



SIMATIC DP, IM154-8F PN/DP CPU f. ET200 PRO, 512 KB work memory, Int. PROFINET interface, Int. PROFIBUS DP master/slave interface Degree of protection IP65/67, Micro Memory Card and Connection module required

General information	
HW functional status	01
Firmware version	V3.2
Product function	
• Isochronous mode	Yes; Via PROFIBUS DP or PROFINET interface
Engineering with	
• Programming package	STEP 7 V5.5 or higher, Distributed Safety V5.4 SP4
Supply voltage	
Rated value (DC)	24 V
external protection for power supply lines (recommendation)	MCB 24 V DC / 16 A with tripping characteristic Type B and C (see ET 200pro manual)
Load voltage L+	
• 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
Input current	
Current consumption, typ.	350 mA
Current consumption (in no-load operation), typ.	250 mA; Typical, current consumption for CPU in STOP state
Inrush current, typ.	2 A
$I^2t$	0.25 A <sup>2</sup> s; Typical
Power loss	
Power loss, typ.	8.5 W
Memory	
Work memory	
• integrated	512 kbyte
• 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; Guaranteed by MMC (maintenance-free)
• without battery	Yes; Program and data
CPU processing times	
for bit operations, typ.	0.05 $\mu$ s
for word operations, typ.	0.09 $\mu$ s
for fixed point arithmetic, typ.	0.12 $\mu$ s
for floating point arithmetic, typ.	0.45 $\mu$ 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"> <li>• Number, max.</li> <li>• Size, max.</li> </ul>
	1 024; Number range: 1 to 16000 64 kbyte
FB	<ul style="list-style-type: none"> <li>• Number, max.</li> <li>• Size, max.</li> </ul>
	1 024; Number range: 0 to 7999 64 kbyte
FC	<ul style="list-style-type: none"> <li>• Number, max.</li> <li>• Size, max.</li> </ul>
	1 024; Number range: 0 to 7999 64 kbyte
OB	<ul style="list-style-type: none"> <li>• Size, max.</li> <li>• Number of free cycle OBs</li> <li>• Number of time alarm OBs</li> <li>• Number of delay alarm OBs</li> <li>• Number of cyclic interrupt OBs</li> <li>• Number of process alarm OBs</li> <li>• Number of DPV1 alarm OBs</li> <li>• Number of isochronous mode OBs</li> <li>• Number of startup OBs</li> <li>• Number of asynchronous error OBs</li> <li>• Number of synchronous error OBs</li> </ul>
	64 kbyte 1; OB 1 1; OB 10 2; OB 20, 21 4; OB 32, 33, 34, 35 1; OB 40 3; OB 55, 56, 57 1; OB 61 1; OB 100 6; OB 80, 82, 83, 85, 86, 87 (OB83 only for centralized I/O and PROFINET IO) 2; OB 121, 122
Nesting depth	<ul style="list-style-type: none"> <li>• per priority class</li> <li>• additional within an error OB</li> </ul>
	16 4
Counters, timers and their retentivity	
S7 counter	<ul style="list-style-type: none"> <li>• Number</li> </ul>
	256
Retentivity	<ul style="list-style-type: none"> <li>— adjustable</li> <li>— preset</li> </ul>
	Yes Z 0 to Z 7
Counting range	<ul style="list-style-type: none"> <li>— adjustable</li> <li>— lower limit</li> <li>— upper limit</li> </ul>
	Yes 0 999
IEC counter	<ul style="list-style-type: none"> <li>• present</li> <li>• Type</li> <li>• Number</li> </ul>
	Yes SFB Unlimited (limited only by RAM capacity)
S7 times	<ul style="list-style-type: none"> <li>• Number</li> </ul>
	256
Retentivity	<ul style="list-style-type: none"> <li>— adjustable</li> <li>— preset</li> </ul>
	Yes No retentivity
Time range	<ul style="list-style-type: none"> <li>— lower limit</li> <li>— upper limit</li> </ul>
	10 ms 9 990 s
IEC timer	<ul style="list-style-type: none"> <li>• present</li> <li>• Type</li> <li>• Number</li> </ul>
	Yes SFB Unlimited (limited only by RAM capacity)
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	128 kbyte
Flag	<ul style="list-style-type: none"> <li>• Size, max.</li> <li>• Retentivity available</li> <li>• Retentivity preset</li> <li>• Number of clock memories</li> </ul>
	2 048 byte Yes; MB 0 to MB 2 047 MB 0 to MB 15 8
Data blocks	

• 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>	
I/O address area	
• Inputs	2 048 byte
• Outputs	2 048 byte
of which distributed	
— 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	16 384
— of which central	128
• Outputs	16 384
— of which central	64
<b>Analog channels</b>	
• Inputs	1 024
— of which central	64
• Outputs	1 024
— of which central	64
<b>Hardware configuration</b>	
Integrated power supply	No
<b>Number of DP masters</b>	
• integrated	1
<b>Rack</b>	
• Racks, max.	1
• Modules per rack, max.	16; Expansion width max. 1 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
• Deviation per day, max.	10 s; Typ.: 2 s
<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	Yes
• on MPI, device	Yes
• to DP, master	Yes; With DP slave only slave clock
• on DP, device	Yes
• on Ethernet via NTP	Yes; As client
<b>1. Interface</b>	
<b>Interface type</b>	Integrated RS 485 interface
<b>Isolated</b>	Yes
<b>Interface types</b>	
• RS 485	Yes
• Output current of the interface, max.	May only be used for external terminating resistor

• Design of the connection	2x M12 B-coded
<b>Protocols</b>	
• MPI	Yes
• PROFIBUS DP master	Yes
• PROFIBUS DP device	Yes
• Point-to-point connection	No
<b>MPI</b>	
• Transmission rate, max.	12 Mbit/s
<b>Services</b>	
— 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
<b>PROFIBUS DP master</b>	
• Transmission rate, max.	12 Mbit/s
• max. number of DP devices	124
<b>Services</b>	
— 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; Connection configured on one side only
— Equidistance	Yes
— Isochronous mode	Yes; OB 61 - isochronous mode is possible either on DP or PROFINET IO (not simultaneously)
— SYNC/FREEZE	Yes
— activation/deactivation of DP devices	Yes
— Direct data exchange (slave-to-slave communication)	Yes; as subscriber
— DPV1	Yes
<b>Address area</b>	
— Inputs, max.	2 048 byte
— Outputs, max.	2 048 byte
<b>User data per DP device</b>	
— Inputs, max.	244 byte
— Outputs, max.	244 byte
<b>1st interface / PROFIBUS DP device / header</b>	
• 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
<b>Services</b>	
— Routing	Yes; with interface active
— Global data communication	No
— S7 basic communication	No
— S7 communication	Yes
— S7 communication, as client	No
— S7 communication, as server	Yes; Connection configured on one side only
— Direct data exchange (slave-to-slave communication)	Yes
— DPV1	No
<b>Transfer memory</b>	
— Inputs	244 byte
— Outputs	244 byte
<b>2. Interface</b>	
Interface type	PROFINET
Isolated	Yes; Galvanic isolation for P3 is implemented in IM154-8, for P1 and P2 in CM

automatic detection of transmission rate	Yes; 10/100 Mbit/s
Autonegotiation	Yes
Autocrossing	Yes
Change of IP address at runtime, supported	Yes
<b>Interface types</b>	
• Number of ports	3
• integrated switch	Yes
• Design of the connection	Ethernet (2x M12 D-coded; 1x RJ45)
<b>Protocols</b>	
• 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
• Media redundancy	Yes
<b>PROFINET IO Controller</b>	
• Transmission rate, max.	100 Mbit/s
<b>Services</b>	
— PG/OP communication	Yes
— Routing	Yes
— S7 communication	Yes; With loadable FBs, max. configurable connections: 14, max. number of instances: 32
— Isochronous mode	Yes; OB 61 - isochronous mode is possible either on DP or PROFINET IO (not simultaneously)
— IRT	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	250 µs to 512 ms (depending on the operating mode, see "IM 154-8 CPU Interface Module" operating instructions for more details)
<b>Address area</b>	
— Inputs, max.	2 048 byte
— Outputs, max.	2 048 byte
— User data consistency, max.	1 024 byte
<b>PROFINET IO Device</b>	
<b>Services</b>	
— PG/OP communication	Yes
— Routing	Yes
— S7 communication	Yes; With loadable FBs, max. configurable connections: 14, max. number of instances: 32
— 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
<b>Transfer memory</b>	
— Inputs, max.	1 440 byte; Per IO Controller with shared device
— Outputs, max.	1 440 byte; Per IO Controller with shared device
<b>Submodules</b>	
— Number, max.	64
— User data per submodule, max.	1 024 byte
<b>PROFINET CBA</b>	
• acyclic transmission	Yes
• cyclic transmission	Yes
<b>Open IE communication</b>	
• 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
• Keep-alive function, supported	Yes
<b>Protocols</b>	
<b>Redundancy mode</b>	
<b>Media redundancy</b>	
— Switchover time on line break, typ.	200 ms; PROFINET MRP
— Number of stations in the ring, max.	50
<b>SIMATIC communication</b>	
• S7 routing	Yes
<b>Open IE communication</b>	
• TCP/IP	Yes; via integrated PROFINET interface and loadable FBs
— Number of connections, max.	8
— Data length, max.	32 768 byte; 1 460 bytes with connection type 01H; 32 768 bytes with connection type 11H
— several passive connections per port, supported	Yes
• ISO-on-TCP (RFC1006)	Yes
— Number of connections, max.	8
— Data length, max.	32 768 byte
• UDP	Yes
— 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>	
<b>PG/OP communication</b>	Yes
<b>Global data communication</b>	
• supported	Yes
• Number of GD loops, max.	8
• Number of GD packets, max.	8
• Number of GD packets, transmitter, max.	8
• Number of GD packets, receiver, max.	8
• Size of GD packets, max.	22 byte
• Size of GD packet (of which consistent), max.	22 byte
<b>S7 basic communication</b>	
• 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)
<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
performance data / PROFINET CBA / remote interconnection / with acyclic transfer / header	
— 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
performance data / PROFINET CBA / remote interconnection / with cyclic transfer / header	
— 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
Number of connections	
● overall	16
● usable for PG communication	15
— reserved for PG communication	1
— adjustable for PG communication, min.	1
— adjustable for PG communication, max.	15
● usable for OP communication	15
— reserved for OP communication	1
— adjustable for OP communication, min.	1
— adjustable for OP communication, max.	15
● usable for S7 basic communication	14
— reserved for S7 basic communication	0
— adjustable for S7 basic communication, min.	0
— adjustable for S7 basic communication, max.	14
● usable for routing	X1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave (active): max. 14; X2 as PROFINET: 24 max.
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
<b>Forcing</b>	
• Forcing	Yes
• Forcing, variables	I/O
• Number of variables, max.	10
<b>Diagnostic buffer</b>	
• present	Yes
• Number of entries, max.	500; Only the last 100 entries are retentive at power on/off
— adjustable	No
— preset	10
<b>Potential separation</b>	
between backplane bus and electronics	No
between backplane bus and all other circuit components	Yes
between supply and all other circuits	Yes
<b>Isolation</b>	
Isolation tested with	In general, 707 V DC (type test), Ethernet interface 1 500 V AC (for P1 and P2 on CM, for P3 on IM)
<b>Degree and class of protection</b>	
IP degree of protection	IP65/67
<b>Standards, approvals, certificates</b>	
CE mark	Yes
CSA approval	No
cULus	Yes
FM approval	No
RCM (formerly C-TICK)	Yes
<b>Highest safety class achievable in safety mode</b>	
• Performance level according to ISO 13849-1	PLe
• SIL acc. to IEC 61508	SIL 3
<b>configuration / header</b>	
<b>Configuration software</b>	
• 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
— CFC	Yes
— GRAPH	Yes
— HiGraph®	Yes
<b>Know-how protection</b>	
• User program protection/password protection	Yes
• Block encryption	Yes; With S7 block Privacy
<b>Dimensions</b>	
Width	135 mm
Height	130 mm
Depth	65 mm; 60 mm without cover for RJ45 socket; 65 mm with cover for RJ45 socket
<b>Weights</b>	
Weight, approx.	720 g
<b>Classifications</b>	
	<b>Version</b>
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	10	EC001603
ETIM	9	EC001603
ETIM	8	EC001603
ETIM	7	EC001603
IDEA	4	3565
UNSPSC	15	32-15-17-05

## Approvals / Certificates

### General Product Approval



[Miscellaneous](#)



[Miscellaneous](#)



### General Product Approval

### Functional Safety

### Maritime application

[KC](#)



[Type Examination Certificate](#)



### Maritime application

### other



[NK / Nippon Kaiji Kyokai](#)



[CCS \(China Classification Society\)](#)



[PROFINET](#)

### other

### Industrial Communication

[Miscellaneous](#)



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