SIEMENS

Product data sheet 6AG1151-8FB01-2AB0

SIPLUS ET200S IM151-8F PN/DP -25 ... +60 DEGREES C WITH CONFORMAL COATING BASED ON 6ES7151-8FB01 -0AB0 . CPU FOR ET200S,
256 KB WORKING MEMORY,
INT. PROFINET INTERFACE (WITH THREE RJ45 PORTS) AS IO-CONTROLLER,
W/O BATTERY MMC REQUIRED

General information	
Hardware product version	01
Firmware version	V3.2
Engineering with	
Programming package	STEP 7 V 5.5 or higher, Distributed Safety V 5.4 SP4
Supply voltage	
24 V DC	Yes
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes ; against destruction
External protection for supply cables (recommendation)	24 V DC/16 A miniature circuit breaker with type B and C tripping characteristics. Note: A 24 V DC/16 A miniature circuit breaker with type B tripping characteristics trips before and with type C tripping characteristic after the device protection fuse.
Mains buffering	
Mains/voltage failure stored energy time	5 ms
Input current	
Inrush current, max.	1.8 A ; typ.
I^2t	0.13 $A^2 \cdot s$
from supply voltage 1L+, max.	352 mA ; 426 mA with DP master module
Output current	
Current output to backplane bus (DC 5 V), max.	700 mA
Power losses	
Power loss, typ.	5.5 W
Memory	
Work memory	
integrated	256 kbyte ; For program and data
expandable	No
Size of retentive memory for retentive data blocks	64 kbyte

Load memory	
pluggable (MMC)	Yes
pluggable (MMC), max.	8 Mbyte
Data management on MMC (after last programming), min.	10 a
Backup	
present	Yes ; Ensured by SIMATIC Micro Memory Card (maintenance-free)
CPU processing times	
for bit operations, typ.	0.06 µs
for word operations, typ.	0.12 µs
for fixed point arithmetic, typ.	0.16 µs
for floating point arithmetic, typ.	0.59 µs
CPU-blocks	
Number of blocks (total)	1024 ; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used.
DB	
Number, max.	1024 ; Number range: 1 to 16000
Size, max.	64 kbyte
FB	
Number, max.	1024 ; Number range: 0 to 7999
Size, max.	64 kbyte
FC	
Number, max.	1024 ; Number range: 0 to 7999
Size, max.	64 kbyte
OB	
Description	See S7-300 operation 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 time 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 isochronous mode OBs	1 ; OB 61; only for PROFINET
Number of startup OBs	1 ; OB 100
Number of asynchronous error OBs	6 ; OB 80, 82, 83, 85, 86, 87 (OB83 only for centralized I/O and PROFINET IO)
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	9990 s
IEC timer	
present	Yes
Type	SFB
Number	Unlimited (limited only by RAM capacity)
Data areas and their retentivity	
Flag	
Number, max.	256 byte
Retentivity available	Yes
Retentivity preset	MB 0 to MB 15
Number of clock memories	8 ; 1 memory byte
Data blocks	

Number, max.	1024 ; Number range: 1 to 16000
Size, max.	64 kbyte
Retentivity adjustable	Yes ; via non-retain property on DB
Retentivity preset	Yes
Local data	
per priority class, max.	32768 byte ; Max. 2048 bytes per block
Address area	
I/O address area	
Inputs	2048 byte
Outputs	2048 byte
of which, distributed	
Inputs	2048 byte
Outputs	2048 byte
Process image	
Inputs, adjustable	2048 byte
Outputs, adjustable	2048 byte
Inputs, default	128 byte
Outputs, default	128 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	16336
Outputs	16336
Inputs, of which central	496
Outputs, of which central	496
Analog channels	
Inputs	1021
Outputs	1021
Inputs, of which central	124
Outputs, of which central	124
Hardware configuration	
Number of mounting rails that can be used	1
Max. length of mounting rail	Station width: <= 1 m or < 2 m
Number of modules per system, max.	63 ; Centralized
Time of day	
Clock	
Hardware clock (real-time clock)	Yes
battery-backed and synchronizable	Yes

Deviation per day, max.	10 s ; Typ.: 2 s
Backup time	6 wk ; At 40 °C ambient temperature, typically
Behavior of the clock following POWER-ON	Clock continues running after POWER OFF
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 hour
retentive	Yes ; Must be restarted at each restart
Clock synchronization	
supported	Yes
to MPI, master	No
to MPI, slave	No
to DP, master	Yes ; With DP master module
to DP, slave	Yes ; With DP master module
in AS, master	No
in AS, slave	No
on Ethernet via NTP	Yes ; as client
Interfaces	
Supports protocol for PROFINET IO	
Number of PROFINET interfaces	1
WLAN	
Number of wireless interfaces	0
1st interface	
Type of interface	PROFINET
Physics	Ethernet
Isolated	Yes
Integrated switch	Yes
Number of ports	3 ; RJ45
Automatic detection of transmission speed	Yes
Autonegotiation	Yes
Autocrossing	Yes
Change of IP address at runtime, supported	Yes
Media redundancy	
supported	Yes
Switchover time on line break, typically	200 ms ; PROFINET MRP
Number of stations in the ring, max.	50

