



spare part SIPLUS S7-300 CPU 315F-2PN/DP based on 6ES7315-2FJ14-0AB0 with conformal coating, -25...+60 °C, central processing unit with 512 KB work memory, 1st interface MPI/DP 12 Mbps, 2nd interface Ethernet PROFINET, with 2-port switch, Micro Memory Card required

General information	
Product function	
<ul style="list-style-type: none"> Isochronous mode 	Yes; Via PROFIBUS DP or PROFINET interface
Engineering with	
<ul style="list-style-type: none"> Programming package 	STEP 7 V5.5 or higher, Distributed Safety V5.4 SP4
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	
<ul style="list-style-type: none"> Mains/voltage failure stored energy time Repeat rate, min. 	5 ms 1 s
Input current	
Current consumption (rated value)	750 mA
Current consumption (in no-load operation), typ.	150 mA
Inrush current, typ.	4 A
I^2t	1 A ² ·s
Power loss	
Power loss, typ.	4.65 W
Memory	
Work memory	
<ul style="list-style-type: none"> integrated expandable 	512 kbyte No
Load memory	
<ul style="list-style-type: none"> Plug-in (MMC) Plug-in (MMC), max. Data management on MMC (after last programming), min. 	Yes 8 Mbyte 10 y
Backup	
<ul style="list-style-type: none"> present without battery 	Yes; Guaranteed by MMC (maintenance-free) Yes; Program and data
CPU processing times	
for bit operations, typ.	0.05 μs
for word operations, typ.	0.09 μs
for fixed point arithmetic, typ.	0.12 μs
for floating point arithmetic, typ.	0.45 μs
CPU-blocks	

Number of blocks (total)	1 024; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used.
DB	
<ul style="list-style-type: none"> • Number, max. • Size, max. 	1 024; Number range: 1 to 16000 64 kbyte
FB	
<ul style="list-style-type: none"> • Number, max. • Size, max. 	1 024; Number range: 0 to 7999 64 kbyte
FC	
<ul style="list-style-type: none"> • Number, max. • Size, max. 	1 024; Number range: 0 to 7999 64 kbyte
OB	
<ul style="list-style-type: none"> • Size, max. • Number of free cycle OBs • Number of time alarm OBs • Number of delay alarm OBs • Number of cyclic interrupt OBs • Number of process alarm OBs • Number of DPV1 alarm OBs • Number of isochronous mode OBs • Number of startup OBs • Number of asynchronous error OBs • Number of synchronous error OBs 	64 kbyte 1; OB 1 1; OB 10 2; OB 20, 21 4; OB 32, 33, 34, 35 1; OB 40 3; OB 55, 56, 57 1; OB 61 1; OB 100 6; OB 80, 82, 83, 85, 86, 87 (OB83 only for PROFINET IO) 2; OB 121, 122
Nesting depth	
<ul style="list-style-type: none"> • per priority class • additional within an error OB 	16 4
Counters, timers and their retentivity	
S7 counter	
<ul style="list-style-type: none"> • Number 	256
Retentivity	
<ul style="list-style-type: none"> — adjustable — lower limit — upper limit — preset 	Yes 0 255 Z 0 to Z 7
Counting range	
<ul style="list-style-type: none"> — adjustable — lower limit — upper limit 	Yes 0 999
IEC counter	
<ul style="list-style-type: none"> • present • Type • Number 	Yes SFB Unlimited (limited only by RAM capacity)
S7 times	
<ul style="list-style-type: none"> • Number 	256
Retentivity	
<ul style="list-style-type: none"> — adjustable — lower limit — upper limit — preset 	Yes 0 255 No retentivity
Time range	
<ul style="list-style-type: none"> — lower limit — upper limit 	10 ms 9 990 s
IEC timer	
<ul style="list-style-type: none"> • present • Type • Number 	Yes SFB Unlimited (limited only by RAM capacity)
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	128 kbyte
Flag	
<ul style="list-style-type: none"> • Size, max. 	2 048 byte

