SIEMENS

Data sheet

6ES7154-8AB01-0AB0

SIMATIC DP, IM154-8 PN/DP CPU f. ET200 PRO, 384 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
Supply voltage	
Rated value (DC)	24 V
external protection for power supply lines	MCB 24 V DC / 16 A with tripping characteristic Type B and C
(recommendation)	(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

Power loss, typ. Memory Work memory integrated expandable No Plug-in (MMC) Plug-in (MMC) Plug-in (MMC), max. Data management on MMC (after last programming), min. Backup present ves; Guaranteed by MMC (maintenance-free) without battery Per yes; Program and data CPU processing times for bit operations, typ. for word operations, typ. for fixed point arithmetic, typ. for floating point arithmetic, typ. 0.45 µs	Current consumption (in no-load operation), typ.	250 mA; Typical, current consumption for CPU in STOP state
Power loss Power loss, typ. 8.5 W Memory Work memory • integrated	Inrush current, typ.	2 A
Power loss, typ. Memory Work memory • integrated • expandable Load memory • Plug-in (MMC) • Plug-in (MMC) • Plug-in (MMC) • plug-in (MMC) • present • without battery • present • without battery CPU processing times for bit operations, typ. for keed point arithmetic, typ. for floading point arithmetic, typ. for floating point arithmetic, typ. O.45 µs CPU-blocks Number of blocks (total) • Number, max. • Size, max. FB • Number, max. • Size, max. FC • Number, max. • Size, max. • Size, max. 64 kbyte FC • Number, max. • Size, max. 64 kbyte FC • Number, max. • Size, max. 64 kbyte FC • Number, max. • Size, max. 64 kbyte FC • Number, max. • Size, max. 64 kbyte FC • Number of free cycle OBs • Number of flee cycle OBs • Number of delay alarm OBs • Number of cyclic interrupt OBs	l²t	0.25 A ² ·s; Typical
Work memory Integrated Expandable Expandabl	Power loss	
Note	Power loss, typ.	8.5 W
• integrated 384 kbyte • expandable No Load memory • Plug-in (MMC) Yes • Plug-in (MMC), max. 8 Mbyte • Data management on MMC (after last programming), min. 10 y Backup Yes; Guaranteed by MMC (maintenance-free) • present Yes; Guaranteed by MMC (maintenance-free) • without battery Yes; Program and data CPU processing times for bit operations, typ. 0.05 μs for word operations, typ. 0.09 μs for fixed point arithmetic, typ. 0.12 μs for floating point arithmetic, typ. 0.45 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. 64 kbyte • Size, max. 1 024; Number range: 1 to 16000 • Size, max. 64 kbyte FC • Number, max. 64 kbyte • Number, max. 64 kbyte • Size, max. 64 kbyte • Size, max. 64 kbyte • Number of free cy	Memory	
expandable Load memory Plug-in (MMC), Yes Plug-in (MMC), max. Data management on MMC (after last programming), min. Backup Present without battery Propossing times for bit operations, typ. On 5 ps for fixed point arithmetic, typ. On 10 2 ps for floating point arithmetic, typ. OBB Number of blocks (total) Number, max. Size, max. Size, max. Polyman. Polyman. Size, max. Polyman.	Work memory	
Load memory Plug-in (MMC) Yes Plug-in (MMC), max. 8 Mbyte Data management on MMC (after last programming), min. Backup Present Yes; Guaranteed by MMC (maintenance-free) without battery Yes; Program and data CPU processing times for bit operations, typ. 0.05 µs for word operations, typ. 0.09 µs for fixed point arithmetic, typ. 0.12 µs for floating point arithmetic, typ. 0.45 µs CPU-blocks Number of blocks (total) 1024; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used. DB Number, max. 1024; Number range: 1 to 16000 Size, max. 1024; Number range: 0 to 7999 Size, max. 64 kbyte FC Number, max. 64 kbyte FC Number, max. 1024; Number range: 0 to 7999 Size, max. 64 kbyte FC Number, max. 64 kbyte FC Number of rice cycle OBs Number of free cycle OBs Number of delay alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs	• integrated	384 kbyte
Plug-in (MMC) Yes Plug-in (MMC), max. 8 Mbyte Data management on MMC (after last programming), min. Backup Present Yes; Guaranteed by MMC (maintenance-free) without battery Yes: Program and data CPU processing times for bit operations, typ. 0.05 µs for word operations, typ. 0.09 µs for fixed point arithmetic, typ. 0.12 µs for floating point arithmetic, typ. 0.45 µs CPU-blocks Number of blocks (total) 1024; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used. DB Number, max. 1024; Number range: 1 to 16000 4 kbyte FB Number, max. 64 kbyte FC Number, max. 1024; Number range: 0 to 7999 4 kbyte FC Number, max. 64 kbyte FC Number of free cycle OBs Number of free cycle OBs Number of free cycle OBs Number of delay alarm OBs Number of cyclic interrupt OBs	• expandable	No
