SIEMENS

Data sheet

6AG1317-2EK14-2AY0



spare part SIPLUS S7-300 CPU 317-2PN/DP based on 6ES7317-2EK14-0AB0 with conformal coating, -25...+70 °C, central processing unit with 1 MB work memory, 1st interface MPI/DP 12 Mbps, 2nd interface Ethernet PROFINET, with 2-port switch, Micro Memory Card required

Figure	simi	ar

General information	
Product function	
Isochronous mode	Yes; Via PROFIBUS DP or PROFINET interface
Engineering with	
 Programming package 	STEP 7 V5.5 or higher
Supply voltage	
Rated value (DC)	24 V; A power supply according to EN 50155 shall be used
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
external protection for power supply lines (recommendation)	2 A min.
Mains buffering	
 Mains/voltage failure stored energy time 	5 ms
Repeat rate, min.	1 s
Input current	
Current consumption (rated value)	750 mA
Current consumption (in no-load operation), typ.	150 mA
Inrush current, typ.	4 A
² t	1 A ^{2.} s
Power loss	
Power loss, typ.	4.65 W
Memory	
Work memory	
 integrated 	1 024 kbyte
expandable	No
Load memory	
 Plug-in (MMC) 	Yes
 Plug-in (MMC), max. 	8 Mbyte
 Data management on MMC (after last programming), min. 	10 y
Backup	
 present 	Yes; Guaranteed by MMC (maintenance-free)
without battery	Yes; Program and data
CPU processing times	
for bit operations, typ.	0.025 µs
for word operations, typ.	0.03 µs
for fixed point arithmetic, typ.	0.04 µs
for floating point arithmetic, typ.	0.16 µs

Number of blocks (total) 2 648; (DBs, FCs, FBs); the maximum number of loadable blocks can be dividuod by the MMC used. 08 • Number, max. 2 648; Number range: 1 to 10000 • Size, max. 64 kbyte F8 2 048; Number range: 0 to 7999 • Size, max. 64 kbyte F0 2 048; Number range: 0 to 7999 • Size, max. 64 kbyte F0 2 048; Number range: 0 to 7999 • Size, max. 64 kbyte F0 2 048; Number range: 0 to 7999 • Size, max. 64 kbyte F0 2 048; Number range: 0 to 7999 • Size, max. 64 kbyte F0 2 048; Number range: 0 to 7999 • Number of free cycle OBs 1:08 1 • Number of free cycle OBs 1:08 1 • Number of process alorn OBs 1:08 4 • Number of cycle interupt OBs 2:08 20, 21 • Number of startup OBs 1:08 4 • Number of startup OBs 1:08 5 • Number of startup OBs 1:08 10 • Number of startup OBs 1:08 11 • Number of startup OBs 1:08 11 </th <th>CPU-blocks</th> <th></th>	CPU-blocks	
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- adjustableYes- lower limit0- upper limit511- presetNo retentivityTime range10 ms- lower limit9 990 sIEC timer9 990 sIEC timerYes• presentYes• TypeSFB• NumberUnlimited (limited only by RAM capacity)Data areas and their retentivity		512
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upper limit 511 preset No retentivity Time range - lower limit 10 ms upper limit 9 990 s IEC timer - • present Yes • Type SFB • Number Unlimited (limited only by RAM capacity)	-	
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upper limit 9 990 s IEC timer • present Yes • Type SFB • Number Unlimited (limited only by RAM capacity)		
IEC timer		
• present Yes • Type SFB • Number Unlimited (limited only by RAM capacity)		9 990 S
Type SFB Number Unlimited (limited only by RAM capacity) Data areas and their retentivity		
• Number Unlimited (limited only by RAM capacity) Data areas and their retentivity		
Data areas and their retentivity		
		Unlimited (limited only by RAM capacity)
Retentive data area (incl. timers, counters, flags), max. 256 kbyte	Data areas and their retentivity	
	Retentive data area (incl. timers, counters, flags), max.	256 kbyte

Flag	
• Size, max.	4 096 byte
Retentivity available	Yes; From MB 0 to MB 4 095
Retentivity available	MB 0 to MB 15
Number of clock memories	8; 1 memory byte
Data blocks	o, Thiemory byte
Retentivity adjustable	Yes; via non-retain property on DB
Retentivity preset	Yes
Local data	103
per priority class, max.	32 768 byte; Max. 2048 bytes per block
Address area	
I/O address area	
Inputs	8 192 byte
Outputs	8 192 byte
of which distributed	0 102 byte
— Inputs	8 192 byte
— Outputs	8 192 byte
Process image	
Inputs	8 192 byte
Outputs	8 192 byte
Inputs, adjustable	8 192 byte
Outputs, adjustable	8 192 byte
Inputs, default	256 byte
Outputs, default	256 byte
Subprocess images	
 Number of subprocess images, max. 	1; With PROFINET IO, the length of the user data is limited to 1600
	bytes
Digital channels	
Inputs	65 536
— of which central	1 024
Outputs	65 536
— of which central	1 024
Analog channels	
Inputs	4 096
— of which central	256
Outputs	4 096
— of which central	256
Hardware configuration	
Number of expansion units, max.	3
Number of DP masters	
• integrated	1
• via CP	4
Number of operable FMs and CPs (recommended)	2
• FM	8
• CP, PtP	8
• CP, LAN	10
Rack	4
Racks, max. Modules per rack max	8
Modules per rack, max.	
Time of day	
Clock	Yes
Hardware clock (real-time) retentive and synchronizable	Yes
retentive and synchronizable	
Backup time Deviation per day, max	6 wk; At 40 °C ambient temperature
Deviation per day, max. Pobavior of the clock following POWER ON	10 s; Typ.: 2 s
Behavior of the clock following POWER-ON Behavior of the clock following expire of backup	Clock continues running after POWER OFF
 Behavior of the clock following expiry of backup period 	the clock continues at the time of day it had when power was switched off
Operating hours counter	
Number	4

