP communication - Routing - Global data communication - S7 basic communication - S7 communication, as server - Direct data exchange (slave-to-slave communication, as server - Direct data exchange (slave-to-slave communication) - DPV1 - User data exchange (slave-to-slave communication) - DPV1 - User data exchange (slave-to-slave communication) - S7 communication, as server - Direct data exchange (slave-to-slave communication) - DPV1 - User data exchange (slave-to-slave communication) - S7 communication, as server - Direct data exchange (slave-to-slave communication) - DPV1 - User data exchange (slave-to-slave communication) - S7 communication - S8 communication - S9 com		
Communication PPV0		
- DPV0		Yes
DPV1	•	Vas
Address area - Inputs, max Outputs, max Outputs, max. User data per DP slave - User data per DP slave, max Inputs, max Outputs, max Outputs, max Outputs, max Slots, max Slots, max Poer slot, max Poer slot, max Slots, max Poer slot, max Slots, max Slots, max Poer slot, max Slots, max Poer slot, max Number of connections - SSD file - Transmission rate, max automatic baud rate search - Address area, max of which consistent, max of which consistent, max of which consistent, max of which consistent, max Services - PG/OP communication - Routing - Routing - Routing - Global data communication - S7 basic communication - S7 rosmmunication, as server - Direct data exchange (slave-to-slave communication) - S7 communication, as server - Direct data exchange (slave-to-slave communication) - DPV1 - Inputs - Outputs - Outputs - Outputs - Ves - Open IE communication - S7 routing - S7 routing - S7 routing - Ves - Outputs - Open IE communication - S7 routing - S7 routing - Ves - Data length, max Kes - Ves - Open IE communication - S7 routing - Ves - Outputs - O		
Inputs, max Outputs, max Outputs, max Outputs, max User data per DP slave User data per DP slave User data per DP slave, max Inputs, max User data per DP slave, max User data per DP slave Outputs, max Slots, max Sl		165
User data per DP slave - User data per DP slave, max Inputs, max Outputs, max Slots, max Slots, max per slot, max 128 byte PROFIBUS DP slave • Number of connections - GSD file - http://support.automation.siemens.com/WW/view/en/113652 - 11 Mbit/s - Address area, max 12 Mbit/s - 12 Mbit/s - 13 Mbit/s - 14 Mbit/s - 15 Mbit/s - 15 Mbit/s - 16 Mbit/s - 17 Mbit/s - 18 Mbi		6 khyte
User data per DP slave		
- User data per DP slave, max Inputs, max Inputs, max Outputs, max Slots, max Slots, max per slot, max per slot, max per slot, max per slot, max 128 byte PROFIBUS DP slave • Number of connections • GSD file • Intur//support_automation_siemens.com/WW/view/en/113652 • Transmission rate, max. • 12 Mbit/s • Transmission rate, max. • 12 Mbit/s • Transmission rate, max. • 12 Mbit/s • Transmission rate, max. • User data per address area, max. • User data per address area, max of which consistent, max. Services - PG/OP communication - Routing - Global data communication - S7 basic communication - S7 oommunication - S7 communication, as client - S7 communication, as client - S7 communication, as server - Direct data exchange (slave-to-slave communication) - DPV1 No Transfer memory - Inputs - Outputs - Outputs - Outputs - Outputs - Protocols - S7 routing - S8 - S7 routing - S9	·	o noglo
- Inputs, max Outputs, max Slots, max Per slot, max per slot, max Poer slot, max Number of connections - Number of connections - So D file - Into://support.automation.siemens.com/WW/view/en/113652 - Transmission rate, max automatic baud rate search - Address area, max User data per address area, max of which consistent, max Services - PG/OP communication - Routing - Routing - Routing - Global data communication - S7 basic communication - S7 communication - S7 communication, as server - Direct data exchange (slave-to-slave communication) - DPV1 - Transfer memory - Inputs - Outputs -	·	244 hyte
Slots, max per slot, max per slot. max slots	•	
— per slot, max. 128 byte PROFIBUS DP slave • Number of connections • GSD file http://support.automation.siemens.com/WW/view/en/113652 • Transmission rate, max. 12 Mbit/s • Address area, max. 32 • User data per address area, max. 32 • User data per address area, max. 32 byte — of which consistent, max. 32 byte Services - PG/OP communication Yes - Routing Yes; with interface active Global data 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 Transfer memory - Inputs 244 byte Protocols SIMATIC communication • S7 routing Yes Open IE communication • S7 routing Yes Open IE communication • ISO-on-TCP (RFC1006) - Data length, max. 1452 bytes via CP 443-1 Adv. Web server • supported No No Pes Yes Number of DP masters with isochronous mode Yes Number of DP masters with isochronous mode		
