SIEMENS

Data sheet

6AG1151-7AA20-7AB0

Spare part SIPLUS ET 200S IM 151-7 CPU -25...+70°C based on 6ES7151-7AA20-0AB0



Figure similar

General information	
HW functional status	01
Firmware version	V2.6
Engineering with	
Programming package	STEP 7 V5.2 + SP1 or higher with HW update
Supply voltage	
Load voltage L+	
Rated value (DC)	24 V
 permissible range, lower limit (DC) 	20.4 V
 permissible range, upper limit (DC) 	28.8 V
Short-circuit protection	Yes
Reverse polarity protection	Yes
Input current	
from supply voltage 1L+, max.	250 mA; 280 mA with DP master module
Output current	
for backplane bus (5 V DC), max.	700 mA

Power loss	
Power loss, typ.	3.3 W
Memory	
Work memory	
• integrated	96 kbyte; For program and data
• expandable	No
Load memory	
• Plug-in (MMC)	Yes
Plug-in (MMC), max.	8 Mbyte
 Data management on MMC (after last 	10 y
programming), min.	
Backup	
• present	Yes; Guaranteed by MMC (maintenance-free)
CPU processing times	
for bit operations, typ.	0.1 μs
for word operations, typ.	0.2 μs
for fixed point arithmetic, typ.	2 µs
for floating point arithmetic, typ.	3 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	
• Number, max.	511; Number range: 1 to 511
● Size, max.	16 kbyte
FB	
Number, max.	1 024; Number range: 0 to 2047
● Size, max.	16 kbyte
FC	
Number, max.	1 024; Number range: 0 to 2047
• Size, max.	16 kbyte
ОВ	
• Size, max.	16 kbyte
 Number of free cycle OBs 	1; OB 1
 Number of time alarm OBs 	1; OB 10
Number of delay alarm OBs	1; OB 20
 Number of cyclic interrupt OBs 	1; OB 35
 Number of process alarm OBs 	1; OB 40
 Number of DPV1 alarm OBs 	3; OB 55, 56, 57
Number of startup OBs	1; OB 100
Number of asynchronous error OBs	6; OB 80, 82, 83, 85, 86, 87
Nesting depth	

• per priority class	8
additional within an error OB	4

### ST counter Number 256 Retentivity		
Retentivity	Counters, timers and their retentivity	
Retentivity - adjustable Yes - lower limit 0 - upper limit 255 - preset Z 0 to Z 7 Counting range - adjustable Yes - lower limit 0 - upper limit 9999 IEC counter • present Yes • Number Vulnimited (limited only by RAM capacity) 57 times • Number Z56 Retentivity - adjustable Yes - lower limit 0 - upper limit 0 - upper limit 0 - upper limit 255 - preset No retentivity Time range - lower limit 10 ms - upper limit 9 9 990 s IEC timer • present Yes - Type SFB - Number Nortentivity		250
- 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 • Number SFB • Number 256 Retentivity - adjustable Yes - lower limit 0 - upper limit 9 10 10 10 10 10 10 10		250
— lower limit — upper limit — upper limit — preset — 255 — preset — adjustable — lower limit — upper limit — upper limit — upper limit — present — Fresent — Yes — Number — Number — Number — Adjustable — lower limit — upper limit — Present — Yes — Number — Number — Number — Number — Number — adjustable — lower limit — upper		
upper limit		
Counting range		
Counting range - adjustable Yes - lower limit 0 - upper limit 999 IEC counter • present Yes • Number 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 • Number IEC timer • present Yes • Number Unlimited (limited only by RAM capacity)	— upper limit	
— adjustable Yes — lower limit 0 — upper limit 999 IEC counter Yes ● present Yes ● Type SFB ● Number Unlimited (limited only by RAM capacity) S7 times S7 times ● Number 256 Retentivity Yes — lower limit 0 — upper limit 255 — preset No retentivity Time range Iower limit — lower limit 10 ms — upper limit 9 990 s IEC timer Yes ● present Yes ● Number Unlimited (limited only by RAM capacity)		Z 0 to Z 7
lower 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 • Number IEC timer • present • Type • Number Unlimited (limited only by RAM capacity)	Counting range	
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- lower limit 0 - upper limit 255 - preset No retentivity Time range - lower limit 10 ms - upper limit 9 990 s IEC timer • present • Type • Number Data areas and their retentivity	Retentivity	
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Data areas and their retentivity	• Type	SFB
	• Number	Unlimited (limited only by RAM capacity)
	Data areas and their retentivity	
	· · · · · · · · · · · · · · · · · · ·	64 kbyte
max.		
Flag	Flag	
• Number, max. 256 byte	Number, max.	256 byte
Retentivity available Yes	Retentivity available	Yes
Retentivity preset MB 0 to MB 15	 Retentivity preset 	MB 0 to MB 15
Number of clock memories 8; 1 memory byte	 Number of clock memories 	8; 1 memory byte
Local data	Local data	

