SIEMENS

Data sheet

6ES7414-3EM06-0AB0



********** Replacement part ********* SIMATIC S7-400, CPU 414-3 PN/DP Central processing unit with: work memory 4 MB, (2 MB code, 2 MB data), Interfaces: 1st interface MPI/DP 12 Mbit/s, (X1), 2nd interface Ethernet/PROFINET (X5), 3rd interface IF 964-DP plug-in (IF1)

Figure similar

General information	
Product type designation	CPU 414-3 PN/DP
HW functional status	01
Firmware version	V6.0
Product function	
 Isochronous mode 	Yes; Via PROFIBUS DP or PROFINET interface
Engineering with	
 Programming package 	STEP 7 V5.5 or higher/iMap V3.0 + iMap STEP 7 Add-on V3.0 SP5 or higher
CiR - Configuration in RUN	
CiR synchronization time, basic load	100 ms
CiR synchronization time, time per I/O byte	15 μs; Time per I/O byte
Supply voltage	
Rated value (DC)	Power supply via system power supply
Input current	
from backplane bus 5 V DC, typ.	1.3 A
from backplane bus 5 V DC, max.	1.5 A
from backplane bus 24 V DC, max.	300 mA; 150 mA per DP interface
from interface 5 V DC, max.	90 mA; At each DP interface
Power loss	
Power loss, typ.	6.5 W
Power loss, max.	7.5 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.	125 μA; up to 40 °C
Backup current, max.	450 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
PU processing times	
for bit operations, typ.	45 ns
for word operations, typ.	45 ns
for fixed point arithmetic, typ.	45 ns
for floating point arithmetic, typ.	135 ns
PU-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, max.	3 000; Number range: 0 to 7999
• 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	4; OB 10-13
Number of delay alarm OBs	4; OB 20-23
Number of cyclic interrupt OBs	4; OB 32, 33, 34, 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
ounters, 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
	No times retentive

-	
Time range	40
— lower limit	10 ms
— upper limit	9 990 s
IEC timer	v
• present	Yes
• Type	SFB
Number	Unlimited (limited only by RAM capacity)
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max. Flag	Total working and load memory (with backup 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	
Integrated power supply	No
Number of expansion units, max.	21
connectable OPs	63
Multicomputing	Yes; 4 CPUs max. (with UR1 or UR2)
Interface modules	103, 4 Of 03 max. (with ore of ore2)
Number of connectable IMs (total), max.	6
Number of connectable IM 460s, max. Number of connectable IM 460s, max.	6
Number of connectable IM 463s, max. Number of connectable IM 463s, max.	4; IM 463-2
Number of DP masters	T, IIII TJU-L
• 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	1; IF 964-DP
	6
 Number of pluggable S5 modules (via adapter capsule in 	
 Number of pluggable S5 modules (via adapter capsule in central device), max. 	
central device), max.	1

	max. 4 in central controller
Number of operable FMs and CPs (recommended)	max. 4 in control cont
• 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; 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
• in AS, master	Yes
• in AS, slave	Yes
on Ethernet via NTP	Yes; As client
to IF 964 DP Time difference in system when synchronizing via	Yes
Ethernet, max.	10 ms
• MPI, max.	200 ms
Interfaces	200 1110
Interfaces/bus type	1 x MPI/PROFIBUS DP, 1 x PROFINET (2 ports), 1 x PROFIBUS DP (optionally pluggable)
Number of RS 485 interfaces	2
Number of other interfaces	0
Optical interface	No
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 • Number of connections	22: If a diagnostics repeater is used on the line, the number of connection
Number of connections Transmission rate, may	32; 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. Services	IZ IVIUVO
— PG/OP communication	Yes
— PG/OP communication — Routing	Yes
Routing Global data communication	Yes
— S7 basic communication	Yes
— S7 basic communication — S7 communication	Yes
— S7 communication, as client	Yes
o. communication, do shortt	

— 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
 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	
— 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
— Slots, 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
— 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) 	No
— DPV1	No
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte
2. Interface	
Interface type	PROFINET
Isolated	Yes
automatic detection of transmission rate	Yes; Autosensing
Autonegotiation	Yes
Autocrossing	Yes
