SIEMENS

Data sheet

6ES7416-3FS06-0AB0



********* Replacement part ******** SIMATIC S7-400, CPU416F-3 PN/DP Central processing unit with: work memory 16 MB, (8 MB code, 8 MB data), Interfaces: 1st interface MPI/DP 12 Mbit/s, (X1), 2nd interface Ethernet/PROFINET (X5), 3rd interface plug-in IFM module (IF1)

Figure similar

General information	
Product type designation	CPU 416F-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	10 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 	16 Mbyte
 integrated (for program) 	8 Mbyte
 integrated (for data) 	8 Mbyte
expandable	No
Load memory	
expandable FEPROM	Yes; with Memory Card (FLASH)
 expandable FEPROM, max. 	64 Mbyte
 integrated RAM, max. 	1 Mbyte
expandable RAM	Yes; with Memory Card (RAM)
expandable RAM, max.	64 Mbyte
Backup	
• present	Yes
with battery	Yes; all data
 without battery 	No
Battery	

Dealers hotten	
Backup battery	
Backup current, typ.	125 μA; up to 40 °C
Backup current, max.Backup time, max.	450 μ A 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.	30 ns
for word operations, typ.	30 ns
for fixed point arithmetic, typ.	30 ns
for floating point arithmetic, typ.	90 ns
CPU-blocks	
DB	
Number, max.	10 000; Number range: 1 to 16000
• Size, max.	64 kbyte
FB	
Number, max.	5 000; Number range: 0 to 7999
• Size, max.	64 kbyte
FC	
Number, max.	5 000; 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	8; OB 10-17
Number of delay alarm OBs	4; OB 20-23
Number of cyclic interrupt OBs	9; OB 30-38 (shortest cycle that can be set = $500 \ \mu s$)
Number of process alarm OBs	8; OB 40-47
Number of DPV1 alarm OBs	3; OB 55-57
Number of isochronous mode OBs	4; OB 61-64
 Number of multicomputing OBs 	1; OB 60
 Number of background OBs 	1; OB 90
Number of startup OBs	2; 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 	2
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	2.040
Number	2 048
Retentivity	
— adjustable	Yes
— lower limit	0
— upper limit	2 047
— preset	No times retentive

T:	
Time range	
— lower limit	10 ms
— upper limit	9 990 s
IEC timer	
• present	Yes
• Туре	SFB
Number	Unlimited (limited only by RAM capacity)
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	Total working and load memory (with backup battery)
Flag	
• Size, max.	16 kbyte; Size of bit memory address area
Retentivity available	Yes
Retentivity available	MB 0 to MB 15
Number of clock memories	8; in 1 memory byte
Local data	
 adjustable, max. 	32 kbyte
• preset	16 kbyte
Address area	
I/O address area	
Inputs	16 kbyte
Outputs	16 kbyte
Process image	
 Inputs, adjustable 	16 kbyte
Outputs, adjustable	16 kbyte
Inputs, default	512 byte
Outputs, default	512 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	131 072
— of which central	131 072
Outputs	131 072
— of which central	131 072
Analog channels	
Inputs	8 192
— of which central	8 192
Outputs	8 192
— of which central	8 192
Hardware configuration	
Number of expansion units, max.	21
connectable OPs	95
Multicomputing	Yes; 4 CPUs max. (with UR1 or UR2)
Interface modules	
Number of connectable IMs (total), max.	6
Number of connectable IM 460s, max.	6
 Number of connectable IM 463s, max. 	4; IM 463-2
Number of DP masters	
integrated	1
• via CP	10; CP 443-5 Extended
● via IM 467	4
Mixed mode IM + CP permitted	No; IM 467 not suitable for use with CP 443-5 Ext. and CP 443-1 EX4x, EX20, GX20 (in PROFINET IO mode)
 via interface module 	1; IF 964-DP
 Number of pluggable S5 modules (via adapter capsule in 	6
central device), max.	
Number of IO Controllers	
integrated	1
• via CP	4; No mixed operation of CP443-1 EX40 and CP443-1 EX 41/EX20/GX20, max. 4 in central controller

