



Figure similar

\*\*\* spare part \*\*\* SIMATIC DP, IM151-8F PN/DP CPU for ET200S, 256 KB work memory, int. PROFINET interface (with three RJ45 ports) as IO Controller/I-device without battery, MMC required

General information	
HW functional status	01
Firmware version	V3.2
Product function	
• Isochronous mode	No
Engineering with	
• Programming package	as of STEP 7 V5.5, Distributed Safety V5.4 SP4 or as of STEP 7 TIA Portal V11
Supply voltage	
Rated value (DC)	24 V
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 power supply lines (recommendation)	2 A min.
Mains buffering	
• Mains/voltage failure stored energy time	5 ms
Input current	
Inrush current, typ.	1.8 A
$I^2t$	0.13 A <sup>2</sup> ·s
from supply voltage 1L+, max.	352 mA; 426 mA with DP master module
Output current	
for backplane bus (5 V DC), max.	700 mA
Power loss	
Power loss, typ.	5.5 W
Memory	
Work memory	
• integrated	256 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 programming), min.	10 a
Backup	
• present	Yes; Ensured by SIMATIC Micro Memory Card (maintenance-free)
CPU processing times	
for bit operations, typ.	0.06 $\mu$ s
for word operations, typ.	0.12 $\mu$ s
for fixed point arithmetic, typ.	0.16 $\mu$ s

for floating point arithmetic, typ.	0.59 $\mu$ s
<b>CPU-blocks</b>	
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.	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	
● Number, max.	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 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; 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
<b>Counters, timers and their retentivity</b>	
S7 counter	
● Number	256
Retentivity	
— adjustable	Yes
— 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
— 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)
<b>Data areas and their retentivity</b>	
Retentive data area (incl. timers, counters, flags), max.	64 kbyte
Flag	
● Size, max.	256 byte
● Retentivity available	Yes
● Retentivity preset	MB 0 to MB 15

• Number of clock memories	8; 1 memory byte
<b>Data blocks</b>	
• Retentivity adjustable	Yes; via non-retain property on DB
• Retentivity preset	Yes
<b>Local data</b>	
• per priority class, max.	32 768 byte; Max. 2048 bytes per block
<b>Address area</b>	
<b>I/O address area</b>	
• Inputs	2 048 byte
• Outputs	2 048 byte
<b>of which distributed</b>	
— Inputs	2 048 byte
— Outputs	2 048 byte
<b>Process image</b>	
• Inputs, adjustable	2 048 byte
• Outputs, adjustable	2 048 byte
• Inputs, default	128 byte
• Outputs, default	128 byte
<b>Subprocess images</b>	
• Number of subprocess images, max.	1; With PROFINET IO, the length of the user data is limited to 1600 bytes
<b>Digital channels</b>	
• Inputs	16 336
— of which central	496
• Outputs	16 336
— of which central	496
<b>Analog channels</b>	
• Inputs	1 021
— of which central	124
• Outputs	1 021
— of which central	124
<b>Hardware configuration</b>	
Number of modules per system, max.	63; Centralized
<b>Mounting rail</b>	
• Number of mounting rails that can be used	1
• Length of mounting rail, max.	Station width: ≤ 1 m or < 2 m
<b>Time of day</b>	
<b>Clock</b>	
• 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; Typ.: 2 s
• Behavior of the clock following POWER-ON	Clock continues running after POWER OFF
• Behavior of the clock following expiry of backup period	the clock continues at the time of day it had when power was switched off
<b>Operating hours counter</b>	
• Number	1
• Number/Number range	0
• Range of values	0 to 2 <sup>31</sup> hours (when using SFC 101)
• Granularity	1 h
• retentive	Yes; Must be restarted at each restart
<b>Clock synchronization</b>	
• supported	Yes
• to MPI, master	No
• on MPI, device	No
• to DP, master	Yes; With DP master module
• on DP, device	Yes; With DP master module
• in AS, master	No
• in AS, device	No
• on Ethernet via NTP	Yes; As client
<b>1. Interface</b>	
Interface type	PROFINET

Isolated	Yes
automatic detection of transmission rate	Yes
Autonegotiation	Yes
Autocrossing	Yes
Change of IP address at runtime, supported	Yes
Interface types	
• RJ 45 (Ethernet)	Yes
• Number of ports	3; RJ45
• 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 device	No
• Open IE communication	Yes; Via TCP/IP, ISO on TCP, and UDP
• Web server	Yes
• Point-to-point connection	No
PROFINET IO Controller	
• Transmission rate, max.	100 Mbit/s; full duplex
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
— IRT	Yes
— 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	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")
Address area	
— Inputs, max.	2 kbyte
— Outputs, max.	2 kbyte
— User data consistency, max.	1 024 byte; with PROFINET I/O
PROFINET IO Device	
Services	
— PG/OP communication	Yes
— Routing	Yes
— S7 communication	Yes; with loadable FBs
— Isochronous mode	No
— IRT	Yes

— PROFIenergy	Yes; With SFB 73 / 74 prepared for loadable PROFIenergy 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 of submodules / at the 1st interface / as PROFINET IO device / maximum	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, 23, 25, 80, 102, 135, 161, 443, 8080, 34962, 34963, 34964, 65532, 65533, 65534, 65535
<b>2. Interface</b>	
Interface type	External interface via master module 6ES7138-4HA00-0AB0
Isolated	Yes
Interface types	
• RS 485	Yes
• Output current of the interface, max.	No
Protocols	
• MPI	No
• PROFINET IO Controller	No
• PROFINET IO Device	No
• PROFINET CBA	No
• PROFIBUS DP master	Yes
• PROFIBUS DP device	No
• Open IE communication	No
• Web server	No
PROFIBUS DP master	
• Transmission rate, max.	12 Mbit/s
• max. number of DP devices	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
— Isochronous mode	No
— SYNC/FREEZE	Yes
— activation/deactivation of DP devices	Yes
— max. number of DP devices that can be activated/deactivated at the same time	8
— Direct data exchange (slave-to-slave communication)	Yes
— DPV1	Yes
Address area	
— Inputs, max.	2 048 byte
— Outputs, max.	2 048 byte
User data per DP device	
— Inputs, max.	244 byte
— Outputs, max.	244 byte
Protocols	
Redundancy mode	
Media redundancy	

— MRP	Yes
— Switchover time on line break, typ.	200 ms; PROFINET MRP
— Number of stations in the ring, max.	50
<b>Open IE communication</b>	
• TCP/IP	Yes; via integrated PROFINET interface and loadable FBs
— Number of connections, max.	8
— Data length for connection type 01H, max.	1 460 byte
— Data length for connection type 11H, max.	32 768 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.	32 768 byte
• UDP	Yes; via integrated PROFINET interface and loadable FBs
— Number of connections, max.	8
— Data length, max.	1 472 byte
<b>Web server</b>	
• supported	Yes
• User-defined websites	Yes
• Number of HTTP clients	5
<b>communication functions / header</b>	
PG/OP communication	Yes
Data record routing	Yes; With DP master module
<b>Global data communication</b>	
• supported	No
<b>S7 basic communication</b>	
• supported	Yes; I blocks
• User data per job, max.	76 byte
• User data per job (of which consistent), max.	76 byte
<b>S7 communication</b>	
• supported	Yes
• as server	Yes
• as client	Yes; via integrated PROFINET 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)
<b>communication functions / PROFINET CBA (with set target communication load) / header</b>	
• Setpoint for the CPU communication load	50 %
• Number of remote interconnection partners	32
• number of master/device functions	30
• total of all master/device connections	1 000
• data length of all incoming master/device connections, max.	4 000 byte
• data length of all outgoing master/device connections, max.	4 000 byte
• Number of device-internal and PROFIBUS interconnections	500
• Data length of device-internal und PROFIBUS interconnections, max.	4 000 byte
• Data length per connection, max.	1 400 byte
<b>performance data / PROFINET CBA / remote interconnection / with acyclic transfer / header</b>	
— Sampling interval, min.	500 ms
— Number of incoming interconnections	100
— Number of outgoing interconnections	100
— 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.	1 400 byte
<b>performance data / PROFINET CBA / remote interconnection / with cyclic transfer / header</b>	
— Transmission frequency: Transmission interval, min.	1 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
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
• total number of instances, max.	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
• Forcing, 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	Yes
Diagnostics function	Yes
Diagnostics indication LED	
• for maintenance	Yes; MT
• Bus fault BF (red)	Yes; BF-PN
• Group error SF (red)	Yes

• Monitoring 24 V voltage supply ON (green)	Yes		
• Bus activity PROFINET (green)	Yes; P1-/P2-/P3-Link		
<b>Potential separation</b>			
between PROFIBUS DP and all other circuit components	Yes		
<b>Isolation</b>			
Isolation tested with	500 V DC		
<b>Degree and class of protection</b>			
IP degree of protection	IP20		
<b>configuration / header</b>			
Configuration software			
• STEP 7	Yes; V5.5 or higher		
<b>configuration / programming / header</b>			
• Command set	see instruction list		
• Nesting levels	8		
• System functions (SFC)	see instruction list		
• System function blocks (SFB)	see instruction list		
<b>Programming language</b>			
— LAD	Yes		
— FBD	Yes		
— STL	Yes		
— SCL	Yes; Optional		
— CFC	Yes; Optional		
— GRAPH	Yes; Optional		
— HiGraph®	Yes; Optional		
<b>Know-how protection</b>			
• User program protection/password protection	Yes		
• Block encryption	Yes; With S7 block Privacy		
<b>programming / cycle time monitoring / header</b>			
• lower limit	1 ms		
• upper limit	6 000 ms		
• adjustable	Yes		
• preset	150 ms		
<b>Dimensions</b>			
Width	120 mm; DP master module: 35 mm		
Height	119.5 mm		
Depth	75 mm		
<b>Weights</b>			
Weight, approx.	320 g; DP master module: Approx. 100 g		
<b>Classifications</b>			
	Version	Classification	
	eClass	14	27-24-26-07
	eClass	12	27-24-26-07
	eClass	9.1	27-24-26-07
	eClass	9	27-24-26-07
	eClass	8	27-24-26-07
	eClass	7.1	27-24-26-07
	eClass	6	27-24-26-07
	ETIM	9	EC001603
	ETIM	8	EC001603
	ETIM	7	EC001603
	IDEA	4	3565
	UNSPSC	15	32-15-17-05
<b>Approvals / Certificates</b>			
General Product Approval	For use in hazardous locations	Radio Equipment Type Approval Certificate	Environment



[CCC-Ex](#)

[Miscellaneous](#)

[Confirmation](#)

---

last modified:

3/3/2025 