	Variable Application and the bright of level 10 Comballing of the company with
Change of IP address at runtime, supported	Yes; Assignment by higher-level IO-Controller or by the user program with SFB104 "IP_CONF"
Change of IP address at runtime, supported Number of connection resources	Yes; Assignment by higher-level IO-Controller or by the user program with SFB104 "IP_CONF" 64

D I 45 (545 cm - 4)	V
• RJ 45 (Ethernet)	Yes
Number of ports	2
integrated switch	Yes
Protocols	
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
PROFINET CBA	Yes
 PROFIBUS DP master 	No
 PROFIBUS DP slave 	No
Open IE communication	Yes
Web server	Yes
Point-to-point connection	No
Media redundancy	Yes
PROFINET IO Controller	
Transmission rate, max.	100 Mbit/s
Services	
— PG/OP communication	Yes
— S7 communication	Yes
— S7 communication — Isochronous mode	
	Yes; Only with IRT and the High Performance option
— Shared device	Yes
— Prioritized startup	Yes
Number of IO devices with prioritized startup, max.	32
Number of connectable IO Devices, max.	256
Of which IO devices with IRT, max.	64
— of which in line, max.	64
 Number of IO Devices with IRT and the option "high flexibility" 	256
— of which in line, max.	61
 Number of connectable IO Devices for RT, max. 	256
— of which in line, max.	256
 Activation/deactivation of IO Devices 	Yes
 Number of IO Devices that can be simultaneously activated/deactivated, max. 	8
 IO Devices changing during operation (partner ports), supported 	Yes
 Number of IO Devices per tool, max. 	8; 8 parallel calls of the SFC 12 "D_ACT_DP" possible per line. Max. 32 IO Devices changing during operation (partner ports) are supported
 Device replacement without swap medium 	Yes
— Send cycles	$250~\mu s,500~\mu s,1$ ms, 2 ms, 4 ms additionally with IRT with high performance: $250~\mu s$ to 4 ms in $125~\mu s$ frame
— Updating time	250 µs to 512 ms; minimum value depends on preset communication share for PROFINET IO, on the number of IO Devices and on the amount of configured user data, see PROFINET system description
Address area	
— Inputs, max.	8 kbyte
— Outputs, max.	8 kbyte
User data consistency, max.	1 024 byte
PROFINET IO Device	
Services	
— PG/OP communication	Yes
	Yes
— S7 communication	
— Isochronous mode	No V
— IRT	Yes
— Prioritized startup	Yes
— Shared device	Yes
Number of IO Controllers with shared device, max.	2
Transfer memory	
— Inputs, max.	1 440 byte; Per IO Controller with shared device
— Inputs, max.— Outputs, max.	1 440 byte; Per IO Controller with shared device 1 440 byte; Per IO Controller with shared device
— Outputs, max.	
— Outputs, max. Submodules	1 440 byte; Per IO Controller with shared device

acyclic transmission	Yes
cyclic transmission	Yes
Open IE communication	
Number of connections, max.	62
Local port numbers used at the system end	0, 20, 21, 25, 80, 102, 135, 161, 34962, 34963, 34964, 65532, 65533, 65534, 65535
Keep-alive function, supported	Yes
3. Interface	
Interface type	Pluggable interface module (IF)
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 master	
 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
— DPV0	Yes
— DPV1	Yes
Address area	Clibyto
— Inputs, max.	6 kbyte 6 kbyte
Outputs, max. User data per DP slave	U KDYLE
User data per DP slave, max.	244 byte
User data per DP slave, max. Inputs, max.	244 byte 244 byte
— Inputs, max. — Outputs, max.	244 byte 244 byte
— Outputs, max. — Slots, max.	244 byte 244
— per slot, max.	128 byte
PROFIBUS DP slave	120 8310
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
— Routing	Yes; with interface active
Global data communication	No
— Giobai data communication	IVU

 S7 basic communication 	No
— S7 communication	Yes
 S7 communication, as client 	Yes
 S7 communication, as server 	Yes
 — Direct data exchange (slave-to-slave communication) 	No
— DPV1	No
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte
Protocols	
Redundancy mode	
Media redundancy	
Switchover time on line break, typ.	200 ms
— Number of stations in the ring, max.	50
SIMATIC communication	
S7 routing	Yes
Open IE communication	
• TCP/IP	Yes; via integrated PROFINET interface and loadable FBs
Number of connections, max.	62
— Data length, max.	32 kbyte
several passive connections per port, supported	Yes
ISO-on-TCP (RFC1006)	Yes; Via integrated PROFINET interface or CP 443-1 Adv. and loadable FBs
- Number of connections, max.	62
— Data length, max.	32 kbyte; 1 452 bytes via CP 443-1 Adv.
