SIEMENS

Data sheet

6ES7412-2EK07-0AB0



SIMATIC S7-400, CPU 412-2 PN Central processing unit with: Work memory 1 MB, (0.5 MB code; 0.5 MB data) interfaces 1st interface MPI/DP 12 Mbit/s, (X1), 2nd interface Ethernet/PROFINET (X5)

General information	
Product type designation	CPU 412-2 PN
HW functional status	01
Firmware version	V7.0
Product function	
 Isochronous mode 	Yes; Via PROFIBUS DP or PROFINET interface
Engineering with	
 Programming package 	STEP 7 V5.5 or higher with HSP 262
CiR - Configuration in RUN	
CiR synchronization time, basic load	100 ms
CiR synchronization time, time per I/O byte	30 μs
Supply voltage	
Rated value (DC)	Power supply via system power supply
Input current	
from backplane bus 5 V DC, typ.	1.1 A
from backplane bus 5 V DC, max.	1.4 A
from backplane bus 24 V DC, max.	150 mA; 150 mA per DP interface
from interface 5 V DC, max.	90 mA; At the DP interface
Power loss	
Power loss, typ.	5.5 W
Memory	
Type of memory	RAM
Work memory	
integrated	1 Mbyte
integrated (for program)	512 kbyte
integrated (for data)	512 kbyte
expandable	No
Load memory	
 expandable FEPROM 	Yes; with Memory Card (FLASH)
 expandable FEPROM, max. 	64 Mbyte
integrated RAM, max.	512 kbyte
 expandable RAM 	Yes; with Memory Card (RAM)
expandable RAM, max.	64 Mbyte
Backup	
• present	Yes
with battery	Yes; all data
 without battery 	No
Battery	
Backup battery	
 Backup current, typ. 	180 μA; up to 40 °C

 Backup current, max. 	850 μΑ
 Backup time, max. 	Dealt with in the module data manual with the secondary conditions and the
5 " () U U U U U ODU	factors of influence
Feeding of external backup voltage to CPU	5 V DC to 15 V DC
CPU processing times	04.05
for bit operations, typ.	31.25 ns
for word operations, typ.	31.25 ns
for fixed point arithmetic, typ.	31.25 ns
for floating point arithmetic, typ.	62.5 ns
CPU-blocks	
DB	
Number, max.	3 000; Number range: 1 to 16000
• Size, max.	64 kbyte
FB	
Number, max.	1 500; Number range: 0 to 7999
• Size, max.	64 kbyte
FC	
Number, max.	1 500; 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 	2; OB 10, 11
 Number of delay alarm OBs 	2; OB 20, 21
 Number of cyclic interrupt OBs 	2; OB 32, 35 (shortest cycle that can be set = 500 µs)
 Number of process alarm OBs 	2; OB 40, 41
 Number of DPV1 alarm OBs 	3; OB 55-57
 Number of isochronous mode OBs 	2; OB 61-62
 Number of multicomputing OBs 	1; OB 60
 Number of background OBs 	1; OB 90
 Number of startup OBs 	3; OB 100-102
 Number of asynchronous error OBs 	9; OB 80-88
 Number of synchronous error OBs 	2; OB 121, 122
Nesting depth	
 per priority class 	24
 additional within an error OB 	1
Counters, timers and their retentivity	
S7 counter	
Number	2 048
Retentivity	
— adjustable	Yes
— 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
— preset	No times retentive
Time range	. 10 tillion fotolitis
— lower limit	10 ms
— upper limit	9 990 s
— upper infinit	0000
• present	Yes
·	SFB
• Type	ט ט

Number	Unlimited (limited only by RAM capacity)
Data areas and their retentivity	S
Retentive data area (incl. timers, counters, flags), max.	Total working and load memory (with backup battery)
Flag	. Same and load money (with buokidy buttery)
• Size, max.	4 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.	8 kbyte
• preset	4 kbyte
Address area	
I/O address area	
• Inputs	4 kbyte
Outputs	4 kbyte
Process image	
Inputs, adjustable	4 kbyte
Outputs, adjustable	4 kbyte
• Inputs, default	128 byte
Outputs, default	128 byte
• consistent data, max.	244 byte
Access to consistent data in process image	Yes
Subprocess images	
Number of subprocess images, max.	15
Digital channels	
• Inputs	32 768
— of which central	32 768
Outputs	32 768
— of which central	32 768
Analog channels	
• Inputs	2 048
— of which central	2 048
Outputs	2 048
— of which central	2 048
Hardware configuration	
Number of expansion units, max.	21
connectable OPs	47
Multicomputing	Yes; 4 CPUs max. (with UR1 or UR2)
Interface modules	
Number of connectable IMs (total), max.	6
Number of connectable IM 460s, max. Number of connectable IM 462s, max.	6 4- IM 402-2
Number of connectable IM 463s, max. Number of DD receives.	4; IM 463-2
Number of DP masters	4
• integrated	1 10: CD 443 F Extended
• via CP	10; CP 443-5 Extended
