## SIEMENS

## **Product data sheet**

## 6ES7416-2XN05-0AB0



SIMATIC S7-400, CPU 416-2 CENTRAL PROCESSING UNIT WITH: 5.6 MB WORKING MEMORY, (2.8 MB CODE, 2.8 MB DATA), 1. INTERFACE MPI/DP 12 MBIT/S, 2. INTERFACE PROFIBUS DP

General information	
Hardware product version	04
Firmware version	V5.3
Engineering with	
Programming package	STEP7 V 5.3 SP2 or higher with HW update
CiR - Configuration in RUN	
CiR synchronization time, basic load	100 ms
CiR synchronization time, time per I/O slave	10 µs
Supply voltage	
24 V DC	No ; Power supply via system power supply
Input current	
from CPU, max.	Not relevant for 400 series (300 series set)
from backplane bus 5 V DC, typ.	0.9 A
from backplane bus 5 V DC, max.	1.1 A
from backplane bus 24 V DC, max.	300 mA ; 150 mA per DP interface
from interface 5 V DC, max.	90 mA ; At each DP interface
Power losses	
Power loss, typ.	4.5 W
Power loss, max.	5 W

[nicht versorgt: TAK_ABX692_001_000]		
Backup battery		
Battery operation	Not relevant	
Backup current, typ.	125 μA ; (up to 40 °C)	
Backup current, max.	550 µA	
Backup time, max.	See reference manual, module data, Chapter 3.3	
Feeding of external backup voltage to CPU	5 to 15 VDC	
Feeding of external backup voltage to CPU	5 to 15 VDC	
Memory		
Work memory		
integrated	5.6 Mbyte	
integrated (for program)	2.8 Mbyte	
integrated (for data)	2.8 Mbyte	
expandable	No	
Load memory		
expandable FEPROM	Yes ; with Memory Card (FLASH)	
expandable FEPROM, max.	64 Mbyte	
integrated RAM, max.	1 Mbyte	
expandable RAM	Yes ; with Memory Card (RAM)	
expandable RAM, max.	64 Mbyte	
Backup		
present	Yes	
with battery	Yes ; all data	
without battery	No	
CPU processing times		
for bit operations, typ.	30 ns	
for word operations, typ.	30 ns	
for fixed point arithmetic, typ.	30 ns	
for floating point arithmetic, typ.	90 ns	
CPU-blocks		
DB		
Number, max.	10000 ; Number range: 1 to 16000	
Size, max.	64 kbyte	
FB		
Number, max.	5000 ; Number range: 0 to 7999	
Size, max.	64 kbyte	
FC	FC	
Number, max.	5000 ; Number range: 0 to 7999	

Size, max.	64 kbyte
ОВ	
Number, max.	see instruction list
Size, max.	64 kbyte
Number of free cycle OBs	1 ; OB 1
Number of time alarm OBs	8 ; OB 10-17
Number of delay alarm OBs	4 ; OB 20-23
Number of time interrupt OBs	9 ; OB 30-38 (shortest cycle that can be set = 500 $\mu$ s)
Number of process alarm OBs	8 ; OB 40-47
Number of DPV1 alarm OBs	3 ; OB 55-57
Number isochronous mode OBs	4 ; OB 61-64
Number of multicomputing OBs	1 ; OB 60
Number of background OBs	1 ; OB 90
Number of startup OBs	3 ; OB 100-102
Number of asynchronous error OBs	9 ; OB 80-88
Number of synchronous error OBs	2 ; OB 121, 122
Nesting depth	
per priority class	24
additional within an error OB	2
Counters, timers and their retentivity	
S7 counter	
Number	2048
Retentivity	
adjustable	Yes
lower limit	0
upper limit	2047
preset	Z 0 to Z 7
Counting range	
lower limit	0
upper limit	999
IEC counter	
present	Yes
Туре	SFB
Number	Unlimited (limited only by RAM capacity)
S7 times	
Number	2048
Retentivity	
adjustable	Yes

lower limit	0
upper limit	2047
preset	No times retentive
Time range	
lower limit	10 ms
upper limit	9990 s
IEC timer	5550 5
	Ver
present	Yes
Туре	SFB
Number	Unlimited (limited only by RAM capacity)
Data areas and their retentivity	
retentive data area, total	Total working and load memory (with backup battery)
Flag	
Number, max.	16 kbyte ; Size of bit memory address area
Retentivity available	Yes
Retentivity preset	MB 0 to MB 15
Number of clock memories	8 ; (in 1 memory byte)
Data blocks	
Number, max.	10000 ; Number range: 1 to 16000
Size, max.	64 kbyte
Local data	
adjustable, max.	32 kbyte
preset	16 kbyte
Address area	
I/O address area	
Inputs	16 kbyte
Outputs	16 kbyte
of which, distributed	
MPI/DP interface, inputs	2 kbyte
MPI/DP interface, outputs	2 kbyte
DP interface, inputs	8 kbyte
DP interface, outputs	8 kbyte
Process image	
Inputs, adjustable	16 kbyte
Outputs, adjustable	16 kbyte
Inputs, default	512 byte
Outputs, default	512 byte
consistent data, max.	244 byte