• UDP	Yes; via integrated PROFINET interface and loadable FBs
Number of connections, max.	62
— Data length, max.	1 472 byte
Web server	v
• supported	Yes
User-defined websites	Yes
Number of HTTP clients	5
Isochronous mode	
Equidistance	Yes
Number of DP masters with isochronous mode	2
User data per isochronous slave, max.	244 byte
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	100
	Vac
	Yes
as client User data per job, may	Yes
User data per job, max.	Yes 64 kbyte
	Yes

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 24/24 CPU, max. Standard communication (FMS) Yes; Via CP and loadable FB supported communication functions / PROFINET CBA (with set target communication load) / header · Setpoint for the CPU communication load 20 % • number of remote connection partners / with PROFINET 32 **CBA** • number of technological functions / with PROFINET CBA 150 / for master or slave • number of connections / with PROFINET CBA / for 4 500 master or slave / total • data volume / of the input variables / with PROFINET 45 000 byte CBA / for master or slave • data volume / of the output variables / with PROFINET 45 000 byte CBA / for master or slave number of internal and PROFIBUS interconnections / with 1 000 PROFINET CBA / maximum • data volume / of internal and PROFIBUS interconnections 16 000 byte / with PROFINET CBA / for master or slave • data volume / with PROFINET CBA / per connection / 2 000 byte performance data / PROFINET CBA / remote interconnection / with acyclic transfer / header 200 ms; Depending on preset communication load, number of interconnections — update time / of the remote interconnections / in the case of acyclic transmission / with PROFINET CBA and data length used - number of remote connections to input variables / in 250 the case of acyclic transmission / with PROFINET CBA / maximum — number of remote connections to output variables / 250 in the case of acyclic transmission / with PROFINET CBA / maximum - data volume / as user data for remote 8 000 byte interconnections with input variables / in the case of acyclic transmission / with PROFINET CBA data volume / as user data for remote 8 000 byte interconnections with output variables / in the case of acyclic transmission / with PROFINET CBA - data volume / as user data for remote 2 000 byte interconnections / in the case of acyclic transmission / with PROFINET CBA / per connection / maximum performance data / PROFINET CBA / remote interconnection / with cyclic transfer / header - update time / of the remote interconnections / with 1 ms; Depending on preset communication load, number of interconnections cyclical transfer / with PROFINET CBA and data length used number of remote connections to input variables / 300 with PROFINET CBA / with cyclic transfer / maximum - number of remote connections to output variables 300 with cyclical transfer / with PROFINET CBA / maximum - data volume / as user data for remote 4 800 byte interconnections with input variables / with cyclical transfer / with PROFINET CBA / maximum data volume / as user data for remote 4 800 byte interconnections with output variables / with cyclical transfer / with PROFINET CBA / maximum - data volume / as user data for remote 450 byte interconnections / with cyclical transfer / with PROFINET CBA / per connection / maximum performance data / PROFINET CBA / HMI variables via PROFINET / acyclic / header - number of connectable HMI stations / for HMI 2x PN OPC/1x iMap variables / in the case of acyclic transmission / with PROFINET CBA - update time / of the HMI variables / in the case of 500 ms acyclic transmission / with PROFINET CBA number of HMI variables / in the case of acyclic 1 000 transmission / with PROFINET CBA / maximum - data volume / as user data for HMI variables / in the 32 000 byte case of acyclic transmission / with PROFINET CBA / maximum performance data / PROFINET CBA / PROFIBUS proxy functionality / header

PROFIBILIS growy functionality — data without Profibilis group functionality / with PROFIBIC TAN per connection / maximum Number of connections • overall • usable for PG communication — reserved for PG communication — adjustable for PG communication — adjustable for PG communication — reserved for PG communication — adjustable for PG communication — reserved for PG communication — adjustable for PG communication — reserved for PG communication, max. • usable for ST basic communication — adjustable for ST basic communication, max. • usable for ST basic communication — reserved for ST basic communication, max. • usable for ST communication — reserved for ST basic communication, max. • usable for ST communication — reserved for ST basic communication, max. • usable for Touting — reserved for ST communication — adjustable for ST communication, max. • usable for Touting — reserved for stording, max. • Usable for Touting — reserved for stording, max. • ST message functions Number of login stations for message functions, max. Alam, B, Alam, BP, Nolly and Notify, B (e.g., WinCC) ST message functions Ves Ves Number of restricts flat can log on simultaneously (SFB 37 AR ST NUMBER of messages Ves Ves Number of predictions Ves Ves Number of predictions Number of predictions Ves Ves Number of predictions Number of veriables, max. Ve	— product function / with PROFINET CBA /	Yes; 32 PROFIBUS slaves max. connectable