• via IM 467	No: IM 467 cannot be used jointly with CP 443.5 Ext. or CP 443.1 in
Mixed mode IM + CP permitted	No; IM 467 cannot be used jointly with CP 443-5 Ext. or CP 443-1 in PROFINET IO mode
• via interface module	0
 Number of pluggable S5 modules (via adapter capsule in central device), max. 	6
Number of IO Controllers	
• integrated	1
• via CP	4; Max. 4 in the central controller; no mixed operation of different CP 443-1 types in PROFINET IO mode
Number of operable FMs and CPs (recommended)	
• FM	Limited by number of slots and number of connections
• CP, PtP	CP 440: Limited by number of slots; CP 441: Limited by number of 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	1
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	1h
• retentive	Yes
Clock synchronization	
• supported	Yes
• to MPI, master	Yes
• on MPI, device	Yes
• to DP, master	Yes
• on DP, device	Yes
• in AS, master	Yes
• in AS, device	Yes
• on Ethernet via NTP	Yes; As client
• to IF 964 DP	No
Time difference in system when synchronizing via	
• Ethernet, max.	10 ms
• MPI, max.	200 ms
Interfaces	
Interfaces/bus type	1 x MPI/PROFIBUS DP, 1 x PROFINET (2 ports)
Number of RS 485 interfaces	1; Combined MPI / PROFIBUS DP
1. Interface	
	MPI/PROFIBUS DP
1. Interface	MPI/PROFIBUS DP Yes
1. Interface Interface type	
1. Interface Interface type Isolated	
1. Interface Interface type Isolated Interface types	Yes
1. Interface Interface type Isolated Interface types • RS 485	Yes
Interface Interface type Isolated Interface types • RS 485 • Output current of the interface, max.	Yes
Interface Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols	Yes Yes 150 mA
Interface Interface type Isolated Interface types RS 485 Output current of the interface, max. Protocols MPI	Yes Yes 150 mA Yes
Interface Interface type Isolated Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP device MPI	Yes Yes 150 mA Yes Yes Yes Yes
Interface Interface type Isolated Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP device	Yes Yes 150 mA Yes Yes Yes Yes Yes Yes Yes Ye
Interface Interface type Isolated Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP device MPI Number of connections	Yes Yes 150 mA Yes Yes Yes Yes Yes Yes Yes Ye
Interface Interface type Isolated Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP device MPI Number of connections Transmission rate, max.	Yes Yes 150 mA Yes Yes Yes Yes Yes Yes Yes Ye
Interface Interface type Isolated Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP device MPI Number of connections Transmission rate, max. Services	Yes Yes 150 mA Yes Yes Yes Yes Yes Yes Yes Ye
Interface Interface type Isolated Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP device MPI Number of connections Transmission rate, max. Services — PG/OP communication	Yes Yes 150 mA Yes Yes Yes Yes Yes Yes Yes 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 Yes
Interface Interface type Isolated Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP device MPI Number of connections Transmission rate, max. Services — PG/OP communication — Routing	Yes Yes 150 mA Yes Yes Yes Yes Yes Yes Yes Ye
Interface Interface type Isolated Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP device MPI Number of connections Transmission rate, max. Services PG/OP communication Routing Global data communication	Yes Yes 150 mA Yes Yes Yes Yes Yes 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 Yes Yes Yes Yes
Interface Interface type Isolated Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP device MPI Number of connections Transmission rate, max. Services PG/OP communication Routing Global data communication S7 basic communication	Yes Yes 150 mA Yes Yes Yes Yes Yes Yes Yes Ye
Interface Interface type Isolated Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP device MPI Number of connections Transmission rate, max. Services PG/OP communication Routing Global data communication S7 basic communication S7 communication	Yes Yes 150 mA Yes Yes Yes Yes Yes Yes Yes Ye
Interface Interface type Isolated Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP device MPI Number of connections Transmission rate, max. Services PG/OP communication Routing Global data communication S7 basic communication S7 communication S7 communication S7 communication, as client	Yes Yes 150 mA Yes Yes Yes Yes Yes Yes Yes Ye
