



SIMATIC DP, IM151-7 CPU for ET200S, 128 KB work memory with integrated PROFIBUS DP interface (9-pole D-sub socket) as DP slave, without battery
SIMATIC MMC required

General information	
HW functional status	01
Firmware version	V3.3
Product function	
<ul style="list-style-type: none"> • Isochronous mode 	No
Engineering with	
<ul style="list-style-type: none"> • Programming package 	as of STEP 7 V5.5 + SP1 or as of V5.2 + SP1 + HSP 219 or as of STEP 7 TIA Portal V11
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	19.2 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	
<ul style="list-style-type: none"> • Mains/voltage failure stored energy time 	5 ms
Input current	
Inrush current, typ.	1.8 A
I ² t	0.09 A ² ·s
from supply voltage 1L+, max.	320 mA; 410 mA with DP master module
Output current	
for backplane bus (5 V DC), max.	700 mA
Power loss	
Power loss, typ.	4.2 W
Memory	
Work memory	
<ul style="list-style-type: none"> • integrated • expandable 	128 kbyte No
Load memory	
<ul style="list-style-type: none"> • Plug-in (MMC) • Plug-in (MMC), max. • Data management on MMC (after last programming), min. 	Yes 8 Mbyte 10 a
Backup	
<ul style="list-style-type: none"> • 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)	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 startup OBs	1; OB 100
• Number of asynchronous error OBs	6; OB 80, 82, 83 (for centralized I/O only, not for distributed I/O), 85, 86, 87
• 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	
— 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	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	
• Size, max.	256 byte
• Retentivity available	Yes; MB 0 to MB 255

<ul style="list-style-type: none"> • Retentivity preset • Number of clock memories 	MB 0 to MB 15 8; 1 memory byte
Data blocks	
<ul style="list-style-type: none"> • Retentivity adjustable • Retentivity preset 	Yes; via non-retain property on DB Yes
Local data	
<ul style="list-style-type: none"> • per priority class, max. 	32 kbyte; Max. 2048 bytes per block
Address area	
I/O address area	
<ul style="list-style-type: none"> • Inputs • Outputs 	2 048 byte 2 048 byte
of which distributed	
<ul style="list-style-type: none"> — Inputs — Outputs 	2 048 byte 2 048 byte
Process image	
<ul style="list-style-type: none"> • Inputs • Outputs • Inputs, adjustable • Outputs, adjustable • Inputs, default • Outputs, default 	2 048 byte 2 048 byte 2 048 byte 2 048 byte 128 byte 128 byte
Digital channels	
<ul style="list-style-type: none"> • Inputs <ul style="list-style-type: none"> — of which central • Outputs <ul style="list-style-type: none"> — of which central 	16 336 496 16 336 496
Analog channels	
<ul style="list-style-type: none"> • Inputs <ul style="list-style-type: none"> — of which central • Outputs <ul style="list-style-type: none"> — of which central 	1 021 124 1 021 124
Hardware configuration	
Number of modules per system, max.	63; Centralized
Mounting rail	
<ul style="list-style-type: none"> • Number of mounting rails that can be used • Length of mounting rail, max. 	1 Station width: ≤ 1 m or < 2 m
Time of day	
Clock	
<ul style="list-style-type: none"> • Hardware clock (real-time) • retentive and synchronizable • Backup time • Deviation per day, max. • Behavior of the clock following POWER-ON • Behavior of the clock following expiry of backup period 	Yes Yes 6 wk; At 40 °C ambient temperature, typically 10 s; Typ.: 2 s Clock continues running after POWER OFF the clock continues at the time of day it had when power was switched off
Operating hours counter	
<ul style="list-style-type: none"> • Number • Number/Number range • Range of values • Granularity • retentive 	1 0 0 to 2 ³¹ hours (when using SFC 101) 1 h Yes; Must be restarted at each restart
Clock synchronization	
<ul style="list-style-type: none"> • supported • to MPI, master • to MPI, slave • to DP, master • to DP, slave • in AS, master • in AS, slave 	Yes Yes Yes Yes; With DP slave only slave clock Yes No No
Interfaces	
Interfaces/bus type	1 x MPI/PROFIBUS DP