Access to consistent data in process image	Yes
Subprocess images	
Number of subprocess images, max.	15
Digital channels	
Inputs	131072
Outputs	131072
Inputs, of which central	131072
Outputs, of which central	131072
Analog channels	
Inputs	8192
Outputs	8192
Inputs, of which central	8192
Outputs, of which central	8192
Hardware configuration	
Expansion devices, max.	21
connectable OPs	63
Multicomputing	Yes ; 4 CPUs
Interface modules	
Number of connectable IMs (total), max.	6
Number of connectable IM 460s, max.	6
Number of connectable IM 463s, max.	4 ; IM 463-2
Number of DP masters	
integrated	2
via IM 467	4
via CP	10 ; CP 443-5 Extended
Mixed mode IM + CP permitted	No ; IM 467 not suitable for use with CP 443-5 Ext. and CP443-1 EX4x, EX20, GX20 (in PNIO mode)
via interface module	0
Number of pluggable S5 modules (via adapter capsule in central device), max.	6
Number of IO Controllers	
integrated	0
via CP	4 ; No mixed operation of CP443-1 EX40 and CP443-1 EX 41/EX20/GX20, max. 4 in central controller
Number of operable FMs and CPs (recommended)	
FM	Limited by number of slots and number of connections
CP, point-to-point	CP 440: Limited by number of slots; CP 441: limited by number of connections
PROFIBUS and Ethernet CPs	14 ; Of which 10 CPs max. or IMs as DP master, 4 PN controller maximum