Functionality	
MPI	No
DP master	No
DP slave	No
PROFINET IO Device	Yes ; Also simultaneously with IO Controller functionality
PROFINET IO Controller	Yes ; Also simultaneously with IO-Device functionality
PROFINET CBA	Yes
Open IE communication	Yes
Web server	Yes
Number of HTTP clients	5
Point-to-point connection	No
PROFINET IO Controller	
Transmission rate, max.	100 Mbit/s ; full duplex
Number of connectable IO devices, max.	128
Max. number of connectable IO devices for RT	128
of which in line, max.	128
Number of IO devices with IRT and the option "high flexibility"	128
of which in line, max.	61
Number of IO Devices with IRT and the option "high performance", max.	64
of which in line, max.	64
IRT, supported	Yes
Shared device, supported	Yes
Prioritized startup supported	Yes
Number of IO Devices, max.	32
Activation/deactivation of IO Devices	Yes
Maximum number of IO devices that can be activated/deactivated at the same time.	8
IO Devices changing during operation (partner ports), supported	Yes
Max. number of IO devices per tool	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	Minimum value depends on communication share set for PROFINET I/O, on the number of I/O devices, and on the number of configured user data items.
Updating times	250 µs to 512 ms (depends on operating mode; for more details, refer to Operating Instructions, "Interface Module IM151-8 PN/DP CPU")
Services	
PG/OP communication	Yes

Routing	Yes ; With DP master module
S7 communication	Yes ; with loadable FBs
Isochronous mode	Yes ; OB 61; only for PROFINET IO
Open IE communication	Yes ; Via TCP/IP, ISO on TCP, and UDP
Address area	
Inputs, max.	2 kbyte
Outputs, max.	2 kbyte
User data consistency, max.	1024 byte ; with PROFINET I/O
PROFINET IO Device	
Services	
PG/OP communication	Yes
Routing	Yes
S7 communication	Yes ; with loadable FBs
Isochronous mode	No
Open IE communication	Yes ; Via TCP/IP, ISO on TCP, and UDP
IRT, supported	Yes
PROFIenergy, supported	Yes ; With SFB 73 / 74 prepared for loadable PROFIenergy standard FB for I-Device
Shared device, supported	Yes
Number of IO controllers with shared device, max.	2
Transfer memory	
Inputs, max.	1440 byte ; Per IO Controller with shared device
Outputs, max.	1440 byte ; Per IO Controller with shared device
Submodules	
Number, max.	64
User data per submodule, max.	1024 byte
PROFINET CBA	
acyclic transmission	Yes
Cyclic transmission	Yes
Open IE communication	
Open IE communication, supported	Yes ; Via TCP/IP, ISO on TCP, and UDP
Number of connections, max.	8
Local port numbers used at the system end	0, 20, 21, 23, 25, 80, 102, 135, 161, 8080, 34962, 34963, 34964, 65532, 65533, 65534, 65535
2nd interface	
Type of interface	External interface via master module 6ES7138-4HA00-0AB0
Physics	RS 485
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	No

Functionality	
MPI	No
DP master	Yes
DP slave	No
PROFINET IO Controller	No
PROFINET IO Device	No
PROFINET CBA	No
Open IE communication	No
Web server	No
DP master	
Transmission rate, max.	12 Mbit/s
Number of DP slaves, max.	32 ; 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 mode support	Yes
Isochronous mode	No
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
DPV1	Yes
Address area	
Inputs, max.	2048 byte
Outputs, max.	2048 byte
User data per DP slave	
Inputs, max.	244 byte
Outputs, max.	244 byte
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	No
Communication functions	
PG/OP communication	Yes
Data record routing	Yes ; With DP master module

