## SIEMENS

## Data sheet

## 6ES7414-3XM07-0AB0



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

General information	
Product type designation	CPU 414-3
HW functional status	01
Firmware version	V7.0
Engineering with	
<ul> <li>Programming package</li> </ul>	STEP 7 V5.4 or higher with HSP 261
CiR – Configuration in RUN	
CiR synchronization time, basic load	100 ms
CiR synchronization time, time per I/O byte	15 μs
Supply voltage	
Rated value (DC)	
• 24 V DC	No; Power supply via system power supply
Input current	
from backplane bus 5 V DC, typ.	1.1 A
from backplane bus 5 V DC, max.	1.3 A
from backplane bus 24 V DC, max.	450 mA; 150 mA per DP interface
from interface 5 V DC, max.	90 mA; At each DP interface

Power loss	
Power loss, typ.	5.5 W
Power loss, max.	6.5 W
Memory	
Type of memory	RAM
Work memory	
integrated	4 Mbyte
<ul> <li>integrated (for program)</li> </ul>	2 Mbyte
<ul> <li>integrated (for brogram)</li> <li>integrated (for data)</li> </ul>	2 Mbyte
expandable	No
Load memory	
	Yes; with Memory Card (FLASH)
expandable FEPROM	
• 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
<ul> <li>with battery</li> </ul>	Yes; all data
<ul> <li>without battery</li> </ul>	No
Battery	
Backup battery	
<ul> <li>Backup current, typ.</li> </ul>	180 µA
<ul> <li>Backup current, max.</li> </ul>	850 µA
• Dealum times	
<ul> <li>Backup time, max.</li> </ul>	Dealt with in the module data manual with the secondary conditions and the factors of influence
<ul> <li>Backup time, max.</li> <li>Feeding of external backup voltage to CPU</li> </ul>	
<ul> <li>Feeding of external backup voltage to CPU</li> </ul>	conditions and the factors of influence
	conditions and the factors of influence
Feeding of external backup voltage to CPU CPU processing times	conditions and the factors of influence 5 V DC to 15 V DC
• Feeding of external backup voltage to CPU CPU processing times for bit operations, typ.	conditions and the factors of influence 5 V DC to 15 V DC 18.75 ns
Feeding of external backup voltage to CPU     CPU processing times     for bit operations, typ.     for word operations, typ.	conditions and the factors of influence 5 V DC to 15 V DC 18.75 ns 18.75 ns
<ul> <li>Feeding of external backup voltage to CPU</li> <li>CPU processing times for bit operations, typ. for word operations, typ. for fixed point arithmetic, typ. for floating point arithmetic, typ.</li> </ul>	conditions and the factors of influence 5 V DC to 15 V DC 18.75 ns 18.75 ns 18.75 ns
• Feeding of external backup voltage to CPU CPU processing times for bit operations, typ. for word operations, typ. for fixed point arithmetic, typ.	conditions and the factors of influence 5 V DC to 15 V DC 18.75 ns 18.75 ns 18.75 ns
Feeding of external backup voltage to CPU     CPU processing times     for bit operations, typ.     for word operations, typ.     for fixed point arithmetic, typ.     for floating point arithmetic, typ.     CPU-blocks	conditions and the factors of influence 5 V DC to 15 V DC 18.75 ns 18.75 ns 18.75 ns
Feeding of external backup voltage to CPU     CPU processing times     for bit operations, typ.     for word operations, typ.     for fixed point arithmetic, typ.     for floating point arithmetic, typ.     CPU-blocks     DB	conditions and the factors of influence 5 V DC to 15 V DC 18.75 ns 18.75 ns 18.75 ns 37.5 ns
<ul> <li>Feeding of external backup voltage to CPU</li> <li>CPU processing times         <ul> <li>for bit operations, typ.</li> <li>for word operations, typ.</li> <li>for fixed point arithmetic, typ.</li> <li>for floating point arithmetic, typ.</li> </ul> </li> <li>CPU-blocks         <ul> <li>DB</li> <li>Number, max.</li> </ul> </li> </ul>	conditions and the factors of influence 5 V DC to 15 V DC 18.75 ns 18.75 ns 18.75 ns 37.5 ns 6 000; Number range: 1 to 16000
<ul> <li>Feeding of external backup voltage to CPU</li> <li>CPU processing times         <ul> <li>for bit operations, typ.</li> <li>for word operations, typ.</li> <li>for fixed point arithmetic, typ.</li> <li>for floating point arithmetic, typ.</li> </ul> </li> <li>CPU-blocks         <ul> <li>DB</li> <li>Number, max.</li> <li>Size, max.</li> </ul> </li> </ul>	conditions and the factors of influence 5 V DC to 15 V DC 18.75 ns 18.75 ns 18.75 ns 37.5 ns 6 000; Number range: 1 to 16000
