## **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
Engineering with	
<ul> <li>Programming package</li> </ul>	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	
Supply voltage	No; Power supply via system power supply
Supply voltage Rated value (DC)	
Supply voltage Rated value (DC) • 24 V DC	
Supply voltage Rated value (DC) • 24 V DC Input current	No; Power supply via system power supply
Supply voltage Rated value (DC) • 24 V DC Input current from backplane bus 5 V DC, typ.	No; Power supply via system power supply

Power loss	
Power loss, typ.	5.5 W
Power loss, max.	7 W
Memory	
Type of memory	RAM
Work memory	
• integrated	1 Mbyte
<ul> <li>integrated (for program)</li> </ul>	512 kbyte
<ul> <li>integrated (for data)</li> </ul>	512 kbyte
• expandable	No
Load memory	
expandable FEPROM	Yes; with Memory Card (FLASH)
• expandable FEPROM, max.	64 Mbyte
<ul> <li>integrated RAM, max.</li> </ul>	512 kbyte
• expandable RAM	Yes; with Memory Card (RAM)
<ul> <li>expandable RAM, max.</li> </ul>	64 Mbyte
Backup	
● present	Yes
<ul> <li>with battery</li> </ul>	Yes; all data
<ul> <li>without battery</li> </ul>	No
Battery Backup battery	
Backup current, typ.	180 μA; up to 40 °C
Backup current, max.	850 μA
<ul><li>Backup current, max.</li><li>Backup time, max.</li></ul>	Dealt with in the module data manual with the secondary
• Backup unie, max.	conditions and the factors of influence
<ul> <li>Feeding of external backup voltage to CPU</li> </ul>	5 V DC to 15 V DC
CPU processing times	
for bit operations, typ.	31.25 ns
for word operations, typ.	31.25 ns
for fixed point arithmetic, typ. for floating point arithmetic, typ.	31.25 ns 62.5 ns
for hoating point antimetic, typ.	02.5 115
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

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

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 in total	Total working and load memory (with backup battery)
Flag	
• Number, max.	4 kbyte; Size of bit memory address area
Retentivity available	Yes
Retentivity preset	MB 0 to MB 15
<ul> <li>Number of clock memories</li> </ul>	8; in 1 memory byte
Local data	
<ul> <li>adjustable, max.</li> </ul>	8 kbyte
● preset	4 kbyte
Address area	
I/O address area	
• Inputs	4 kbyte
Outputs	4 kbyte
Process image	
<ul> <li>Inputs, adjustable</li> </ul>	4 kbyte
<ul> <li>Outputs, adjustable</li> </ul>	4 kbyte
<ul> <li>Inputs, default</li> </ul>	128 byte
• Outputs, default	128 byte
• consistent data, max.	244 byte
<ul> <li>Access to consistent data in process image</li> </ul>	Yes
Subprocess images	
<ul> <li>Number of subprocess images, max.</li> </ul>	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	
<ul> <li>Number of connectable IMs (total), max.</li> </ul>	6
<ul> <li>Number of connectable IM 460s, max.</li> </ul>	6
<ul> <li>Number of connectable IM 463s, max.</li> </ul>	4; IM 463-2
Number of DP masters	
• integrated	1
● via CP	10; CP 443-5 Extended
● via IM 467	4
<ul> <li>Mixed mode IM + CP permitted</li> </ul>	No; IM 467 cannot be used jointly with CP 443-5 Ext. or CP 443-1 in PROFINET IO mode
• via interface module	0
<ul> <li>Number of pluggable S5 modules (via adapter capsule in central device), max.</li> </ul>	6
Number of IO Controllers	
<ul> <li>integrated</li> </ul>	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
<ul> <li>PROFIBUS and Ethernet CPs</li> </ul>	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	
<ul> <li>required slots</li> </ul>	1
Time of day	
Time of day Clock	
Hardware clock (real-time)	Yes
retentive and synchronizable	Yes
Resolution	1 ms
Resolution	1 ms
<ul> <li>Deviation per day (buffered), max.</li> </ul>	1.7 s; Power off
<ul> <li>Deviation per day (buildred), max.</li> <li>Deviation per day (unbuffered), max.</li> </ul>	8.6 s; For power On
• Deviation per day (unbunered), max. Operating hours counter	
Number	16
	0 to 15
Number/Number range     Pange of values	SFCs 2, 3 and 4: 0 to 32767 hours SFC 101: 0 to 2^31 - 1 hours
<ul><li>Range of values</li><li>Granularity</li></ul>	1 h

Clock synchronization         Ves           • supported         Yes           • to MPI, master         Yes           • to MPI, slave         Yes           • to MPI, slave         Yes           • to DP, slave         Yes           • to DP, slave         Yes           • to AS, slave         Yes           • in AS, slave         Yes           • on Ehernet 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/bus type         1 x MPI/PROFIBUS DP, 1 x PROFINET (2 ports)           Number of RS 485 interfaces         1; Combined MPI / PROFIBUS DP           Interface type         Integrated           Physics         RS 485 / PROFIBUS HMPI           Isolated         Yes           Power supply to interface (15 to 30 V DC), max.         150 mA           Number of connection resources         WPI           • PROFIBUS DP master         Yes	• retentive	Yes
• supported       Yes         • to MPI, master       Yes         • to MPI, master       Yes         • to DP, master       Yes         • to DP, alave       Yes         • to DP, alave       Yes         • in AS, master       Yes         • in AS, slave       Yes         • on Ethernet via NTP       Yes, so client         • to Fl94DP       No         Time difference in system when synchronizing via       10 ms         • Ethernet, max.       10 ms         • MPI, max.       200 ms         Interfaces/bus type       1 x MPI/PROFIBUS DP, 1 x PROFINET (2 ports)         Number of RS 485 interfaces       1: Combined MPI / PROFIBUS DP         Interface       Integrated         Prover supply to interface (15 to 30 V DC), max.       150 mA         Number of connection resources       MPI: 32, DP: 16         Proteods       Yes         • PROFIBUS DP master       Yes         • PROFIBUS DP slave       Yes         • PROFIBU		
+ to MPI, masterYes+ to MPI, slaveYes+ to DP, nasterYes+ to DP, slaveYes+ to DP, slaveYes+ in AS, masterYes- in AS, masterYes- on Ethernet via NTPYes, As client+ to IF 964 DPNoTime difference in system when synchronizing viaImage: State		Yes