integrated channels (DO) 0 Analog inputs Integrated channels (AI) 0	Time of day		
battery-backed and synchronizable         Yes           Resolution         1 ms           Deviation per day (buffered), max.         1.7 s : Power off           Deviation per day (unbuffered) max.         8.6 s : For power On           Operating hours counter         8.6 s : For power On           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 hour           retentive         Yes           Clock synchronization         Yes           supported         Yes           to MPI, slave         Yes           to MPI, slave         Yes           to DP, slave         Yes           to DP, slave         Yes           in AS, master         Yes           in AS, slave         Yes           or Ethernet via NTP         No i via CP           to IF 364 DP         No           medifference in system when synchronizing via         200 ms           Digital outputs         0           integrated channels (DO)         0           Analog inputs         0	Clock		
Resolution         1 ms           Deviation per day (buffered), max.         1.7 s; Power off           Deviation per day (unbuffered) max.         8.6 s; For power On           Operating hours counter         16           Number         16           Number/Number range         0 to 15           Granularity         1 hour           retentive         Yes           Clock synchronization         Yes           supported         Yes           to MPI, master         Yes           to DP, slave         Yes           in AS, slave         Yes           on Ethernet via NTP         No : via CP           nue difference in system when synchronizing via         200 ms           Digital outputs         0           integrated channels (DO)         0           Analog inputs         0	Hardware clock (real-time clock)	Yes	
Deviation per day (buffered), max.         1.7 s ; Power off           Deviation per day (unbuffered) max.         8.6 s ; For power On           Operating hours counter         16           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 hour           retentive         Yes           Clock synchronization         Yes           supported         Yes           to MPI, master         Yes           to MPI, slave         Yes           to DP, master         Yes           in AS, master         Yes           in AS, master         Yes           on Ethernet via NTP         No i via CP           nor Sternet via NTP         No i via CP           medifference in system when synchronizing via         MPI, max.           Digital outputs         200 ms           integrated channels (DO)         0           Analog inputs         0           Integrated channels (AI)         0	battery-backed and synchronizable	Yes	
Deviation per day (unbuffered) max.         8.6 s ; For power On           Operating hours counter         16           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 hour           retentive         Ves           Clock synchronization         Yes           supported         Yes           to MPI, master         Yes           to DP, naster         Yes           to DP, slave         Yes           in AS, master         Yes           in AS, slave         Yes           on Ethernet via NTP         No           for JP 964 DP         No           MPI, max.         200 ms           Digital outputs         Journes           in AS, slave         0           netifference in system when synchronizing via         MPI, max.           MPI, max.         200 ms	Resolution	1 ms	
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 2v31 - 1 hours           Granularity         1 hour           retentive         Yes           Clock synchronization         Yes           supported         Yes           to MPI, master         Yes           to DP, master         Yes           to DP, slave         Yes           in AS, master         Yes           on Ethernet via NTP         No ; via CP           to IF 964 DP         No           Time difference in system when synchronizing via         200 ms           MPI, max.         200 ms           Digital outputs         0           Integrated channels (DO)         0	Deviation per day (buffered), max.	1.7 s ; Power off	
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 hour           retentive         Yes           Clock synchronization         Yes           supported         Yes           to MPI, master         Yes           to DP, master         Yes           to DP, slave         Yes           in AS, master         Yes           in AS, master         Yes           on Ethernet via NTP         No ; via CP           to IF 964 DP         No is           MPI, max.         200 ms           Digital outputs         Journes           Integrated channels (DO)         0           Integrated channels (AI)         0	Deviation per day (unbuffered) max.	8.6 s ; For power On	
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 hour           retentive         Yes           Clock synchronization         Yes           supported         Yes           to MPI, master         Yes           to DP, master         Yes           to DP, master         Yes           to DP, slave         Yes           in AS, master         Yes           in AS, slave         Yes           on Ethernet via NTP         No : via CP           to IF 964 DP         No           MPI, max.         200 ms           Digital outputs         0           integrated channels (DO)         0	Operating hours counter		
Range of values         SFCs 2, 3 and 4: 0 to 32767 hours SFC 101: 0 to 2^31 - 1 hours           Granularity         1 hour           retentive         Yes           Clock synchronization         Yes           supported         Yes           to MPI, master         Yes           to MPI, slave         Yes           to DP, master         Yes           to DP, slave         Yes           in AS, master         Yes           in AS, slave         Yes           on Ethernet via NTP         No via CP           on Ethernet via NTP         No           med difference in system when synchronizing via         200 ms           Digital outputs         0           integrated channels (DO)         0	Number	16	
Granularity         1 hour           retentive         Yes           Clock synchronization         Yes           supported         Yes           to MPI, master         Yes           to MPI, slave         Yes           to DP, master         Yes           to DP, slave         Yes           to DP, slave         Yes           in AS, master         Yes           in AS, slave         Yes           on Ethernet via NTP         Yes           on Ethernet via NTP         No via CP           Time difference in system when synchronizing via         200 ms           Digital outputs         0           Integrated channels (DO)         0           Integrated channels (AI)         0	Number/Number range	0 to 15	
retentive         Yes           Clock synchronization         Yes           supported         Yes           to MPI, master         Yes           to MPI, slave         Yes           to DP, master         Yes           to DP, slave         Yes           to DP, slave         Yes           in AS, master         Yes           in AS, slave         Yes           on Ethernet via NTP         No ; via CP           to IF 964 DP         No           Time difference in system when synchronizing via         MPI, max.           200 ms         Digital outputs           integrated channels (DO)         0           Analog inputs         0           Integrated channels (AI)         0	Range of values	SFCs 2, 3 and 4: 0 to 32767 hours SFC 101: 0 to 2^31 - 1 hours	
Clock synchronization       Yes         supported       Yes         to MPI, master       Yes         to MPI, slave       Yes         to DP, master       Yes         to DP, slave       Yes         in AS, master       Yes         in AS, slave       Yes         on Ethernet via NTP       No ; via CP         to IF 964 DP       No         Time difference in system when synchronizing via       200 ms         Digital outputs       integrated channels (DO)         Integrated channels (Al)       0	Granularity	1 hour	
supported         Yes           to MPI, master         Yes           to MPI, slave         Yes           to DP, master         Yes           to DP, slave         Yes           in AS, master         Yes           in AS, slave         Yes           on Ethernet via NTP         No ; via CP           to IF 964 DP         No           Time difference in system when synchronizing via         200 ms           Digital outputs         0           integrated channels (DO)         0	retentive	Yes	
Interfaces         Yes           to MPI, master         Yes           to DP, master         Yes           to DP, slave         Yes           in AS, master         Yes           in AS, slave         Yes           on Ethernet via NTP         No ; via CP           to IF 964 DP         No           MPI, max.         200 ms           Digital outputs         0           integrated channels (DO)         0	Clock synchronization		
to MPI, slave         Yes           to DP, master         Yes           to DP, slave         Yes           in AS, master         Yes           in AS, slave         Yes           on Ethernet via NTP         No ; via CP           to IF 964 DP         No           Time difference in system when synchronizing via         200 ms           Digital outputs         200 ms           Integrated channels (DO)         0           Analog inputs         0	supported	Yes	
to DP, master         Yes           to DP, slave         Yes           in AS, master         Yes           in AS, slave         Yes           on Ethernet via NTP         No ; via CP           to IF 964 DP         No           Time difference in system when synchronizing via         200 ms           Digital outputs         0           Integrated channels (DO)         0	to MPI, master	Yes	
to DP, slaveYesin AS, masterYesin AS, slaveYeson Ethernet via NTPNo ; via CPto IF 964 DPNoTime difference in system when synchronizing viaMPI, max.200 msDigital outputsIntegrated channels (DO)Integrated channels (AI)0Integrated channels (AI)0	to MPI, slave	Yes	
in AS, master       Yes         in AS, slave       Yes         on Ethernet via NTP       No ; via CP         to IF 964 DP       No         Time difference in system when synchronizing via       No         MPI, max.       200 ms         Digital outputs       0         integrated channels (DO)       0         Analog inputs       0         Integrated channels (AI)       0	to DP, master	Yes	
in AS, slave       Yes         on Ethernet via NTP       No ; via CP         to IF 964 DP       No         Time difference in system when synchronizing via       No         MPI, max.       200 ms         Digital outputs       1         integrated channels (DO)       0         Analog inputs       0         Integrated channels (AI)       0	to DP, slave	Yes	
on Ethernet via NTPNo ; via CPto IF 964 DPNoTime difference in system when synchronizing viaNoMPI, max.200 msDigital outputs0Integrated channels (DO)0Analog inputs0Integrated channels (Al)0Integrated channels (Al)0	in AS, master	Yes	
to IF 964 DP       No         Time difference in system when synchronizing via       200 ms         MPI, max.       200 ms         Digital outputs       0         Integrated channels (DO)       0         Analog inputs       0         Integrated channels (AI)       0	in AS, slave	Yes	
Time difference in system when synchronizing via         MPI, max.       200 ms         Digital outputs       0         integrated channels (DO)       0         Analog inputs       0         Integrated channels (AI)       0         Integrated channels (AI)       0	on Ethernet via NTP	No ; via CP	
MPI, max.     200 ms       Digital outputs     0       integrated channels (DO)     0       Analog inputs     0       Integrated channels (AI)     0       Interfaces     0	to IF 964 DP	No	
Digital outputs       integrated channels (DO)       0       Analog inputs       Integrated channels (AI)       0       Interfaces	Time difference in system when synchronizing via		
integrated channels (DO)     0       Analog inputs     Integrated channels (AI)       Integrated channels (AI)     0	MPI, max.	200 ms	
Analog inputs Integrated channels (AI) Interfaces	Digital outputs		
Integrated channels (AI) 0 Interfaces	integrated channels (DO)	0	
Interfaces	Analog inputs		
	Integrated channels (AI)	0	
Interfaces 1 x MPI/PROFIBUS DP, 1 x PROFIBUS DP	Interfaces		
	Interfaces	1 x MPI/PROFIBUS DP, 1 x PROFIBUS DP	
Number of USB interfaces 0	Number of USB interfaces	0	
Number of parallel interfaces 0	Number of parallel interfaces	0	
Number of 20 mA interfaces (TTY) 0	Number of 20 mA interfaces (TTY)	0	
Number of RS 232 interfaces 0	Number of RS 232 interfaces	0	
Number of RS 422 interfaces 0	Number of RS 422 interfaces	0	
Number of other interfaces 0	Number of other interfaces	0	
1st interface	1st interface		