<ul> <li>Feeding of external backup voltage to CPU</li> <li>CPU processing times <ul> <li>for bit operations, typ.</li> <li>for word operations, typ.</li> <li>for fixed point arithmetic, typ.</li> <li>for floating point arithmetic, typ.</li> </ul> </li> <li>CPU-blocks <ul> <li>DB</li> <li>Number, max.</li> <li>Size, max.</li> </ul> </li> </ul>	conditions and the factors of influence 5 V DC to 15 V DC 18.75 ns 18.75 ns 18.75 ns 37.5 ns 6 000; Number range: 1 to 16000 64 kbyte
<ul> <li>Feeding of external backup voltage to CPU</li> <li>CPU processing times <ul> <li>for bit operations, typ.</li> <li>for word operations, typ.</li> <li>for fixed point arithmetic, typ.</li> <li>for floating point arithmetic, typ.</li> </ul> </li> <li>CPU-blocks <ul> <li>DB</li> <li>Number, max.</li> <li>Size, max.</li> </ul> </li> <li>FB <ul> <li>Number, max.</li> </ul> </li> </ul>	conditions and the factors of influence         5 V DC to 15 V DC         18.75 ns         18.75 ns         18.75 ns         37.5 ns         6 000; Number range: 1 to 16000         64 kbyte         3 000; Number range: 0 to 7999
<ul> <li>Feeding of external backup voltage to CPU</li> <li>CPU processing times <ul> <li>for bit operations, typ.</li> <li>for word operations, typ.</li> <li>for fixed point arithmetic, typ.</li> </ul> </li> <li>for floating point arithmetic, typ.</li> </ul> <li>CPU-blocks <ul> <li>DB</li> <li>Number, max.</li> <li>Size, max.</li> </ul> </li> <li>FB <ul> <li>Number, max.</li> <li>Size, max.</li> </ul> </li>	conditions and the factors of influence         5 V DC to 15 V DC         18.75 ns         18.75 ns         18.75 ns         37.5 ns         6 000; Number range: 1 to 16000         64 kbyte         3 000; 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>	4; OB 10-13
<ul> <li>Number of delay alarm OBs</li> </ul>	4; OB 20-23
<ul> <li>Number of cyclic interrupt OBs</li> </ul>	4; OB 32-35 (shortest cycle that can be set = 500 $\mu$ s)
<ul> <li>Number of process alarm OBs</li> </ul>	4; OB 40-43
<ul> <li>Number of DPV1 alarm OBs</li> </ul>	3; OB 55-57
<ul> <li>Number of isochronous mode OBs</li> </ul>	3; OB 61-63
<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	
• per priority class	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
— upper limit — preset	2 047 Z 0 to Z 7
— preset Counting range	Z 0 to Z 7
<ul> <li>preset</li> <li>Counting range</li> <li>lower limit</li> </ul>	Z 0 to Z 7 0
<ul> <li>preset</li> <li>Counting range</li> <li>lower limit</li> <li>upper limit</li> </ul>	Z 0 to Z 7
<ul> <li>preset</li> <li>Counting range</li> <li>lower limit</li> <li>upper limit</li> <li>IEC counter</li> </ul>	Z 0 to Z 7 0 999
<ul> <li>preset</li> <li>Counting range</li> <li>lower limit</li> <li>upper limit</li> <li>IEC counter</li> <li>present</li> </ul>	Z 0 to Z 7 0 999 Yes
<ul> <li>preset</li> <li>Counting range</li> <li>lower limit</li> <li>upper limit</li> <li>IEC counter</li> <li>present</li> <li>Type</li> </ul>	Z 0 to Z 7 0 999 Yes SFB
<ul> <li>preset</li> <li>Counting range</li> <li>lower limit</li> <li>upper limit</li> </ul> IEC counter <ul> <li>present</li> <li>Type</li> <li>Number</li> </ul>	Z 0 to Z 7 0 999 Yes
<ul> <li>preset</li> <li>Counting range</li> <li>lower limit</li> <li>upper limit</li> </ul> IEC counter <ul> <li>present</li> <li>Type</li> <li>Number</li> </ul> S7 times	Z 0 to Z 7 0 999 Yes SFB Unlimited (limited only by RAM capacity)
<ul> <li>preset</li> <li>Counting range</li> <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> </ul>	Z 0 to Z 7 0 999 Yes SFB
<ul> <li>preset</li> <li>Counting range</li> <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> </ul>	Z 0 to Z 7 0 999 Yes SFB Unlimited (limited only by RAM capacity) 2 048
<ul> <li>preset</li> <li>Counting range</li> <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>	Z 0 to Z 7 0 999 Yes SFB Unlimited (limited only by RAM capacity) 2 048 Yes
preset Counting range lower limit upper limit IEC counter • present • Type • Number S7 times • Number Retentivity adjustable lower limit	Z 0 to Z 7 0 999 Yes SFB Unlimited (limited only by RAM capacity) 2 048 Yes 0
<ul> <li>preset</li> <li>Counting range</li> <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>	Z 0 to Z 7 0 999 Yes SFB Unlimited (limited only by RAM capacity) 2 048 Yes