with PROCINET CBA / per connection / maximum Number of commonication - reserved for PS communication - reserved for PS resis communication - reserved for PS Passis communication - reserved for ST communication	PROFIBUS proxy functionality	
		240 byte, diave dependent
usable for PG communication	Number of connections	
reserved for PC communication	• overall	64
Usable for OP communication I—adjustable for OP communication I—reserved for OP communication I—adjustable for OP communication I—reserved for OP communication I—reserved for ST basic communication I—reserved for ST basic communication I—reserved for ST basic communication I—reserved for ST country I—res	 usable for PG communication 	
Usable for OP communication — reserved for OP communication, max. Usable for ST basic communication, max. Usable for ST basic communication, max. Usable for ST communication — adjustable for ST basic communication, max. Usable for ST communication — reserved for ST basic communication, max. Usable for ST communication — reserved for ST communication, max. Usable for routing — reserved for routing — adjustable for ST communication, max. Usable for routing — reserved for routing — adjustable for orting, max. Usable for routing — reserved for routing, max. Usable for routing — reserved for routing, max. Usable for routing — reserved for routing, max. Usable for routing, for routing, max. Usa	 reserved for PG communication 	1
- reserved for OP communication max. • usable for S7 basic communication - reserved for S7 basic communication - reserved for S7 basic communication - adjustable for S7 communication - adjustable for S7 communication - adjustable for Touting - reserved for routing - adjustable for routing, max. 5 massage functions Number of login stations for message functions, max. S7 massage functions Number of login stations for message functions, max. S3 massage functions Number of login stations for message functions, max. S4 Max 63 with Alarm, S/SQ and Alarm, D/DQ (QPs); max 8 with Alarm, Alarm, 8, Alarm, 8, Notity and Notity, 8 (e.g., WinCC) Symbol-related messages Yes SCAN process diagnostic messages Yes Process diagnostic messages Yes Process diagnostic messages Number of instances for alarm 8 and S7 communication blocks, max. Alarm 5-blocks Number of instances for alarm 8 and S7 communication blocks, max. 9 process control messages Process control max 1 128 1 1000 ms gnd, max. 1 28 1 1000 ms gnd, max. 1 10	 adjustable for PG communication, max. 	0
- adjustable for OP communication, max. • usable for S7 basic communication - reserved for S7 basic communication - adjustable for S7 basic communication, max. • usable for S7 communication - reserved for S7 basic communication, max. • usable for S7 communication - reserved for To communication, max. • usable for To communication, max. • usable for trouting - reserved for routing - adjustable for soft communication, max. • usable for trouting - reserved for routing - adjustable for routing - adjustable for routing, max. • D S7 massage functions Number of login stations for message functions, max. S7 massage functions S7 massage functions, max.	 usable for OP communication 	
Usable for ST basic communication — reserved for ST basic communication, max. Usable for ST obsic communication, max. Usable for ST communication — adjustable for ST communication, max. Usuable for routing — reserved for routing — adjustable for routing — with state of login stations for message functions, max. Alarm 8, Alarm_8P, Natily and Notity_8 (e.g., WinCC) Symbol-related messages Yes Symbol-related messages Yes Symbol-related messages Yes Frocess diagnostic messages Yes simultaneously active Alarm S blocks, max. Alarm 8 blocks Process diagnostic messages Yes simultaneously active Alarm S blocks, max. 400; Simultaneously active alarm_SiSQ blocks or alarm_DiDQ blocks Alarm 8 blocks Process control messages Yes In the state of instances for alarm 8 and ST communication blocks, max. 9 preset, max. 9 preset, max. 100 128 • In 1000 ms grid, max. • In 1000 ms grid,	 reserved for OP communication 	1