	0.4-2
Number/Number range	0 to 3
Range of values	0 to 2^31 hours (when using SFC 101)
• Granularity	1h
• retentive	Yes; Must be restarted at each restart
Clock synchronization	
• supported	Yes
• to MPI, master	Yes
• to MPI, slave	Yes
• to DP, master	Yes; With DP slave only slave clock
• to DP, slave	Yes
• in AS, master	Yes
● in AS, slave	Yes
on Ethernet via NTP	Yes; As client
Digital inputs	
Number of digital inputs	0
Digital outputs	
Number of digital outputs	0
Analog inputs	
Number of analog inputs	0
Analog outputs	
Number of analog outputs	0
Interfaces	4. Ethernet O and witch Ot D 445
Number of industrial Ethernet interfaces	1; Ethernet, 2-port switch, 2*RJ45
Number of PROFINET interfaces	1; 2 ports (switch) RJ45
Number of RS 485 interfaces	1; Combined MPI / PROFIBUS DP
Number of RS 422 interfaces	0
1. Interface	
Interface type	Integrated RS 485 interface
Isolated	Yes
Interface types	
• RS 485	Yes
 Output current of the interface, max. 	200 mA
Protocols	
• MPI	Yes
PROFIBUS DP master	Yes
PROFIBUS DP slave	Yes
 Point-to-point connection 	No
MPI	
 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 - S7 communication, as client	No; but via CP and loadable FB
	Yes
- S7 communication, as server	
PROFIBUS DP master	12 Mbit/o
Transmission rate, max.	12 Mbit/s
Number of DP slaves, max.	124
Services	Vec
— PG/OP communication	Yes
- Routing	Yes
— Global data communication	No
— S7 basic communication	Yes; I blocks only
— S7 communication	Yes
 — S7 communication, as client 	No
 — S7 communication, as server 	Yes
— Equidistance	Yes