Number of operable FMs and CPs (recommended)	
• FM	Limited by number of slots or 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	2
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 (bulleted), max. 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	1h
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	Yes
Time difference in system when synchronizing via	
• Ethernet, max.	10 ms
• MPI, max.	200 ms
Interfaces	
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	44; 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	
	Yes
Services	Yes
Services — PG/OP communication — Routing — Global data communication	Yes Yes
Services — PG/OP communication — Routing	Yes Yes Yes
Services — PG/OP communication — Routing — Global data communication	Yes Yes
Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication — S7 communication, as client	Yes Yes Yes
Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication	Yes Yes Yes

• Number of connections, max.	32; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1
Transmission rate, max.	12 Mbit/s
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	32
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
Change of IP address at runtime, supported	Yes; Assignment by higher-level IO-Controller or by the user program with SFB104 "IP_CONF"
Number of connection resources	96
Interface types	
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
— 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 μ s, 500 μ s, 1 ms, 2 ms, 4 ms additionally with IRT with high performance:
— Updating time	250 μs to 4 ms in 125 μs frame 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
— S7 communication	Yes
— Isochronous mode	No
— 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
— Outputs, max.	1 440 byte; Per IO Controller with shared device
Submodules	
— Number, max.	64
— User data per submodule, max.	1 024 byte
PROFINET CBA	
acyclic transmission	Yes
cyclic transmission	Yes

Open IE communication	
Number of connections, max.	94
• 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	32
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. 	32
• Transmission rate, max.	12 Mbit/s
Number of DP slaves, max.	125
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	
— Inputs, max.	8 kbyte
— Outputs, max.	8 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	22
Number of connections GSD file	32
GSD file Transmission rate, max.	http://support.automation.siemens.com/WW/view/en/113652 12 Mbit/s
automatic baud rate search	No
Address area, max.	32; Virtual slots
 Address area, max. 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	No
— S7 communication	Yes