reserved for \$7 basic communication, max adjustable for \$7 communication, max reserved for \$7 communication ax adjustable for \$7 communication, max adjustable for for comminication, max adjustable for routing adjustable for routing reserved for routing adjustable for routing adjustable for routing adjustable for routing adjustable for routing reserved for routing adjustable for routing adjustable for routing reserved for routing routing states for routing reserved for routing, max Ves Symbol-related message functions, max Alarm 8-Brocker Yes SCAN procedure Yes Yes SCAN procedure Yes Yes SCAN procedure Yes Yes SCAN procedure Yes SUM process of larm 8 and 87 communication blocks, max 400. Simultaneously active alarm_SYSQ blocks or alarm_D/DQ blocks Yes SIMD process or alarm 8 and 87 communication blocks, max yerset, max Yes Number of instances for alarm 8 and 87 communication blocks, max yerset, max Yes Number of archives that can log on simultaneously (SFB 37 routine) Number of messages Yes Number of messages Yes Number of messages Yes Number of messages Yes Number of sing dimax 128 100 ms grid, max 101 102 103	 adjustable for OP communication, max. 	0
- adjustable for S7 basic communication, max. - usable for S7 communication - adjustable for S7 communication - adjustable for S7 communication, max. - usable for routing - reserved for routing - reserved for routing - adjustable for F7 communication, max. 0 S7 message functions, max. 63; Max. 63 with Alarm, SISQ and Alarm_DIDQ (OPs); max. 8 with Alarm, Alarm_B, Alarm_BP, Notify and Notify_B (e.g. WinCC) Symbol-related messages Yes SCAN procedure - Yes Program alarms - Yes Program alarms - Yes Program alarms - Yes - Proses diagnostic messages - Number of instances for alarm 8 and S7 communication blocks, max. 400; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ blocks - Number of archives that can log on simultaneously (SFB 37 AR, SEND) Number of messages - overall, max. - in 100 ms grid, max. - in 100 ms grid, max. - in 100 ms grid, max. - with 100 ms grid, max. - with 100 ms grid, max. - with 500, 1000 ms grid, max. - Wish 500, 1000 m	 usable for S7 basic communication 	
usable for \$7 communication	 reserved for S7 basic communication 	0
- reserved for S7 communication, max adjustable for F8 communication, max adjustable for routing - reserved for routing - adjustable for routing, max. 57 mossage functions Number of login stations for message functions, max. Alam 8, Alam	•	0
- adjustable for \$7 communication, max. • usable for routing - reserved for routing - adjustable for routing, max. 0 ST message functions Number of login stations for message functions, max. Alarm, 8, Alarm, 9P, Notity and Notity, 6 (e.g., WinCC) Yes SCAN procedure - Yes Process diagnostic messages - Yes simultaneously active alarm, 5/SQ blocks or alarm_D/DQ blocks Alarm 8-blocks - Number of instances for alarm 8 and \$7 communication blocks, max prosel, max - in 100 ms grid, max	 usable for S7 communication 	
- usable for routing - reserved for routing - adjustable for routing - adjustable for routing, max. ST message functions Number of login stations for message functions, max. Alam_8, Alam_8P, Notify and Notify_8 (e.g., WinCC) Symbol-related messages Yes SCAN procedure Yes Program alarms Process diagnostic messages Smultaneously active Alamm-S blocks, max. 400; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ blocks Number of instances for alarm 8 and S7 communication blocks, max. 400; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ blocks * Number of instances for alarm 8 and S7 communication blocks, max. * process control messages Process control messages * ves Number of archives that can log on simultaneously (SFB 37 AR_SEND) Number of messages * overall, max. * in 100 ms gnd, max. * in 100 ms gnd, max. * in 100 ms gnd, max. * vint 500, 1000 ms gnd, max. * vint 500, 1000 ms gnd, max. * vint 100 ms gnd, max. * vint 100, 1000 ms gnd, max. * 10 * vint 100, 1000 ms gnd, max. * 10 * Status block * Yes Number of treakpoints Status block * Yes Number of variables, max. * 70; Status/control * Status/control variable * Variables * Number of variables, max. * 70; Status/control * Forcing * Forci		0
reserved for routing adjustable for routing, max. ST message functions Number of login stations for message functions, max. Alarm, 8, Alarm, 8/Notify and Notify, 8 (e.g., WinCC) Symbol-related messages Yes SCAN procedure Yes Program alarms Yes Program alarms Ves Program alarms Ves Number of instances for alarm 8 and S7 communication blocks, max. Alarm 8-blocks Number of instances for alarm 8 and S7 communication blocks, max. • preset, max. • preset, max. • preset, max. Number of archives that can log on simultaneously (SFB 37 AR, SEND) Number of archives that can log on simultaneously (SFB 37 al. in 100 ms grid, max. • with 100 ms grid, max. • with 100, 100 ms grid, max. • with 100, 100 ms grid, max. • with 100, 100 ms grid, max. • with 100 ns grid, max. • yes (Up to 16 simultaneously Status block Number of breakpoints Status block Yes; Up to 16 variable tables • Variables • Number of variables, max. Forcing • Forcing • Forcing, variables • Number of variables, max. Forcing • Forcing, variables • Number of variables, max. 266 • Ves Up to 16 variable tables • Number of variables, max. Forcing • Forcing, variables • Number of variables, max. 266 • Ves Up to 16 variables, blit memories, distributed I/Os, timers, counters • Number of variables, max. Forcing • Forcing, variables • Number of or or or variables, max. 70. Status/control • Preset • Number of entries, max. 3 200 - adjustable - preset 120	 adjustable for S7 communication, max. 	0
