

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	
<ul style="list-style-type: none"> Programming package 	STEP 7 V5.2 + SP1 or higher with HW update
Supply voltage	
Load voltage L+	
<ul style="list-style-type: none"> Rated value (DC) 	24 V
<ul style="list-style-type: none"> permissible range, lower limit (DC) 	20.4 V
<ul style="list-style-type: none"> permissible range, upper limit (DC) 	28.8 V
<ul style="list-style-type: none"> Short-circuit protection 	Yes
<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> integrated 	96 kbyte; For program and data
<ul style="list-style-type: none"> expandable 	No
Load memory	
<ul style="list-style-type: none"> Plug-in (MMC) 	Yes
<ul style="list-style-type: none"> Plug-in (MMC), max. 	8 Mbyte
<ul style="list-style-type: none"> Data management on MMC (after last programming), min. 	10 y
Backup	
<ul style="list-style-type: none"> present 	Yes; Guaranteed by MMC (maintenance-free)
CPU processing times	
for bit operations, typ.	0.1 μ s
for word operations, typ.	0.2 μ s
for fixed point arithmetic, typ.	2 μ s
for floating point arithmetic, typ.	3 μ s
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. 	511; Number range: 1 to 511
<ul style="list-style-type: none"> Size, max. 	16 kbyte
FB	
<ul style="list-style-type: none"> Number, max. 	1 024; Number range: 0 to 2047
<ul style="list-style-type: none"> Size, max. 	16 kbyte
FC	
<ul style="list-style-type: none"> Number, max. 	1 024; Number range: 0 to 2047
<ul style="list-style-type: none"> Size, max. 	16 kbyte
OB	
<ul style="list-style-type: none"> Size, max. 	16 kbyte
<ul style="list-style-type: none"> Number of free cycle OBs 	1; OB 1
<ul style="list-style-type: none"> Number of time alarm OBs 	1; OB 10
<ul style="list-style-type: none"> Number of delay alarm OBs 	1; OB 20
<ul style="list-style-type: none"> Number of cyclic interrupt OBs 	1; OB 35
<ul style="list-style-type: none"> Number of process alarm OBs 	1; OB 40
<ul style="list-style-type: none"> Number of DPV1 alarm OBs 	3; OB 55, 56, 57
<ul style="list-style-type: none"> Number of startup OBs 	1; OB 100
<ul style="list-style-type: none"> 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

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	
— can be set	Yes
— lower limit	0
— upper limit	999
IEC counter	
• 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 (incl. timers, counters, flags), max.	64 kbyte
Flag	
• Number, max.	256 byte
• Retentivity available	Yes
• Retentivity preset	MB 0 to MB 15
• Number of clock memories	8; 1 memory byte
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
Time of day	
Clock	
• Hardware clock (real-time)	Yes
• retentive and synchronizable	Yes
• Backup time	6 wk; At 40 °C ambient temperature, typically
• Deviation per day, max.	10 s
Operating hours counter	
• Number	1
• Number/Number range	0
• Range of values	0 to 2 ³¹ hours (when using SFC 101)
• retentive	Yes; Must be restarted at each restart
Clock synchronization	
• supported	Yes
• to MPI, master	Yes
• to MPI, slave	Yes
• to DP, master	Yes
• to DP, slave	Yes
• in AS, master	No
• in AS, slave	No
Interfaces	
Interfaces/bus type	1 x MPI/PROFIBUS DP

Number of industrial Ethernet interfaces	0
Number of PROFINET interfaces	0
Number of wireless interfaces	0

1. Interface

Interface type	Integrated RS 485 interface
Physics	RS 485
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	80 mA

Functionality	
• MPI	Yes
• PROFIBUS DP master	No
• PROFIBUS DP slave	Yes; active / passive
• Point-to-point connection	No

MPI	
• Number of connections	12; Notice: 12 connections per CPU, not per interface
• Transmission rate, max.	12 Mbit/s

Services	
— PG/OP communication	Yes
— Routing	Yes; With master module
— Global data communication	Yes
— S7 basic communication	Yes
— S7 communication	Yes
— S7 communication, as client	No
— S7 communication, as server	Yes

DP slave	
• Number of connections	12; Notice: 12 connections per CPU, not per interface
• GSD file	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; Up to max. size of the transfer memory

Services	
— Routing	Yes; Only when interface active and in master mode
— 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

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
Functionality	
• MPI	No
• PROFIBUS DP master	Yes
• Point-to-point connection	No
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 to terminal)	No
Communication functions	
PG/OP communication	Yes
Global data communication	
• supported	Yes
• Number of GD packets, max.	4

• Number of GD packets, transmitter, max.	4
• Number of GD packets, receiver, max.	4
• 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	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, max.	10
• 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
Test commissioning functions	
Status block	Yes
Single step	Yes

Number of breakpoints	2
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.	100
— adjustable	No
Potential separation	
between load voltage and all other switching components	Yes
between PROFIBUS DP and all other circuit components	Yes
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)
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Configuration software

• STEP 7	Yes
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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
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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
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last modified: 05/16/2018