to DP, masterYesto DP, masterYesto DP, slaveYesin AS, masterYesin AS, slaveYeson Ethemet via NTPYes: As clientto IF 964 DPNoNoInterfaces in system when synchronizing viaEthernet, max.10 msMPI, max.200 msInterfaces/bus type1 x MPI/PROFIBUS DP, 1 x PROFINET (2 ports)Number of RS 485 interfaces1: Combined MPI / PROFIBUS DPInterfaces/bus type1 t x MPI/PROFIBUS DP, 1 x PROFINET (2 ports)Interfaces1: Combined MPI / PROFIBUS DPInterfaces1: Combined MPI / PROFIBUS DPInterfaces1: Combined MPI / PROFIBUS DPInterfaces1: Combined MPI / PROFIBUS DPInterfaceIntegratedPower supply to interface (15 to 30 V DC), max.150 mANumber of connection resourcesMPI 32, DP: 16ProtocolsYes• MPIYes• PROFIBUS DP masterYes• PROFIBUS DP slaveYesMPIVes• Number of connections32; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1• Transmission rate, max.21 Mbit/sServices—— PG/OP communicationYes— RoutingYes— Global data communicationYes— S7 communicationYes— S7 communication, as clientYes— S7 communication, as clientYes— S7 communication, a		Yes
• to DP, masterYes• to DP, slaveYes• in AS, masterYes• in AS, masterYes• on Ethernet via NTPYes; As client• to IF 964 DPNoTime difference in system when synchronizing via• Ethernet, max.10 ms• Ethernet, max.200 ms• Number of RS 485 interfaces1 x MPI/PROFIBUS DP, 1 x PROFINET (2 ports)Number of RS 485 interfaces1 x MPI/PROFIBUS DP, 1 x PROFINET (2 ports)Interfaces/bus type1 x MPI/PROFIBUS DP, 1 x PROFINET (2 ports)Interfaces/bus type1 x MPI/PROFIBUS DP, 1 x PROFINET (2 ports)Number of RS 485 interfaces1 x Combined MPI / PROFIBUS DPInterface typeIntegratedProver supply to interface (15 to 30 v DC), max.MPI %es• PROFIBUS DP masterYes• PROFIBUS DP masterYes• PROFIBUS DP masterYes• Number of connection resourcesWHI %es• Number of connections32; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1• Transmission rate, max.20 WISServices—— PG/DP communicationYes— RoutingYes— RoutingYes— Global data communicationYes— S7 communication, as clientYes— S7 communication, as clientYes— S7 communication, as serverYes	● to MPI, slave	Yes
• to DP, slaveYes• in AS, masterYes• in AS, slaveYes• on Ethernet via NTPYes; As client• to IF 964 DPNoTime difference in system when synchronizing via• Ethernet, max.10 ms• MPI, max.200 msInterfaces/bus type1 x MPI/PROFIBUS DP, 1 x PROFINET (2 ports)Number of RS 485 interfaces1 x MPI/PROFIBUS DP, 1 x PROFINET (2 ports)Number of RS 485 interfaces1 combined MPI / PROFIBUS DP1 InterfaceIntegratedPower supply to interface (15 to 30 V DC), max.150 mANumber of connection resourcesMPI: 32, DP: 16ProtocolsYes• PROFIBUS DP masterYes• PROFIBUS DP slave32; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1• Number of connection32; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1• Transmission rate, 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.Yes• PG/OP communicationYes• PG/OP communicationYes• RoutingYes• Global data communicationYes• S7 communication, as clientYes• S7 communication, as clientYes• S7 communication, as serverYes		Yes
• in AS, masterYes• in AS, slaveYes• on Ethernet via NTPYes: As client• to IF 964 DPNoTime difference in system when synchronizing viaIf memet, max.• Ethernet, max.10 ms• MPI, max.200 msInterfaces/bus type1 x MPI/PROFIBUS DP, 1 x PROFINET (2 ports)Number of RS 485 interfaces1: Combined MPI / PROFIBUS DP1 InterfaceIntegratedPhysicsRS 485 / PROFIBUS + MPIIsolatedYesPower supply to interface (15 to 30 V DC), max.150 mANumber of Connection resourcesMPI: 32, DP: 16ProtocolsYes• MPIYes• PROFIBUS DP slaveYesMPIYes• Number of connections32; 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/sServices PG/OP communicationYes- RoutingYes- Global data communicationYes- S7 basic communicationYes- S7 communication, as clientYes- S7 communication, as serverYes		Yes
• in AS, slaveYes• on Ethernet via NTPYes; As client• to IF 964 DPNoTime difference in system when synchronizing via• Ethernet, max.10 ms• MPI, max.200 msInterfaces/bus type1 x MPI/PROFIBUS DP, 1 x PROFINET (2 ports)Number of RS 485 interfaces1; combined MPI / PROFIBUS DPInterface typeIntegratedInterface typeIntegratedPower supply to interface (15 to 30 V DC), max.150 mANumber of connection resourcesMPI• MPIYes• PROFIBUS DP masterYes• PROFIBUS DP masterYes• PROFIBUS DP slaveYesMPIYes• Number of connections32; 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/sServices PG/CP communicationYes- RoutingYes- Global data communicationYes- S7 basic communicationYes- S7 communication, as clientYes- S7 communication, as serverYes		Yes
• on Ethernet via NTPYes; As client• to IF 964 DPNoTime difference in system when synchronizing via• Ethernet, max.10 ms• MPI, max.200 msInterfaces/bus type1 x MPI/PROFIBUS DP, 1 x PROFINET (2 ports)Number of RS 485 interfaces1; Combined MPI / PROFIBUS DPInterface1 x MPI/PROFIBUS DPInterface typeIntegratedPhysicsRS 485 / PROFIBUS + MPIIsolatedYesPower supply to interface (15 to 30 V DC), max.150 mANumber of connection resourcesMPI• MPIYes• MPIYes• NorfiBUS DP masterYes• PROFIBUS DP slaveYesMPIYes• PROFIBUS DP slaveYesMPIYes• DROFIBUS DP slaveYesMPIYes• Services-• PROFIBUS DP slaveYes• Services-• Services-• Services-• Services-• Services-• PG/OP communicationYes• Robibl data communicationYes• Services-• Service		Yes
• to IF 964 DPNoTime difference in system when synchronizing via• Ethernet, max.10 ms• MPI, max.200 msInterfacesInterfaces/bus type1 x MPI/PROFIBUS DP, 1 x PROFINET (2 ports)Number of RS 485 interfaces1; Combined MPI / PROFIBUS DP1 Interface1 x MPI/PROFIBUS P1 Interface typeIntegratedPhysicsRS 485 / PROFIBUS + MPIIsolatedYesPower supply to interface (15 to 30 V DC), max.150 mANumber of connection resourcesMPI: 32, DP: 16ProtocolsVes• PROFIBUS DP masterYes• PROFIBUS DP slaveYesMPIYes• Number of connections32; 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/sServices PG/OP communicationYes- RoutingYes- RoutingYes- S7 basic communicationYes- S7 communicationYes- S7 communication, as clientYes- S7 communication, as serverYes		Yes: As client
Time difference in system when synchronizing via            • Ethernet, max. • MPI, max. • MPI, max. 200 ms          Interfaces         Interfaces/bus type       1 × MPI/PROFIBUS DP, 1 × PROFINET (2 ports)         Number of RS 485 interfaces       1; Combined MPI / PROFIBUS DP         Interface       11; Combined MPI / PROFIBUS PP         Interface type       Integrated         Physics       RS 485 / PROFIBUS + MPI         Isolated       Yes         Power supply to interface (15 to 30 V DC), max.       150 mA         Number of connection resources       MPI: 32, DP: 16         Protocols       Yes         • MPI       Yes         • PROFIBUS DP master       Yes         • PROFIBUS DP slave       Yes         MPI       Yes         • Number of connections       32; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1         • Transmission rate, max.       12 Mbit/s         Services       —         — PG/OP communication       Yes         — Routing       Yes         — Golabal data communication       Yes         — S7 basic communication       Yes         — S7 communication       Yes         — S7 c		
• Ethernet, max.       10 ms         • MPI, max.       200 ms         Interfaces       1 x MPI/PROFIBUS DP, 1 x PROFINET (2 ports)         Number of RS 485 interfaces       1; Combined MPI / PROFIBUS DP         1 Interface type       Integrated         Physics       RS 485 / PROFIBUS + MPI         Isolated       Yes         Power supply to interface (15 to 30 V DC), max.       150 mA         Number of connection resources       MPI 32, DP: 16         Protocols       Yes         • MPI       Yes         • PROFIBUS DP master       Yes         • PROFIBUS DP slave       Yes         MPI       Yes         • Number of connections       32; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1         • Transmission rate, max.       12 Mbit/s         Services       -         - PG/OP communication       Yes         - Routing       Yes         - Global data communication       Yes         - S7 communication       Yes         - S7 communication       Yes         - S7 communication, as client       Yes		
• MPI, max.200 msInterfacesInterfaces/bus type1 x MPU/PROFIBUS DP, 1 x PROFINET (2 ports)Number of RS 485 interfaces1; Combined MPI / PROFIBUS DPInterfaceIntegratedInterface typeIntegratedPhysicsRS 485 / PROFIBUS + MPIIsolatedYesPower supply to interface (15 to 30 V DC), max.150 mANumber of connection resourcesMPI: 32, DP: 16ProtocolsYes• MPIYes• PROFIBUS DP masterYes• PROFIBUS DP slaveYesMPIYes• Number of connections22; 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/sServicesImage: State S		10 ms
Interfaces/bus type       1 x MPI/PROFIBUS DP, 1 x PROFINET (2 ports)         Number of RS 485 interfaces       1; Combined MPI / PROFIBUS DP         Interface       Integrated         Interface type       Integrated         Physics       RS 485 / PROFIBUS + MPI         Isolated       Yes         Power supply to interface (15 to 30 V DC), max.       150 mA         Number of connection resources       MPI: 32, DP: 16         Protocols		200 ms
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       Interface type         Interface type       Integrated         Physics       RS 485 / PROFIBUS + MPI         Isolated       Yes         Power supply to interface (15 to 30 V DC), max.       150 mA         Number of connection resources       MPI: 32, DP: 16         Protocols		
Number of RS 485 interfaces       1; Combined MPI / PROFIBUS DP         Interface type       Integrated         Physics       RS 485 / PROFIBUS + MPI         Isolated       Yes         Power supply to interface (15 to 30 V DC), max.       150 mA         Number of connection resources       MPI: 32, DP: 16         Protocols		
1. Interface         Interface type       Integrated         Physics       RS 485 / PROFIBUS + MPI         Isolated       Yes         Power supply to interface (15 to 30 V DC), max.       MD         Number of connection resources       MPI: 32, DP: 16         Protocols		
Interface type       Integrated         Physics       RS 485 / PROFIBUS + MPI         Isolated       Yes         Power supply to interface (15 to 30 V DC), max.       150 mA         Number of connection resources       MPI: 32, DP: 16         Protocols	Number of R3 403 Interfaces	r, combined writt ron bus br
Physics       RS 485 / PROFIBUS + MPI         Isolated       Yes         Power supply to interface (15 to 30 V DC), max.       150 mA         Number of connection resources       MPI: 32, DP: 16         Protocols       Yes         • MPI       Yes         • PROFIBUS DP master       Yes         • PROFIBUS DP slave       Yes         MPI       Services         • Transmission rate, max.       12 Mbit/s         Services       -         • PG/OP communication       Yes         • Routing       Yes         • Global data communication       Yes         • S7 basic communication       Yes         • S7 communication       Yes         • S7 communication       Yes         • S7 communication, as client       Yes         • S7 communication, as server       Yes		
IsolatedYesPower supply to interface (15 to 30 V DC), max.150 mANumber of connection resourcesMPI: 32, DP: 16ProtocolsYes• MPIYes• PROFIBUS DP masterYes• PROFIBUS DP slaveYesMPIYes• Number of connections32; 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/sServices PG/OP communicationYes- RoutingYes- S7 basic communicationYes- S7 communicationYes- S7 communication, as clientYes- S7 communication, as serverYes		
Power supply to interface (15 to 30 V DC), max.       150 mA         Number of connection resources       MPI: 32, DP: 16         Protocols       Yes         • MPI       Yes         • PROFIBUS DP master       Yes         • PROFIBUS DP slave       Yes         MPI       Yes         • Number of connections       32; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1         • Transmission rate, max.       12 Mbit/s         Services		
Number of connection resourcesMPI: 32, DP: 16ProtocolsYes• MPIYes• PROFIBUS DP masterYes• PROFIBUS DP slaveYesMPIYes• Number of connections32; 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/sServicesYes- PG/OP communicationYes- RoutingYes- Global data communicationYes- S7 communicationYes- S7 communication, as clientYes- S7 communication, as serverYes		
Protocols• MPIYes• PROFIBUS DP masterYes• PROFIBUS DP slaveYes• PROFIBUS DP slave32; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1• Number of connections32; 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/sServices PG/OP communicationYes- RoutingYes- Global data communicationYes- S7 basic communicationYes- S7 communicationYes- S7 communication, as clientYes- S7 communication, as serverYes		
• MPIYes• PROFIBUS DP masterYes• PROFIBUS DP slaveYesMPIServices• Transmission rate, 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/sServices PG/OP communicationYes- RoutingYes- Global data communicationYes- S7 basic communicationYes- S7 communication, as clientYes- S7 communication, as serverYes		MPI: 32, DP: 16
Image: Normal sector of the		<u> </u>
• PROFIBUS DP slave       Yes         MPI       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.       32; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1         • Transmission rate, max.       12 Mbit/s         Services       -         - PG/OP communication       Yes         - Routing       Yes         - Global data communication       Yes         - S7 basic communication       Yes         - S7 communication       Yes         - S7 communication, as client       Yes         - S7 communication, as server       Yes		
MPI         • Number of connections       32; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1         • Transmission rate, max.       12 Mbit/s         Services       - PG/OP communication         - Routing       Yes         - Global data communication       Yes         - S7 basic communication       Yes         - S7 communication, as client       Yes         - S7 communication, as server       Yes		
• Number of connections32; 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/sServices PG/OP communicationYes- RoutingYes- Global data communicationYes- S7 basic communicationYes- S7 communicationYes- S7 communication, as clientYes- S7 communication, as serverYes		Yes
connection resources on the line is reduced by 1• Transmission rate, max.12 Mbit/sServices- PG/OP communicationYes- RoutingYes- Global data communicationYes- S7 basic communicationYes- S7 communicationYes- S7 communication, as clientYes- S7 communication, as serverYes		
Services         - PG/OP communication       Yes         - Routing       Yes         - Global data communication       Yes         - S7 basic communication       Yes         - S7 communication       Yes         - S7 communication       Yes         - S7 communication       Yes         - S7 communication, as client       Yes         - S7 communication, as server       Yes	<ul> <li>Number of connections</li> </ul>	
PG/OP communicationYes RoutingYes Global data communicationYes S7 basic communicationYes S7 communicationYes S7 communication, as clientYes S7 communication, as serverYes	<ul> <li>Transmission rate, max.</li> </ul>	12 Mbit/s
- RoutingYes- Global data communicationYes- S7 basic communicationYes- S7 communicationYes- S7 communication, as clientYes- S7 communication, as serverYes	Services	
Global data communicationYes S7 basic communicationYes S7 communicationYes S7 communication, as clientYes S7 communication, as serverYes	— PG/OP communication	Yes
	— Routing	Yes
	— Global data communication	Yes
— S7 communication, as client     Yes       — S7 communication, as server     Yes	— S7 basic communication	Yes
— S7 communication, as server Yes	— S7 communication	Yes
	— S7 communication, as client	Yes
PROFIBUS DP master	— S7 communication, as server	Yes
	PROFIBUS DP master	

<ul> <li>Transmission rate, max.</li> <li>12 Mbit/s</li> <li>Number of DP slaves, max.</li> <li>32</li> <li>Services</li> <li>PG(OP communication</li> <li>Services</li> <li>Ves</li> <li>Routing</li> <li>Ves; S7 routing</li> <li>Global data communication</li> <li>No</li> <li>S7 basic communication</li> <li>S7 basic communication</li> <li>S7 communication, as elivent</li> <li>S7 communication, as server</li> <li>S7 communication of DP slaves</li> <li>S7 communication of DP slaves</li> <li>SVNC/FREEZE</li> <li>Ves</li> <li>SVNC/FREEZE</li> <li>Ves</li> <li>Address area</li> <li>Inputs, max.</li> <li>2 kbyte</li> <li>Outputs, max.</li> <li>2 kbyte</li> <li>Outputs, max.</li> <li>2 kbyte</li> <li>User data per DP slave, max.</li> <li>244 byte</li> <li>Inputs, max.</li> <li>Solts, max.</li> <li>Stots, max.</li> <li>Sub the</li> <li>FROFIBUS DP slave</li> <li>Transmission rate, max.</li> <li>Address area, max.</li> <li>Sub the</li> <li>PROFIBUS DP slave</li> <li>Number of connections</li> <li>Ith vision of the same.</li> <li>Sub the</li> <li>Subt, max.</li> <li>Sub the</li> <li>Subt, max.</li> <li>Address area, max.</li> <li>Sub the</li> <li>Subt, max.</li> <li>Address area, max.</li> <li>Sub the</li> <li>PROFIBUS DP slave</li> <li>No</li> <li>Ves with interface active</li> <li>Services</li> </ul>	<ul> <li>Number of connections, max.</li> </ul>	16; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1
• Number of DP slaves, max.         32           Services         -           -         PC/OP communication         Yes           -         Routing         Ves, S7 routing           -         Global data communication         Na           -         S7 basic communication         Yes           -         S7 communication         Yes           -         S7 communication, as elever         Yes           -         S7 communication, as server         Yes           -         S7 communication, as server         Yes           -         Equidistance         Yes           -         Equidistance         Yes           -         Sr WC/FREEZE         Yes           -         Direct data exchange (slave-to-slave Yes         Yes           -         Direct data exchange (slave-to-slave Yes         Yes           -         Direct data per DP slave, max.         2 kbyte           -         Uptus, max.         2 kbyte           -         Outputs, max.         2 kbyte           -         Inputs, max.         244 byte           -         Soft, max.         244 byte           -         Soft, max.         242 byte           -<	• Transmission rate, max	-
Services       - PG/OP communication     Yes       - Routing     Yes, S7 routing       - Global data communication     No       - S7 basic communication     Yes       - S7 communication     Yes       - S7 communication     Yes       - S7 communication     Yes       - S7 communication, as client     Yes       - S7 communication, as server     Yes       - Equidistance     Yes       - Equidistance     Yes       - Equidistance     Yes       - Strochrous mode     Yes       - Direct data exchange (slave-to-slave     Yes       - Dired data exchange (slave-to-slave     Yes       - Outputs, max.     2 kbyte       - User data per DP slave, max.     2 kbyte       - User data per DP slave, max.     244 byte       - Outputs, max.     244 byte       - Stots, max.     244 byte       - Stots, max.     24 byte       - Stots, max.     12 byte		
PG/OP communicationYesRoutingYes: S7 routingGlobal data communicationNoS7 basic communicationYesS7 communicationYesS7 communication, as clientYesS7 communication, as serverYesEquidistanceYesEquidistanceYesEquidistanceYesStrochronous modeYesStrochronous modeYesStrochronous modeYesStrochronous modeYesStrochronous modeYesStrochronous modeYesDirect data exchange (slave-to-slave communication)YesDirect data exchange (slave-to-slave communication)YesDirect data per DP slaveYesDirect data per DP slave2 kbyteUser data per DP slave, max.24 kbyteInputs, max.244 byteStols, max.24 byteStols, max.128 bytePROFIBUS DP slave128 bytePROFIBUS DP slave128 byteStols, max.124 byteStols, max.129 bytePROFIBUS DP slave128 byteStols, max.129 byteStols, max.32 byteStols area, max.32 byteTransmission rate, max.32 byteOdytos, max.32 byteDef/OP communicationYes: with interface activeDef/OP communicationYes: with interface activeDef/OP communicationYes: with interface active		
RoutingYes; S7 routingGlobal data communicationNoS7 basic communicationYesS7 communication, as clientYesS7 communication, as serverYesEquidistanceYesEquidistanceYesEquidistanceYesBochroneus modeYesSrNC/FREEZEYesBochroneus modeYesBochroneus modeYesBochroneus modeYesBochroneus modeYesBochroneus modeYesBochroneus modeYesDEV1YesDEV1YesDEV1YesDEV1YesDEV1YesDEV1YesDUstr, max.2 kbyteDutyts, max.2 kbyteDutyts, max.244 byteDutyts, max.244 byteSlots, max.244 byteSlots, max.12 byteSlots, max.12 byteSlots, max.12 byteSlots, max.22 byteDersion mate, max.12 byteSlots, max.32 byteTersmission rate, max.32 byteTersmission rate, max.32 byteSlots-max.32 byteDersion		Yes
Global data communicationNo- S7 basic communicationYes- S7 communication, as clientYes- S7 communication, as serverYes- S7 communication, as serverYes- EquidistanceYes- EquidistanceYes- Isochronous modeYes- Isochronous modeYes- SYNC/FREZEYes- Direct data exchange (slave-to-slave communication)Yes- Direct data exchange (slave-to-slave communication)Yes- Direct data exchange (slave-to-slave communication)Yes- User data per DP slaveYes- User data per DP slave, max.2 kbyte- Outputs, max.2 kbyte- Outputs, max.244 byte- Slots, max.244 byte- Slots, max.12 bytePROFIBUS DP slave12 byteFROFIBUS DP slave12 kbit/s- Transmission rate, max.12 byte- Tansmission rate, max.12 kbit/s- Address area, max.32 byte- Teddat per data searchNo- Address area, max.32 byte- Tensmission rate, max.32 byte- Tensmission rate, max.32 byte- Tensmission rate, max.32 byte- Derive sarea, max.32 byte- PG/OP communicationYes; with interface active- PG/OP communicationYes; with interface active- PG/OP communicationYes; with interface active- ST routingYes; with interface active		Yes; S7 routing
	•	-
		Yes
ST communication, as serverYes- EquidistanceYes- EquidistanceYes- Isochronous modeYes- Isochronous modeYes- SYNC/FREEZEYes- Activation/deactivation of DP slavesYes- Direct data exchange (slave-to-slave communication)Yes- DPV1YesAddress area2 kbyte- Outputs, max.2 kbyte- User data per DP slave, max.24 byte- User data per DP slave, max.244 byte- Slots, max.245 byte- Number of connections16• GSD filehttp://support.automation siemens.com/WW/view/en/113652• Transmission rate, max.32 byte• User data per address area, max.32 byte• Of which consistent, max.32 byte• Of which consistent, max.32 byte• SlotS32 byte• PG/OP communicationYes; with interface active- PG/OP		Yes
	- S7 communication, as client	Yes
EquidistanceYes EquidistanceYes Isochronous modeYes Isochronous modeYes SYNC/FREEZEYes Activation/deactivation of DP slavesYes Direct data exchange (slave-to-slave communication)Yes DPV1Yes DPV1Yes DPV1Yes Outputs, max.2 kbyte Outputs, max.2 kbyte Outputs, max.244 byte Outputs, max.244 byte Outputs, max.244 byte Slots, max.245 byte Slots, max.254 byte Slots, max.254 byte Slots, max.32 byte Slots, max.		Yes
		Yes
		Yes
Activation (deactivation of DP slavesYes— Direct data exchange (slave-to-slave communication) — DPV1Yes— Direct data exchange (slave-to-slave communication)Yes— DPV1YesAddress area2 kbyte— Inputs, max.2 kbyte— Outputs, max.2 kbyte— User data per DP slave244 byte— Inputs, max.244 byte— Outputs, max.244 byte— Outputs, max.244 byte— Outputs, max.244 byte— Slots, max.244 byte— Slots, max.244 byte— Slots, max.244 byte— Slots, max.16GSD filehttp://support automation siemens.com/WW/view/en/113652• Transmission rate, max.12 Mbit/s• automatic baud rate searchNo• Address area, max.32 byte• User data per address area, max.32 byte• Direct data per address area, max.32 byte• Services— of which consistent, max.• PG/OP communicationYes; with interface active— S7 routingYes; with interface active		Yes
Poincet data exchange (slave-to-slave communication)Yes- DPV1YesAddress area2 kbyte- Inputs, max.2 kbyte- Outputs, max.2 kbyteUser data per DP slave244 byte- Inputs, max.244 byte- User data per DP slave, max.244 byte- Outputs, max.244 byte- Outputs, max.244 byte- Outputs, max.244 byte- Slots, max.244- per slot, max.128 bytePROFIBUS DP slave16• Number of connections16• GSD filehttp://support.automation.siemens.com/WW/view/en/113652• Transmission rate, max.12 Mbit/s• automatic baud rate searchNo• Address area, max.32 byte• User data per address area, max.32 byte• Outputs consistent, ma		Yes
communication)Yes- DPV1YesAddress area2 kbyte- Inputs, max.2 kbyte- Outputs, max.2 kbyteUser data per DP slave244 byte- Inputs, max.244 byte- Outputs, max.244 byte- Outputs, max.244 byte- Outputs, max.244 byte- Slots, max.244- per slot, max.244- per slot, max.128 bytePROFIBUS DP slave16· Slots filehttp://support.automation.siemens.com/WW/view/en/113652· Transmission rate, max.12 Mbit/s· automatic baud rate searchNo· Address area, max.32; Virtual slots· User data per address area, max.32 byte· Outputs, max.32 byte· Services of which consistent, max.32 byte· Services PG/OP communicationYes; with interface active- S7 routingYes; with interface active	<ul> <li>Activation/deactivation of DP slaves</li> </ul>	Yes
- DPV1YesAddress area2 kbyte- Inputs, max.2 kbyteOutputs, max.2 kbyteUser data per DP slave, max.244 byte- User data per DP slave, max.244 byte- Outputs, max.244 byte- Outputs, max.244 byte- Outputs, max.244 byte- Slots, max.244 byte- per slot, max.244 byte- per slot, max.244 byte- Slots, max.244 byte- Slots, max.16• Number of connections16• GSD filehttp://support.automation.siemens.com/WW/view/en/113652• Transmission rate, max.12 Mbit/s• automatic baud rate searchNo• Address area, max.32 byte• User data per address area, max.32 byte• of which consistent, max.32 byteServices of which consistent, max.32 byte- Services PG/OP communicationYes; with interface active- ST routingYes; with interface active	— Direct data exchange (slave-to-slave	Yes
Address area- Inputs, max.2 kbyte- Outputs, max.2 kbyteUser data per DP slave244 byte- User data per DP slave, max.244 byte- Inputs, max.244 byte- Outputs, max.244 byte- Outputs, max.244 byte- Slots, max.244- per slot, max.244- per slot, max.244- per slot, max.244- Slots, max.244- Slots, max.244- Transmission rate, max.16• GSD filehttp://support.automation.siemens.com/WW/view/en/113652• Transmission rate, max.12 Mbit/s• automatic baud rate searchNo• Address area, max.32; Virtual slots• User data per address area, max.32 byte- of which consistent, max.32 byteServices PG/OP communicationYes; with interface active- S7 routingYes; with interface active	communication)	
Inputs, max.2 kbyte Outputs, max.2 kbyteUser data per DP slave244 byte Inputs, max.244 byte Outputs, max.244 byte Outputs, max.244 byte Outputs, max.244 per slot, max.244 per slot, max.244 per slot, max.244 per slot, max.128 bytePROFIBUS DP slave16• Number of connections16• GSD filehttp://support.automation.siemens.com/WW/view/en/113652• Transmission rate, max.12 Mbit/s• automatic baud rate searchNo• Address area, max.32; Virtual slots• User data per address area, max.32 byte- of which consistent, max.32 byteServices PG/OP communicationYes; with interface active- S7 routingYes; with interface active	— DPV1	Yes
- Outputs, max.2 kbyteUser data per DP slave244 byte- User data per DP slave, max.244 byte- Inputs, max.244 byte- Outputs, max.244 byte- Slots, max.244- per slot, max.244- per slot, max.128 bytePROFIBUS DP slave• Number of connections16• GSD filehttp://support.automation.siemens.com/WW/view/en/113652• Transmission rate, max.12 Mbit/s• automatic baud rate searchNo• Address area, max.32; Virtual slots• User data per address area, max.32 byte- of which consistent, max.32 byteServices PG/OP communicationYes; with interface active- S7 routingYes; with interface active	Address area	
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 bytePROFIBUS DP slave• Number of connections16• GSD filehttp://support.automation.siemens.com/WW/view/en/113652• Transmission rate, max.12 Mbit/s• automatic baud rate searchNo• Address area, max.32; Virtual slots• User data per address area, max.32 byte- of which consistent, max.32 byteServices PG/OP communicationYes; with interface active- S7 routingYes; with interface active	— Inputs, max.	2 kbyte
User data per DP slave, max.244 byte Inputs, max.244 byte Outputs, max.244 byte Slots, max.244 per slot, max.244 per slot, max.128 bytePROFIBUS DP slave• Number of connections16• GSD filehttp://support.automation.siemens.com/WW/view/en/113652• Transmission rate, max.12 Mbit/s• automatic baud rate searchNo• Address area, max.32; Virtual slots• User data per address area, max.32 byte- of which consistent, max.32 byteServices PG/OP communicationYes; with interface active- S7 routingYes; with interface active	— Outputs, max.	2 kbyte
Inputs, max.244 byte Outputs, max.244 byte Slots, max.244 per slot, max.128 bytePROFIBUS DP slave• Number of connections16• GSD filehttp://support.automation.siemens.com/WW/view/en/113652• Transmission rate, max.12 Mbit/s• automatic baud rate searchNo• Address area, max.32 tytrual slots• User data per address area, max.32 byte• of which consistent, max.32 byte• Def CommunicationYes; with interface active- PG/OP communicationYes; with interface active	User data per DP slave	
- Outputs, max.244 byte- Slots, max.244- per slot, max.128 bytePROFIBUS DP slave16• Number of connections16• GSD filehttp://support.automation.siemens.com/WW/view/en/113652• Transmission rate, max.12 Mbit/s• automatic baud rate searchNo• Address area, max.32; Virtual slots• User data per address area, max.32 byte- of which consistent, max.32 byteServices PG/OP communicationYes; with interface active- S7 routingYes; with interface active	— User data per DP slave, max.	244 byte
- Slots, max.244- per slot, max.128 bytePROFIBUS DP slave128 byte• Number of connections16• GSD filehttp://support.automation.siemens.com/WW/view/en/113652• Transmission rate, max.12 Mbit/s• automatic baud rate searchNo• Address area, max.32; Virtual slots• User data per address area, max.32 byte- of which consistent, max.32 byteServices PG/OP communicationYes; with interface active- S7 routingYes; with interface active	— Inputs, max.	244 byte
per slot, max.128 bytePROFIBUS DP slave16• Number of connections16• GSD filehttp://support.automation.siemens.com/WW/view/en/113652• Transmission rate, max.12 Mbit/s• automatic baud rate searchNo• Address area, max.32; Virtual slots• User data per address area, max.32 byte- of which consistent, max.32 byteServices PG/OP communicationYes; with interface active- S7 routingYes; with interface active	— Outputs, max.	244 byte
PROFIBUS DP slave• Number of connections16• GSD filehttp://support.automation.siemens.com/WW/view/en/113652• Transmission rate, max.12 Mbit/s• automatic baud rate searchNo• Address area, max.32; Virtual slots• User data per address area, max.32 byte• of which consistent, max.32 byteServices- PG/OP communicationYes; with interface active- S7 routingYes; with interface active	— Slots, max.	244
• Number of connections16• GSD filehttp://support.automation.siemens.com/WW/view/en/113652• Transmission rate, max.12 Mbit/s• automatic baud rate searchNo• Address area, max.32; Virtual slots• User data per address area, max.32 byte- of which consistent, max.32 byteServices PG/OP communicationYes; with interface active- S7 routingYes; with interface active	— per slot, max.	128 byte
• GSD filehttp://support.automation.siemens.com/WW/view/en/113652• Transmission rate, max.12 Mbit/s• automatic baud rate searchNo• Address area, max.32; Virtual slots• User data per address area, max.32 byte- of which consistent, max.32 byteServices PG/OP communicationYes; with interface active- S7 routingYes; with interface active	PROFIBUS DP slave	
<ul> <li>Transmission rate, max.</li> <li>12 Mbit/s</li> <li>automatic baud rate search</li> <li>No</li> <li>Address area, max.</li> <li>32; Virtual slots</li> <li>User data per address area, max.</li> <li>32 byte</li> <li>of which consistent, max.</li> <li>32 byte</li> </ul> Services — PG/OP communication — PG/OP communication — S7 routing Yes; with interface active	<ul> <li>Number of connections</li> </ul>	16
<ul> <li>automatic baud rate search</li> <li>Address area, max.</li> <li>User data per address area, max.</li> <li>Of which consistent, max.</li> <li>Services</li> <li>PG/OP communication</li> <li>S7 routing</li> <li>No</li> <li>No</li> <li>Services</li> <li>Services</li> </ul>	• GSD file	http://support.automation.siemens.com/WW/view/en/113652
<ul> <li>Address area, max.</li> <li>User data per address area, max.</li> <li>Of which consistent, max.</li> <li>Services</li> <li>PG/OP communication</li> <li>S7 routing</li> <li>Yes; with interface active</li> </ul>	<ul> <li>Transmission rate, max.</li> </ul>	12 Mbit/s
• User data per address area, max.32 byte- of which consistent, max.32 byteServices32 byte- PG/OP communicationYes; with interface active- S7 routingYes; with interface active	<ul> <li>automatic baud rate search</li> </ul>	No
- of which consistent, max.     32 byte       Services     - PG/OP communication       - S7 routing     Yes; with interface active	<ul> <li>Address area, max.</li> </ul>	32; Virtual slots
Services       — PG/OP communication     Yes; with interface active       — S7 routing     Yes; with interface active	<ul> <li>User data per address area, max.</li> </ul>	32 byte
— PG/OP communication     Yes; with interface active       — S7 routing     Yes; with interface active	— of which consistent, max.	32 byte
— S7 routing Yes; with interface active	Services	
	— PG/OP communication	
— Global data communication No	— S7 routing	Yes; with interface active
	— Global data communication	No

— S7 basic communication	No
— S7 communication	Yes
- S7 communication, as client	Yes
— S7 communication, as server	Yes
<ul> <li>— Direct data exchange (slave-to-slave communication)</li> </ul>	No
— DPV1	No
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte

2. Interface		
Interface type	PROFINET	
Physics	Ethernet RJ45	
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	48	
Interface types		
Number of ports	2	
<ul> <li>integrated switch</li> </ul>	Yes	
Media redundancy		
• supported	Yes	
<ul> <li>Switchover time on line break, typ.</li> </ul>	200 ms	
<ul> <li>Number of stations in the ring, max.</li> </ul>	50	
Protocols		
<ul> <li>PROFINET IO Controller</li> </ul>	Yes	
PROFINET IO Device	Yes	
PROFINET CBA	Yes	
<ul> <li>PROFIBUS DP master</li> </ul>	No	
<ul> <li>PROFIBUS DP slave</li> </ul>	No	
Open IE communication	Yes	
Web server	Yes	
<ul> <li>Point-to-point connection</li> </ul>	No	
PROFINET IO Controller		
• Transmission rate, max.	100 Mbit/s	
Services		
— PG/OP communication	Yes	
— S7 routing	Yes	
— S7 communication	Yes	

— Isochronous mode	Yes; Only with IRT and the High Performance option
— Open IE communication	Yes
— Shared device	Yes
— Prioritized startup	Yes
— Number of IO devices with prioritized	32
startup, max.	
— Number of connectable IO Devices, max.	256
— Of which IO devices with IRT, max.	64
— of which in line, max.	64
<ul> <li>— Number of IO Devices with IRT and the option "high flexibility"</li> </ul>	256
— of which in line, max.	61
— Number of connectable IO Devices for RT,	256
max.	
— of which in line, max.	256
<ul> <li>Activation/deactivation of IO Devices</li> </ul>	Yes
<ul> <li>— Number of IO Devices that can be simultaneously activated/deactivated, max.</li> </ul>	8
<ul> <li>— IO Devices changing during operation (partner ports), supported</li> </ul>	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
<ul> <li>Device replacement without swap medium</li> </ul>	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 routing	Yes
— S7 communication	Yes
— Isochronous mode	No
— Open IE communication	Yes
— IRT	Yes
— Prioritized startup	Yes

Ob and day in a	Yes
— Shared device	
— Number of IO Controllers with shared	2
device, max.	
Transfer memory	1 440 huter Der IO Centreller with charad device
— 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	
<ul> <li>acyclic transmission</li> </ul>	Yes
<ul> <li>cyclic transmission</li> </ul>	Yes
Open IE communication	
<ul> <li>Number of connections, max.</li> </ul>	46
<ul> <li>Local port numbers used at the system end</li> </ul>	0, 20, 21, 25, 80, 102, 135, 161, 34962, 34963, 34964, 65532, 65533, 65534, 65535
<ul> <li>Keep-alive function, supported</li> </ul>	Yes
Ductocolo	
Protocols Open IE communication	
• TCP/IP	Yes; via integrated PROFINET interface and loadable FBs
— Number of connections, max.	
— Data length, max.	32 kbyte
<ul> <li>— several passive connections per port, supported</li> </ul>	Yes
<ul> <li>ISO-on-TCP (RFC1006)</li> </ul>	Yes; Via integrated PROFINET interface or CP 443-1 Adv. and loadable FBs
<ul> <li>— Number of connections, max.</li> </ul>	46
— Data length, max.	32 kbyte; 1452 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
<ul> <li>User-defined websites</li> </ul>	Yes
<ul> <li>Number of HTTP clients</li> </ul>	5
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes; Via PROFIBUS DP or PROFINET interface
Equidistance	Yes
Number of DP masters with isochronous mode	
User data per isochronous slave, max.	1 244 byte
shortest clock pulse	1.5 ms; 0.5 ms without use of SFC 126, 127
Shorlest clock puise	1.5 ms, 0.5 ms without use 01 3FC 120, 121

max. cycle	32 ms
Communication functions	
PG/OP communication	Yes
<ul> <li>Number of connectable OPs without message processing</li> </ul>	47
<ul> <li>Number of connectable OPs with message processing</li> </ul>	47; When using Alarm_S/SQ and Alarm_D/DQ
Data record routing	Yes
Global data communication	
• supported	Yes
<ul> <li>Number of GD loops, max.</li> </ul>	8
<ul> <li>Number of GD packets, transmitter, max.</li> </ul>	8
Number of GD packets, receiver, max.	16
<ul> <li>Size of GD packets, max.</li> </ul>	54 byte
• Size of GD packet (of which consistent), max.	1 variable
S7 basic communication	
• supported	Yes
• User data per job, max.	76 byte
<ul> <li>User data per job (of which consistent), max.</li> </ul>	1 variable
S7 communication	
• supported	Yes
• as server	Yes
• as client	Yes
• User data per job, max.	64 kbyte
<ul> <li>User data per job (of which consistent), max.</li> </ul>	462 byte; 1 variable
S5 compatible communication	
<ul> <li>supported</li> </ul>	Yes; Via FC AG_SEND and AG_RECV, max. via 10 CP 443-1 or 443-5
<ul> <li>User data per job, max.</li> </ul>	8 kbyte
<ul> <li>User data per job (of which consistent), max.</li> </ul>	240 byte
<ul> <li>Number of simultaneous AG-SEND/AG-RECV orders per CPU, max.</li> </ul>	24/24
Standard communication (FMS)	
• supported	Yes; Via CP and loadable FB
PROFINET CBA (at set setpoint communication load)	
<ul> <li>Setpoint for the CPU communication load</li> </ul>	20 %
<ul> <li>Number of remote interconnection partners</li> </ul>	32
<ul> <li>Number of functions, master/slave</li> </ul>	150
<ul> <li>Total of all master/slave connections</li> </ul>	4 500
<ul> <li>Data length of all incoming connections master/slave, max.</li> </ul>	45 000 byte

<b>-</b>	
<ul> <li>Data length of all outgoing connections master/slave, max.</li> </ul>	45 000 byte
<ul> <li>Number of device-internal and PROFIBUS interconnections</li> </ul>	1 000
<ul> <li>Data length of device-internal und PROFIBUS interconnections, max.</li> </ul>	16 000 byte
<ul> <li>Data length per connection, max.</li> </ul>	2 000 byte
Remote interconnections with acyclic transmission	
— Sampling frequency: Sampling time, min.	200 ms; Depending on preset communication load, number of interconnections and data length used
- Number of incoming interconnections	250
<ul> <li>— Number of outgoing interconnections</li> </ul>	250
<ul> <li>Data length of all incoming interconnections, max.</li> </ul>	8 000 byte
<ul> <li>Data length of all outgoing interconnections, max.</li> </ul>	8 000 byte
— Data length per connection, max.	2 000 byte
Remote interconnections with cyclic transmission	
— Transmission frequency: Transmission interval, min.	1 ms; Depending on preset communication load, number of interconnections and data length used
<ul> <li>Number of incoming interconnections</li> </ul>	300
— Number of outgoing interconnections	300
<ul> <li>— Data length of all incoming interconnections, max.</li> </ul>	4 800 byte
<ul> <li>Data length of all outgoing interconnections, max.</li> </ul>	4 800 byte
— Data length per connection, max.	450 byte
HMI variables via PROFINET (acyclic)	
— 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
PROFIBUS proxy functionality	
— supported	Yes; 32 PROFIBUS slaves max. connectable
— Data length per connection, max.	240 byte; Slave-dependent
Number of connections	
• overall	48
<ul> <li>usable for PG communication</li> </ul>	47
— reserved for PG communication	1
— adjustable for PG communication, max.	0
<ul> <li>usable for OP communication</li> </ul>	47
— reserved for OP communication	1

— adjustable for OP communication, max.	0
<ul> <li>usable for S7 basic communication</li> </ul>	46
- reserved for S7 basic communication	0
— adjustable for S7 basic communication,	0
max.	
<ul> <li>usable for S7 communication</li> </ul>	46
- reserved for S7 communication	0
— adjustable for S7 communication, max.	0
<ul> <li>usable for routing</li> </ul>	23
— reserved for routing	0
— adjustable for routing, max.	0

07		functions
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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)
Symbol-related messages	Yes
SCAN procedure	Yes
Program alarms	Yes
Process diagnostic messages	Yes
simultaneously active Alarm-S blocks, max.	250; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ blocks
Alarm 8-blocks	Yes
<ul> <li>Number of instances for alarm 8 and S7 communication blocks, max.</li> </ul>	300
● preset, max.	150
Process control messages	Yes
Number of archives that can log on simultaneously (SFB 37 AR_SEND)	4
Number of messages	
• overall, max.	256
<ul> <li>in 100 ms grid, max.</li> </ul>	0
• in 500 ms grid, max.	256
• in 1000 ms grid, max.	256
Number of additional values	
• with 100 ms grid, max.	0
• with 500, 1000 ms grid, max.	1
Test commissioning functions	
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
<ul> <li>Number of variables, max.</li> </ul>	70; Status/control
Forcing	
Forcing	Yes
<ul> <li>Forcing, variables</li> </ul>	Inputs/outputs, bit memories, distributed I/Os
<ul> <li>Number of variables, max.</li> </ul>	64
Diagnostic buffer	
• present	Yes
• Number of entries, max.	3 200
— adjustable	Yes
— preset	120
Service data	
● can be read out	Yes
Standards, approvals, certificates CE mark	Yes
CSA approval	Yes
UL approval	Yes
cULus	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes
EAC (formerly Gost-R)	Yes
Use in hazardous areas	
• ATEX	ATEX II 3G Ex nA IIC T4 Gc
Ambient conditions	
Ambient temperature during operation	
• min.	0 °C
• max.	60 °C
Configuration	
Configuration software	
• STEP 7	Yes
Programming	
Command set	see instruction list
Nesting levels	7
<ul> <li>Access to consistent data in process image</li> </ul>	Yes
<ul> <li>System functions (SFC)</li> </ul>	see instruction list
<ul> <li>System function blocks (SFB)</li> </ul>	see instruction list
Programming language	
— LAD	Yes
— FBD	Yes

— STL	Yes
— SCL	Yes
— CFC	Yes
— GRAPH	Yes
— HiGraph®	Yes
Number of simultaneously active SFCs	
— 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
Number of simultaneously active SFBs	
— 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	
<ul> <li>User program protection/password protection</li> </ul>	Yes
Block encryption	Yes; With S7 block Privacy
Dimensions	
Width	25 mm
Height	290 mm
Depth	219 mm
Weights	
Weight, approx.	750 g
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