	9	
Number of acrivies that can log on simultaneously (SFB 37 AR SEND) Number of acrivies that can log on simultaneously (SFB 37 AR SEND) Number of acrivies that can log on simultaneously (SFB 37 AR SEND) Number of acrivies that can log on simultaneously (SFB 37 AR SEND) Number of acrivies that can log on simultaneously (SFB 37 AR SEND) Number of acrivies that can log on simultaneously (SFB 37 AR SEND) Number of acrivies that can log on simultaneously (SFB 37 AR SEND) Number of acrivies that can log on simultaneously (SFB 37 AR SEND) Number of acrivies that can log on simultaneously (SFB 37 AR SEND) Number of acrivies that can log on simultaneously (SFB 37 AR SEND) Number of acrivies that can log on simultaneously (SFB 37 AR SEND) Number of messages • overall, max. • in 500 ms grid, max. • 128 • in 100 ms grid, max. • in 500 ms grid, max. • with 500, 1000 ms grid, max. 10 **Status block **Ves; Up to 16 simultaneously Single step **Number of breakpoints Situsioritol • Status/control variable • Variables • Variables • Variables • Number of variables, max. **Torcing • Forcing • Forcing • Forcing, variables • Number of variables, max. - Adjustable - Porsest • Ves **Diagnostic buffer • Preset • Number of entries, max. - adjustable - preset 120	_	
Number of login stations for message functions, max. Symbol-related messages Yes SCAN procedure Yes Process diagnostic messages Yes Process diagnostic messages Yes Alarm_8, Notify and Notify_8 (e.g. WinCC) Yes Process diagnostic messages Yes Alon, Simultaneously active Alarm-S blocks, max. 400, Simultaneously active alarm_S/SQ blocks or alarm_D/DQ blocks Number of instances for alarm 8 and S7 communication blocks, max. **Number of instances for alarm 8 and S7 communication blocks, max. **Number of archives that can log on simultaneously (SFB 37 AR_SEND) Number of messages **overall, max. **in 100 ms grid, max. **in 100 ms grid, max. **in 100 ms grid, max. **ovin		0
Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC) Symbol-related messages SCAN procedure Yes Program alarms Yes Process diagnostic messages Simultaneously active Alarm-S blocks, max. Alarm 8-blocks Number of instances for alarm 8 and S7 communication blocks, max. Process control messages Yes Number of archives that can log on simultaneously (SFB 37 AR_SEND) Number of messages o overall, max. 1512 in 100 ms grid, max. 256 in 100 ms grid, max. 256 with 100 ms grid, max. 10 Test commissioning functions Status block Yes Status Control residues Yes Yes Status Control residues Is a status Control residue of the simultaneously Single step Yes Number of archives that can log on simultaneously (SFB 37 AR_SEND) Number of messages • overall, max. 128 • in 100 ms grid, max. 256 • in 100 ms grid, max. 128 • with 100 ms grid, max. 10 Test commissioning functions Status block Yes; Up to 16 simultaneously Single step Yes Number of variables, max. 70; Status/Control variable • Number of variables, max. 70; Status/Control Forcing • Forcing • Forcing, variables, max. 256 Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 70; Status/Control Forcing • Forcing, variables, max. 256 Inputs/outputs, bit memories, distributed I/Os Number of variables, max. 256 Inputs/outputs, bit memories, distributed I/Os Number of variables, max. 256 Inputs/outputs, bit memories, distributed I/Os Number of variables, max. 256 Inputs/outputs, bit memories, distributed I/Os Number of variables, max. 256 Inputs/outputs, bit memories, distributed I/Os Number of variables, max. 256 Inputs/outputs, bit memories, distributed I/Os Number of variables, max. 256 Inputs/outputs, bit memories, distributed I/Os Processor of the service of		20.14 20.11 1 20.00 1 1 20.00 1 1 1
Symbol-related messages SCAN procedure Yes Process diagnostic messages Yes simultaneously active Alarm-S blocks, max. Alarm 8-blocks Number of instances for alarm 8 and S7 communication blocks, max. Process control messages Number of archives that can log on simultaneously (SFB 37 RA_SEND) Number of archives that can log on simultaneously (SFB 37 RA_SEND) Number of messages o overall, max in 100 ms grid, max. 128 in 100 ms grid, max. 128 in 100 ms grid, max. 129 Number of additional values with 100 ms grid, max. 1 1 Status block Yes; Up to 16 simultaneously Single step Yes Number of breakpoints 16 Status/control Status/control variables Number of variables, max. Forcing Forcing Forcing Forcing Forcing Forcing Forcing Forcing Forsest Number of variables, max. 256 Inputs/outputs, bit memories, distributed I/Os Inp	Number of login stations for message functions, max.	