Interface Interface type Isolated Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP device MPI Number of connections Transmission rate, max. Services PG/OP communication Routing Global data communication S7 basic communication S7 communication S7 communication S7 communication, as client S7 communication, as server	Yes Yes 150 mA Yes Yes Yes Yes Yes Yes Yes Ye
Interface type Isolated Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP device MPI Number of connections Transmission rate, max. Services PG/OP communication Routing Global data communication S7 basic communication S7 communication S7 communication S7 communication, as client S7 communication, as server	Yes Yes 150 mA Yes Yes Yes Yes 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 Yes Yes Yes Yes Yes Yes Yes Y
Interface Interface type Isolated Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP device MPI Number of connections Transmission rate, max. Services PG/OP communication Routing Global data communication S7 basic communication S7 communication S7 communication S7 communication, as client S7 communication, as server	Yes 150 mA Yes Yes Yes Yes 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 Yes Yes Yes Yes Yes Yes Yes Yes Yes Y
Interface type Isolated Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP device MPI Number of connections Transmission rate, max. Services PG/OP communication Routing Global data communication S7 basic communication S7 communication S7 communication S7 communication, as client S7 communication, as server PROFIBUS DP master Number of connections, max.	Yes Yes 150 mA Yes Yes Yes Yes 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 Yes Yes Yes Yes Yes Yes Yes Y
Interface type Isolated Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP device MPI Number of connections Transmission rate, max. Services PG/OP communication Routing Global data communication S7 basic communication S7 communication S7 communication S7 communication, as client S7 communication, as server	Yes Yes Yes Yes Yes Yes Yes Yes
Interface type Isolated Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP device MPI Number of connections Transmission rate, max. Services PG/OP communication Routing Global data communication S7 basic communication S7 communication S7 communication S7 communication, as client S7 communication, as server PROFIBUS DP master Number of connections, max.	Yes Yes Yes Yes Yes Yes Yes Yes
Interface Interface type Isolated Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP device MPI Number of connections Transmission rate, max. Services PG/OP communication Routing Global data communication S7 basic communication S7 communication S7 communication S7 communication, as client S7 communication, as server PROFIBUS DP master Number of connections, max. Transmission rate, max. Transmission rate, max. max. number of DP devices Services	Yes 150 mA Yes Yes Yes Yes Yes Yes 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 Yes Yes Yes Yes Yes Yes Yes Yes Yes Y
Interface Interface type Isolated Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP device MPI Number of connections Transmission rate, max. Services PG/OP communication Routing Global data communication S7 basic communication S7 communication S7 communication S7 communication, as client S7 communication, as server PROFIBUS DP master Number of connections, max. Transmission rate, max. Transmission rate, max. Transmission rate, max. Transmission rate, max. Transmission rate, max. Transmission rate, max. Transmission rate, max. Transmission rate, max. Transmission rate, max. Transmission rate, max. Transmission rate, max. Transmission rate, max. Transmission rate, max. Transmission rate, max. Transmission rate, max. Transmission rate, max. Transmission rate, max. Transmission rate, max. Transmission rate, max.	Yes Yes Yes Yes Yes Yes Yes 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 Yes Yes Yes Yes Yes Yes Yes Y