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 - 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 Transfer memory - Inputs - Outputs Protocols SIMATIC communication • S7 routing - S7 communication • S7 routing - S7 routing - S7 routing - S7 communication - S7 routing - S44 byte - Outputs Protocols SIMATIC communication - S7 routing - Den IE communication - S7 routing - Data length, max. Via CP 443-1 and loadable FB - Late protocols - Sumported - No - Sumported - No - Satisfance - Sumported - No - Sumported - Sumported - No - Sump		
Number of connections GSD file Transmission rate, max. 12 Mbit/s automatic baud rate search Address area, max. 32 byte Services - PG/OP communication - S7 basic communication - S7 communication - S7 communication, as server - Direct data exchange (slave-to-slave communication) - DPV1 Transfer memory - Inputs - Outputs Protocols SIMATIC communication • S7 routing - S7 communication - S7 routing - Utyle CPEC1006) - Data length, max. 16 http://support.automation.siemens.com/WW/view/en/113652 12 Mbit/s 12 M		120 byte
SGSD file Transmission rate, max. 12 Mbit/s automatic baud rate search Address area, max. 22 User data per address area, max. 32 Ouser data per address area, max. 32 byte Services PG/OP communication Routing Sf basic communication Sf communication Sf communication Sf communication, as client Sf communication Sf routing Yes Open IE communication Sf routing Sf r		16
 Transmission rate, max. automatic baud rate search No Address area, max. User data per address area, max. — of which consistent, max. 32 byte — of which consistent, max. 32 byte Services — PG/OP communication — 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 Transfer memory — Inputs — Outputs Protocols SIMATIC communication ● S7 routing Yes Open IE communication ● S7 routing Yes Open IE communication ● ISO-on-TCP (RFC1006) — Data length, max. 1 452 bytes via CP 443-1 and loadable FB — Data length, max. 1 452 bytes via CP 443-1 Adv. Web server ● supported No No Ecquidistance No No No No Equidistance Yes Number of DP masters with isochronous mode 3 		
 automatic baud rate search Address area, max. User data per address area, max. — of which consistent, max. Services — PG/OP communication — 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) — DP/1 No Transfer memory — Inputs — Outputs 244 byte — Outputs 244 byte Protocols SIMATIC communication • S7 counting Yes Open IE communication • ISO-on-TCP (RFC1006) — Data length, max. 1 452 bytes via CP 443-1 and loadable FB — Data length, max. 1 452 bytes via CP 443-1 Adv. Web server • supported Equidistance No No 		
Address area, max. User data per address area, max. of which consistent, max. 32 byte Services - PG/OP communication 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 Transfer memory Inputs Outputs Protocols SIMATIC communication S7 routing Yes Yes Open IE communication S1 communication S1 communication S1 communication S2 d4 byte Protocols SIMATIC communication S1 communication S2 communication S3 communication S4 byte Poet IE communication S6 communication S7 routing Yes Open IE communication S6 communication S7 communication S6 communication S7 routing Yes Open IE communication S6 communication S7 routing Yes Open IE communication S6 communication S7 routing Yes Open IE communication S8 routing Yes No No No S8 routing Yes No No S8 routing Yes No No No No No No No No No N		
User data per address area, max. — of which consistent, max. Services		
	•	
Services - PG/OP communication Yes - 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 Transfer memory - Inputs 244 byte - Outputs 244 byte Protocols SIMATIC communication • S7 routing Yes Open IE communication • ISO-on-TCP (RFC1006) - Data length, max. 1452 bytes via CP 443-1 Adv. Web server • supported No Isochronous mode Equidistance Yes Number of DP masters with isochronous mode Yes Number of DP masters with isochronous mode Yes Number of DP masters with isochronous mode		·
PG/OP communication Routing Routing Global data communication S7 basic communication S7 basic communication S7 basic communication S7 communication S7 communication S7 communication, as client S7 communication, as server Direct data exchange (slave-to-slave communication) DPV1 DPV1 No Transfer memory Inputs Outputs Outputs Outputs Outputs Outputs S7 routing S8 routing Data length, max Via CP 443-1 and loadable FB Data length, max. Web server supported No Isochronous mode Equidistance No No Isochronous mode S7 routing S9 routing No Isochronous mode S9 routing		32 byte
- Routing Yes; with interface active - Global data communication No - S7 basic communication Yes - S7 communication Yes - S7 communication, as client Yes - S7 communication, as server Yes - Direct data exchange (slave-to-slave communication) - DPV1 No Transfer memory - Inputs 244 byte - Outputs 244 byte Protocols SIMATIC communication		Vee
- 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 Transfer memory - Inputs 244 byte - Outputs 244 byte Protocols SIMATIC communication • S7 routing Yes Open IE communication • ISO-on-TCP (RFC1006) Via CP 443-1 and loadable FB - Data length, max. 1 452 bytes via CP 443-1 Adv. Web server • supported No Isochronous mode Equidistance Yes Number of DP masters with isochronous mode 3		