• per priority class, max.	510 byte
Address area	
I/O address area	
• Inputs	2 048 byte
Outputs	2 048 byte
Process image	
• Inputs	128 byte; Not adjustable
Outputs	128 byte; Not adjustable
Digital channels	
• Inputs	16 336
— of which central	248
Outputs	16 336
— of which central	248
Analog channels	
• Inputs	1 021
— of which central	124
Outputs	1 021
— of which central	124
Hardware configuration	
Number of modules per system, max.	63; Centralized
Number of modules per system, max. Time of day	63; Centralized
	63; Centralized
Time of day	Yes
Time of day Clock	Yes Yes
Time of day Clock • Hardware clock (real-time)	Yes
Time of day Clock • Hardware clock (real-time) • retentive and synchronizable	Yes Yes
Time of day Clock • Hardware clock (real-time) • retentive and synchronizable • Backup time	Yes Yes 6 wk; At 40 °C ambient temperature, typically
Time of day Clock • Hardware clock (real-time) • retentive and synchronizable • Backup time • Deviation per day, max.	Yes Yes 6 wk; At 40 °C ambient temperature, typically
Time of day Clock • Hardware clock (real-time) • retentive and synchronizable • Backup time • Deviation per day, max. Operating hours counter	Yes Yes 6 wk; At 40 °C ambient temperature, typically 10 s
Time of day Clock • Hardware clock (real-time) • retentive and synchronizable • Backup time • Deviation per day, max. Operating hours counter • Number	Yes Yes 6 wk; At 40 °C ambient temperature, typically 10 s
Time of day Clock • Hardware clock (real-time) • retentive and synchronizable • Backup time • Deviation per day, max. Operating hours counter • Number • Number Number range	Yes Yes 6 wk; At 40 °C ambient temperature, typically 10 s
Time of day Clock • Hardware clock (real-time) • retentive and synchronizable • Backup time • Deviation per day, max. Operating hours counter • Number • Number • Number/Number range • Range of values	Yes Yes 6 wk; At 40 °C ambient temperature, typically 10 s 1 0 0 to 2^31 hours (when using SFC 101)
Time of day Clock • Hardware clock (real-time) • retentive and synchronizable • Backup time • Deviation per day, max. Operating hours counter • Number • Number/Number range • Range of values • Granularity	Yes Yes 6 wk; At 40 °C ambient temperature, typically 10 s 1 0 0 to 2^31 hours (when using SFC 101) 1 h Yes; Must be restarted at each restart
Time of day Clock • Hardware clock (real-time) • retentive and synchronizable • Backup time • Deviation per day, max. Operating hours counter • Number • Number • Range of values • Granularity • retentive	Yes Yes 6 wk; At 40 °C ambient temperature, typically 10 s 1 0 0 to 2^31 hours (when using SFC 101) 1 h Yes; Must be restarted at each restart Yes
Time of day Clock	Yes Yes 6 wk; At 40 °C ambient temperature, typically 10 s 1 0 0 to 2^31 hours (when using SFC 101) 1 h Yes; Must be restarted at each restart Yes Yes
Time of day Clock Hardware clock (real-time) retentive and synchronizable Backup time Deviation per day, max. Operating hours counter Number Number Range of values Granularity retentive Clock synchronization supported	Yes Yes 6 wk; At 40 °C ambient temperature, typically 10 s 1 0 0 to 2^31 hours (when using SFC 101) 1 h Yes; Must be restarted at each restart Yes
Time of day Clock	Yes Yes 6 wk; At 40 °C ambient temperature, typically 10 s 1 0 0 to 2^31 hours (when using SFC 101) 1 h Yes; Must be restarted at each restart Yes Yes
Time of day Clock Hardware clock (real-time) retentive and synchronizable Backup time Deviation per day, max. Operating hours counter Number Number/Number range Range of values Granularity retentive Clock synchronization supported to MPI, master to MPI, slave	Yes Yes 6 wk; At 40 °C ambient temperature, typically 10 s 1 0 0 to 2^31 hours (when using SFC 101) 1 h Yes; Must be restarted at each restart Yes Yes Yes
Time of day Clock	Yes Yes 6 wk; At 40 °C ambient temperature, typically 10 s 1 0 0 to 2^31 hours (when using SFC 101) 1 h Yes; Must be restarted at each restart Yes Yes Yes Yes Yes