Interface Interface type Isolated Interface types RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP device MPI Number of connections Transmission rate, max. Services PG/OP communication Routing Global data communication S7 basic communication S7 communication S7 communication S7 communication, as client S7 communication, as server PROFIBUS DP master Number of connections, max. Transmission rate, max. Transmission rate, max. max. number of DP devices Services	Yes 150 mA Yes Yes Yes Yes Yes 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 Yes Yes Yes Yes Yes Yes Yes Yes Yes Y

C7 has a communication	Voc
— 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 devices	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 device	
— user data per DP device, max.	244 byte
— Inputs, max.	244 byte
— Outputs, max.	244 byte
— Slots, max.	244
— per slot, max.	128 byte
1st interface / PROFIBUS DP device / header	
 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 	No
communication)	
— 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"
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 device	No
	110
Open IE communication	Yes

B	
Point-to-point connection	No
Media redundancy	Yes
PROFINET IO Controller	400 M W
Transmission rate, max.	100 Mbit/s
Services	v
— PG/OP communication	Yes
— S7 communication	Yes
— Isochronous mode	Yes; Only with IRT and the High Performance option
— Shared device	Yes Yes
— Prioritized startup	32
 Number of IO devices with prioritized startup, max. 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	256
flexibility"	200
— 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.	4 kbyte
— Outputs, max.	4 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	1.440 byte: Per IO Controller with abound do vice
— Inputs, max.	1 440 byte; Per IO Controller with shared device
— Outputs, max. Submodules	1 440 byte; Per IO Controller with shared device
	64
— Number, max.	
— User data per submodule, max. PROFINET CBA	1 024 byte
acyclic transmission	Yes
cyclic transmission	Yes
Open IE communication	
Number of connections, max.	46
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 Protocole	Yes
Protocols	
Redundancy mode Media redundancy	
Media redundancy	200 mg
 Switchover time on line break, typ. 	200 ms

 Number of stations in the ring, max. 	50
SIMATIC communication	30
S7 routing	Yes
Open IE communication	165
• TCP/IP	Yes; via integrated PROFINET interface and loadable FBs
— Number of connections, max.	46
— 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.	46
— 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. 	46
— Data length, max.	1 472 byte
Web server	
• supported	Yes
 User-defined websites 	Yes
Number of HTTP clients	5
Isochronous mode	
Equidistance	Yes
Number of DP masters with isochronous mode	1
User data per isochronous slave, max.	244 byte
shortest clock pulse	1.5 ms; 0.5 ms without use of SFC 126, 127
max. cycle	32 ms
communication functions / header	
PG/OP communication	Yes
Number of connectable OPs without message processing	47
Number of connectable OPs with message processing	47; When using Alarm_S/SQ and Alarm_D/DQ
Data record routing	Yes
Global data communication	Voo
supportedNumber of GD loops, max.	Yes 8
Number of GD packets, transmitter, max.	8
Number of GD packets, transmitter, max. Number of GD packets, receiver, max.	16
Size of GD packets, max.	54 byte
Size of GD packet (of which consistent), max.	1 variable
S7 basic communication	
• supported	Yes
User data per job, max.	76 byte
User data per job (of which consistent), max.	1 variable
S7 communication	
• supported	Yes
• as server	Yes
• as client	Yes
 User data per job, max. 	64 kbyte
User data per job (of which consistent), max.	462 byte; 1 variable
S5 compatible communication	
• supported	Yes; Via FC AG_SEND and AG_RECV, max. via 10 CP 443-1 or 443-5
 User data per job, max. 	8 kbyte
 User data per job (of which consistent), max. 	240 byte
Number of simultaneous AG-SEND/AG-RECV orders per CPLL may	24/24
CPU, max.	
Standard communication (FMS)	Vac: Via CP and loadable FR
supported communication functions / PROFINET CBA (with set target communication functions)	Yes; Via CP and loadable FB
Setpoint for the CPU communication load	20 %
Number of remote interconnection partners	32
number of remote interconnection partners number of master/device functions	150
total of all master/device connections	4 500
data length of all incoming master/device connections,	45 000 byte
max.	