 Plug-in (MMC), max. Data management on MMC (after last programming), min. Backup present present without battery Yes; Guaranteed by MMC (maintenance-free) without battery Program and data CPU processing times for bit operations, typ. 0.09 µs for fixed point arithmetic, typ. 0.12 µs for floating point arithmetic, typ. 0.45 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. Size, max. 1 024; Number range: 1 to 16000 Size, max. FB Number, max. Size, max. 1 024; Number range: 0 to 7999 4 kbyte FC Number, max. Size, max. 64 kbyte FC Number, max. Size, max. 64 kbyte Size, max. 64 kbyte Size, max. 64 kbyte Size, max. 64 kbyte Size, max. 64 kbyte Size, max. 64 kbyte Size, max. 64 kbyte Size, max. 64 kbyte Size, max. Number of free cycle OBs Number of delay alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs 4 (OB 32, 33, 34, 35 	Load memory	
Data management on MMC (after last programming), min. Backup Present Yes; Guaranteed by MMC (maintenance-free) without battery Yes; Program and data CPU processing times for bit operations, typ. for fixed point arithmetic, typ. for floating point arithmetic, typ. for floating point arithmetic, typ.	• Plug-in (MMC)	Yes
programming), min. Backup • present • without battery Pes; Forgram and data CPU processing times for bit operations, typ. for word operations, typ. for fixed point arithmetic, typ. for floating point arithmetic, typ. OL2 μs for floating point arithmetic, typ. CPU-blocks Number of blocks (total) Number, max. • Size, max. FE • Number, max. • Size, max. Author of the size, max. Size, max. Author of size,	Plug-in (MMC), max.	8 Mbyte
 • present • without battery Yes; Program and data CPU processing times for bit operations, typ. 0.09 μs for word operations, typ. 0.12 μs for floating point arithmetic, typ. 0.45 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. • Size, max. • Number, max. • Size, max. • Size, max. • Abyte FC • Number, max. • Size, max. • Size, max. • 64 kbyte FC • Number, max. • Size, max. • 64 kbyte FC • Number, max. • Size, max. • Gat kbyte OB • Size, max. • Whyte OB • Size, max. • Whyte • Number of free cycle OBs • Number of free cycle OBs • Number of delay alarm OBs • Number of delay alarm OBs • Number of cyclic interrupt OBs 4; OB 32, 33, 34, 35 	-	10 y
 • present • without battery Yes; Program and data CPU processing times for bit operations, typ. 0.09 μs for word operations, typ. 0.12 μs for floating point arithmetic, typ. 0.45 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. • Size, max. • Number, max. • Size, max. • Size, max. • Abyte FC • Number, max. • Size, max. • Size, max. • 64 kbyte FC • Number, max. • Size, max. • 64 kbyte FC • Number, max. • Size, max. • Gat kbyte OB • Size, max. • Whyte OB • Size, max. • Whyte • Number of free cycle OBs • Number of free cycle OBs • Number of delay alarm OBs • Number of delay alarm OBs • Number of cyclic interrupt OBs 4; OB 32, 33, 34, 35 	· · ·	
for bit operations, typ. for word operations, typ. for fixed point arithmetic, typ. for floating point arithmetic, typ. O.45 µs O.45 µs CPU-blocks Number of blocks (total) Number, max. Size, max. Size, max. I 024; Number range: 1 to 16000 A kbyte FC Number, max. Size, max. I 024; Number range: 0 to 7999 A kbyte FC Number, max. Size, max. Size, max. A to 24; Number range: 0 to 7999 A kbyte FC Number, max. Size, max. A to 24; Number range: 0 to 7999 A kbyte FC Number, max. Size, max. A to 24; Number range: 0 to 7999 A kbyte FC Number, max. Size, max. A to 24; Number range: 0 to 7999 A kbyte FC Number of free cycle OBs Number of free cycle OBs Number of free day alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs Number of cyclic interrupt OBs	• present	Yes; Guaranteed by MMC (maintenance-free)
for bit operations, typ. for word operations, typ. for fixed point arithmetic, typ. for floating point arithmetic, typ. O.45 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. Size, max. 1 024; Number range: 1 to 16000 64 kbyte FB Number, max. Size, max. 1 024; Number range: 0 to 7999 64 kbyte FC Number, max. Size, max. 1 024; Number range: 0 to 7999 64 kbyte FC Number, max. Size, max. 64 kbyte CB Size, max. 64 kbyte 64 kbyte 1 024; Number range: 0 to 7999 65 kbyte CB Number of free cycle OBs Number of free cycle OBs Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs Number of size, interrupt OBs Number of size, on size,	without battery	Yes; Program and data
for bit operations, typ. for word operations, typ. for fixed point arithmetic, typ. for floating point arithmetic, typ. O.45 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. Size, max. 1 024; Number range: 1 to 16000 64 kbyte FB Number, max. Size, max. 1 024; Number range: 0 to 7999 64 kbyte FC Number, max. Size, max. 1 024; Number range: 0 to 7999 64 kbyte FC Number, max. Size, max. 64 kbyte CB Size, max. 64 kbyte 64 kbyte 1 024; Number range: 0 to 7999 65 kbyte CB Number of free cycle OBs Number of free cycle OBs Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs Number of size, interrupt OBs Number of size, on size,	CPU processing times	
for fixed point arithmetic, typ. for floating point arithmetic, typ. 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. Size, max. 1 024; Number range: 1 to 16000 4 kbyte FB Number, max. Size, max. 1 024; Number range: 0 to 7999 4 kbyte FC Number, max. Size, max. 1 024; Number range: 0 to 7999 4 kbyte FC Number, max. Size, max. 1 024; Number range: 0 to 7999 2 Size, max. Size, m		0.05 μs
for floating point arithmetic, typ. 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. Size, max. 1 024; Number range: 1 to 16000 64 kbyte FB Number, max. Size, max. 1 024; Number range: 0 to 7999 64 kbyte FC Number, max. Size, max. 1 024; Number range: 0 to 7999 64 kbyte FC Number, max. Size, max. 1 024; Number range: 0 to 7999 64 kbyte FC Number of free cycle OBs Number of free cycle OBs Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs Number of cyclic interrupt OBs	for word operations, typ.	0.09 µs
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. Size, max. 1 024; Number range: 1 to 16000 64 kbyte FB Number, max. Size, max. 1 024; Number range: 0 to 7999 64 kbyte FC Number, max. Size, max. 1 024; Number range: 0 to 7999 64 kbyte FC Number, max. Size, max. 1 024; Number range: 0 to 7999 64 kbyte OB Size, max. 1 024; Number range: 0 to 7999 7999 7999 7999 7999 7999 7999 799	for fixed point arithmetic, typ.	0.12 µs
Number of blocks (total) 1 024; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used. Number, max. 1 024; Number range: 1 to 16000 64 kbyte FB Number, max. 1 024; Number range: 0 to 7999 64 kbyte FC Number, max. 1 024; Number range: 0 to 7999 64 kbyte FC Number, max. 1 024; Number range: 0 to 7999 64 kbyte FC Number, max. 64 kbyte OB Size, max. 64 kbyte OB Size, max. 64 kbyte 1; OB 1 Number of free cycle OBs Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs Number of cyclic interrupt OBs	for floating point arithmetic, typ.	0.45 µs
can be reduced by the MMC used. DB Number, max. 1 024; Number range: 1 to 16000 Size, max. 64 kbyte Number, max. 5ize, 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 FC Number, max. 64 kbyte OB Size, max. 64 kbyte OB Size, max. 64 kbyte Number of free cycle OBs 1; OB 1 Number of delay alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs 4; OB 32, 33, 34, 35	CPU-blocks	
 Number, max. Size, max. 64 kbyte Number, max. Size, max. 1 024; Number range: 0 to 7999 Size, max. 64 kbyte Number, max. Number, max. Size, max. 1 024; Number range: 0 to 7999 Size, max. Size, max. 64 kbyte OB Size, max. Number of free cycle OBs Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs 4; OB 32, 33, 34, 35 	Number of blocks (total)	
 Size, max. Number, max. Size, max. Number range: 0 to 7999 Size, max. Number, max. Number, max. Size, max. Size, max. Size, max. Size, max. Size, max. Number of free cycle OBs Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs Size, OB 32, 33, 34, 35 	DB	
FB Number, max. Size, max. Number, max. 1 024; Number range: 0 to 7999 64 kbyte FC Number, max. 1 024; Number range: 0 to 7999 64 kbyte OB Size, max. 64 kbyte Number of free cycle OBs 1; OB 1 Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs 4; OB 32, 33, 34, 35	• Number, max.	1 024; Number range: 1 to 16000
 Number, max. Size, max. 64 kbyte Number, max. Number, max. Size, max. Size, max. Size, max. Size, max. Number of free cycle OBs Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs 1 0B 10 Number of cyclic interrupt OBs 1 0B 32, 33, 34, 35 	• Size, max.	64 kbyte
 Size, max. Number, max. Size, max. Size, max. Size, max. Size, max. Number of free cycle OBs Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs 4; OB 32, 33, 34, 35 	FB	
 Number, max. Size, max. Size, max. Size, max. Size, max. Number of free cycle OBs Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs 1 OB 10 2 OB 20, 21 Number of cyclic interrupt OBs 	• Number, max.	1 024; Number range: 0 to 7999
 Number, max. Size, max. 64 kbyte OB Size, max. Number of free cycle OBs Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs 4; OB 32, 33, 34, 35 	• Size, max.	64 kbyte
 Size, max. Size, max. Size, max. Number of free cycle OBs Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs 4; OB 32, 33, 34, 35 	FC	
 Size, max. Number of free cycle OBs Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs 4; OB 32, 33, 34, 35 	Number, max.	1 024; Number range: 0 to 7999
 Size, max. Number of free cycle OBs Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs 4; OB 32, 33, 34, 35 	• Size, max.	64 kbyte
 Number of free cycle OBs Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs 1; OB 10 2; OB 20, 21 Number of cyclic interrupt OBs 4; OB 32, 33, 34, 35 	ОВ	
 Number of time alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs 1; OB 10 2; OB 20, 21 4; OB 32, 33, 34, 35 	• Size, max.	64 kbyte
 Number of delay alarm OBs Number of cyclic interrupt OBs 2; OB 20, 21 4; OB 32, 33, 34, 35 	 Number of free cycle OBs 	1; OB 1
• Number of cyclic interrupt OBs 4; OB 32, 33, 34, 35	 Number of time alarm OBs 	1; OB 10
	 Number of delay alarm OBs 	2; OB 20, 21
• Number of process alarm OBs 1; OB 40	 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
 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
Counters timers and their retentivity	