<del>_</del> .	
Time range	10
— lower limit	10 ms
— upper limit	9 990 s
IEC timer	
• present	Yes
• Type	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.	8 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	
• adjustable, max.	16 kbyte
• preset	8 kbyte
Address area	
I/O address area	
Inputs	8 kbyte
Outputs	8 kbyte
Process image	
<ul> <li>Inputs, adjustable</li> </ul>	8 kbyte
<ul> <li>Outputs, adjustable</li> </ul>	8 kbyte
<ul> <li>Inputs, default</li> </ul>	256 byte
<ul> <li>Outputs, default</li> </ul>	256 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	65 536
— of which central	65 536
Outputs	65 536
— of which central	65 536
Analog channels	
• Inputs	4 096
— of which central	4 096
Outputs	4 096
— of which central	4 096

Hardware configuration	
Number of expansion units, max.	21
connectable OPs	63
Multicomputing	Yes; 4 CPUs max. (with UR1 or UR2)
Interface modules	
<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	2
● 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	1
<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>	0
• via CP	4; Max. 4 in the central controller; no mixed operation of different CP 443-1 types in PROFINET IO mode
Number of operable FMs and CPs (recommended)	
● FM	Limited by number of slots and number of connections
● CP, PtP	CP 440: Limited by number of slots; CP 441: limited by number of connections
<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>	2
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 (unbuffered), max.</li> </ul>	8.6 s; For power On
Operating hours counter	
Number	16
Number/Number range	0 to 15
Range of values	SFCs 2, 3 and 4: 0 to 32767 hours SFC 101: 0 to 2^31 - 1 hours
Granularity	1 h
- Granulanty	