 data length of all outgoing master/device connections, max. 	45 000 byte
Number of device-internal and PROFIBUS interconnections	1 000
 Data length of device-internal und PROFIBUS interconnections, max. 	16 000 byte
 Data length per connection, max. 	2 000 byte
performance data / PROFINET CBA / remote interconnection	/ with acyclic transfer / header
— Sampling interval, min.	200 ms; Depending on preset communication load, number of interconnections and data length used
 Number of incoming interconnections 	250
 Number of outgoing interconnections 	250
 Data length of all incoming interconnections, max. 	8 000 byte
 Data length of all outgoing interconnections, max. 	8 000 byte
 data volume / as user data for remote interconnections / in the case of acyclic transmission / with PROFINET CBA / per connection / maximum 	2 000 byte
performance data / PROFINET CBA / remote interconnection	/ with cyclic transfer / header
— Transmission frequency: Transmission interval, min.	1 ms; Depending on preset communication load, number of interconnections and data length used
 Number of incoming interconnections 	300
 Number of outgoing interconnections 	300
 Data length of all incoming interconnections, max. 	4 800 byte
 Data length of all outgoing interconnections, max. 	4 800 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 PROF	FINET / acyclic / header
 Number of stations that can log on for HMI variables (PN OPC/iMap) 	2x PN OPC/1x iMap
 HMI variable updating 	500 ms
 Number of HMI variables 	1 000
 Data length of all HMI variables, max. 	32 000 byte
performance data / PROFINET CBA / PROFIBUS proxy function	onality / header
— supported	Yes; 32 PROFIBUS slaves max. connectable
Data length per connection, max.	240 byte; Slave-dependent
Number of connections	
• overall	48
 usable for PG communication 	47
— reserved for PG communication	1
— adjustable for PG communication, max.	0
usable for OP communication	47
— reserved for OP communication	1
— adjustable for OP communication, max.	0
usable for S7 basic communication recovered for S7 basic communication	46
— reserved for S7 basic communication	0
 — adjustable for S7 basic communication, max. • usable for S7 communication 	0
usable for S7 communication — reserved for S7 communication	46
 reserved for S7 communication adjustable for S7 communication, max. 	0
 adjustable for 57 communication, max. usable for routing 	23
usable for routing reserved for routing	0
reserved for routing adjustable for routing, max.	U .
	0
S7 message functions	0
S7 message functions Number of login stations for message functions, may	
Number of login stations for message functions, max.	47; Max. 47 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC)
Number of login stations for message functions, max. Symbol-related messages	47; Max. 47 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC) Yes
Number of login stations for message functions, max. Symbol-related messages SCAN procedure	47; Max. 47 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC) Yes Yes
Number of login stations for message functions, max. Symbol-related messages SCAN procedure Program alarms	47; Max. 47 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC) Yes Yes Yes
Number of login stations for message functions, max. Symbol-related messages SCAN procedure Program alarms Process diagnostic messages	47; Max. 47 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC) Yes Yes Yes Yes
Number of login stations for message functions, max. Symbol-related messages SCAN procedure Program alarms Process diagnostic messages simultaneously active Alarm-S blocks, max.	47; Max. 47 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC) Yes Yes Yes Yes Yes Yes Sor Simultaneously active alarm_S/SQ blocks or alarm_D/DQ blocks
Number of login stations for message functions, max. Symbol-related messages SCAN procedure Program alarms Process diagnostic messages	47; Max. 47 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC) Yes Yes Yes Yes