Physics         RS 485 / PROFIBUS + MPI           Isolated         Yes           Power supply to interface (15 to 30 V DC), max.         150 mA           Number of connection resources         MPI: 44, DP: 32           Functionality         Yes           MPI         Yes           DP master         Yes           DP slave         Yes           MPI         Yes           MPI         Yes           DP master         Yes           DP slave         Yes           MPI         Yes           Services         Yes           PG/OP communication         Yes           Routing         Yes           Global data communication         Yes           S7 communication         Yes           S7 communication, as client         Yes           S7 communication, as server         Yes	Type of interface	integrated
Isolated         Yes           Power supply to interface (15 to 30 V DC), max.         150 mA           Number of connection resources         MPI: 44, DP: 32           Functionality         Yes           MPI         Yes           DP master         Yes           DP alave         Yes           Number of connections         44; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1           Number of connections         12 Mbit/s           Services         12 Mbit/s           PG/OP communication         Yes           Stasic communication         Yes           Stasic communication         Yes           ST communication, as client         Yes           ST communication, as server         Yes           PG/OP communication         Yes           Number of connections, max.         32           ST communication, as server         Yes           PG/OP communication         Yes           Number of pP slaves, max.         32           ST basic communication         Yes		-
Number of connection resources         MPI: 44, DP. 32           Functionality         Yes           PP master         Yes           DP slave         Yes           Number of connections         44 ; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1           Transmission rate, max.         12 Mbit/s           Sorvices	Isolated	Yes
Number of connection resources         MPI: 44, DP. 32           Functionality         Yes           PP master         Yes           DP slave         Yes           Number of connections         44 ; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1           Transmission rate, max.         12 Mbit/s           Sorvices	Power supply to interface (15 to 30 V DC), max.	_
Functionality         Yes           DP master         Yes           DP slave         Yes           MPI         Yes           Number of connections         44 ; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1           Transmission rate, max.         12 Mbit/s           Sorvices	Number of connection resources	MPI: 44, DP: 32
MPI         Yes           DP master         Yes           DP slave         Yes           MPI	Functionality	
PP master         Yes           DP slave         Yes           Mumber of connections         44 : 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 / 20 / 20 / 20 / 20 / 20 / 20 / 20 /		Yes
DP siave         Yes           Mumber of connections         44 : 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           PG/OP communication         Yes           Global data communication         Yes           S7 basic communication         Yes           S7 communication         Yes           S7 communication         Yes           S7 communication, as cilent         Yes           S7 communication, as cilent         Yes           PP master         Yes           Number of connections, max.         32 : if a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1           Transmission rate, max.         12 Mbit/s           Number of DP slaves, max.         32 calcalcalcalcalcalcalcalcalcalcalcalcalc		
Mumber of connections         44 : 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           PG/OP communication         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           PP master         Yes           Number of connections, max.         32 : If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1           Transmission rate, max.         12 Mbit/s           Number of DP slaves, max.         32           Sorvices         Yes           PG/OP communication         Yes           Routing         Yes           Global data communication         Yes           S7 communication         Yes           S7 communication         Yes           PG/OP communication         Yes           S7 communication         Yes           S7 communication         Yes           S7 communi		
Number of connections         44 ; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1           Transmission rate, max.         12 Mbit/s           Sorvices         PG/OP communication         Yes           Routing         Yes         Solution           Global data communication         Yes         Solution           S7 basic communication         Yes         Solution           S7 communication         Yes         Solution           S7 communication         Yes         Solution           S7 communication         Yes         Solution           S7 communication, as client         Yes         Solution           S7 communication, as server         Yes         Solution           Number of connections, max.         22 ; 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         Solution           Number of DP slaves, max.         32         Solution         Solution           Solution         Yes         Solution         Yes           Global data communication         Yes         Solution         Yes           S7 communication         Yes         Solution         Yes           S7 commu		
connection resources on the line is reduced by 1           Transmission rate, max.         12 Mbit/s           Services         PG/OP communication           PG/OP communication         Yes           Routing         Yes           Global data communication         Yes           S7 communication         Yes           S7 communication         Yes           S7 communication, as client         Yes           S7 communication, as client         Yes           S7 communication, as server         Yes           P master         Ocomection resources on the line is reduced by 1           Transmission rate, max.         12 Mbit/s           Number of Connections, max.         32           Services         2           PG/OP communication         Yes           Routing         Yes           Global data communication         Yes           Number of DP slaves, max.         32           Services         Yes           PG/OP communication         Yes           Global data communication         Yes           S7 communication, as client         Yes           S7 communication, as client         Yes           S7 communication, as server         Yes           S7 comm		44 · If a diagnostics repeater is used on the line, the number of
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 client         Yes           S7 communication, as server         Yes           DP master         Yes           Number of connections, max.         32 : If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1           Transmission rate, max.         12 Mbit/s           Number of DP slaves, max.         32           Services         PG/OP communication           Yes         Secondation           S7 communication         Yes           Global data communication         No           S7 communication         Yes           S7 communication         Yes           S7 communication, as server		
PG/OP communicationYesRoutingYesGlobal data communicationYesS7 basic communicationYesS7 communication, as clientYesS7 communication, as clientYesS7 communication, as clientYesS7 communication, as serverYesP masterYesNumber of connections, max.22 : If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1Transmission rate, max.12 Mbit/sNumber of DP slaves, max.23 : 23 : 23 : 23 : 23 : 23 : 23 : 23 :	Transmission rate, max.	12 Mbit/s
RoutingYesGlobal data communicationYesS7 basic communicationYesS7 communication, as clientYesS7 communication, as clientYesS7 communication, as clientYesDP masterS2 ; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1Number of connections, max.32 ; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1Transmission rate, max.12 Mbit/sNumber of DP slaves, max.32ServicesyesPG/OP communicationYesRoutingYesGlobal data communicationNoS7 communicationYesS7 communicationYesS7 communication, as clientYesS7 communication, as enverYesS7 communication, as clientYesS7 communication, as clientYesS7 communication, as clientYesS7 communication, as serverYesS7 communication, as serverYesS7 communication, as serverYesSYNC/FREEZEYesActivation/deactivation of DP slavesYes	Services	
Global data communicationYesS7 basic communicationYesS7 communication, as clientYesS7 communication, as clientYesS7 communication, as serverYesP masterVesNumber of connections, max.32; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1Number of DP slaves, max.32Services32PG/OP communicationYesRoutingYesGlobal data communicationNoS7 communication, as serverYesS7 communicationYesS7 communicationYesS7 communicationYesS7 communication, as serverYesS7 communication, as serverYesSYNC/FREEZEYesActivation/deactivation of DP slavesYesYesYesSYNC/FREEZEYesSYNC/FREEZEYesSYNC/FREEZEYesSYNC/FREEZEYesSYNC/FREEZEYesSYNC/FREEZEYesSYNC/FREEZEYesSYNC/FREEZEYesSYNC/FREEZEYesSYNC/FREEZEYesSYNC/FREEZEYesSYNC/FREEZE<	PG/OP communication	Yes
S7 basic communicationYesS7 communication, as clientYesS7 communication, as clientYesS7 communication, as serverYesP masterS7 communication, as serverNumber of connections, max.32 ; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1Number of DP slaves, max.32 additionation (Sectionationationationationationationationa	Routing	Yes
S7 communicationYesS7 communication, as clientYesS7 communication, as serverYesDP masterTransmission rate, max.Number of connections, max.32 ; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1Transmission rate, max.12 Mbit/sNumber of DP slaves, max.32ServicesServicesPG/OP communicationYesRoutingYesGlobal data communicationNoS7 communicationYesS7 communicationYesS7 communicationYesS7 communication, as clientYesS7 communication, as erverYesS7 communication, as serverYesS7 communication, as serverYesS7 communication, as clientYesS7 communication, as serverYesS7 communication, as serverYesS7 communication, as serverYesS7 communication, as serverYesActivation/deactivation of DP slavesYes	Global data communication	Yes
S7 communication, as clientYesS7 communication, as serverYesDP masterNumber of connections, max.32 ; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1Transmission rate, max.12 Mbit/sNumber of DP slaves, max.32ServicesServicesPG/OP communicationYesRoutingYesGlobal data communicationNoS7 basic communicationYesS7 communicationYesS7 communicationYesS7 communicationYesS7 communication, as clientYesS7 communication, as serverYesS7 communication, as serverYesActivation/deactivation of DP slavesYes	S7 basic communication	Yes
S7 communication, as server       Yes         DP master       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 / 12 Mbit/s         Number of DP slaves, max.       32         Services       32         PG/OP communication       Yes         Routing       Yes         Global data communication       No         S7 communication       Yes         S7 communication, as client       Yes         S7 communication, as server       Yes         Equidistance mode support       Yes         Isochronous mode       Yes         SYNC/FREEZE       Yes         Activation/deactivation of DP slaves       Yes	S7 communication	Yes
P master           Number of connections, max.         32 ; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1           Transmission rate, max.         12 Mbit/s           Number of DP slaves, max.         32           Services         76/OP communication           PG/OP communication         Yes           Routing         Yes           Global data communication         No           S7 basic communication         Yes           S7 communication         Yes           S7 communication, as client         Yes           S7 communication, as server         Yes           Equidistance mode support         Yes           Isochronous mode         Yes           SYNC/FREEZE         Yes           Activation/deactivation of DP slaves         Yes	S7 communication, as client	Yes
Number of connections, max.32 ; If a diagnostics repeater is used on the line, the number of connection resources on the line is reduced by 1Transmission rate, max.12 Mbit/sNumber of DP slaves, max.32Services96/OP communicationPG/OP communicationYesRoutingYesGlobal data communicationNo\$7 basic communicationYes\$7 communicationYes\$7 communicationYes\$7 communicationYes\$7 communication, as clientYes\$7 communication, as serverYesEquidistance mode supportYesIsochronous modeYes\$YNC/FREEZEYesActivation/deactivation of DP slavesYes	S7 communication, as server	Yes
connection resources on the line is reduced by 1Transmission rate, max.12 Mbit/sNumber of DP slaves, max.32ServicesYesPG/OP communicationYesGlobal data communicationNoS7 basic communicationYesS7 communicationYesS7 communication, as clientYesS7 communication, as serverYesEquidistance mode supportYesIsochronous modeYesSYNC/FREEZEYesActivation/deactivation of DP slavesYes	DP master	
Number of DP slaves, max.32ServicesPG/OP communicationYesRoutingYesGlobal data communicationNoS7 basic communicationYesS7 communicationYesS7 communication, as clientYesS7 communication, as serverYesEquidistance mode supportYesIsochronous modeYesSYNC/FREEZEYesActivation/deactivation of DP slavesYes	Number of connections, max.	
ServicesPG/OP communicationYesRoutingYesGlobal data communicationNoS7 basic communicationYesS7 communicationYesS7 communication, as clientYesS7 communication, as serverYesS7 communication, as serverYesSYNC/FREEZEYesSYNC/FREEZEYesActivation/deactivation of DP slavesYes	Transmission rate, max.	12 Mbit/s
PG/OP communicationYesRoutingYesGlobal data communicationNoS7 basic communicationYesS7 communicationYesS7 communication, as clientYesS7 communication, as serverYesEquidistance mode supportYesIsochronous modeYesSYNC/FREEZEYesActivation/deactivation of DP slavesYes	Number of DP slaves, max.	32
RoutingYesGlobal data communicationNoS7 basic communicationYesS7 communicationYesS7 communication, as clientYesS7 communication, as serverYesS7 communication, as serverYesActivation/deactivation of DP slavesYes	Services	
Global data communicationNoS7 basic communicationYesS7 communicationYesS7 communication, as clientYesS7 communication, as serverYesEquidistance mode supportYesIsochronous modeYesSYNC/FREEZEYesActivation/deactivation of DP slavesYes	PG/OP communication	Yes
S7 basic communicationYesS7 communicationYesS7 communication, as clientYesS7 communication, as serverYesEquidistance mode supportYesIsochronous modeYesSYNC/FREEZEYesActivation/deactivation of DP slavesYes	Routing	Yes
S7 communicationYesS7 communication, as clientYesS7 communication, as serverYesEquidistance mode supportYesIsochronous modeYesSYNC/FREEZEYesActivation/deactivation of DP slavesYes	Global data communication	No
S7 communication, as clientYesS7 communication, as serverYesEquidistance mode supportYesIsochronous modeYesSYNC/FREEZEYesActivation/deactivation of DP slavesYes	S7 basic communication	Yes
S7 communication, as server       Yes         Equidistance mode support       Yes         Isochronous mode       Yes         SYNC/FREEZE       Yes         Activation/deactivation of DP slaves       Yes	S7 communication	Yes
Equidistance mode support     Yes       Isochronous mode     Yes       SYNC/FREEZE     Yes       Activation/deactivation of DP slaves     Yes	S7 communication, as client	Yes
Isochronous mode     Yes       SYNC/FREEZE     Yes       Activation/deactivation of DP slaves     Yes	S7 communication, as server	Yes
SYNC/FREEZE     Yes       Activation/deactivation of DP slaves     Yes	Equidistance mode support	Yes
Activation/deactivation of DP slaves Yes	Isochronous mode	Yes
	SYNC/FREEZE	Yes
Direct data exchange (slave-to-slave communication) Yes	Activation/deactivation of DP slaves	Yes
	Direct data exchange (slave-to-slave communication)	Yes