Isochronous mode SYNC/FREEZE Yes SYNC/FREEZE Yes Activation/deactivation of DP slaves Yes Number of DP slaves that can be simultanceuly activated/deactivated, max. Direct data exchange (slave-to-slave communication) DPV1 Yes Address area Inputs, max. B kloyle User data per adress area Inputs, max. Address area, max. 244 byte Inputs, max. 244 byte Outputs, max. Services PCVP1 Yes, a subscriber Outputs, max. B kloyle User data per adress area, max. 244 byte Outputs, max. Services PCVP Communication Yes, only with passive interface
Number of DP slaves that can be subscriber Direct data exchange (slave-to-alave communication) Yes; as subscriber Direct data exchange (slave-to-alave communication) Yes Address area 8 kbyte Dutyls, max. 8 kbyte Outputs, max. 8 kbyte Outputs, max. 8 kbyte Outputs, max. 244 byte POPTIS lave
Direct data exchange (slave-to-slave communication).
communication) Yes Address area 8 kbyte Address area 8 kbyte Outputs, max. 8 kbyte User data per DP slave 244 byte PROFIBUS DP slave 32 • Itransmission rate, max. 12 Mbit/s • address area, max. 32 • User data per address area, max. 32 • User data per address area, max. 32 > PROFID communication Yes, Only with active interface - Routing Yes, Only with active interface - Routing Yes, Only with active interface - S7 communication No - S7 communication No - S7 communication, as server Yes - Drot No Transfer memory - - Inputs 244 byte - Outputs 244 byte 2. Underface Yes Interface type PROFINET Isolated Yes automatic detection of transmission rate Yes Autoregriation Yes
Address area Inputs, max. B kbyte Imputs, max. B kbyte User data per DP slave Imputs, max. 244 byte Imputs, max. 244 byte PROFIBUS DP slave Imputs, max. 244 byte Imputs, max. 244 byte Procession Yes; only with passive interface Imputs, max. 32
- Inputs, max. 8 ktyle - Outputs, max. 8 ktyle - Outputs, max. 8 ktyle - Inputs, max. 244 byte - Outputs, max. 244 byte - Outputs, max. 244 byte PROFIBUS DP slave 12 Mbl/s • automatic baut rate search 4 se; only with passive interface • Address area, max. 32 • User data per address area, max. 32 byte Services - - PG/OP communication Yes - Routing Yes: Only with active interface - Global data communication No - S7 basic communication No - S7 communication Yes: Connection configured on one side only - Direct data exchange (slave-to-slave communication) Yes: Connection configured on one side only - Direct data exchange (slave-to-slave communication) Yes - Direct data exchange (slave-to-slave communication) Yes - Diret data exchange (slave-to-slave communication) Yes - Outputs 244 byte - Outputs 244 byte 2 Interface Yes Interface type PROFINET Isolated Yes Interface type Yes Interface type Yes Interface type
Outputs, max. 8 kbyte User data per DP slave 244 byte Outputs, max. 244 byte PROFEUS DP slave 12 Mbt/s • Itransmission rate, max. 12 Mbt/s • utomatic baud rate search Yes, only with passive interface • Odders area, max. 32 • User data per address area, max. 32 byte Services - - PGOP communication Yes - Routing Yes: Only with active interface - Oddobal data communication No - S7 basic communication No - S7 communication, as client No - S7 communication, as client No - S7 communication, as client No - DPV1 No - DPV1 No - Inputs 244 byte - Outputs Yes - Inputs 244 byte - Outputs 244 byte - S7 communication Yes - Inputs 244 byte - Outputs 244 byte - Interface type Yes Interface type Yes
User data per DP slave 244 byte - Inputs, max, 244 byte PROFIBUS DP slave 244 byte • Intransmission rate, max, 12 Mbt/s • uburdit baut rate search Yes; only with passive interface • Address area, max, 32 • User data per address area, max, 32 • User data per address area, max, 32 • Services - - PG/OP communication Yes; - Global data communication No - S7 basic communication Yes; - S7 communication, as server Yes; Connection configured on one side only - Direct data exchange (slave-lo-slave communication) No - Direct data exchange (slave-lo-slave communication) Yes; Connection configured on one side only - Direct data exchange (slave-lo-slave communication) No - Direct data exchange (slave-lo-slave communication) Yes; Connection configured on one side only - Unptit 244 byte 244 byte
- Inputs, max. 244 byte - Outputs, max. 244 byte PROFIBUS Polisive 244 byte • Iransmission rate, max. 12 Mbl/bs • automatic baud rate search Yes; only with passive interface • Address area, max. 32 • Isar data per address area, max. 32 • Isar data per address area, max. 32 • Strictes - - PG/OP communication Yes; Only with active interface - Routing Yes, Only with active interface - Oldola data communication No - S7 communication, as client No - S7 communication, as client No - S7 communication, as client No - S7 communication, as server Yes; Connection configured on one side only - Drv1 No Transfer memory - - Inputs 244 byte 2 Interface type PROFINET Isolated Yes automatic detection of transmission rate Yes; 10/100 Mbit/s Autocrossing Yes - Norther of transmission rate Yes; 2 Interface type Yes Interface type Yes Interface type Yes Interface type Yes Interface type
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PROFIBUS DP slave 12 Mbit/s • Itransmission rate, max. 12 Mbit/s • automatic baut rate search 32 • Jear data per address area, max. 32 byte Services - - PG/OP communication Yes. only with passive interface - Routing Yes. Only with active interface - Routing Yes. Only with active interface - Routing Yes. Only with active interface - S7 basic communication No - S7 communication, as client No - S7 communication, as server Yes; Connection configured on one side only - Direct data exchange (slave-to-slave communication) Yes - DPV1 No Transfer memory 244 byte - Linputs 244 byte 2 Interface PROFINET Iterface type PROFINET Isolated Yes automatic detection of transmission rate Yes Autoregotation Yes • RU 45 (Ethernet) Yes • RU 45 (Ethernet) Yes • Roperiset surthme, supported Yes • Interface types Yes <t< td=""></t<>