Interfaces/bus type Number of industrial Ethernet interfaces 0 Number of PROFINET interfaces 0 Number of PROFINET interfaces 0 Interface Interface type Interface type Physics Isolated Yes Isolated Yes Power supply to interface (15 to 30 V DC), max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave Point-to-point connection No MPI • Number of connections • Transmission rate, max. Services — PG/OP communication — S7 communication — S7 communication — S7 communication, as client — S7 communication, as server PROFIBUS DP slave • Number of connections • Transmission rate, max. 12 Mbit/s Services — PG/OP communication — S7 communication, as server PROFIBUS DP slave • Number of connections • Transmission rate, max. 12 Mbit/s PROFIBUS DP slave • Number of connections • Transmission rate, max. 12 Mbit/s PROFIBUS DP slave • Number of connections • Transmission rate, max. • Automatic baud rate search • Address area, max. • User data per address area, max. • User data per address area, max. 9 User data per add	Interfaces	
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Number of wireless interfaces	Number of industrial Ethernet interfaces	0
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Power supply to interface (15 to 30 V DC), max. 80 mA	Interface type	Integrated RS 485 interface
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 — S7 communication, as client — S7 communication, as server — Direct data exchange (slave-to-slave communication) — DPV1 No 	Services	
 — S7 communication, as server — Direct data exchange (slave-to-slave communication) — DPV1 Yes Yes Yes Yes No 	— Routing	Yes; Only when interface active and in master mode
 S7 communication, as server Direct data exchange (slave-to-slave communication) DPV1 Yes Yes Yes Yes No 	 S7 communication, as client 	No
 — Direct data exchange (slave-to-slave communication) — DPV1 No 		Yes
— DPV1 No	— Direct data exchange (slave-to-slave	Yes
Transfer memory		No
	Transfer memory	

— Inputs	244 byte
— Outputs	244 byte
2. Interface	
Interface type	External interface via master module 6ES7138-4HA00-0AB0
Physics	RS 485
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	No
Protocols	
• MPI	No
 PROFIBUS DP master 	Yes
Point-to-point connection	No
PROFIBUS DP master	
Number of connections, max.	12; Notice: 12 connections per CPU, not per interface
• 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	Yes
— SYNC/FREEZE	Yes
 Activation/deactivation of DP slaves 	Yes
 Direct data exchange (slave-to-slave communication) 	Yes
— DPV1	Yes
Address area	
— Inputs, max.	2 kbyte
— Outputs, max.	2 kbyte
User data per DP slave	
— Inputs, max.	244 byte
— Outputs, max.	244 byte
Isochronous mode	
Isochronous operation (application synchronized up	No
to terminal)	
Communication functions	
PG/OP communication	Yes
Global data communication	

• supported	Yes
supportedNumber of GD packets, max.	4
·	4
Number of GD packets, transmitter, max.	4
Number of GD packets, receiver, max.	
• Size of GD packets, max.	22 byte
Size of GD packet (of which consistent), max.	22 byte
S7 basic communication	Vaa
• 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	No
 User data per job, max. 	180 byte
 User data per job (of which consistent), max. 	64 byte
S5 compatible communication	
• supported	No
Standard communication (FMS)	
• supported	No
Number of connections	
• overall	12
 usable for PG communication 	11
 reserved for PG communication 	1
 adjustable for PG communication, max. 	11
 usable for OP communication 	11
 reserved for OP communication 	1
 adjustable for OP communication, max. 	11
 usable for S7 basic communication 	10
 reserved for S7 basic communication 	0
 adjustable for S7 basic communication, 	10
max.	
usable for routing	4; As slave only with active interface, with IM 151-7 CPU as DP master
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.	40

Status block	Yes
	Yes
Single step Number of breakpoints	2
Status/control	۷
	Yes
Status/control variable	
• 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.	100
— adjustable	No
Potential separation	
between load voltage and all other switching	Yes
components	
between PROFIBUS DP and all other circuit	Yes
components	
Permissible potential difference	
between different circuits	75 V DC/60 V AC
Isolation	
Isolation tested with	500 V DC
Degree and class of protection	
IP degree of protection	IP20
Standards, approvals, certificates	
CE mark	Yes
Ambient conditions	
Ambient temperature during operation	
• min.	-25 °C; = Tmin
• max.	70 °C; = Tmax
Altitude during operation relating to sea level	
 Ambient air temperature-barometric pressure- altitude 	Tmin Tmax at 1 080 hPa 795 hPa (-1 000 m +2 000 m) // Tmin (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 60068-2-38, max. 	100 %; RH incl. condensation/frost permitted (no commissioning in bedewed state)
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 incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
 to mechanically active substances according to EN 60721-3-3 	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!
Configuration	
Configuration rules	max. 63 peripheral modules per station; station width < 1 m or < 2 m; max. 10 A per load group (power module); master interface module on right next to IM 151-7 CPU (X2 interface)
Configuration software	
• STEP 7	Yes
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
— GRAPH	Yes; Optional
Know-how protection	
User program protection/password protection	Yes
Cycle time monitoring	
• lower limit	1 ms
• upper limit	6 000 ms
• adjustable	Yes
• preset	150 ms
Dimensions	
Width	60 mm; DP master module: 35 mm
Height	119.5 mm
Depth	75 mm
Weights	

Weight, approx.

200 g; DP master module: Approx. 100 g

last modified: 04/09/2019