DPV1	Yes
Address area	
Inputs, max.	2 kbyte
Outputs, max.	2 kbyte
User data per DP slave	
User data per DP slave, max.	244 byte
Inputs, max.	244 byte
Outputs, max.	244 byte
Slots, max.	244
per slot, max.	 128 byte
DP slave	
Number of connections	32
GSD file	
Transmission rate, max.	12 Mbit/s
Automatic baud rate search	No
Address area, max.	32 ; Virtual slots
User data per address area, max.	32 byte
User data per address area, of which consistent, max.	32 byte
Services	
PG/OP communication	Yes ; with interface active
Routing	Yes ; with interface active
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
Direct data exchange (slave-to-slave communication)	No
DPV1	No
Transfer memory	
Inputs	244 byte
Outputs	244 byte
2nd interface	
Type of interface	integrated
Physics	RS 485 / PROFIBUS
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	150 mA
Number of connection resources	32

DP master	Yes
DP slave	_
	Yes
P master	-
Number of connections, max.	32
Transmission rate, max.	12 Mbit/s
Number of DP slaves, max.	125
Services	
PG/OP communication	Yes
Routing	Yes
Global data communication	No
S7 basic communication	Yes
S7 communication	Yes
S7 communication, as client	Yes
S7 communication, as server	Yes
Equidistance mode support	Yes
Isochronous mode	Yes
SYNC/FREEZE	Yes
Activation/deactivation of DP slaves	Yes
Direct data exchange (slave-to-slave communication)	Yes
DPV1	Yes
Address area	
Inputs, max.	8 kbyte
Outputs, max.	8 kbyte
User data per DP slave	
User data per DP slave, max.	244 byte
Inputs, max.	244 byte
Outputs, max.	244 byte
Slots, max.	244
per slot, max.	128 byte
P slave	
Number of connections	32
GSD file	http://support.automation.siemens.com/WW/view/de/113652
Transmission rate, max.	12 Mbit/s
Address area, max.	32
User data per address area, max.	32 byte
User data per address area, of which consistent, max.	32 byte