• automatic baud rate search Yes; only with passive interface • Address area, max. 32 • User data per address area, max. 32 byte Services - - PG/OP communication Yes - Routing Yes; Only with active interface - Routing Yes; Only with active interface - S7 basic communication No - S7 communication No - S7 communication, as client No - S7 communication, as server Yes; Connection configured on one side only - Dired data exchange (slave-to-slave communication) No - DPV1 No Transfer memory - - Inputs 244 byte - Outputs 244 byte 2.Interface type PROFINET Isolated Yes automatic detection of transmission rate Yes; Ol/100 Mbit/s Autoregotation Yes Autoregotation Yes • RJ 45 (Ethernet) Yes • Nohrer of ports 2 • integrated switch Yes; Also simultaneously with IO-Device functionality • PROFINET IO Controller Yes; Also simultaneously with IO-Device functionality • PROFINET IO Controller Yes; Also simultaneously with IO-Device functionality • PROFINET IO Device
 Address area, max. User data per address area, max. 32 byte Bervices PG(OP communication Structs PG(OP communication Structs Gobal data communication No S7 basic communication S7 communication, as server Server Ves Contect data exchange (slave-to-slave communication) Direct data exchange (slave-to-slave communication) Yes Interface type Protocols Ves No (Structure) Yes No (Structure) Yes (Structure) <l< td=""></l<>
• User data per address area, max. 32 byte Services - - PG/OP communication Yes - Routing Yes; Only with active interface - Global data communication No - S7 basic communication No - S7 communication, as server Yes; Connection configured on one side only - S7 communication, as server Yes; Connection configured on one side only - Direct data exchange (slave-to-slave communication) Yes - DPV1 No Transfer memory - - Inputs 244 byte - Outputs 244 byte 2. Interface type PROFINET Isolated Yes automatic detection of transmission rate Yes; 10/100 Mbit/s Autorossing Yes Change of IP address at runtime, supported Yes Interface type Yes Interface type Yes Interface type Yes Protocols 2 Interface type Yes Protocols Yes Protocols Yes Protocols Yes Interface types Yes Interface types Yes Interface types Yes Interface types Yes
Services - PG/OP communication Yes - Global data communication No - S7 basic communication No - S7 communication, as client No - S7 communication, as client No - S7 communication, as server Yes; Connection configured on one side only - Direct data exchange (slave-to-slave communication) Yes - DPV1 No Transfer memory 244 byte - Outputs 244 byte 2 Interface PROFINET Isolated Yes - Outputs 244 byte 2 Interface type PROFINET Isolated Yes - Autoargotation Yes Autoargotation Yes - RI 45 (Ethernet) Yes - Number of ports 2 • integrated switch Yes • Number of ports 2 • MPI No • PROFINET TIO Controller Yes: Also simultaneously with IO-Device functionality • PROFINET IO Controller Yes • Number of ports 2 • MPI No
- PG/OP communication Yes - Routing Yes: Only with active interface - Global data communication No - S7 basic communication No - S7 communication, as selvent No - S7 communication, as server Yes; Connection configured on one side only - Direct data exchange (slave-to-slave communication) Yes - DPV1 No Transfer memory - - Inputs 244 byte - Outputs 244 byte - Outputs 244 byte - Outputs 244 byte - Interface type PROFINET Interface type Yes; 10/100 Mbit/s Autoregotiation Yes Autocrossing Yes - Rul 45 (Ethernet) Yes • Number of ports 2 • interface type Yes; Also simultaneously with IO-Device functionality • PROFINET IO Controller Yes; Also simultaneously with IO-Device functionality • PROFINET IO Exvice Yes; Also simultaneously with IO-Device functionality • PROFINET IO Exvice Yes; Also simultaneously with IO-Device functionality • PROFINET IO Exvice Yes; Also simultaneously with IO-Device functionality • PROFINET IO Exvice Yes; Also simultaneously with IO-Device functionality • PROFINET IO Exv
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communication) - DPV1NoTransfer memory244 byte- Inputs244 byte- Outputs244 byte2. InterfacePROFINETIsolatedYesautomatic detection of transmission rateYes; 10/100 Mbit/sAutorcossingYesChange of IP address at runtime, supportedYesInterface typePROFINETInterface typeYesAutorcossingYesChange of IP address at runtime, supportedYesInterface typesYes• RJ 45 (Ethernet)Yes• Number of ports2• integrated switchYesProtocolsYes; Also simultaneously with IO-Device functionality• PROFINET IO ControllerYes; Also simultaneously with IO Controller functionality• PROFINET CBAYes• PROFIBUS DP masterNo• PROFIBUS DP slaveNo• Open IE communicationYes; Via TCP/IP, ISO on TCP, and UDP• Web serverYes
DPV1NoTransfer memory244 byteInputs244 byteOutputs244 byte2. InterfacePROFINETIsolatedYesautomatic detection of transmission rateYes; 10/100 Mbit/sAutorogotiationYesAutorogotiationYesAutocrossingYesChange of IP address at runtime, supportedYesInterface typesInterface types• RJ 45 (Ethernet)Yes• Integrated switchYesProtocolsVes• MPINo• PROFINET IO ControllerYes; Also simultaneously with IO-Device functionality• PROFINET CBAYes• PROFINET CBAYes• PROFINET CBAYes• PROFINET CBAYes• PROFINET D DeviceYes; Also simultaneously with IO Controller functionality• PROFINET DB p slaveNo• Open IE communicationYes; Via TCP/IP, ISO on TCP, and UDP• Web serverYes
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Inputs244 byte Outputs244 byte2. InterfacePROFINETIsolatedYesautomatic detection of transmission rateYes; 10/100 Mbit/sautomatic detection of transmission rateYes; 10/100 Mbit/sAutorcossingYesChange of IP address at runtime, supportedYesInterface types
Outputs244 byteInterfacePROFINETIsolatedYesautomatic detection of transmission rateYes; 10/100 Mbit/sautomatic detection of transmission rateYes; 10/100 Mbit/sAutonegotiationYesAutocrossingYesChange of IP address at runtime, supportedYesInterface types
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automatic detection of transmission rateYes; 10/100 Mbit/sAutonegotiationYesAutocrossingYesChange of IP address at runtime, supportedYesInterface typesYes• RJ 45 (Ethernet)Yes• Number of ports2• integrated switchYesProtocolsYes; Also simultaneously with IO-Device functionality• PROFINET IO ControllerYes; Also simultaneously with IO Controller functionality• PROFINET CBAYes• PROFIBUS DP masterNo• PROFIBUS DP slaveNo• Open IE communicationYes; Via TCP/IP, ISO on TCP, and UDP• Web serverYes
AutonegotiationYesAutocrossingYesChange of IP address at runtime, supportedYesInterface types• RJ 45 (Ethernet)Yes• Number of ports2• integrated switchYesProtocols• MPINo• PROFINET IO ControllerYes; Also simultaneously with IO-Device functionality• PROFINET IO DeviceYes• PROFINET CBAYes• PROFIBUS DP masterNo• PROFIBUS DP slaveNo• Open IE communicationYes; Via TCP/IP, ISO on TCP, and UDP• Web serverYes
AutocrossingYesChange of IP address at runtime, supportedYesInterface types• RJ 45 (Ethernet)Yes• Number of ports2• integrated switchYesProtocols• MPINo• PROFINET IO ControllerYes; Also simultaneously with IO-Device functionality• PROFINET CBAYes• PROFINET CBAYes• PROFIBUS DP masterNo• Open IE communicationYes; Via TCP/IP, ISO on TCP, and UDP• Web serverYes
Change of IP address at runtime, supportedYesInterface types• RJ 45 (Ethernet)Yes• Number of ports2• integrated switchYesProtocols• MPINo• PROFINET IO ControllerYes; Also simultaneously with IO-Device functionality• PROFINET IO DeviceYes; Also simultaneously with IO Controller functionality• PROFINET CBAYes• PROFIBUS DP masterNo• PROFIBUS DP slaveNo• Open IE communicationYes; Via TCP/IP, ISO on TCP, and UDP• Web serverYes
Interface types• RJ 45 (Ethernet)Yes• Number of ports2• integrated switchYesProtocols• MPINo• PROFINET IO ControllerYes; Also simultaneously with IO-Device functionality• PROFINET IO DeviceYes; Also simultaneously with IO Controller functionality• PROFINET CBAYes• PROFIBUS DP masterNo• PROFIBUS DP slaveNo• Open IE communicationYes; Via TCP/IP, ISO on TCP, and UDP• Web serverYes
• RJ 45 (Ethernet)Yes• Number of ports2• integrated switchYesProtocols• MPINo• PROFINET IO ControllerYes; Also simultaneously with IO-Device functionality• PROFINET IO DeviceYes; Also simultaneously with IO Controller functionality• PROFINET CBAYes• PROFIBUS DP masterNo• PROFIBUS DP slaveNo• Open IE communicationYes; Via TCP/IP, ISO on TCP, and UDP• Web serverYes
Number of ports2integrated switchYesProtocols• MPINo• PROFINET IO ControllerYes; Also simultaneously with IO-Device functionality• PROFINET IO DeviceYes; Also simultaneously with IO Controller functionality• PROFINET CBAYes• PROFIBUS DP masterNo• PROFIBUS DP slaveNo• Open IE communicationYes; Via TCP/IP, ISO on TCP, and UDP• Web serverYes
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Protocols • MPI No • PROFINET IO Controller Yes; Also simultaneously with IO-Device functionality • PROFINET IO Device Yes; Also simultaneously with IO Controller functionality • PROFINET CBA Yes • PROFIBUS DP master No • PROFIBUS DP slave No • Open IE communication Yes; Via TCP/IP, ISO on TCP, and UDP • Web server Yes
• PROFINET IO ControllerYes; Also simultaneously with IO-Device functionality• PROFINET IO DeviceYes; Also simultaneously with IO Controller functionality• PROFINET CBAYes• PROFIBUS DP masterNo• PROFIBUS DP slaveNo• Open IE communicationYes; Via TCP/IP, ISO on TCP, and UDP• Web serverYes
• PROFINET IO DeviceYes; Also simultaneously with IO Controller functionality• PROFINET CBAYes• PROFIBUS DP masterNo• PROFIBUS DP slaveNo• Open IE communicationYes; Via TCP/IP, ISO on TCP, and UDP• Web serverYes
• PROFINET IO DeviceYes; Also simultaneously with IO Controller functionality• PROFINET CBAYes• PROFIBUS DP masterNo• PROFIBUS DP slaveNo• Open IE communicationYes; Via TCP/IP, ISO on TCP, and UDP• Web serverYes
• PROFINET CBAYes• PROFIBUS DP masterNo• PROFIBUS DP slaveNo• Open IE communicationYes; Via TCP/IP, ISO on TCP, and UDP• Web serverYes
• PROFIBUS DP slaveNo• Open IE communicationYes; Via TCP/IP, ISO on TCP, and UDP• Web serverYes
• PROFIBUS DP slaveNo• Open IE communicationYes; Via TCP/IP, ISO on TCP, and UDP• Web serverYes
Web server Yes
Web server Yes
PROFINET IO Controller
Transmission rate, max. 100 Mbit/s
Services
— PG/OP communication Yes
- Routing Yes
— S7 communication Yes; with loadable FBs, max. configurable connections: 16, max.