1. Interface	
Interface type	Integrated RS 485 interface
Isolated	Yes
Interface types	
<ul style="list-style-type: none"> • RS 485 • Output current of the interface, max. 	<ul style="list-style-type: none"> Yes 80 mA
Protocols	
<ul style="list-style-type: none"> • MPI • PROFIBUS DP master • PROFIBUS DP slave • Point-to-point connection 	<ul style="list-style-type: none"> Yes No Yes; active / passive No
MPI	
<ul style="list-style-type: none"> • Transmission rate, max. 	12 Mbit/s
Services	
<ul style="list-style-type: none"> — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication — S7 communication, as client — S7 communication, as server 	<ul style="list-style-type: none"> Yes Yes; With master module Yes Yes Yes; Only server, configured on one side No Yes
PROFIBUS DP slave	
<ul style="list-style-type: none"> • GSD file • Transmission rate, max. • automatic baud rate search • Address area, max. • User data per address area, max. 	<ul style="list-style-type: none"> The latest GSD file is available on the Internet (http://www.siemens.com/profibus-gsd) 12 Mbit/s Yes; only with passive interface 32 32 byte; Up to max. size of the transfer memory
Services	
<ul style="list-style-type: none"> — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication — S7 communication, as client — S7 communication, as server — Direct data exchange (slave-to-slave communication) — DPV1 	<ul style="list-style-type: none"> Yes Yes; Only with active, integrated DP slave interface and inserted DP master module in DP master mode No No Yes; Only server, configured on one side No Yes Yes Yes No
Transfer memory	
<ul style="list-style-type: none"> — Inputs — Outputs 	<ul style="list-style-type: none"> 244 byte 244 byte
2. Interface	
Interface type	External interface via master module 6ES7138-4HA00-0AB0
Isolated	Yes
Interface types	
<ul style="list-style-type: none"> • RS 485 • Output current of the interface, max. 	<ul style="list-style-type: none"> Yes No
Protocols	
<ul style="list-style-type: none"> • MPI • PROFIBUS DP master • PROFIBUS DP slave 	<ul style="list-style-type: none"> No Yes No
PROFIBUS DP master	
<ul style="list-style-type: none"> • Transmission rate, max. • Number of DP slaves, max. 	<ul style="list-style-type: none"> 12 Mbit/s 32; Per station
Services	
<ul style="list-style-type: none"> — PG/OP communication — Routing — Global data communication — S7 basic communication 	<ul style="list-style-type: none"> Yes Yes No Yes; I blocks only

— S7 communication	Yes; Only server, configured on one side
— S7 communication, as client	No
— S7 communication, as server	Yes
— Equidistance	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.	2 kbyte
— Outputs, max.	2 kbyte
User data per DP slave	
— Inputs, max.	244 byte
— Outputs, max.	244 byte
Protocols	
Open IE communication	
• TCP/IP	No
communication functions / header	
PG/OP communication	Yes
Data record routing	Yes; With DP master module
Global data communication	
• 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
S7 basic communication	
• communication function / S7 basic communication	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.	See online help of STEP 7 (shared parameters of the SFBs/FBs and of the SFCs/FCs of S7 Communication)
• User data per job (of which consistent), max.	See online help of STEP 7 (shared parameters of the SFBs/FBs and of the SFCs/FCs of S7 Communication)
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 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.	300
Test commissioning functions	
Status block	Yes; Up to 2 simultaneously
Single step	Yes
Number of breakpoints	4
Status/control	
<ul style="list-style-type: none"> • Status/control variable 	Yes
<ul style="list-style-type: none"> • Variables 	Inputs, outputs, memory bits, DB, times, counters
<ul style="list-style-type: none"> • Number of variables, max. 	30
<ul style="list-style-type: none"> — of which status variables, max. 	30
<ul style="list-style-type: none"> — of which control variables, max. 	14
Forcing	
<ul style="list-style-type: none"> • Forcing 	Yes
<ul style="list-style-type: none"> • Forcing, variables 	Inputs, outputs
<ul style="list-style-type: none"> • Number of variables, max. 	10
Diagnostic buffer	
<ul style="list-style-type: none"> • present 	Yes
<ul style="list-style-type: none"> • Number of entries, max. 	500
<ul style="list-style-type: none"> — adjustable 	No
<ul style="list-style-type: none"> — of which powerfail-proof 	100; Only the last 100 entries are retained
<ul style="list-style-type: none"> • Number of entries readable in RUN, max. 	499
<ul style="list-style-type: none"> — adjustable 	Yes; From 10 to 499
<ul style="list-style-type: none"> — preset 	10
Service data	
<ul style="list-style-type: none"> • can be read out 	Yes
Interrupts/diagnostics/status information	
Alarms	Yes
Diagnostics function	Yes
Diagnostics indication LED	
<ul style="list-style-type: none"> • Group error SF (red) 	Yes
<ul style="list-style-type: none"> • Monitoring 24 V voltage supply ON (green) 	Yes
Potential separation	
between PROFIBUS DP and all other circuit components	Yes
Isolation	
Isolation tested with	500 V DC
Degree and class of protection	
IP degree of protection	IP20
configuration / header	
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	
<ul style="list-style-type: none"> • STEP 7 Lite 	No
configuration / programming / header	
<ul style="list-style-type: none"> • Command set 	see instruction list
<ul style="list-style-type: none"> • Nesting levels 	8
<ul style="list-style-type: none"> • System functions (SFC) 	see instruction list
<ul style="list-style-type: none"> • System function blocks (SFB) 	see instruction list
Programming language	
<ul style="list-style-type: none"> — LAD 	Yes
<ul style="list-style-type: none"> — FBD 	Yes
<ul style="list-style-type: none"> — STL 	Yes
<ul style="list-style-type: none"> — SCL 	Yes; Optional
<ul style="list-style-type: none"> — CFC 	Yes; Optional
<ul style="list-style-type: none"> — GRAPH 	Yes; Optional
<ul style="list-style-type: none"> — HiGraph® 	Yes; Optional
Know-how protection	
<ul style="list-style-type: none"> • User program protection/password protection 	Yes
<ul style="list-style-type: none"> • Block encryption 	Yes; With S7 block Privacy

programming / cycle time monitoring / header	
• 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: 9/7/2023 