- S7 basic communication	_	
— S7 communication Yes — S7 communication, as client Yes — S7 communication, as server Yes — Direct data exchange (slave-to-slave communication) — DPV1 No Transfer memory — Inputs 244 byte — Outputs 244 byte Protocols SIMATIC communication ● S7 routing Yes Open IE communication ● ISO-on-TCP (RFC1006) Via CP 443-1 and loadable FB — Data length, max. 1 452 bytes via CP 443-1 Adv. Web server ● supported No Isochronous mode Equidistance Yes Number of DP masters with isochronous mode Yes Yes Number of DP masters with isochronous mode Yes Yes No		
— S7 communication, as client — S7 communication, as server — Direct data exchange (slave-to-slave communication) — DPV1 No Transfer memory — Inputs — Outputs Protocols SIMATIC communication • S7 routing Open IE communication • ISO-on-TCP (RFC1006) — Data length, max. Via CP 443-1 and loadable FB — Data length, max. Via CP 443-1 Adv. Web server • supported No Isochronous mode Equidistance Yes Number of DP masters with isochronous mode Yes Via CP 448-1 Yes No Yes Yes No		
— S7 communication, as server — Direct data exchange (slave-to-slave communication) — DPV1 No Transfer memory — Inputs — Outputs Protocols SIMATIC communication • S7 routing Open IE communication • ISO-on-TCP (RFC1006) — Data length, max. Web server • supported No Isochronous mode Equidistance No No No Yes No No No No Server Yes No No No No Server • Supported No Server No No Server Yes No No Server Yes No No Server Supported No		
— Direct data exchange (slave-to-slave communication) — DPV1 No Transfer memory — Inputs — Outputs 244 byte — Outputs 244 byte Protocols SIMATIC communication • S7 routing Yes Open IE communication • ISO-on-TCP (RFC1006) — Data length, max. 1452 bytes via CP 443-1 Adv. Web server • supported No Isochronous mode Equidistance Yes Number of DP masters with isochronous mode 3		
communication) — DPV1 No Transfer memory — Inputs 244 byte — Outputs 244 byte Protocols SIMATIC communication • S7 routing Yes Open IE communication • ISO-on-TCP (RFC1006) Via CP 443-1 and loadable FB — Data length, max. 1 452 bytes via CP 443-1 Adv. Web server • supported No Isochronous mode Equidistance Yes Number of DP masters with isochronous mode 3		
— DPV1 No Transfer memory — Inputs 244 byte Protocols SIMATIC communication ● S7 routing Yes Open IE communication ● ISO-on-TCP (RFC1006) Via CP 443-1 and loadable FB — Data length, max. 1452 bytes via CP 443-1 Adv. Web server ● supported No Isochronous mode Equidistance Yes Number of DP masters with isochronous mode 3		NO
Transfer memory — Inputs — Outputs 244 byte Protocols SIMATIC communication • S7 routing Yes Open IE communication • ISO-on-TCP (RFC1006) — Data length, max. 1 452 bytes via CP 443-1 Adv. Web server • supported Isochronous mode Equidistance Full March Street Stree		No
-— Inputs -— Outputs 244 byte Protocols SIMATIC communication ● S7 routing Yes Open IE communication ● ISO-on-TCP (RFC1006) -— Data length, max. 1 452 bytes via CP 443-1 Adv. Web server ● supported No Isochronous mode Equidistance Yes Number of DP masters with isochronous mode 244 byte 244 byte 244 byte 244 byte 244 byte		110
Protocols SIMATIC communication ● S7 routing Open IE communication ● ISO-on-TCP (RFC1006) — Data length, max. Via CP 443-1 and loadable FB — Data length, max. 1 452 bytes via CP 443-1 Adv. Web server ● supported No Isochronous mode Equidistance Yes Number of DP masters with isochronous mode 3	·	244 hyte
Protocols SIMATIC communication • S7 routing Yes Open IE communication • ISO-on-TCP (RFC1006) Via CP 443-1 and loadable FB — Data length, max. 1 452 bytes via CP 443-1 Adv. Web server • supported No Isochronous mode Equidistance Yes Number of DP masters with isochronous mode 3		
SIMATIC communication S7 routing Open IE communication ISO-on-TCP (RFC1006) Data length, max. Via CP 443-1 and loadable FB Data length, max. 1 452 bytes via CP 443-1 Adv. Web server supported No Isochronous mode Equidistance Yes Number of DP masters with isochronous mode 3		2-TH DYIC
● S7 routing Yes Open IE communication ● ISO-on-TCP (RFC1006) Via CP 443-1 and loadable FB — Data length, max. 1 452 bytes via CP 443-1 Adv. Web server ● supported No Isochronous mode Equidistance Yes Number of DP masters with isochronous mode 3		
Open IE communication ISO-on-TCP (RFC1006) Data length, max. Via CP 443-1 and loadable FB 1 452 bytes via CP 443-1 Adv. Web server supported No Isochronous mode Equidistance Yes Number of DP masters with isochronous mode 3		Von
ISO-on-TCP (RFC1006)		165
— Data length, max. 1 452 bytes via CP 443-1 Adv. Web server ● supported No Isochronous mode Equidistance Yes Number of DP masters with isochronous mode 3	·	Via CD 440.4 and leadable ED
Web server ◆ supported No Isochronous mode Equidistance Yes Number of DP masters with isochronous mode 3		
● supported No Isochronous mode Equidistance Yes Number of DP masters with isochronous mode 3		1 452 Dytes via CP 443-1 Adv.
Sochronous mode Yes		N-
Equidistance Yes Number of DP masters with isochronous mode 3		NO
Number of DP masters with isochronous mode 3		
	Number of DP masters with isochronous mode	3
User data per isochronous slave, max. 244 byte	User data per isochronous slave, max.	244 byte
shortest clock pulse 1 ms; 0.5 ms without use of SFC 126, 127	shortest clock pulse	1 ms; 0.5 ms without use of SFC 126, 127

max. cycle	32 ms
communication functions / header	
PG/OP communication	Yes
Number of connectable OPs without message processing	63
 Number of connectable OPs with message processing 	63; When using Alarm_S/SQ and Alarm_D/DQ
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; 1 variable
S5 compatible communication	
• 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 orders per CPU, max. 	24/24
Standard communication (FMS)	
• supported	Yes; Via CP and loadable FB
Number of connections	
• overall	64
 usable for PG communication 	63
 reserved for PG communication 	1
 adjustable for PG communication, max. 	0
 usable for OP communication 	63
 reserved for OP communication 	1
 adjustable for OP communication, max. 	0
 usable for S7 basic communication 	62
 reserved for S7 basic communication 	0
 adjustable for S7 basic communication, max. 	0
 usable for S7 communication 	62
 reserved for S7 communication 	0
 adjustable for S7 communication, max. 	0
usable for routing	31
reserved for routing	0
— adjustable for routing, max.	0
S7 message functions	
Number of login stations for message functions, max.	63; Max. 63 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC)
Symbol-related messages	Yes
SCAN procedure	Yes
Program alarms	Yes
Process diagnostic messages	Yes
simultaneously active Alarm-S blocks, max.	400; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ blocks
Alarm 8-blocks	Yes
 Number of instances for alarm 8 and S7 communication blocks, max. 	1 200

a preset may	300
• preset, max.	Yes
Process control messages Number of archives that can log on simultaneously (SFB	16
37 AR_SEND)	
Number of messages	
overall, max.	512
● in 100 ms grid, max.	128
• in 500 ms grid, max.	256
 • in 1000 ms grid, max. 	512
Number of additional values	
with 100 ms grid, max.	1
 with 500, 1000 ms grid, max. 	10
Test commissioning functions	
Status block	Yes; Up to 16 simultaneously
Single step	Yes
Number of breakpoints	16
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, peripheral inputs, peripheral outputs
Number of variables, max. Piggraph and buffers	256
Diagnostic buffer	Voc
Present Number of entries, may	Yes
Number of entries, max.	3 200 Vos
— adjustable	Yes
— preset Service data	120
• can be read out	Yes
Standards, approvals, certificates	100
CE mark	Voc
CSA approval	Yes 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 / header	
Configuration software	
• STEP 7	Yes
configuration / programming / header	
Command set	see instruction list
Nesting levels	7
Access to consistent data in process image	Yes
System functions (SFC)	see instruction list
System function blocks (SFB)	see instruction list
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes

— CFC	Yes	
— GRAPH	Yes	
— HiGraph®	Yes	
configuration / programming / number of simultaneously	active SFC / header	
— number of simultaneously active system functions (SFC) / with DPSYC_FR	2; SFC 11; per interface	
— number of simultaneously active system functions (SFC) / with 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	
configuration / programming / number of simultaneously active SFB / header		
— 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	
Block encryption	Yes; With S7 block Privacy	
Dimensions		
Width	50 mm	
Height	290 mm	
Depth	219 mm	
Weights		
Weight, approx.	900 g	

last modified: 4/1/2022 🖸