Isochronous mode	number of instances: 32
— Isochronous mode	Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS DP or PROFINET IO
— IRT	Yes
— Shared device	Yes
— Prioritized startup	Yes
 — Number of IO devices with prioritized startup, max. 	32
 — Number of connectable IO Devices, max. 	128
 — Of which IO devices with IRT, max. 	64
— of which in line, max.	64
 — Number of IO Devices with IRT and the option "high flexibility" 	128
— of which in line, max.	61
 — Number of connectable IO Devices for RT, max. 	128
— of which in line, max.	128
 Activation/deactivation of IO Devices 	Yes
 — Number of IO Devices that can be simultaneously activated/deactivated, max. 	8
 IO Devices changing during operation (partner ports), supported 	Yes
 — Number of IO Devices per tool, max. 	8
 Device replacement without swap medium 	Yes
— Send cycles	250 $\mu s,$ 500 $\mu s,$ 1 ms; 2 ms, 4 ms (not in the case of IRT with "high flexibility" option)
— Updating time	250 μs to 512 ms (depending on the operating mode, see Manual "S7-300 CPU 31xC and CPU 31x, technical Data" for more details)
Address area	
— Inputs, max.	8 kbyte
— Outputs, max.	8 kbyte
— User data consistency, max.	1 024 byte
PROFINET IO Device	
Services	
— PG/OP communication	Yes
— Routing	Yes
— S7 communication	Yes; with loadable FBs, max. configurable connections: 16, max. number of instances: 32
 — Isochronous mode 	No
— IRT	Yes
— PROFlenergy	Yes; With SFB 73 / 74 prepared for loadable PROFIenergy standard FB for I-Device
 — Shared device 	
	Yes
- Number of IO Controllers with shared device,	Yes 2
 Number of IO Controllers with shared device, max. 	
 — Number of IO Controllers with shared device, max. Transfer memory 	2
 Number of IO Controllers with shared device, max. Transfer memory Inputs, max. 	2 1 440 byte; Per IO Controller with shared device
 Number of IO Controllers with shared device, max. Transfer memory Inputs, max. Outputs, max. 	2
 Number of IO Controllers with shared device, max. Transfer memory Inputs, max. Outputs, max. Submodules 	2 1 440 byte; Per IO Controller with shared device 1 440 byte; Per IO Controller with shared device
 Number of IO Controllers with shared device, max. Transfer memory Inputs, max. Outputs, max. Submodules Number, max. 	2 1 440 byte; Per IO Controller with shared device 1 440 byte; Per IO Controller with shared device 64
 Number of IO Controllers with shared device, max. Transfer memory Inputs, max. Outputs, max. Submodules Number, max. User data per submodule, max. 	2 1 440 byte; Per IO Controller with shared device 1 440 byte; Per IO Controller with shared device
 Number of IO Controllers with shared device, max. Transfer memory Inputs, max. Outputs, max. Submodules Number, max. User data per submodule, max. PROFINET CBA 	2 1 440 byte; Per IO Controller with shared device 1 440 byte; Per IO Controller with shared device 64 1 024 byte
 Number of IO Controllers with shared device, max. Transfer memory Inputs, max. Outputs, max. Submodules Number, max. User data per submodule, max. PROFINET CBA acyclic transmission 	2 1 440 byte; Per IO Controller with shared device 1 440 byte; Per IO Controller with shared device 64 1 024 byte Yes
 Number of IO Controllers with shared device, max. Transfer memory Inputs, max. Outputs, max. Submodules Number, max. User data per submodule, max. PROFINET CBA acyclic transmission cyclic transmission 	2 1 440 byte; Per IO Controller with shared device 1 440 byte; Per IO Controller with shared device 64 1 024 byte
 Number of IO Controllers with shared device, max. Transfer memory Inputs, max. Outputs, max. Submodules Number, max. User data per submodule, max. PROFINET CBA acyclic transmission cyclic transmission Open IE communication 	2 1 440 byte; Per IO Controller with shared device 1 440 byte; Per IO Controller with shared device 64 1 024 byte Yes Yes
 Number of IO Controllers with shared device, max. Transfer memory Inputs, max. Outputs, max. Submodules Number, max. User data per submodule, max. PROFINET CBA acyclic transmission cyclic transmission cyclic transmission Number of connections, max. 	2 1 440 byte; Per IO Controller with shared device 1 440 byte; Per IO Controller with shared device 64 1 024 byte Yes Yes 16
 Number of IO Controllers with shared device, max. Transfer memory Inputs, max. Outputs, max. Outputs, max. Submodules Number, max. User data per submodule, max. PROFINET CBA acyclic transmission cyclic transmission cyclic transmission Number of connections, max. Local port numbers used at the system end 	2 1 440 byte; Per IO Controller with shared device 1 440 byte; Per IO Controller with shared device 64 1 024 byte Yes Yes
 Number of IO Controllers with shared device, max. Transfer memory Inputs, max. Outputs, max. Submodules Number, max. User data per submodule, max. PROFINET CBA acyclic transmission cyclic transmission cyclic transmission Number of connections, max. 	2 1 440 byte; Per IO Controller with shared device 1 440 byte; Per IO Controller with shared device 64 1 024 byte Yes Yes 16 0, 20, 21, 25, 80, 102, 135, 161, 8080, 34962, 34963, 34964, 65532,
 Number of IO Controllers with shared device, max. Transfer memory Inputs, max. Outputs, max. Outputs, max. Submodules Number, max. User data per submodule, max. PROFINET CBA acyclic transmission cyclic transmission cyclic transmission Number of connections, max. Local port numbers used at the system end 	2 1 440 byte; Per IO Controller with shared device 1 440 byte; Per IO Controller with shared device 64 1 024 byte Yes Yes 16 0, 20, 21, 25, 80, 102, 135, 161, 8080, 34962, 34963, 34964, 65532, 65533, 65534, 65535
 Number of IO Controllers with shared device, max. Transfer memory Inputs, max. Outputs, max. Outputs, max. Submodules Number, max. User data per submodule, max. PROFINET CBA acyclic transmission cyclic transmission cyclic transmission Number of connections, max. Local port numbers used at the system end Keep-alive function, supported 	2 1 440 byte; Per IO Controller with shared device 1 440 byte; Per IO Controller with shared device 64 1 024 byte Yes Yes 16 0, 20, 21, 25, 80, 102, 135, 161, 8080, 34962, 34963, 34964, 65532, 65533, 65534, 65535
 Number of IO Controllers with shared device, max. Transfer memory Inputs, max. Outputs, max. Outputs, max. Submodules Number, max. User data per submodule, max. PROFINET CBA acyclic transmission cyclic transmission cyclic transmission Number of connections, max. Local port numbers used at the system end Keep-alive function, supported Protocols 	2 1 440 byte; Per IO Controller with shared device 1 440 byte; Per IO Controller with shared device 64 1 024 byte Yes Yes 16 0, 20, 21, 25, 80, 102, 135, 161, 8080, 34962, 34963, 34964, 65532, 65533, 65534, 65535 Yes