• retentive	Yes
Clock synchronization	
• supported	Yes
• to MPI, master	Yes
● to MPI, slave	Yes
• to DP, master	Yes
● to DP, slave	Yes
• in AS, master	Yes
• in AS, slave	Yes
<ul> <li>on Ethernet via NTP</li> </ul>	No; Via CP
• to IF 964 DP	Yes
Time difference in system when synchronizing via	
• MPI, max.	200 ms
Interfaces	
Interfaces/bus type	1 x MPI/PROFIBUS DP, 1 x PROFIBUS DP, 1 x PROFIBUS DP
····· 41 ·	(optionally pluggable)
Number of RS 485 interfaces	2; Combined MPI / PROFIBUS DP and PROFIBUS DP
Number of other interfaces	1; PROFIBUS DP with IF 964-DP (plug-in option; MLFB:
	6ES7964-2AA04-0AB0)
1. Interface	
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	
• MPI	Yes
PROFIBUS DP master	Yes
PROFIBUS DP slave	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
<ul> <li>Transmission rate, max.</li> </ul>	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
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>Sub the</li> <li>Subt, ma</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         Yes           -         Outputs, max.         2 kbyte           -         Outputs, max.         2 kbyte           -         Inputs, max.         244 byte           -         Softs, max.         244 byte           -         Softs, 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       - Direct 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       - Inputs, 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 kbit/s- Tansmission rate, max.12 kbit/s- Slots, max.32 byte- Townatic baud rate searchNo- Address area, max.32 byte- Derive PG/OP communicationYes; with interface active- PG/OP communicationYes; 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• Outpits, max.24 byte• Outpits outpits and max.32 byte• Transmission rate, max.32 byte• Address area, max.32 byte• Outpits outpits area, max.32 byte• Outpits outpits area, max.32 byte• Outpits outpits area, max.32 byte• Of which consistent, max.32 byte• Outpits outpits outpits area, max.32 byte• Outpits outpits outpits outpits area, max.32 byte• Outpits o		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	Integrated
Physics	RS 485 / PROFIBUS
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	150 mA
Number of connection resources	16
Protocols	
<ul> <li>PROFIBUS DP master</li> </ul>	Yes
PROFIBUS DP slave	Yes
PROFIBUS DP master	
<ul> <li>Number of connections, max.</li> </ul>	16
<ul> <li>Transmission rate, max.</li> </ul>	12 Mbit/s
<ul> <li>Number of DP slaves, max.</li> </ul>	96
Services	
— PG/OP communication	Yes
— Routing	Yes; S7 routing
— Global data communication	No
— S7 basic communication	Yes
— S7 communication	Yes
— S7 communication, as client	Yes
— S7 communication, as server	Yes
— Equidistance	Yes
— Isochronous mode	Yes
- SYNC/FREEZE	Yes
— Activation/deactivation of DP slaves	Yes
— Direct data exchange (slave-to-slave	Yes
communication)	
— DPV1	Yes
Address area	
— Inputs, max.	6 kbyte
— Outputs, max.	6 kbyte

User data per DP slave	
— User data per DP slave, max.	244 byte
— Inputs, max.	244 byte
— Outputs, max.	244 byte
— Slots, max.	244
— per slot, max.	128 byte
PROFIBUS DP slave	
Number of connections	16
• GSD file	http://support.automation.siemens.com/WW/view/en/113652
<ul> <li>Transmission rate, max.</li> </ul>	12 Mbit/s
Address area, max.	32
<ul> <li>User data per address area, max.</li> </ul>	32 byte
— of which consistent, max.	32 byte
Services	
— Routing	Yes; with interface active
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte
	,
3. Interface	
Interface type	Pluggable interface module (IF), technical data as for 2nd interface
Plug-in interface modules	IF 964-DP (MLFB: 6ES7964-2AA04-0AB0)
Physics	RS 485 / PROFIBUS
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	150 mA
automatic detection of transmission rate	No
Number of connection resources	16
Protocols	
• MPI	No
PROFIBUS DP master	Yes
PROFIBUS DP slave	Yes
PROFIBUS DP master	
Number of connections, max.	16
• Transmission rate, max.	12 Mbit/s
<ul> <li>Number of DP slaves, max.</li> </ul>	96
Services	
— PG/OP communication	Yes
— Routing	Yes; S7 routing
— Global data communication	No
— S7 basic communication	Yes
— S7 communication	Yes

— S7 communication, as client	Yes
— S7 communication, as server	Yes
— Equidistance	Yes
— Isochronous mode	Yes
SYNC/FREEZE	Yes
<ul> <li>Activation/deactivation of DP slaves</li> </ul>	Yes
<ul> <li>— Direct data exchange (slave-to-slave communication)</li> </ul>	Yes
— DPV0	Yes
— DPV1	Yes
Address area	
— Inputs, max.	6 kbyte
— Outputs, max.	6 kbyte
User data per DP slave	
— User data per DP slave, max.	244 byte
— Inputs, max.	244 byte
— Outputs, max.	244 byte
— Slots, max.	244
— per slot, max.	128 byte
PROFIBUS DP slave	
Number of connections	16
• GSD file	http://support.automation.siemens.com/WW/view/en/113652
<ul> <li>Transmission rate, max.</li> </ul>	12 Mbit/s
<ul> <li>automatic baud rate search</li> </ul>	No
• Address area, max.	32
• User data per address area, max.	32 byte
— of which consistent, max.	32 byte
Services	
— PG/OP communication	Yes
— 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
Outputo	244 byte
— Outputs	244 byte