Routing	Yes		
Transfer memory			
Inputs	244 byte		
Outputs	244 byte		
Isochronous mode			
Isochronous operation (application synchronized up to terminal)	Yes ; For PROFIBUS only		
Number of DP masters with isochronous mode	2		
User data per isochronous slave, max.	244 byte		
equidistance	Yes		
shortest clock pulse	1 ms ; 0.5 ms without use of SFC 126, 127		
max. cycle	32 ms		
Communication functions			
PG/OP communication	Yes		
Number of connectable OPs without message processing	63		
Number of connectable OPs with message processing	63 ; When using alarm_S and alarm_D		
Data record routing	Yes		
Global data communication	Global data communication		
supported	Yes		
Number of GD loops, max.	16		
Number of GD packets, transmitter, max.	16		
Number of GD packets, receiver, max.	32		
Size of GD packets, max.	54 byte		
Size of GD packet (of which consistent), max.	1 variable		
S7 basic communication			
supported	Yes		
User data per job, max.	76 byte		
User data per job (of which consistent), max.	1 variable		
S7 communication			
supported	Yes		
as server	Yes		
as client	Yes		
User data per job, max.	64 kbyte		
User data per job (of which consistent), max.	462 byte ; 1 variable		
S5-compatible communication			
supported	Yes ; Via FC AG_SEND and AG_RECV, max. via 10 CP 443-1 or 443-5		
User data per job, max.	8 kbyte		
User data per job (of which consistent), max.	240 byte		