— Switchover time on line break, typ.	200 ms; PROFINET MRP
 — Switchover time of fine break, typ. — Number of stations in the ring, max. 	50
Open IE communication	
• TCP/IP	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.	
— Data length for connection type 01H, max.	1 460 byte
— Data length for connection type 11H, max.	32 768 byte
— several passive connections per port,	Yes
supported	
• ISO-on-TCP (RFC1006)	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.	16
— Data length, max.	32 768 byte
• UDP	Yes; via integrated PROFINET interface and loadable FBs
 — Number of connections, max. 	16
— Data length, max.	1 472 byte
Web server	
supported	Yes
User-defined websites	Yes
 Number of HTTP clients 	5
communication functions / header	
PG/OP communication	Yes
Data record routing	Yes
Global data communication	
supported	Yes
 Number of GD loops, max. 	8
Number of GD packets, max.	8
 Number of GD packets, transmitter, max. 	8
 Number of GD packets, receiver, max. 	8
• Size of GD packets, max.	22 byte
 Size of GD packet (of which consistent), max. 	22 byte
S7 basic communication	.,
supported	Yes
• User data per job, max.	76 byte
 User data per job (of which consistent), max. 	76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or
	X_GET as server)
S7 communication	
 supported 	Yes
• as server	Yes
• as client	Yes; via integrated PROFINET interface and loadable FB or via CP and loadable FB
 User data per job, max. 	See online help of STEP 7 (shared parameters of the SFBs/FBs and of
OF compatible companying time	the SFCs/FCs of S7 Communication)
S5 compatible communication	Vee: via CB and leadable EC
supported communications functions / PROFINET CRA (with set target a	Yes; via CP and loadable FC
communication functions / PROFINET CBA (with set target of	
 Setpoint for the CPU communication load 	50 %
 Setpoint for the CPU communication load Number of remote interconnection partners 	50 % 32
 Setpoint for the CPU communication load Number of remote interconnection partners Number of functions, master/slave 	50 % 32 30
 Setpoint for the CPU communication load Number of remote interconnection partners Number of functions, master/slave Total of all master/slave connections 	50 % 32 30 1 000
 Setpoint for the CPU communication load Number of remote interconnection partners Number of functions, master/slave 	50 % 32 30
 Setpoint for the CPU communication load Number of remote interconnection partners Number of functions, master/slave Total of all master/slave connections Data length of all incoming connections 	50 % 32 30 1 000
 Setpoint for the CPU communication load Number of remote interconnection partners Number of functions, master/slave Total of all master/slave connections Data length of all incoming connections master/slave, max. Data length of all outgoing connections 	50 % 32 30 1 000 4 000 byte
 Setpoint for the CPU communication load Number of remote interconnection partners Number of functions, master/slave Total of all master/slave connections Data length of all incoming connections master/slave, max. Data length of all outgoing connections master/slave, max. Number of device-internal and PROFIBUS 	50 % 32 30 1 000 4 000 byte 4 000 byte
 Setpoint for the CPU communication load Number of remote interconnection partners Number of functions, master/slave Total of all master/slave connections Data length of all incoming connections master/slave, max. Data length of all outgoing connections master/slave, max. Number of device-internal and PROFIBUS interconnections Data length of device-internal und PROFIBUS 	50 % 32 30 1 000 4 000 byte 4 000 byte 500
 Setpoint for the CPU communication load Number of remote interconnection partners Number of functions, master/slave Total of all master/slave connections Data length of all incoming connections master/slave, max. Data length of all outgoing connections master/slave, max. Number of device-internal and PROFIBUS interconnections Data length of device-internal und PROFIBUS interconnections, max. 	50 % 32 30 1 000 4 000 byte 4 000 byte 500 4 000 byte 1 400 byte
 Setpoint for the CPU communication load Number of remote interconnection partners Number of functions, master/slave Total of all master/slave connections Data length of all incoming connections master/slave, max. Data length of all outgoing connections master/slave, max. Number of device-internal and PROFIBUS interconnections Data length of device-internal und PROFIBUS interconnections, max. Data length per connection, max. 	50 % 32 30 1 000 4 000 byte 4 000 byte 500 4 000 byte 1 400 byte
 Setpoint for the CPU communication load Number of remote interconnection partners Number of functions, master/slave Total of all master/slave connections Data length of all incoming connections master/slave, max. Data length of all outgoing connections master/slave, max. Number of device-internal and PROFIBUS interconnections Data length of device-internal und PROFIBUS interconnections, max. Data length per connection, max. pata length per connection, max. 	50 % 32 30 1 000 4 000 byte 4 000 byte 500 4 000 byte 1 400 byte 1 400 byte ction / with acyclic transfer / header
 Setpoint for the CPU communication load Number of remote interconnection partners Number of functions, master/slave Total of all master/slave connections Data length of all incoming connections master/slave, max. Data length of all outgoing connections master/slave, max. Number of device-internal and PROFIBUS interconnections Data length of device-internal und PROFIBUS interconnections, max. Data length per connection, max. pata length per connection, max. pata length per connection, max. mater of data / PROFINET CBA / remote interconnections Manual Ampling interval, min. 	50 % 32 30 1 000 4 000 byte 4 000 byte 500 4 000 byte 1 400 byte ction / with acyclic transfer / header 500 ms