<ul style="list-style-type: none"> • Retentivity available • Retentivity preset • Number of clock memories 	Yes; MB 0 to MB 2 047 MB 0 to MB 15 8; 1 memory byte
Data blocks	
<ul style="list-style-type: none"> • Retentivity adjustable • Retentivity preset 	Yes; via non-retain property on DB Yes
Local data	
<ul style="list-style-type: none"> • per priority class, max. 	32 768 byte; Max. 2048 bytes per block
Address area	
I/O address area	
<ul style="list-style-type: none"> • Inputs • Outputs 	2 048 byte 2 048 byte
of which distributed	
<ul style="list-style-type: none"> — Inputs — Outputs 	2 048 byte 2 048 byte
Process image	
<ul style="list-style-type: none"> • Inputs • Outputs • Inputs, adjustable • Outputs, adjustable • Inputs, default • Outputs, default 	2 048 byte 2 048 byte 2 048 byte 2 048 byte 128 byte 128 byte
Subprocess images	
<ul style="list-style-type: none"> • Number of subprocess images, max. 	1; With PROFINET IO, the length of the user data is limited to 1600 bytes
Digital channels	
<ul style="list-style-type: none"> • Inputs <ul style="list-style-type: none"> — of which central • Outputs <ul style="list-style-type: none"> — of which central 	16 384 1 024 16 384 1 024
Analog channels	
<ul style="list-style-type: none"> • Inputs <ul style="list-style-type: none"> — of which central • Outputs <ul style="list-style-type: none"> — of which central 	1 024 256 1 024 256
Hardware configuration	
Number of expansion units, max.	3
Number of DP masters	
<ul style="list-style-type: none"> • integrated • via CP 	1 4
Number of operable FMs and CPs (recommended)	
<ul style="list-style-type: none"> • FM • CP, PtP • CP, LAN 	8 8 10
Rack	
<ul style="list-style-type: none"> • Racks, max. • Modules per rack, max. 	4 8
Time of day	
Clock	
<ul style="list-style-type: none"> • Hardware clock (real-time) • retentive and synchronizable • Backup time • Deviation per day, max. • Behavior of the clock following POWER-ON • Behavior of the clock following expiry of backup period 	Yes Yes 6 wk; At 40 °C ambient temperature 10 s; Typ.: 2 s Clock continues running after POWER OFF the clock continues at the time of day it had when power was switched off
Operating hours counter	
<ul style="list-style-type: none"> • Number • Number/Number range • Range of values 	1 0 0 to 2 ³¹ hours (when using SFC 101)

<ul style="list-style-type: none"> Granularity retentive 	<p>1 h</p> <p>Yes; Must be restarted at each restart</p>
Clock synchronization	
<ul style="list-style-type: none"> supported to MPI, master to MPI, slave to DP, master to DP, slave in AS, master in AS, slave on Ethernet via NTP 	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes; With DP slave only slave clock</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes; As client</p>
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	
Number of industrial Ethernet interfaces	1
Number of PROFINET interfaces	1
Number of RS 485 interfaces	1
Number of RS 422 interfaces	0
1. Interface	
Interface type	Integrated RS 485 interface
Isolated	Yes
Interface types	
<ul style="list-style-type: none"> RS 485 Output current of the interface, max. 	<p>Yes</p> <p>200 mA</p>
Protocols	
<ul style="list-style-type: none"> MPI PROFIBUS DP master PROFIBUS DP slave Point-to-point connection 	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>No</p>
MPI	
<ul style="list-style-type: none"> Transmission rate, max. 	12 Mbit/s
Services	
<ul style="list-style-type: none"> PG/OP communication Routing Global data communication S7 basic communication S7 communication S7 communication, as client S7 communication, as server 	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>No; but via CP and loadable FB</p> <p>Yes</p>
PROFIBUS DP master	
<ul style="list-style-type: none"> Transmission rate, max. Number of DP slaves, max. 	<p>12 Mbit/s</p> <p>124</p>
Services	
<ul style="list-style-type: none"> PG/OP communication Routing Global data communication S7 basic communication S7 communication S7 communication, as client S7 communication, as server Equidistance Isochronous mode 	<p>Yes</p> <p>Yes</p> <p>No</p> <p>Yes; I blocks only</p> <p>Yes</p> <p>No</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS DP or PROFINET IO</p>