Protocols	
Open IE communication	
<ul> <li>ISO-on-TCP (RFC1006)</li> </ul>	Via CP 443-1 and loadable FB
— Data length, max.	1452 bytes via CP 443-1 Adv.
Web server	
• supported	No
laashranaya mada	
Isochronous mode Isochronous operation (application synchronized up	Yes; For PROFIBUS only
to terminal)	
Equidistance	Yes
Number of DP masters with isochronous mode	3
User data per isochronous slave, max.	244 byte
shortest clock pulse	1 ms; 0.5 ms without use of SFC 126, 127
max. cycle	32 ms
Communication functions	
Communication functions PG/OP communication	Yes
	63
<ul> <li>Number of connectable OPs without message processing</li> </ul>	
Number of connectable OPs with message	63; When using Alarm_S/SQ and Alarm_D/DQ
processing	···, ······
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
<ul> <li>Number of GD packets, receiver, max.</li> </ul>	16
<ul> <li>Size of GD packets, max.</li> </ul>	54 byte
<ul> <li>Size of GD packet (of which consistent), max.</li> </ul>	1 variable
S7 basic communication	
supported	Yes
<ul> <li>User data per job, max.</li> </ul>	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	
• 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
<ul> <li>Number of simultaneous AG-SEND/AG-RECV</li> </ul>	24/24
orders per CPU, max.	
Standard communication (FMS)	
supported	Yes; Via CP and loadable FB
Number of connections	
• overall	64
<ul> <li>usable for PG communication</li> </ul>	63
- reserved for PG communication	1
— adjustable for PG communication, max.	0
<ul> <li>usable for OP communication</li> </ul>	63
— reserved for OP communication	1
— adjustable for OP communication, max.	0
<ul> <li>usable for S7 basic communication</li> </ul>	62
- reserved for S7 basic communication	0
<ul> <li>— adjustable for S7 basic communication,</li> </ul>	0
max.	
<ul> <li>usable for S7 communication</li> </ul>	62
- reserved for S7 communication	0
— adjustable for S7 communication, max.	0
<ul> <li>usable for routing</li> </ul>	31
— reserved for routing	0
— adjustable for routing, max.	0

## S7 message functions

Number of login stations for message functions, max.	63; Max. 63 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC)
Symbol-related messages	Yes
SCAN procedure	Yes
Program alarms	Yes
Process diagnostic messages	Yes
simultaneously active Alarm-S blocks, max.	400; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ blocks
Alarm 8-blocks	Yes
<ul> <li>Number of instances for alarm 8 and S7 communication blocks, max.</li> </ul>	1 200
• preset, max.	300
Process control messages	Yes
Number of archives that can log on simultaneously (SFB 37 AR_SEND)	16
Number of messages	
• overall, max.	512
● in 100 ms grid, max.	128

● in 500 ms grid, max.	256
• in 1000 ms grid, max.	512
Number of additional values	
with 100 ms grid, max.	1
-	10
• with 500, 1000 ms grid, max.	
Test commissioning functions	
Status block	Yes; Up to 16 simultaneously
Single step	Yes
Number of breakpoints	16
Status/control	
<ul> <li>Status/control variable</li> </ul>	Yes; Up to 16 variable tables
Variables	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
• Number of variables, max.	70; Status/control
Forcing	
Forcing	Yes
<ul> <li>Forcing, variables</li> </ul>	Inputs, outputs, bit memories, peripheral inputs, peripheral outputs
<ul> <li>Number of variables, max.</li> </ul>	256
Diagnostic buffer	
• present	Yes
<ul> <li>Number of entries, max.</li> </ul>	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°0
• 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	50 mm
Height	290 mm
Depth	219 mm
Weights	
Weight, approx.	900 g

last modified: