

SIPLUS S7-300 CPU 315F-2DP with conformal coating according to EN 50155 T1 Cat 1 CI A/ B based on 6ES7315-6FF04-0ab0 . Fail-safe module with MPI Integr. power supply 24 V DC, Work memory 384 KB, 40 mm width, 2nd interface DP master/ slave Micro Memory Card required



Figure similar

General information	
Product function	
• Isochronous mode	Yes
Engineering with	
• Programming package	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.2 + SP1 or higher with HSP 218 + Distributed Safety
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes; A power supply according to EN 50155 shall be used
permissible range, lower limit (DC)	19.2 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)	850 mA
Current consumption (in no-load operation), typ.	150 mA
Inrush current, typ.	3.5 A
I ² t	1 A ² ·s

Power loss

Power loss, typ.	4.5 W
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Memory

Work memory

• integrated	384 kbyte
• expandable	No
• Size of retentive memory for retentive data blocks	128 kbyte

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.	0.05 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.
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DB

• Number, max.	1 024; Number range: 1 to 16000
• Size, max.	64 kbyte

FB

• Number, max.	1 024; Number range: 0 to 7999
• Size, max.	64 kbyte

FC

• Number, max.	1 024; Number range: 0 to 7999
• Size, max.	64 kbyte

OB

• Description	see instruction list
• Size, max.	64 kbyte
• Number of free cycle OBs	1; OB 1

- Number of time alarm OBs 1; OB 10
- Number of delay alarm OBs 2; OB 20, 21
- Number of cyclic interrupt OBs 4; OB 32, 33, 34, 35
- Number of process alarm OBs 1; OB 40
- Number of DPV1 alarm OBs 3; OB 55, 56, 57
- Number of isochronous mode OBs 1; OB 61
- Number of startup OBs 1; OB 100
- Number of asynchronous error OBs 5; OB 80, 82, 85, 86, 87
- Number of synchronous error OBs 2; OB 121, 122

Nesting depth

- per priority class 16
- additional within an error OB 4

Counters, timers and their retentivity

S7 counter

- Number 256

Retentivity

- adjustable Yes
- lower limit 0
- upper limit 255
- preset Z 0 to Z 7

Counting range

- adjustable Yes
- lower limit 0
- upper limit 999

IEC counter

- present Yes
- Type SFB
- Number Unlimited (limited only by RAM capacity)

S7 times

- Number 256

Retentivity

- adjustable Yes
- lower limit 0
- upper limit 255
- 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)

Data areas and their retentivity

retentive data area in total	all, 128 KB max.
Flag	
• Number, max.	2 048 byte
• Retentivity available	Yes; MB 0 to MB 2 047
• Retentivity preset	MB 0 to MB 15
• Number of clock memories	8; 1 memory byte
Data blocks	
• Retentivity adjustable	Yes; via non-retain property on DB
• Retentivity preset	Yes
Local data	
• per priority class, max.	32 kbyte; Max. 2 KB per block
Address area	
I/O address area	
• Inputs	2 048 byte
• Outputs	2 048 byte
of which distributed	
— Inputs	2 048 byte
— Outputs	2 048 byte
Process image	
• Inputs	2 048 byte
• Outputs	2 048 byte
• Inputs, adjustable	2 048 byte
• Outputs, adjustable	2 048 byte
• Inputs, default	384 byte
• Outputs, default	384 byte
Subprocess images	
• Number of subprocess images, max.	1
Digital channels	
• Inputs	16 384
— of which central	1 024
• Outputs	16 384
— of which central	1 024
Analog channels	
• Inputs	1 024
— of which central	256
• Outputs	1 024
— 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)	
• FM	8
• CP, PtP	8
• CP, LAN	10
Rack	
• Racks, max.	4
• Modules per rack, max.	8
Time of day	
Clock	
• Hardware clock (real-time)	Yes
• retentive and synchronizable	Yes
• Backup time	6 wk; At 40 °C ambient temperature
• Deviation per day, max.	10 s; Typ.: 2 s
• Behavior of the clock following expiry of backup period	Clock continues to run with the time at which the power failure occurred
Operating hours counter	
• Number	1
• Number/Number range	0
• Range of values	0 to 2 ³¹ hours (when using SFC 101)
• Granularity	1 h
• 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
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	0
Number of PROFINET interfaces	0
Number of RS 485 interfaces	2
Number of RS 422 interfaces	0

1. Interface

Interface type	Integrated RS 485 interface
Physics	RS 485
Isolated	No
Power supply to interface (15 to 30 V DC), max.	200 mA

Protocols

• MPI	Yes
• PROFIBUS DP master	No
• PROFIBUS DP slave	No
• Point-to-point connection	No

MPI

• Transmission rate, max.	187.5 kbit/s
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Services

— PG/OP communication	Yes
— Routing	Yes
— Global data communication	Yes
— S7 basic communication	Yes
— S7 communication	Yes
— S7 communication, as client	No
— S7 communication, as server	Yes

2. Interface

Interface type	Integrated RS 485 interface
Physics	RS 485
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	200 mA

Protocols

• MPI	No
• PROFIBUS DP master	Yes
• PROFIBUS DP slave	Yes
• Point-to-point connection	No

PROFIBUS DP master

• Transmission rate, max.	12 Mbit/s
• Number of DP slaves, max.	124; Per station

Services

— 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	Yes; OB 61
— SYNC/FREEZE	Yes
— Activation/deactivation of DP slaves	Yes
— Number of DP slaves that can be simultaneously activated/deactivated, max.	8
— DPV1	Yes
Address area	
— Inputs, max.	2 048 byte
— Outputs, max.	2 048 byte
User data per DP slave	
— Inputs, max.	244 byte
— Outputs, max.	244 byte
PROFIBUS DP slave	
• GSD file	The latest GSD file is available at: http://www.siemens.com/profibus-gsd
• 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; Only server, configured on one side
— S7 communication, as client	No
— S7 communication, as server	Yes
— Direct data exchange (slave-to-slave communication)	Yes
— DPV1	No
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes

Communication functions	
PG/OP communication	Yes
Data record routing	Yes
Global data communication	
<ul style="list-style-type: none"> supported 	Yes
<ul style="list-style-type: none"> Number of GD loops, max. 	8
<ul style="list-style-type: none"> Number of GD packets, max. 	8
<ul style="list-style-type: none"> Number of GD packets, transmitter, max. 	8
<ul style="list-style-type: none"> Number of GD packets, receiver, max. 	8
<ul style="list-style-type: none"> Size of GD packets, max. 	22 byte
<ul style="list-style-type: none"> Size of GD packet (of which consistent), max. 	22 byte
S7 basic communication	
<ul style="list-style-type: none"> supported 	Yes
<ul style="list-style-type: none"> User data per job, max. 	76 byte
<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> supported 	Yes
<ul style="list-style-type: none"> as server 	Yes
<ul style="list-style-type: none"> as client 	Yes; Via CP and loadable FB
<ul style="list-style-type: none"> User data per job, max. 	180 byte; With PUT/GET
<ul style="list-style-type: none"> User data per job (of which consistent), max. 	240 byte; as server
S5 compatible communication	
<ul style="list-style-type: none"> supported 	Yes; via CP and loadable FC
Number of connections	
<ul style="list-style-type: none"> overall 	16
<ul style="list-style-type: none"> usable for PG communication 	15
<ul style="list-style-type: none"> — reserved for PG communication 	1
<ul style="list-style-type: none"> — adjustable for PG communication, min. 	1
<ul style="list-style-type: none"> — adjustable for PG communication, max. 	15
<ul style="list-style-type: none"> usable for OP communication 	15
<ul style="list-style-type: none"> — reserved for OP communication 	1
<ul style="list-style-type: none"> — adjustable for OP communication, min. 	1
<ul style="list-style-type: none"> — adjustable for OP communication, max. 	15
<ul style="list-style-type: none"> usable for S7 basic communication 	12
<ul style="list-style-type: none"> — reserved for S7 basic communication 	0
<ul style="list-style-type: none"> — adjustable for S7 basic communication, min. 	0
<ul style="list-style-type: none"> — adjustable for S7 basic communication, max. 	12
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
• Forcing, variables	Inputs, outputs
• Number of variables, max.	10

Diagnostic buffer

• 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.	Yes; From 10 to 499
— adjustable	Yes; From 10 to 499
— preset	10

Isolation

Isolation tested with	500V AC for 1 minute
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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

• ATEX	Yes
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Railway application

• EN 50155	Yes; Sections 4, 5 and 12; no further agreements apply; T1, Category 1, Class A/B, EN 50155:2007
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Ambient conditions

Ambient temperature during operation	
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• 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
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
• 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	
— to biologically 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
— 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 EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles	
— to biologically 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
— 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 EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
Remark	
— 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	
Configuration software	
• STEP 7	Yes; V5.2 SP1 or higher with HW update
Programming	
• 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
- SCL
- CFC
- GRAPH
- HiGraph®

Yes
 Yes
 Yes
 Yes
 Yes

Know-how protection

- User program protection/password protection
- Block encryption

Yes
 Yes; With S7 block Privacy

Dimensions

Width	40 mm
Height	125 mm
Depth	130 mm

Weights

Weight, approx.	290 g
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