 Data length of all incoming interconnections, max. Data length of all outgoing interconnections, 2 000 byte 	
— Data length of all outgoing interconnections, 2 000 byte	
max.	
— Data length per connection, max. 1 400 byte	
performance data / PROFINET CBA / remote interconnection / with cyclic transfer / header	
— Transmission frequency: Transmission interval, min.	
— Number of incoming interconnections 200	
- Number of outgoing interconnections 200	
— Data length of all incoming interconnections, 2 000 byte	
max.	
— Data length of all outgoing interconnections, 2 000 byte max.	
— Data length per connection, max. 450 byte	
performance data / PROFINET CBA / HMI variables via PROFINET / acyclic / header	
— Number of stations that can log on for HMI 3; 2x PN OPC/1x iMap	
variables (PN OPC/iMap)	
- HMI variable updating 500 ms	
- Number of HMI variables 200	
— Data length of all HMI variables, max. 2 000 byte	
performance data / PROFINET CBA / PROFIBUS proxy functionality / header	
supported Yes	
— Number of linked PROFIBUS devices 16	
- Data length per connection, max. 240 byte; Slave-dependent	
Number of connections	
• overall 32	
usable for PG communication 31	
— reserved for PG communication 1	
— adjustable for PG communication, min. 1	
- adjustable for PG communication, max. 31	
• usable for OP communication 31	
 reserved for OP communication 1 	
- adjustable for OP communication, min.	
- adjustable for OP communication, max. 31	
• usable for S7 basic communication 30	
 reserved for S7 basic communication 0 	
- adjustable for S7 basic communication, max. 30	
• usable for S7 communication 16	
- reserved for S7 communication 0	
- adjustable for S7 communication, min. 0	
- adjustable for S7 communication, max. 16	
• total number of instances, max. 32	
• usable for routing X1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP sla (active): max. 14; X2 as PROFINET: 24 max.	ave
S7 message functions Number of login stations for message functions, max. 32; Depending on the configured connections for PG/OP and communication	S7 basic
Process diagnostic messages Yes	
simultaneously active Alarm-S blocks, max. 300	
Test commissioning functions	
Status block Yes; Up to 2 simultaneously	
Single step Yes	
Number of breakpoints 4	
Status/control	
Status/control variable Yes	
Variables Inputs, outputs, memory bits, DB, times, counters	
Number of variables, max.	
— of which status variables, max. 30	
— of which control variables, max. 14	
Forcing	

Forcing	Yes
 Forcing, variables 	Inputs, outputs
 Number of variables, max. 	10
Diagnostic buffer	10
present	Yes
Number of entries, max.	500
- adjustable	No
— of which powerfail-proof	100; Only the last 100 entries are retained
Number of entries readable in RUN, max.	499
- adjustable	Yes; From 10 to 499
— preset	10
Service data	
• can be read out	Yes
Isolation	
Isolation tested with	500V AC for 1 minute
Standards, approvals, certificates	
CE mark	Vac
	Yes
UL approval	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes
EAC (formerly Gost-R)	Tes
Use in hazardous areas • ATEX	Yes
• ATEX Railway application	
• EN 50155	Yes; Sections 4, 5 and 12; no further agreements apply; T1, Category 1,
• EN 30133	Class A/B, EN 50155:2007
Ambient conditions	
Ambient temperature during operation	
• min.	-25 °C; = Tmin
• max.	60 °C; = Tmax; the rated temperature range of -25 +55 °C (T1)
	applies for the use on railway vehicles according to EN50155
Altitude during operation relating to sea level	
 Installation altitude above sea level, max. 	5 000 m
Ambient air temperature-barometric pressure-	Tmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m) // Tmin
altitude	(Tmax - 10 K) at 795 hPa 658 hPa (+2 000 m +3 500 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m)
Relative humidity	
With condensation, tested in accordance with IEC	100 %; RH incl. condensation/frost (no commissioning under
60068-2-38, max.	condensation conditions)
Resistance	
Use in stationary industrial systems	
 to biologically active substances according to 	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of
EN 60721-3-3	fauna); Class 3B3 on request
 — to chemically active substances according to EN 60721-3-3 	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
— to mechanically active substances according to	Yes; Class 3S4 incl. sand, dust, *
EN 60721-3-3	
Use on land craft, rail vehicles and special-purpose vehic	cles
— to biologically active substances according to	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of
EN 60721-3-5	fauna); Class 5B3 on request
 — to chemically active substances according to EN 60721-3-5 	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
— to mechanically active substances according to	Yes; Class 5S3 incl. sand, dust; *
EN 60721-3-5	
Remark	
 Note regarding classification of environmental 	* The supplied plug covers must remain in place over the unused
conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	interfaces during operation!
configuration / header	
Configuration software • STEP 7	Voe: V5.5 or higher
STEP 7 configuration / programming / header	Yes; V5.5 or higher
 Command set 	see instruction list

 Nesting levels 	8
 System functions (SFC) 	see instruction list
 System function blocks (SFB) 	see instruction list
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes
— CFC	Yes
— GRAPH	Yes
— HiGraph®	Yes
Know-how protection	
 User program protection/password protection 	Yes
 Block encryption 	Yes; With S7 block Privacy
Dimensions	
Width	40 mm
Height	125 mm
Depth	130 mm
Weights	
Weight, approx.	340 g

last modified:

8/24/2021 🖸