Global data communication	
supported	No
S7 basic communication	
supported	Yes ; I blocks
User data per job, max.	76 byte
User data per job (of which consistent), max.	76 byte
S7 communication	
supported	Yes
as server	Yes
as client	Yes ; via integrated PN interface and loadable FBs
User data per job, max.	See online help of STEP 7 (shared parameters of the SFBs/FBs and of the SFCs/FCs of S7 Communication)
Open IE communication	
TCP/IP	Yes ; via integrated PROFINET interface and loadable FBs
Number of connections, max.	8
Data length for connection type 01H, max.	1460 byte
Data length for connection type 11H, max.	32768 byte
Several passive connections per port, supported	Yes
ISO-on-TCP (RFC1006)	Yes ; via integrated PROFINET interface and loadable FBs
Number of connections, max.	8
Data length, max.	32768 byte
UDP	Yes ; via integrated PROFINET interface and loadable FBs
Number of connections, max.	8
Data length, max.	1472 byte
Web server	
supported	Yes
Number of HTTP clients	5
User-defined websites	Yes
PROFINET CBA (at set setpoint communication load)	
Setpoint for the CPU communication load	50 %
Number of remote interconnection partners	32
Number of functions, master/slave	30
Total of all Master/Slave connections	1000
Data length of all incoming connections master/slave, max.	4000 byte
Data length of all outgoing connections master/slave, max.	4000 byte
Number of device-internal and PROFIBUS interconnections	500
Data length of device-internal und PROFIBUS interconnections, max.	4000 byte
Data length per connection, max.	1400 byte

Remote interconnections with acyclic transmission	
Sampling frequency: Sampling time, min.	500 ms
Number of incoming interconnections	100
Number of outgoing interconnections	100
Data length of all incoming interconnections, max.	2000 byte
Data length of all outgoing interconnections, max.	2000 byte
Data length per connection, max.	1400 byte
Remote interconnections with cyclic transmission	
Transmission frequency: Transmission interval, min.	1 ms
Number of incoming interconnections	200
Number of outgoing interconnections	200
Data length of all incoming interconnections, max.	2000 byte
Data length of all outgoing interconnections, max.	2000 byte
Data length per connection, max.	450 byte
HMI variables via PROFINET (acyclic)	
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.	2000 byte
PROFIBUS proxy functionality	
supported	Yes
Number of linked PROFIBUS devices	16
Data length per connection, max.	240 byte ; Slave-dependent
iPAR server	
supported	Yes
Number of connections	
overall	12
usable for PG communication	11
reserved for PG communication	1
Adjustable for PG communication, min.	1
Adjustable for PG communication, max.	11
usable for OP communication	11
reserved for OP communication	1
adjustable for OP communication, min.	1
adjustable for OP communication, max.	11
usable for S7 basic communication	10
Reserved for S7 basic communication	0
adjustable for S7 basic communication, min.	0

adjustable for S7 basic communication, max.	10
usable for S7 communication	10 ; with loadable FBs
Adjustable for S7 communication, max.	10
Max. total number of instances	32
usable for routing	4 ; max.
S7 message functions	
Number of login stations for message functions, max.	12 ; Depending on the configured connections for PG/OP and S7 basic communication
Process diagnostic messages	Yes ; ALARM_S, ALARM_SC, ALARM_SQ, ALARM_D, ALARM_DQ
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
Force, variables	I/O
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
Interrupts/diagnostics/status information	
Alarms	
Alarms	Yes
Diagnostic messages	
Diagnostic functions	Yes
Diagnostics indication LED	
Bus activity PROFINET P1-LINK (green)	Yes
Bus activity PROFINET P2-LINK (green)	Yes
Bus activity PROFINET P3-LINK (green)	Yes
Bus error (red)	Yes

Maintenance information MT (yellow)	Yes
Group error SF (red)	Yes
Monitoring 24 V voltage supply ON (green)	Yes
Galvanic isolation	
between PROFIBUS DP and all other circuit components	Yes
Permissible potential difference	
between different circuits	75 VDC / 60 VAC
Isolation	
Isolation checked with	500 V DC
Degree and class of protection	
Type of protection	IP20
Standards, approvals, certificates	
CE mark	Yes
C-TICK	Yes
Ambient conditions	
Operating temperature	
Min.	-25 °C ; = Tmin
max.	60 °C ; = Tmax
Extended ambient conditions	
Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)
Relative humidity	
with condensation / maximum	100 % ; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
to biologically active substances / conformity with EN 60721-3-3	Yes
to chemically active substances / conformity with EN 60721-3-3	Yes
to mechanically active substances / conformity with EN 60721-3-3	Yes ; Available soon
Configuration	
Configuration software	
STEP 7	Yes ; V5.5 or higher
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	Yes
SCL	Yes ; optional
CFC	Yes ; optional
GRAPH	Yes ; optional
HiGraph®	Yes ; optional
Know-how protection	
User program protection/password protection	Yes
Block encryption	Yes ; With S7 block Privacy
Cycle time monitoring	
lower limit	1 ms
upper limit	6000 ms
adjustable	Yes
preset	150 ms
Dimensions	
Width	120 mm ; DP master module: 35 mm
Height	119.5 mm
Depth	75 mm
Weight	
Weight, approx.	320 g ; DP master module: Approx. 100 g
Status	Jul 22, 2013