67 communication as client	Ven
— S7 communication, as client	Yes
— S7 communication, as server	
 — 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.	94
— 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 and loadable FBs
— Number of connections, max.	94
— 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.	94
— Data length, max.	1 472 byte
Web server	
supported	Yes
 User-defined websites 	Yes
Number of HTTP clients	5
Isochronous mode	
L'avridiatance	Yes
Equidistance	105
Equidistance Number of DP masters with isochronous mode	2
· ·	
Number of DP masters with isochronous mode	2
Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle	2 244 byte
Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header	2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms
Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication	2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes
Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication • Number of connectable OPs without message processing	2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95
Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication • Number of connectable OPs without message processing • Number of connectable OPs with message processing	2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ
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Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication • Number of connectable OPs without message processing • Number of connectable OPs with message processing Data record routing Global data communication • supported	2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ Yes Yes
Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication • Number of connectable OPs without message processing • Number of connectable OPs with message processing Data record routing Global data communication • supported • Number of GD loops, max.	2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ Yes Yes 16
Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication • Number of connectable OPs without message processing • Number of connectable OPs with message processing Data record routing Global data communication • supported • Number of GD loops, max. • Number of GD packets, transmitter, max.	2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ Yes Yes 16 16
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Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication • Number of connectable OPs without message processing • Number of connectable OPs with message processing Data record routing Global data communication • supported • Number of GD loops, max. • Number of GD packets, transmitter, max. • Size of GD packets, max. • Size of GD packet, max. • Size of GD packet (of which consistent), max. S7 basic communication • supported	2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ Yes Yes 16 16 32 54 byte 1 variable Yes
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Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication • Number of connectable OPs without message processing • Number of connectable OPs with message processing Data record routing Global data communication • supported • Number of GD loops, max. • Number of GD packets, transmitter, max. • Number of GD packets, receiver, max. • Size of GD packets, max. • Size of GD packets, max. • Size of GD packet (of which consistent), max. S7 basic communication • supported • User data per job, max. • User data per job (of which consistent), max.	2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ Yes Yes 16 16 32 54 byte 1 variable Yes
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Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication • Number of connectable OPs without message processing • Number of connectable OPs without message processing Data record routing Global data communication • supported • Number of GD loops, max. • Number of GD packets, transmitter, max. • Number of GD packets, receiver, max. • Size of GD packets, max. • Size of GD packet (of which consistent), max. S7 basic communication • supported • User data per job, max. • User data per job (of which consistent), max. S7 communication • supported • user data per job (of which consistent), max. S7 communication • supported • as server • as client	2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ Yes Yes 16 16 32 54 byte 1 variable Yes 76 byte 1 variable Yes 76 byte 1 variable
Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication • Number of connectable OPs without message processing • Number of connectable OPs without message processing Data record routing Global data communication • supported • Number of GD loops, max. • Number of GD packets, transmitter, max. • Number of GD packets, receiver, max. • Size of GD packets, max. • Size of GD packets, max. • Size of GD packet (of which consistent), max. S7 basic communication • supported • User data per job, max. • User data per job (of which consistent), max. S7 communication • supported • as server • as client • User data per job, max.	2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ Yes Yes 16 16 32 54 byte 1 variable Yes 76 byte 1 variable Yes 76 byte 1 variable Yes 64 kbyte
Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication • Number of connectable OPs without message processing • Number of connectable OPs with message processing Data record routing Global data communication • supported • Number of GD loops, max. • Number of GD packets, transmitter, max. • Number of GD packets, receiver, max. • Size of GD packets, max. • Size of GD packets, max. • Size of GD packet (of which consistent), max. S7 basic communication • supported • User data per job, max. • User data per job (of which consistent), max. S7 communication • supported • user data per job, max. • User data per job (of which consistent), max.	2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ Yes Yes 16 16 32 54 byte 1 variable Yes 76 byte 1 variable Yes 76 byte 1 variable
Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication • Number of connectable OPs without message processing • Number of connectable OPs without message processing Data record routing Global data communication • supported • Number of GD loops, max. • Number of GD packets, transmitter, max. • Number of GD packets, receiver, max. • Size of GD packets, max. • Size of GD packets, max. • Size of GD packet (of which consistent), max. S7 basic communication • supported • User data per job, max. • User data per job (of which consistent), max. S7 communication • supported • user data per job (of which consistent), max. S7 communication • supported • user data per job (of which consistent), max. S7 communication • supported • as server • as client • User data per job (of which consistent), max. S5 compatible commu	2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ Yes Yes 16 16 16 32 54 byte 1 variable Yes 76 byte 1 variable Yes Yes Yes Yes Yes Yes Yes Ye
Number of DP masters with isochronous mode User data per isochronous slave, max. shortest clock pulse max. cycle communication functions / header PG/OP communication • Number of connectable OPs without message processing • Number of connectable OPs with message processing Data record routing Global data communication • supported • Number of GD loops, max. • Number of GD packets, transmitter, max. • Number of GD packets, receiver, max. • Size of GD packets, max. • Size of GD packets, max. • Size of GD packet (of which consistent), max. S7 basic communication • supported • User data per job, max. • User data per job (of which consistent), max. S7 communication • supported • user data per job, max. • User data per job (of which consistent), max.	2 244 byte 1 ms; 0.5 ms without use of SFC 126, 127 32 ms Yes 95 95; When using Alarm_S/SQ and Alarm_D/DQ Yes Yes 16 16 32 54 byte 1 variable Yes 76 byte 1 variable Yes 76 byte 1 variable Yes 64 kbyte

• User data per job (of which consistent), max.

240 byte 64/64

Number of simultaneous AG-SEND/AG-RECV orders per CPU, max.

