

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

SIEMENS SIMATIC S7

6ES7151-7AB00-0AB0

IM 151-7 CPU FO INTERFACE MODULE

Applicable product family: SIMATIC ET 200S distributed I/O

OFFICIAL SOURCE

6ES7151-7AB00-0AB0.pdf

The following pages are selected from the supplied manufacturer document and retain their original page content.

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 • Nesting levels • Program organization • System functions (SFC)	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 8 Linear, structured 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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