Focuse control messages Number of nacroives that can log on simultaneously (SFB 37 August of nacroives that can log on simultaneously (SFB 37 August of nacroives that can log on simultaneously (SFB 37 August of nacroives that can log on simultaneously (SFB 37 August of nacroives that can log on simultaneously (SFB 37 August of nacroives that can log on simultaneously (SFB 37 August of nacroives and log on simultaneously (SFB 37 August of nacroives and log on simultaneously (SFB 37 August of nacroives and log on simultaneously (SFB 37 August of nacroives and log on simultaneously (SFB 37 August of nacroives and log on simultaneously (SFB 37 August of nacroives and log on simultaneously (SFB 37 August of nacroives and log on simultaneously (SFB 37 August of nacroives and log on simultaneously (SFB 37 August of nacroives and log on simultaneously (SFB 37 August of nacroives and log on simultaneously (SFB 37 August of nacroives and log on simultaneously (SFB 37 August of nacroives and log of nacroives and log on simultaneously (SFB 37 August of nacroives and log of log of nacroives and lo	• preset, max.	150
Number of natives had can log on simultaneously (SFB 37 AR, SEAD)	<u> </u>	
Number of messages	Number of archives that can log on simultaneously (SFB 37	
• overall, max 256 • in 100 ms gird, max 258 • with 100 ms gird, max 0 • with 100 ms gird, max 1 • virth 100 ms gird, max 7 • virth 100 ms gird, max 7 • virth 100 ms gird, max 1 • virth 100		
• in 100 ms grid, max 256 • in 1000 ms grid, max 256 • in 1000 ms grid, max 256 • with 100 ms grid, max 0 • with 500, more grid, max 1 • Catomissioning functions Status block Yes; Up to 16 simultaneously Status block Yes; Up to 16 simultaneously Status block Yes; Up to 16 simultaneously Status block Yes; Up to 16 variable • Status control variable Yes; Up to 16 variable tables • Status control variable Yes; Up to 16 variable tables • Forcing Yes • Number of variables InputsOutputs, bit memories, distributed I/Os • Number of variables InputsOutputs, bit memories, distributed I/Os • Number of variables Yes • Present		256
In 1500 ms grid, max	,	
■ in 1000 ms grid, max. 256		
with 100 ms grid, max		
• with 500 ms grid, max 1		200
• with 500, 1000 ms grid, max. 1		0
Tost commissioning functions Yes; Up to 16 simultaneously Single step Yes Number of breakpoints 16 Status/control variable Yes; Up to 18 variable tables • Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters • Number of variables, max. 70; Status control Forcing Yes • Forcing, variables, max. 64 • Porsent Yes • Number of variables, max. 64 • Dagnostic buttler Yes • Number of variables, max. 3 200 • Porsent 120 • Aunther of variables, max. 3 200 • Porsent 120 • Porsent 120 • Constance Yes	-	
Status block Yes, Up to 16 simultaneously Single step Yes Number of breakpoints 16 Statuscontrol variable • Variables • Number of variables, max. Forcing • Forcing, variables • Forcing, variables • Inputsoutputs, bit memories, distributed I/Os, timens, counters • Forcing, variables, max. 64 Diagnostic buffer • present • present • present • present • can be read out • Can approval • ATEX Analous areas • ATEX Analous areas • ATEX Analous areas • Configuration is header Configuration of present • or Company operation • inin. • or Company operation of the approval of the configuration of the approval • configuration of present • or Company operation • inin. • or Company operation • inin. • or Company operation of the approval of the configuration of the approval • configuration of present • Nesting levels • System function (SFG) • System function blocks (SFB) • System function blocks (SFB) • System function blocks (SFB) • System • Stcl. • Yes • Stc		
Single step		Ves: Un to 16 simultaneously
Number of breakpoints Statuscontrol variable * Status control variable * Vest Up to 16 variable tables * Number of variables, max. Forcing * Forcing, variables * Number of variables, max. Forcing * Forcing, variables * Number of variables, max. 64 * Present * Present * Present * Number of variables, max. 64 * Dagnostic buffer * Present * Number of entries, max. * adjustable * present * Present * Number of entries, max. * 3 200 * adjustable * present * 20 * Service data * can be read out * Yes * CE mark * Ves * CSA approval * Ut. approval * Ut. approval * Ut. approval * Pes * PA Sproval * Yes * CA (Chmerly C-TICK) * Yes * ATEX * Configuration forware * STEP 7 * Configuration / header * Configuration / header * Syes * Syes for further in the present of		
Status/control Status/control variable Status/control variable Variables Number of variables, max. 70; Status/control Forcing		
Status/control variable Vasis Up to 18 variable tables Inputs/outputs, memory bits, DBs, distributed I/Os, fimers, counters Number of variables, max. Forcing Forcing Forcing Forcing, variables Inputs/outputs, bit memories, distributed I/Os Number of variables, max. 64 Diagnostic buffer Inputs/outputs, bit memories, distributed I/Os Number of variables, max. 64 Diagnostic buffer Inputs/outputs, bit memories, distributed I/Os Number of entries, max. 64 Suppose the end out Pessont Inputs/outputs, bit memories, distributed I/Os Number of entries, max. 64 Suppose the end out Pessont Inputs/outputs, bit memories, distributed I/Os Number of entries, max. 64 Suppose the end out Pessont Inputs/outputs, bit memories, distributed I/Os Number of entries, max. 64 Suppose the end out Pessont Inputs/outputs, bit memories, distributed I/Os Number of entries, max. 64 Pessont Inputs/outputs, bit memories, distributed I/Os Number of entries, max. 64 Pessont Inputs/outputs, bit memories, distributed I/Os Number of entries, max. 64 Pessont Inputs/outputs, bit memories, distributed I/Os Pessont Inputs/outputs/		10
• Variables Inputs'outputs, memory bits, DBs, distributed I/Os, timers, counters Number of variables, max. 70; Status/control Forcing Yes • Forcing Yes Inputs/outputs, bit memories, distributed I/Os • Forcing, variables Inputs outputs, bit memories, distributed I/Os • Forcing Yes • Forcing Yes • Number of variables, max. 64 • Orange of entries, max. 3 200 • and peread out Yes • Present Yes • Number of entries, max. 3 200 • and be read out Yes • Standards, approvals, certificates • CE mark Yes • CSA approval Yes • Utus Yes • Utus Yes • CM (formerly C-TICK) Yes • CAC (formerly Gost-R) Yes • CAC (formerly Gost-R) Yes • ATEX ATEX ATEX ATEX I 3G Ex nA IIC T4 Gc Ambient conditions Ambient temperature during operation • min. 0 °C • max. 60 °C • Configuration / header • Configuration / header • Configuration / programming / header • Configuration / programming / header • STEP 7 Yes • Access to consistence • System function (SFC) see instruction list • Nesting levels Yes • System function blocks (SFB) see instruction list • Programming language		Yes: Un to 16 variable tables
Number of variables, max. 70, Status/control		
Forcing		
Forcing, variables Forcing, variables, max. Number of variables, max. Plagnostic buffer		ro, otatuoroonitioi
Forcing, variables Number of variables, max. Aumber of variables, max. Aumber of variables, max. Aumber of entries, max.	-	Vac
● Number of variables, max.	· ·	
Diagnostic buffer	-	
		∪ 1
Number of entries, max.	-	Von
adjustable		
— preset 120		
Service data Yes Standards, approvals, cortificates CE mark Yes CSA approval Yes U. approval Yes UL approval Yes Yes FM approval Yes RCM (formerly C-TICK) Yes RCM (formerly Gost-R) Yes Yes LaC (formerly Gost-R) Yes Yes Use in hazardous areas ATEX ATEX ATEX II 3G Ex nA IIC T4 GC Ambient temperature during operation • min. 0 °C • max. 60 °C Configuration / header Configuration on software • STEP 7 Yes • STEP 7 Yes See instruction list • Nesting levels 7 Access to consistent data in process image Yes • Access to consistent data in process image Yes See instruction list • System function blocks (SFB) see instruction list • Programming language — LAD Yes — FBD Yes — SCL Yes Yes	-	
