SIEMENS

SIMATIC DP, IM151-7 CPU FO FOR ET200S, WORKING MEMORY
48KB (FROM FW V1.13 ON), INTEGR. PROFIBUS DP INTERFACE
(FO SIMPLEX CONNECTOR) AS DP SLAVE, W/O BATTERY

General information	
Hardware product version	04
Firmware version	V1.1
Engineering with	
• Programming package	STEP 7 V5.1 or higher

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

Input current	
Inrush current, max.	3.5 A
from supply voltage 1L+, max.	250 mA

Output current	
for backplane bus (5 V DC), max.	700 mA

Power loss	
Power loss, typ.	3.3 W

Power loss, max.	4.5 W

Memory

Work memory

• integrated	48 kbyte; as of FW V1.13 48 KB; previously 24 KB
• expandable	No

Load memory

• Plug-in (MMC)	Yes
• Plug-in (MMC), max.	2 Mbyte
• Data management on MMC (after last programming), min.	10 y

Backup

• present	No

CPU processing times

for bit operations, typ.	0.3 µs
for word operations, typ.	1 µs
for fixed point arithmetic, typ.	2 µs
for floating point arithmetic, typ.	50 µs
for timer/counter operations, typ.	12 µs

CPU-blocks

DB

• Number, max.	127; Number range: 1 to 127
• Size, max.	8 kbyte

FB

• Number, max.	128; Number range: 0 to 127
• Size, max.	8 kbyte

FC

• Number, max.	128; Number range: 0 to 127
• Size, max.	8 kbyte

OB

• Size, max.	8 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 startup OBs	1; OB 100
• Number of asynchronous error OBs	4; OB 80, 82, 85, 86

Nesting depth

• per priority class	8
• additional within an error OB	4

Counters, timers and their retentivity

S7 counter	
• Number	64
Retentivity	
— adjustable	Yes
— lower limit	0
— upper limit	63
— preset	Z 0 to Z 7
Counting range	
— can be set	Yes
— lower limit	0
— upper limit	999
IEC counter	
• present	Yes
• Type	SFB
• Number	Unlimited (limited only by RAM capacity)
S7 times	
• Number	128
Retentivity	
— adjustable	Yes
— lower limit	0
— upper limit	127
— 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.	4 736 byte
Flag	
• Number, max.	256 byte
• Retentivity available	Yes; MB 0 to MB 255
• Retentivity preset	MB 0 to MB 15
• Number of clock memories	8; 1 memory byte
Data blocks	
• Number, max.	127; Number range: 1 to 127
• Size, max.	8 kbyte
• Retentivity adjustable	Yes; Max. 8 DB, 4096 data bytes in total

• Retentivity preset	No retentivity
Local data	
• per priority class, max.	256 byte; Local data max.: 1536 byte

Address area	
I/O address area	
• Inputs	1 536 byte
• Outputs	1 536 byte
of which distributed	
— Inputs	64 byte
— Outputs	64 byte
Process image	
• Inputs	128 byte
• Outputs	128 byte
Digital channels	
• Inputs	248; max.
• Outputs	248; max.
Analog channels	
• Inputs	124; max.
• Outputs	124; max.
Addressing volume	
• Inputs	244 byte
• Outputs	244 byte

Hardware configuration	
connectable programming devices/PCs	PGs/OPs with STEP 7 connectable via PROFIBUS interface
Number of modules per system, max.	63
Mounting rail	
• Number of mounting rails that can be used	1
• Length of mounting rail, max.	2 m; Station width: <= 1 m or < 2 m

Time of day	
Clock	
• Software clock	Yes
Operating hours counter	
• Number	0; No

Interfaces	
Interfaces/bus type	1x PROFIBUS DP
Number of PROFINET interfaces	0
Number of wireless interfaces	0
PROFIBUS DP	
• Node addresses	1 to 125
Cable length	

— Cable length, max.	1 000 m; 100 to 1000 m (depending on transmission speed), without repeaters

1. Interface

Interface type	Fiber-optic interface and integrated RS 485 interface for programming
Physics	Fiber-optic cable or RS 485
Isolated	No
Power supply to interface (15 to 30 V DC), max.	80 mA; With RS 485

Functionality

● MPI	No
● PROFIBUS DP slave	Yes
● Point-to-point connection	No

DP slave

● Number of connections	11
● GSD file	http://www.siemens.com/profibus-gsd
● Transmission rate, max.	12 Mbit/s
● Address area, max.	32
● User data per address area, max.	32 byte; Up to max. size of the transfer memory

Services

— PG/OP communication	Yes
— Routing	No
— Global data communication	No
— S7 basic communication	Yes; as server
— S7 communication	Yes; as server
— S7 communication, as client	No
— S7 communication, as server	Yes
— Direct data exchange (slave-to-slave communication)	Yes

Transfer memory

— Inputs	64 byte
— Outputs	64 byte

Communication functions

PG/OP communication	Yes

Global data communication

● supported	No

S7 basic communication

● supported	Yes; as server
● User data per job, max.	76 byte
● User data per job (of which consistent), max.	32 byte; with I_PUT/I_GET

S7 communication

● supported	Yes

● as server	Yes
● as client	No
● User data per job, max.	160 kbyte
● User data per job (of which consistent), max.	32 byte
S5 compatible communication	
● supported	No
Standard communication (FMS)	
● supported	No

S7 message functions	
Process diagnostic messages	Yes; ALARM_S, ALARM_SQ

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.	
— 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

Isolation	
Isolation tested with	500 V DC

Degree and class of protection	
IP degree of protection	IP20

Ambient conditions	
Ambient temperature during operation	
● min.	0 °C
● max.	60 °C

Configuration	
Configuration software	
● STEP 7	Yes; as of V5.1
● STEP 7 Lite	Yes; V2.0 or higher

Programming	
• Command set	Binary logic operations, bracketed operations, result allocation, saving, counting, loading, transferring, comparing, shifting, rotating, complementation, calling blocks, fixed point arithmetic, floating point arithmetic, jump functions
• Nesting levels	8
• Program organization	Linear, structured
• System functions (SFC)	Interrupt and error processing, copy data, clock functions, diagnostic functions, module parameterization, operating mode transitions
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes
Software libraries	
— Process diagnostics	Yes
— Software controller	Yes; depending on the required memory space and the resulting execution time
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
Height	119.5 mm
Depth	75 mm

Weights	
Weight, approx.	200 g
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