Subsetication (MS) supported Setty of CP and loadable FB supported Sety of the CPU communication load / header Sety of the CPU communication parties / with PROFINET CPU subsetication of the CPU communication parties / with PROFINET CPU supported of enclosed parties / with PROFINET CPU in the CPU communication parties / with PROFINET CPU in the case of acyclic transmission / with PROFINET CPU under of internal and PROFIDEUS interconnections //with PROFINET CPU / remote interconnections / with PROFINET CPU / remote interconnections / remote and data water / remote remote interconnections / with PROFINET CPU / remote interconnections / remote //with PROFINET CPU / remote interconnection / with acyclic transmission / with PROFINET CPU / remote interconnection / remote //with PROFINET CPU / remote interconnection / remote //with PROFINET CPU / remote interconnections / remote // remote / remote remote remote remote / remote / remote remote // remote / remote remote remote remote / re	CPU, max.	
	Standard communication (FMS)	
Support for the CPU communication laad 20 % Support of the chorological functions / with PROFINET 22 CAA or more of empte connection partners / with PROFINET 22 CAA for masker or size / fast for masker or size for masker or size for any of the robust with PROFINET CBA for masker or size case of connections with PROFINET CAA for masker or size for any of the robust variables / with PROFINET CAA for masker or size for any of the robust variables / with PROFINET CAA for masker or size for any of the robust variables / with PROFINET CAA for masker or size for any of the robust variables / with PROFINET CAA for masker or size for any of the robust variables / with PROFINET CAA for masker or size for any of the robust variables / with PROFINET CAA for masker or size for any of the robust variables / with PROFINET CAA for masker or size for any of the robust variables / with PROFINET CAA for masker or size for any of the robust variables / with PROFINET CAA for masker or size for any of the robust variables / with PROFINET CAA for masker or size for any of the robust variables / with PROFINET case of acyclic transmission / with PROFINET CBA for any of the robust variables / in the case of acyclic transmission / with PROFINET CBA for any of the robust variables / in the case of acyclic transmission / with PROFINET CBA for any of the robust variables / in the case of acyclic transmission / with PROFINET CBA for any of the robust variables / in the case of acyclic transmission / with PROFINET CBA for any of the robust variables / in the case of acyclic transmission / with PROFINET CBA for any of the robust variables / in the case of acyclic transmission / with PROFINET CBA for any of the robust variables / in the case of acyclic transmission / with PROFINET CBA for any of the robust variables / in the case of acyclic transmission / with PROFIN	supported	Yes; Via CP and loadable FB
• number of temote connection pattners / with PROFINET 32 • number of temotogical functions / with PROFINET CBA 150 • number of connections / with PROFINET CBA 0.000 • adta volume / of the input variables / with PROFINET 65 000 byte • data volume / of the number of interconnections / with PROFINET CBA / name 65 000 byte • data volume / of the number of interconnections / with PROFINET CGA / name 1000 • data volume / of thermal and PROFINET CBA / iso 1000 • data volume / of thermal and PROFINET CBA / per connection / volume / of thermal and PROFINET CBA / per connection / name 1000 • data volume / with PROFINET CBA / per connection / volume / with PROFINET CBA / namester or slave 1000 byte • data volume / with PROFINET CBA / per connection / volume / with PROFINET CBA / namester or slave 1000 byte • data volume / with PROFINET CBA / per connection / name 2000 byte • maximum • data volume / with PROFINET CBA / manute 500 • mumber of memole interconnections / interconnections with input variables / in the case of acpicit transmission / with PROFINET CBA / maximum 610 000 byte • - data volume / au ear data for remote interconnections with input variables / in the case of acpicit transmission / with PROFINET CBA 16 000 byte • - data volume / au ear data for remote interconnections with input variables / in the case of acpicit transmission / with PROFINET CBA 2000 byte • - data volume	communication functions / PROFINET CBA (with set target commun	nication load) / header
CBA • • umber of technological functions / with PROFINET CBA / for master or slave • umber of technological functions / with PROFINET CBA / for master or slave • of the end of the input variables / with PROFINET CBA / for master or slave • of the end of the input variables / with PROFINET CBA / for master or slave • of the end o	 Setpoint for the CPU communication load 	20 %
I or master or slave ⁻ I or master or slave ⁻ I of connections / with PROFINET CBA / for master or slave ⁻ I of an evolume / of the input variables / with PROFINET CBA / for master or slave ⁻ So 000 byte ⁻ CBA / for master or slave ⁻ So 000 byte ⁻ CBA / for master or slave ⁻ So 000 byte ⁻ CBA / for master or slave ⁻ So 000 byte ⁻ CBA / for master or slave ⁻ So 000 byte ⁻ CBA / for master or slave ⁻ So 000 byte ⁻ CBA / for master or slave ⁻ So 000 byte ⁻ CBA / for master or slave ⁻ So 000 byte ⁻ CBA / for master or slave ⁻ So 000 byte ⁻ CBA / for master or slave ⁻ So 000 byte ⁻ CBA / for master or slave ⁻ CBA / for or slave ⁻		32
elata volume / an ende visible / with PROFINET elata volume / an elata vol		150
CBA / for master or slave • e1ata volume / dn exact and PROFINET CBA / maximum • ata volume / dn mant and PROFINET CBA / remote interconnections / with PROFINET CBA / maximum • ata volume / dn internal and PROFINET CBA / remote interconnections / with PROFINET CBA / for master or slave • ata volume / dn internal and PROFINET CBA / remote interconnection / with acyclic transfer / header — undbet inte / of internal and PROFINET CBA / remote interconnections / with acyclic transfer / header — undbet of remote incoments to slave volume / with acyclic transfer / header — undbet of remote incoments in the CBA / remote interconnections / in the case of acyclic transmission / with PROFINET CBA / maximum — undbet of remote connections to uptur variables / in the case of acyclic transmission / with PROFINET CBA / maximum — data volume / a user data for remote interconnections / with experiments with PROFINET CBA / maximum — data volume / a user data for remote interconnections / with experiments with PROFINET CBA / maximum — data volume / a user data for remote interconnections / with PROFINET CBA / maximum — data volume / a user data for remote interconnections / with PROFINET CBA / maximum Performance data / PROFINET CBA / remote interconnections / with PROFINET CBA / maximum Performance data / PROFINET CBA / remote interconnections / with PROFINET CBA / maximum Performance data / PROFINET CBA / remote interconnections / with experiments with experiment volution / a user data for remote interconnections / with PROFINET CBA / remote interconnections / with experiment volution / a user data for remote interconnections / with experiment case / acyclic transmission / with experiment case / ac		6 000
CBA / for master or size		65 000 byte
elda volume / interconnections / with PROFINET CBA / per connection / 2 000 byte elda volume / with PROFINET CBA / per connection / with expclic transmission / with PROFINET CBA m umber of remote connections in the case of acyclic transmission / with PROFINET CBA / maximum m umber of remote connections / in the case of acyclic transmission / with PROFINET CBA / maximum m umber of remote connections / in the case of acyclic transmission / with PROFINET CBA // maximum m umber of remote connections / in the case of acyclic transmission / with PROFINET CBA // maximum m umber of remote connections / in the case of acyclic transmission / with PROFINET CBA // maximum m umber of remote connections / in the case of acyclic transmission / with PROFINET CBA // maximum m data volume / as user data for remote interconnections with output variables / in the case of acyclic transmission / with PROFINET CBA m data volume / as user data for remote interconnections with output variables / in the case of acyclic transmission / with PROFINET CBA m data volume / as user data for remote interconnections with output variables / in the case of acyclic transmission / with PROFINET CBA m data volume / as user data for remote interconnections / with PROFINET CBA m undber of remote connection / maximum performance data / PROFINET CBA m undber of remote connection / with cyclica transfer / With PROFINET CBA m undber of remote connection / with cyclica transfer / with PROFINET CBA m undber of remote connections to input variables / in m umber of remote connection / with cyclica transfer / With PROFINET CBA m undber of remote connection / with cyclica transfer / with PROFINET CBA m umber of remote connection to input variables / in meter connections with output variables / in m umber of remote connections to input variables / in m umber of remote connection to input variables / in m undber o		65 000 byte
 data volume / with PROFINET CBA / for master or slave data volume / with PROFINET CBA / remote interconnection / with acyclic transfer / header 		1 000
maximum maximum performance data / PROFINET CBA / remote interconnections / in the case of acyclic transmission / with PROFINET CBA 200 ms; Depending on preset communication load, number of interconnections and data length used		16 000 byte
update time / of the remote interconnections / in the case of acyclic transmission / with PROFINET CBA 200 ms; Depending on preset communication load, number of interconnections and data length used number of remote connections to output variables / in the case of acyclic transmission / with PROFINET CBA 500 number of remote connections to output variables / in the case of acyclic transmission / with PROFINET CBA 500 data volume / as user data for remote interconnections with output variables / in the case of acyclic transmission / with PROFINET CBA 500 data volume / as user data for remote interconnections with output variables / in the case of acyclic transmission / with PROFINET CBA 16 000 byte data volume / as user data for remote interconnections / with proceints / with PROFINET CBA 2 000 byte data volume / as user data for remote interconnections / with proceints / with proceints / with proceints / with proceints / with acyclic transmission / with proceints / with acyclic transmission / with proceints / with acyclicat transfer / with PROFINET CBA / maximum 2 000 byte number of remote connections to output variables / with cyclicat transfer / with PROFINET CBA / maximum 300 number of remote connections to output variables / with cyclicat transfer / with PROFINET CBA / maximum 4 800 byte number of remote connections to utput variables / with cyclicat transfer / with PROFINET CBA / maximum 4 800 byte number of remote connections to utput variables / with cyclicat transfer / with PROFINET CBA / maximum 4 800 byte number of rem		2 000 byte
case of acyclic transmission / with PROFINET CBA and data length used	performance data / PROFINET CBA / remote interconnection /	with acyclic transfer / header
the case of acyclic transmission / with PROFINET CBA 500 - number of remote connections to output variables / in the case of acyclic transmission / with PROFINET CBA / maximum 500 - data volume / as user data for remote interconnections / with PROFINET CBA 16 000 byte - data volume / as user data for remote interconnections with output variables / in the case of acyclic transmission / with PROFINET CBA 16 000 byte - data volume / as user data for remote interconnections / in the case of acyclic transmission / with PROFINET CBA 2 000 byte - data volume / as user data for remote interconnections / in the case of acyclic transmission / with PROFINET CBA 2 000 byte - update time / of the remote interconnections / with connection / with cyclic transfer / nemote interconnections / with pROFINET CBA / remote interconnections / with cyclic transfer / maximum 1m; Depending on preset communication load, number of interconnections / with cyclical transfer / with PROFINET CBA / waximum - update time / of the remote interconnections / with cyclical transfer / maximum 300 - unumber of remote connections to output variables / with reportinet / with cyclical transfer / with PROFINET CBA / maximum 4 800 byte - data volume / as user data for remote interconnections / with cyclical transfer / with PROFINET CBA / maximum 4 800 byte - data volume / as user data for remote interconnections / with cyclical transfer / with PROFINET CBA / maximum 4 800 byte - data volume / as		
in the case of acyclic transmission / with PROFINET 16 000 byte - data volume / as user data for remote 16 000 byte - data volume / as user data for remote 16 000 byte - data volume / as user data for remote 16 000 byte - data volume / as user data for remote 16 000 byte - data volume / as user data for remote 16 000 byte - data volume / as user data for remote 2 000 byte - data volume / as user data for remote 2 000 byte - data volume / as user data for remote 2 000 byte - data volume / as user data for remote 2 000 byte - data volume / as user data for remote 1 ms; Depending on preset communication load, number of interconnections / with pROFINET CBA / with repote interconnections / with - number of remote connections to output variables / 300 - number of remote connections to output variables / 300 with cyclical transfer / with PROFINET CBA / maximum 4 800 byte - data volume / as user data for remote 4 800 byte interconnections with output variables / with cyclical transfer / with PROFINET CBA / maximum 4 800 byte - data volume / as user data for remote 4 800 byte interconnections with output variables / with cyclical transfer / with PROFINET CBA / maximum	the case of acyclic transmission / with PROFINET CBA	500
interconnections with input variables / in the case of acyclic transmission / with PROFINET CBA 16 000 byte	in the case of acyclic transmission / with PROFINET	500
interconnections with output variables / in the case of acyclic transmission / with PROFINET CBA 2 000 byte - data volume / as user data for remote interconnection / with cyclic transmission / with PROFINET CBA / per connections / with cyclic transfer / header 2 000 byte - update time / of the remote interconnection / with cyclic transfer / header 1 ms; Depending on preset communication load, number of interconnections and data length used - number of remote connections to input variables / with cyclical transfer / with PROFINET CBA / maximum 300 - number of remote connections to output variables / with cyclical transfer / with PROFINET CBA / maximum 300 - number of remote connections to output variables / with cyclical transfer / with PROFINET CBA / maximum 300 - number of remote connections to output variables / with cyclical transfer / with PROFINET CBA / maximum 4 800 byte - data volume / as user data for remote interconnection with input variables / with cyclical transfer / with PROFINET CBA / maximum 4 800 byte - data volume / as user data for remote interconnection / with cyclical transfer / with cy	interconnections with input variables / in the case of	16 000 byte
interconnections / in the case of acyclic transmission / with PROFINET CBA / per connection / maximum interconnections / maximum performance data / PROFINET CBA / remote interconnections / with cyclic transfer / header - update time / of the remote interconnections / with cyclical transfer / with PROFINET CBA 1 ms; Depending on preset communication load, number of interconnections and data length used	interconnections with output variables / in the case of	16 000 byte
performance data / PROFINET CBA / remote interconnection / with cyclic transfer / header	interconnections / in the case of acyclic transmission /	2 000 byte
 update time / of the remote interconnections / with cyclical transfer / with PROFINET CBA number of remote connections to input variables / with PROFINET CBA / maximum number of remote connections to output variables / with cyclical transfer / with PROFINET CBA / maximum data volume / as user data for remote interconnections with input variables / with cyclical transfer / with PROFINET CBA / maximum data volume / as user data for remote interconnections with output variables / with cyclical transfer / with PROFINET CBA / maximum data volume / as user data for remote interconnections with output variables / with cyclical transfer / with PROFINET CBA / maximum data volume / as user data for remote interconnections with output variables / with cyclical transfer / with PROFINET CBA / maximum data volume / as user data for remote interconnections / with cyclical transfer / with PROFINET CBA / maximum data volume / as user data for remote interconnections with output variables / with cyclical transfer / with PROFINET CBA / maximum data volume / as user data for remote interconnections / maximum data volume / as user data for remote interconnections / maximum data volume / as user data for remote interconnections / with cyclical transfer / with PROFINET CBA / HMI variables via PROFINET / acyclic / header number of connectable HMI stations / for HMI variables via PROFINET / acyclic / header update time / of the HMI variables / in the case of acyclic transmission / with PROFINET CBA update time / of the HMI variables / in the case of acyclic transmission / with PROFINET CBA update time / of the HMI variables / in the case of acyclic transmission / with PROFINET CBA unmber of HMI variables / in the case of acyclic too 	· · ·	with cvclic transfer / header
cyclical transfer / with PROFINET CBAand data length used number of remote connections to input variables / with PROFINET CBA / with cyclic transfer / maximum300 number of remote connections to output variables / with optical transfer / with PROFINET CBA / maximum300 data volume / as user data for remote interconnections with uput variables / with cyclical transfer / with PROFINET CBA / maximum4 800 byte data volume / as user data for remote interconnections with output variables / with cyclical transfer / with PROFINET CBA / maximum4 800 byte data volume / as user data for remote interconnections with output variables / with cyclical transfer / with PROFINET CBA / maximum4 500 byte data volume / as user data for remote interconnections / with cyclical transfer / with PROFINET CBA / maximum450 byte data volume / as user data for remote interconnections / with cyclical transfer / with PROFINET CBA / HMI variables via PROFINET / acyclic / header2x PN OPC/1x iMap number of connectable HMI stations / for HMI variables / in the case of acyclic transmission / with PROFINET CBA2x PN OPC/1x iMap update time / of the HMI variables / in the case of acyclic transmission / with PROFINET CBA500 ms number of HMI variables / in the case of acyclic1 500		
with PROFINET CBA / with cyclic transfer / maximum 300	cyclical transfer / with PROFINET CBA	and data length used
with cyclical transfer / with PROFINET CBA / maximum4 800 byte data volume / as user data for remote interconnections with input variables / with cyclical transfer / with PROFINET CBA / maximum4 800 byte data volume / as user data for remote interconnections with output variables / with cyclical transfer / with PROFINET CBA / maximum4 800 byte data volume / as user data for remote interconnections with output variables / with cyclical transfer / with PROFINET CBA / maximum4 800 byte data volume / as user data for remote interconnections / with cyclical transfer / with PROFINET CBA / per connection / maximum450 byteperformance data / PROFINET CBA / HMI variables via PROF variables / in the case of acyclic transmission / with PROFINET CBA2x PN OPC/1x iMap update time / of the HMI variables / in the case of acyclic transmission / with PROFINET CBA500 ms unmber of HMI variables / in the case of acyclic acyclic transmission / with PROFINET CBA1 500	with PROFINET CBA / with cyclic transfer / maximum	
interconnections with input variables / with cyclical transfer / with PROFINET CBA / maximum 4 800 byte — data volume / as user data for remote interconnections with output variables / with cyclical transfer / with PROFINET CBA / maximum 4 800 byte — data volume / as user data for remote interconnections / with cyclical transfer / with PROFINET CBA / maximum 450 byte — data volume / as user data for remote interconnections / with cyclical transfer / with PROFINET CBA / per connection / maximum 450 byte performance data / PROFINET CBA / HMI variables via PROFINET / acyclic / header 2x PN OPC/1x iMap — number of connectable HMI stations / for HMI variables / in the case of acyclic transmission / with PROFINET CBA 500 ms — update time / of the HMI variables / in the case of acyclic transmission / with PROFINET CBA 500 ms — umber of HMI variables / in the case of acyclic 1 500	with cyclical transfer / with PROFINET CBA / maximum	
interconnections with output variables / with cyclical transfer / with PROFINET CBA / maximum 450 byte — data volume / as user data for remote interconnections / with cyclical transfer / with PROFINET CBA / per connection / maximum 450 byte performance data / PROFINET CBA / HMI variables via PROFINET / acyclic / header — — number of connectable HMI stations / for HMI variables via PROFINET CBA 2x PN OPC/1x iMap — update time / of the HMI variables / in the case of acyclic transmission / with PROFINET CBA 500 ms — update time / of the HMI variables / in the case of acyclic transmission / with PROFINET CBA 500 ms — number of HMI variables / in the case of acyclic transmission / with PROFINET CBA 1 500	interconnections with input variables / with cyclical	
interconnections / with cyclical transfer / with PROFINET CBA / per connection / maximum interconnection / maximum performance data / PROFINET CBA / HMI variables via PROFINET / acyclic / header — number of connectable HMI stations / for HMI variables / in the case of acyclic transmission / with PROFINET CBA 2x PN OPC/1x iMap — update time / of the HMI variables / in the case of acyclic transmission / with PROFINET CBA 500 ms — number of HMI variables / in the case of acyclic 1 500	interconnections with output variables / with cyclical	4 800 byte
 number of connectable HMI stations / for HMI variables / in the case of acyclic transmission / with PROFINET CBA update time / of the HMI variables / in the case of acyclic transmission / with PROFINET CBA number of HMI variables / in the case of acyclic 1 500 	interconnections / with cyclical transfer / with	450 byte
 number of connectable HMI stations / for HMI variables / in the case of acyclic transmission / with PROFINET CBA update time / of the HMI variables / in the case of acyclic transmission / with PROFINET CBA number of HMI variables / in the case of acyclic 1 500 	performance data / PROFINET CBA / HMI variables via PROFI	NET / acyclic / header
acyclic transmission / with PROFINET CBA — number of HMI variables / in the case of acyclic 1 500	 number of connectable HMI stations / for HMI variables / in the case of acyclic transmission / with 	
		500 ms
	 number of HMI variables / in the case of acyclic transmission / with PROFINET CBA / maximum 	1 500
 — data volume / as user data for HMI variables / in the case of acyclic transmission / with PROFINET CBA / maximum 48 000 byte 	case of acyclic transmission / with PROFINET CBA /	48 000 byte
performance data / PROFINET CBA / PROFIBUS proxy functionality / header	performance data / PROFINET CBA / PROFIBUS proxy functio	nality / header
 product function / with PROFINET CBA / Yes; 32 PROFIBUS slaves max. connectable PROFIBUS proxy functionality 		Yes; 32 PROFIBUS slaves max. connectable
— data volume / with PROFIBUS proxy functionality / 240 byte: Slave-dependent	— data volume / with PROFIBUS proxy functionality /	240 byte: Slave-dependent

with PROFINET CBA / per connection / maximum	
Number of connections	
• overall	96
usable for PG communication	
- reserved for PG communication	1
 adjustable for PG communication, max. 	0
usable for OP communication	
usable for OP communication — reserved for OP communication	1
	0
 adjustable for OP communication, max. usable for S7 basic communication 	0
usable for S7 basic communication — reserved for S7 basic communication	0
	0
— adjustable for S7 basic communication, max.	0
usable for S7 communication	
- reserved for S7 communication	0
— adjustable for S7 communication, max.	0
usable for routing	
— reserved for routing	0
— adjustable for routing, max.	0
S7 message functions	
Number of login stations for message functions, max.	95; Max. 95 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.	1 000; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ blocks
Alarm 8-blocks	Yes
Number of instances for alarm 8 and S7 communication	4 000
blocks, max.	4 000
• preset, max.	600
Process control messages	Yes
Number of archives that can log on simultaneously (SFB 37	32
AR_SEND)	
Number of messages	
• overall, max.	1 024
● in 100 ms grid, max.	128
• in 500 ms grid, max.	512
● in 1000 ms grid, max.	1 024
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, distributed I/Os
Number of variables, max.	512
Diagnostic buffer	
• present	Yes
Number of entries, max.	3 200
— adjustable	Yes
— 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	e 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	
	C1	
last modified:	4/1/2022	

4/1/2022 🖸