Number of simultaneous AG-SEND/AG-RECV orders per CPU, max.	64/64	
Standard communication (FMS)		
supported	Yes ; Via CP and loadable FB	
Open IE communication		
ISO-on-TCP (RFC1006)	Via CP 443-1 and loadable FB	
Data length, max.		
Web server		
supported	No	
Number of connections		
overall	64	
usable for PG communication	_	
reserved for PG communication	1	
Adjustable for PG communication, max.	0	
usable for OP communication		
reserved for OP communication	1	
adjustable for OP communication, max.	0	
usable for S7 basic communication		
Reserved for S7 basic communication	0	
adjustable for S7 basic communication, max.	0	
usable for S7 communication		
reserved for S7 communication	0	
Adjustable for S7 communication, max.	0	
usable for routing		
Reserved for routing	0	
adjustable for routing, max.	0	
S7 message functions		
Number of login stations for message functions, max.	63 ; Max. 63 with ALARM_S and ALARM_D (OPs); max. 12 with ALARM_8 and ALARM_P (e.g. WinCC)	
Symbol-related messages	Yes	
SCAN procedure	Yes	
Block related messages	Yes	
Process diagnostic messages	Yes	
simultaneously active Alarm-S blocks, max.	1000 ; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ blocks	
Alarm 8-blocks	Yes	
Number of instances for alarm 8 and S7 communication blocks, max.	4000	
preset, max.	600	
Process control messages	Yes	

Number of archives that can log on simultaneously (SFB 37 AR_SEND)	32
Number of messages	
overall, max.	1024
in 100 ms grid, max.	128
in 500 ms grid, max.	512
in 1000 ms grid, max.	1024
Number of additional values	
with 100 ms grid, max.	1
with 500, 1000 ms grid, max.	10
Test commissioning functions	
Status block	Yes ; Up to 2 simultaneously
Single step	Yes
Number of breakpoints	4
Status/control	
Status/control variable	Yes ; Up to 16 variable tables
Variables	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
Number of variables, max.	70 ; Status/control
Forcing	
Forcing	Yes
Force, variables	Inputs, outputs, bit memories, peripheral inputs, peripheral outputs
Number of variables, max.	512
Diagnostic buffer	
present	Yes
Number of entries, max.	3200
adjustable	Yes
preset	120
EMC	
Emission of radio interference acc. to EN 55 011	
Limit class A, for use in industrial areas	Yes
Limit class B, for use in residential areas	No
Configuration	
Configuration software	
STEP 7	Yes
programming	
Command set	see instruction list
Nesting levels	7
Access to consistent data in process image	Yes

Programming longuage	
Programming language	Ver
LAD	Yes
FBD	Yes
STL	Yes
SCL	Yes
CFC	Yes
GRAPH	Yes
HiGraph®	Yes
System functions (SFC)	see instruction list
Number of simultaneously active SFCs	
DPSYC_FR	2
D_ACT_DP	8
RD_REC	8
WR_REC	8
WR_PARM	8
PARM_MOD	1
WR_DPARM	2
DPNRM_DG	8
RDSYSST	8
DP_TOPOL	1
System function blocks (SFB)	see instruction list
Number of simultaneously active SFBs	
RD_REC	8
WR_REC	8
Know-how protection	
User program protection/password protection	Yes
Dimensions	
Width	25 mm
Height	290 mm
Depth	219 mm
Required slots	1
Weight	
Weight, approx.	0.7 kg
Status	Feb 25, 2013