◆ can be read out Yes Standards, approvals, certificates CE mark Yes CSA approval Yes UL approval Yes cULus Yes FM approval Yes RCM (formerly C-TICK) Yes KC approval Yes EAC (formerly Gost-R) Yes Use in hazardous areas ATEX ◆ ATEX ATEX II 3G Ex nA IIC T4 GC Ambient conditions Ambient temperature during operation • min. 0 °C • max. 60 °C configuration / header • 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 Yes — LAD Yes — FBD Yes — STL Yes — SCL		120
Standards, approvals, certificates		Vec
CE mark Yes CSA approval Yes UL approval Yes cULus Yes EM approval Yes RCM (formerly C-TICK) Yes KC approval Yes LEAC (formerly Gost-R) Yes Use in hazardous areas ATEX II 3G Ex nA IIC T4 GC Ambient conditions Ambient temperature during operation • min. 0 °C • max. 60 °C configuration / header Configuration software Yes • STEP 7 Yes configuration / programming / header 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 Yes — FBD Yes — STL Yes — SCL Yes		res
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UL approval		
CULLUS Yes FM approval Yes RCM (formerly C-TICK) Yes KC approval Yes EAC (formerly Gost-R) Yes Use in hazardous areas TEX • ATEX ATEX II 3G Ex nA IIC T4 GC Ambient conditions Ambient temperature during operation • min. 0 °C • max. 60 °C configuration / header Configuration / programming / header • STEP 7 Yes configuration / programming / header 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 Yes — LAD Yes — FBD Yes — STL Yes — STL Yes — STL Yes		
FM approval	· ·	
RCM (formerly C-TICK) Yes		
KC approval Yes EAC (formerly Gost-R) Yes Use in hazardous areas • ATEX ATEX II 3G Ex nA IIC T4 Gc Ambient conditions Ambient temperature during operation • min. 0°C • max. 60°C configuration / header Configuration software • STEP 7 Yes configuration / programming / header • Command set see instruction list • Nesting levels 7 • Access to consistent data in process image Yes • System functions (SFC) see instruction list Programming language — LAD — FBD — STL — SCL Yes Yes Yes Yes Yes Yes Yes Ye	· ·	
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Ambient temperature during operation • min. • max. 60 °C configuration / header Configuration software • STEP 7 Yes configuration / programming / header • Command set • Nesting levels • Access to consistent data in process image • System functions (SFC) • System function blocks (SFB) Programming language — LAD — FBD — STL — SCL Yes Yes 0 °C		ATEV 100 F
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STEP 7 Yes configuration / programming / header Command set Nesting levels Access to consistent data in process image System functions (SFC) System function blocks (SFB) Programming language - LAD - FBD - FBD - STL - SCL Yes Yes see instruction list Yes Yes Yes Yes Yes Yes Yes Y		
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 System function blocks (SFB) Programming language — LAD — FBD — STL — SCL Yes Yes Yes Yes Yes Yes 	•	
Programming language — LAD Yes — FBD Yes — STL Yes — SCL Yes	System functions (SFC)	see instruction list
— LAD Yes — FBD Yes — STL Yes — SCL Yes		see instruction list
— FBD Yes — STL Yes — SCL Yes	Programming language	
STLSCLYesYes	— LAD	Yes
— SCL Yes	— FBD	Yes
	— STL	Yes
— CFC Yes	— SCL	Yes
	— CFC	Yes

— GRAPH	Yes
— HiGraph®	Yes
configuration / programming / number of simultaneously active	SFC / header
— DPSYC_FR	2; SFC 11; per interface
— D_ACT_DP	8; SFC 12; per interface
— RD_REC	8; SFC 59; per interface
— WR_REC	8; SFC 58; per interface
— WR_PARM	8; SFC 55; per interface
— PARM_MOD	1; SFC 57; per interface
— WR_DPARM	2; SFC 56; per interface
— DPNRM_DG	8; SFC 13; per interface
— RDSYSST	8; SFC 51
— DP_TOPOL	1; SFC 103; per interface
configuration / programming / number of simultaneously active SFB / header	
— RDREC	8; SFB 52; per interface, but not more than 32 across all external interfaces
— WRREC	8; SFB 53; per interface, but not more than 32 across all external interfaces
Know-how protection	
 User program protection/password protection 	Yes
 Block encryption 	Yes; With S7 block Privacy
Dimensions	
Width	25 mm
Height	290 mm
Depth	219 mm
Weights	
Weight, approx.	750 g

last modified: 4/25/2024 🖸