— SYNC/FREEZE	Yes
— Activation/deactivation of DP slaves	Yes
— Number of DP slaves that can be simultaneously activated/deactivated, max.	8
— Direct data exchange (slave-to-slave communication)	Yes; as subscriber
— DPV1	Yes
Address area	
— Inputs, max.	2 kbyte
— Outputs, max.	2 kbyte
User data per DP slave	
— Inputs, max.	244 byte
— Outputs, max.	244 byte
PROFIBUS DP slave	
• Transmission rate, max.	12 Mbit/s
• 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
— Global data communication	No
— S7 basic communication	No
— S7 communication	Yes
— 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	
— Inputs	244 byte
— Outputs	244 byte
2. Interface	
Interface type	PROFINET
Isolated	Yes
automatic detection of transmission rate	Yes; 10/100 Mbit/s
Autonegotiation	Yes
Autocrossing	Yes
Change of IP address at runtime, supported	Yes
Interface types	
• RJ 45 (Ethernet)	Yes
• Number of ports	2
• integrated switch	Yes
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; only read function
• Media redundancy	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: 14, max. number of instances: 32
— Isochronous mode	Yes; OB 61; isochronous mode can only be used alternatively on

— IRT	PROFIBUS DP or PROFINET IO
— 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 µs, 500 µs, 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.	2 kbyte
— Outputs, max.	2 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: 14, max. number of instances: 32
— Isochronous mode	No
— IRT	Yes
— PROFINergy	Yes; With SFB 73 / 74 prepared for loadable PROFINergy standard FB for I-Device
— Shared device	Yes
— Number of IO Controllers with shared device, max.	2
Transfer memory	
— Inputs, max.	1 440 byte; Per IO Controller with shared device
— Outputs, max.	1 440 byte; Per IO Controller with shared device
Submodules	
— Number, max.	64
— User data per submodule, max.	1 024 byte
PROFINET CBA	
• acyclic transmission	Yes
• cyclic transmission	Yes
Open IE communication	
• Number of connections, max.	8
• Local port numbers used at the system end	0, 20, 21, 25, 80, 102, 135, 161, 8080, 34962, 34963, 34964, 65532, 65533, 65534, 65535
• Keep-alive function, supported	Yes
Protocols	
PROFIsafe	Yes
Redundancy mode	
Media redundancy	
— Switchover time on line break, typ.	200 ms; PROFINET MRP
— Number of stations in the ring, max.	50

Open IE communication	
<ul style="list-style-type: none"> ● TCP/IP <ul style="list-style-type: none"> — Number of connections, max. — Data length for connection type 01H, max. — Data length for connection type 11H, max. — several passive connections per port, supported ● ISO-on-TCP (RFC1006) <ul style="list-style-type: none"> — Number of connections, max. — Data length, max. ● UDP <ul style="list-style-type: none"> — Number of connections, max. — Data length, max. 	<p>Yes; via integrated PROFINET interface and loadable FBs</p> <p>8</p> <p>1 460 byte</p> <p>32 768 byte</p> <p>Yes</p> <p>Yes; via integrated PROFINET interface and loadable FBs</p> <p>8</p> <p>32 768 byte</p> <p>Yes; via integrated PROFINET interface and loadable FBs</p> <p>8</p> <p>1 472 byte</p>
Web server	
<ul style="list-style-type: none"> ● supported ● User-defined websites ● Number of HTTP clients 	<p>Yes; only read function</p> <p>Yes</p> <p>5</p>
communication functions / header	
PG/OP communication	Yes
Data record routing	Yes
Global data communication	
<ul style="list-style-type: none"> ● supported ● Number of GD loops, max. ● Number of GD packets, max. ● Number of GD packets, transmitter, max. ● Number of GD packets, receiver, max. ● Size of GD packets, max. ● Size of GD packet (of which consistent), max. 	<p>Yes</p> <p>8</p> <p>8</p> <p>8</p> <p>8</p> <p>22 byte</p> <p>22 byte</p>
S7 basic communication	
<ul style="list-style-type: none"> ● supported ● User data per job, max. ● User data per job (of which consistent), max. 	<p>Yes</p> <p>76 byte</p> <p>76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)</p>
S7 communication	
<ul style="list-style-type: none"> ● supported ● as server ● as client ● User data per job, max. 	<p>Yes</p> <p>Yes</p> <p>Yes; via integrated PROFINET interface and loadable FB or via CP and loadable FB</p> <p>See online help of STEP 7 (shared parameters of the SFBs/FBs and of the SFCs/FCs of S7 Communication)</p>
S5 compatible communication	
<ul style="list-style-type: none"> ● supported 	Yes; via CP and loadable FC
communication functions / PROFINET CBA (with set target communication load) / header	
<ul style="list-style-type: none"> ● 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. 	<p>50 %</p> <p>32</p> <p>30</p> <p>1 000</p> <p>4 000 byte</p> <p>4 000 byte</p> <p>500</p> <p>4 000 byte</p> <p>1 400 byte</p>
performance data / PROFINET CBA / remote interconnection / with acyclic transfer / header	
<ul style="list-style-type: none"> — Sampling interval, min. — Number of incoming interconnections — Number of outgoing interconnections — Data length of all incoming interconnections, max. 	<p>500 ms</p> <p>100</p> <p>100</p> <p>2 000 byte</p>