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Program alarms Program starms Process diagnostic messages Process control	·	
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 9 • Number of instances for alarm 8 and S7 communication blocks, max. 1200 • preset, max. 300 Process control messages Yes Number of archives that can log on simultaneously (SFB 37 AR, SEND) 16 AR, SEND) Number of messages • overall, max. 512 • in 100 ms grid, max. 128 • in 100 ms grid, max. 512 • in 100 ms grid, max. 512 • with 100 ms grid, max. 1 • with 100 ms grid, max. 1 • with 500, 1000 ms grid, max. 10 Test commissioning functions 1 Status block Yes; Up to 16 simultaneously Single step Yes Number of breakpoints 16 Status/control Yes; Up to 16 variable tables • Variables Inputs/outputs, memory bits, DBs, distributed l/Os, timers, counters • Number of variables, max. 256 Forcing		
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Alarm 8-blocks Number of instances for alarm 8 and S7 communication blocks, max. preset, max. presest, max. 300 Process control messages Yes Number of archives that can log on simultaneously (SFB 37 AR_SEND) Number of archives that can log on simultaneously (SFB 37 AR_SEND) Number of messages o overall, max. in 100 ms grid, max. in 100 ms grid, max. in 100 ms grid, max. with 100 ms grid, max. 128 in 100 ms grid, max. 256 512 Number of additional values with 100 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 Variables Number of variables, max. Forcing Forcing Forcing, variables, max. Diagnostic buffer present Number of entries, max. - adjustable - preset 120		400; Simultaneously active alarm S/SQ blocks or alarm D/DQ blocks
blocks, max.	<u> </u>	·
• preset, max. 300	 Number of instances for alarm 8 and S7 communication 	1 200
Process control messages Yes Number of archives that can log on simultaneously (SFB 37 AR_SEND) 16 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. • 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 variable • 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 Yes • Number of variables, max. 256 Diagnostic buffer Yes • Number of entries, max. 3 200 — adjustable Yes — preset 120	blocks, max.	
Number of archives that can log on simultaneously (SFB 37 AR_SEND)	• preset, max.	300
Number of messages	Process control messages	Yes
Number of messages		16
 overall, max. in 100 ms grid, max. in 500 ms grid, max. in 1000 ms grid, max. in 1000 ms grid, max. in 1000 ms grid, max. with 100 ms grid, max. with 500, 1000 ms grid, max. with 500, 1000 ms grid, max. 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 Variables Number of variables, max. Forcing Forcing Forcing Forcing, variables, max. Pess (Ip to 16 variable tables) Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters Number of variables, max. Forcing Forcing Forcing, variables Number of variables, max. 256 Diagnostic buffer present Number of entries, max. 3 200 — adjustable — preset 120 		
● 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. ● with 500, 1000 ms grid, max. 10 Test commissioning functions Status block Yes; Up to 16 simultaneously Single step 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, variables Inputs/outputs, bit memories, distributed I/Os ● Number of variables, max. 256 Diagnostic buffer Pes ● present Yes ● Number of entries, max. 3 200 — adjustable Yes — preset 120	-	512
in 500 ms grid, max. in 1000 ms grid, max. in with 100 ms grid, max. with 100 ms grid, max. with 500, 1000 ms grid, max. 10 Test commissioning functions Status block Single step Yes Number of breakpoints 16 Status/control Status/control variable Variables Number of variables, max. Number of variables, max. Forcing Forcing Forcing Forcing, variables Number of variables, max. Diagnostic buffer present Pes Number of entries, max. 3 200 — adjustable — preset 10 10 10 10 10 10 10 10 10 1		
in 1000 ms grid, max. Number of additional values with 100 ms grid, max. 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 Variables Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters Number of variables, max. Forcing Forcing Forcing Forcing, variables Number of variables, max. Diagnostic buffer present Number of entries, max. 3 200 — adjustable — preset 120	-	
Number of additional values • with 100 ms grid, max. • with 500, 1000 ms grid, max. 10 Test commissioning functions Status block Single step Yes Number of breakpoints • Status/control • Status/control variable • Variables • Variables • Number of variables, max. Forcing • Forcing • Forcing, variables, max. Process • Number of variables, max. 256 Diagnostic buffer • present • Number of entries, max. - adjustable - preset 100 Yes; Up to 16 variable tables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 70; Status/control Yes Inputs/outputs, bit memories, distributed I/Os • Number of variables, max. 256 Diagnostic buffer • present • present • yes • Number of entries, max. 3 200 - adjustable - preset 120	·	
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with 500, 1000 ms grid, max. Test commissioning functions Status block Yes; Up to 16 simultaneously Single step Yes Number of breakpoints 16 Status/control Status/control variable Variables Variables Number of variables, max. Forcing Forcing Forcing Forcing Forcing, variables Number of variables, max. Diagnostic buffer Present Number of entries, max. Yes Number of entries, max. 10 Yes; Up to 16 simultaneously Yes; Up to 16 variable tables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 70; Status/control Forcing Yes Inputs/outputs, bit memories, distributed I/Os Number of variables, max. 256 Diagnostic buffer Present Number of entries, max. - adjustable - preset 120		1
Test commissioning functions Status block Yes; Up to 16 simultaneously Single step Yes Number of breakpoints 16 Status/control • Status/control • Status/control variable • Variables • Variables • Number of variables, max. Forcing • Forcing • Forcing, variables • Number of variables, max. Forcing, variables • Number of variables, max. 256 Diagnostic buffer • present • Number of entries, max. — adjustable — preset 120		
Status block Yes; Up to 16 simultaneously Single step Number of breakpoints 16 Status/control • Status/control variable • Variables • Number of variables, max. Forcing • Forcing • Forcing, variables • Number of variables, max. 256 Diagnostic buffer • present • Number of entries, max. 7 yes 120		
Single step Number of breakpoints 16 Status/control Status/control variable Variables Variables Number of variables, max. Forcing Forcing Forcing, variables Number of variables, max. Diagnostic buffer Ves Number of entries, max. Augustable Preset Yes Yes Number of entries, max. 3 200 — adjustable — preset 16 Ves 16 Ves Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 70; Status/control Yes Inputs/outputs, bit memories, distributed I/Os Yes 10 Yes Number of entries, max. 256		Yes; Up to 16 simultaneously
Number of breakpoints Status/control Status/control variable Ves; Up to 16 variable tables Variables Number of variables, max. Forcing Forcing Forcing Forcing, variables Number of variables, max. 10 yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 70; Status/control Forcing Forcing Forcing, variables Inputs/outputs, bit memories, distributed I/Os Number of variables, max. 256 Diagnostic buffer Present Number of entries, max. - adjustable — preset 120		
Status/control Status/control variable Variables Number of variables, max. Forcing Forcing Forcing, variables Number of variables, max. Status/control Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 70; Status/control Forcing Forcing Forcing, variables Inputs/outputs, bit memories, distributed I/Os Number of variables, max. 256 Diagnostic buffer Present Number of entries, max. - adjustable - preset 120		
 Variables Number of variables, max. Forcing Forcing, variables Number of variables, max. Forcing, variables Number of variables, max. Number of variables, max. Diagnostic buffer Present Number of entries, max. Augustable Preset Preset		
 Variables Number of variables, max. Forcing Forcing, variables Number of variables, max. Forcing, variables Number of variables, max. Diagnostic buffer Present Number of entries, max. Augustable Pues Pues<td>Status/control variable</td><td>Yes; Up to 16 variable tables</td>	Status/control variable	Yes; Up to 16 variable tables
Forcing Forcing Forcing Forcing, variables Forcing, variables Number of variables, max. Diagnostic buffer present Number of entries, max. Adjustable preset 120	 Variables 	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
Forcing Forcing, variables Forcing, variables Inputs/outputs, bit memories, distributed I/Os Number of variables, max. Diagnostic buffer present Pumber of entries, max. Adjustable Adjustab	 Number of variables, max. 	70; Status/control
Forcing, variables Inputs/outputs, bit memories, distributed I/Os Number of variables, max. Diagnostic buffer present Number of entries, max. - adjustable - preset Inputs/outputs, bit memories, distributed I/Os 256 Yes Yes 120	Forcing	
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Diagnostic buffer present Pumber of entries, max. adjustable − preset Yes yes preset 120 	 Forcing, variables 	Inputs/outputs, bit memories, distributed I/Os
 present Number of entries, max. adjustable preset 120 	Number of variables, max.	256
 Number of entries, max. adjustable preset 120 	Diagnostic buffer	
— adjustable— presetYes— 120	• present	Yes
— preset 120	 Number of entries, max. 	3 200
·	— adjustable	Yes
Service data	— preset	120
	Service data	

• can be read out	Yes
EMC	
Emission of radio interference acc. to EN 55 011	
 Limit class A, for use in industrial areas 	Yes
Limit class B, for use in residential areas	No
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
— number of simultaneously active system functions (SFC) / with D_ACT_DP	8
— RD_REC	8
— WR_REC	8
— WR_PARM	8
— PARM_MOD	1
— WR_DPARM	2
— DPNRM_DG	8
— RDSYSST	8
— DP_TOPOL	1
configuration / programming / number of simultaneously active	SFB / header
— RDREC	8
— WRREC	8
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 🖸