— Data length of all outgoing interconnections, max.	2 000 byte
— Data length per connection, max.	1 400 byte
performance data / PROFINET CBA / remote interconnection / with cyclic transfer / header	
— Transmission frequency: Transmission interval, min.	10 ms
— Number of incoming interconnections	200
— Number of outgoing interconnections	200
— Data length of all incoming interconnections, max.	2 000 byte
— Data length of all outgoing interconnections, max.	2 000 byte
— 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 variables (PN OPC/iMap)	3; 2x PN OPC/1x 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	16
• usable for PG communication	15
— reserved for PG communication	1
— adjustable for PG communication, min.	1
— adjustable for PG communication, max.	15
• usable for OP communication	15
— reserved for OP communication	1
— adjustable for OP communication, min.	1
— adjustable for OP communication, max.	15
• usable for S7 basic communication	14
— reserved for S7 basic communication	0
— adjustable for S7 basic communication, min.	0
— adjustable for S7 basic communication, max.	14
• usable for S7 communication	14
— reserved for S7 communication	0
— adjustable for S7 communication, min.	0
— adjustable for S7 communication, max.	14
• total number of instances, max.	32
• usable for routing	X1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave (active): max. 14; X2 as PROFINET: 24 max.
S7 message functions	
Number of login stations for message functions, max.	16; Depending on the configured connections for PG/OP and S7 basic communication
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.	30
— of which status variables, max.	30
— of which control variables, max.	14
Forcing	
• Forcing	Yes

<ul style="list-style-type: none"> Forcing, variables Number of variables, max. 	Inputs, outputs 10
Diagnostic buffer	
<ul style="list-style-type: none"> present Number of entries, max. <ul style="list-style-type: none"> adjustable of which powerfail-proof Number of entries readable in RUN, max. <ul style="list-style-type: none"> adjustable preset 	Yes 500 No 100 499 Yes 10
Service data	
<ul style="list-style-type: none"> can be read out 	Yes
Isolation	
Isolation tested with	500V AC for 1 minute
Standards, approvals, certificates	
CE mark	Yes
UL approval	Yes; File E239877
RCM (formerly C-TICK)	Yes
KC approval	Yes
EAC (formerly Gost-R)	Yes
Use in hazardous areas	
<ul style="list-style-type: none"> ATEX 	Yes
Railway application	
<ul style="list-style-type: none"> EN 50155 	Yes; Sections 4, 5 and 12; no further agreements apply; T1, Category 1, Class A/B, EN 50155:2007
Ambient conditions	
Ambient temperature during operation	
<ul style="list-style-type: none"> min. max. 	-25 °C; = Tmin 60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155
Ambient temperature during storage/transportation	
<ul style="list-style-type: none"> min. max. 	-40 °C 70 °C
Altitude during operation relating to sea level	
<ul style="list-style-type: none"> Installation altitude above sea level, max. Ambient air temperature-barometric pressure-altitude 	2 000 m Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
<ul style="list-style-type: none"> With condensation, tested in accordance with IEC 60068-2-38, max. 	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Use in stationary industrial systems	
<ul style="list-style-type: none"> to biologically active substances according to EN 60721-3-3 to chemically active substances according to EN 60721-3-3 to mechanically active substances according to EN 60721-3-3 	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles	
<ul style="list-style-type: none"> to biologically active substances according to EN 60721-3-5 to chemically active substances according to EN 60721-3-5 to mechanically active substances according to EN 60721-3-5 	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); * Yes; Class 5S3 incl. sand, dust; *
Remark	
<ul style="list-style-type: none"> Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04 	* The supplied plug covers must remain in place over the unused interfaces during operation!
configuration / header	
Configuration software	
<ul style="list-style-type: none"> STEP 7 	Yes; V5.5 or higher

configuration / programming / header	
• 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
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