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	
— 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
— 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)

Retentive data area (incl. timers, counters, flags),	128 kbyte
max.	,,
Flag	
Number, max.	2 048 byte
Retentivity available	Yes; MB 0 to MB 2 047
Retentivity preset	MB 0 to MB 15
Number of clock memories	8
Data blocks	
Retentivity adjustable	Yes; via non-retain property on DB
Retentivity preset	Yes
Local data	
• per priority class, max.	32 768 byte; Max. 2048 bytes per block
Address area	
I/O address area	
• Inputs	2 048 byte
Outputs	2 048 byte
of which distributed	
— Inputs	2 048 byte
— Outputs	2 048 byte
Process image	
Inputs, adjustable	2 048 byte
Outputs, adjustable	2 048 byte
• Inputs, default	128 byte
Outputs, default	128 byte
Subprocess images	
 Number of subprocess images, max. 	1; With PROFINET IO, the length of the user data is limited to 1600 bytes
Digital channels	
• Inputs	16 384
— of which central	128
Outputs	16 384
— of which central	64
Analog channels	
• Inputs	1 024
— of which central	64
Outputs	1 024
— of which central	64
Hardware configuration	
Integrated power supply	Yes; 24 V DC
Number of DP masters	
• integrated	1

Rack	
• Racks, max.	1
• Modules per rack, max.	16; Expansion width max. 1 m
Time of day	
Clock	
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
Operating hours counter	
Number	1
Number/Number range	0
 Range of values 	0 to 2^31 hours (when using SFC 101)
 Granularity 	1 h
• retentive	Yes; Must be restarted at each restart
Clock synchronization	
• supported	Yes
● to MPI, master	Yes
• to MPI, slave	Yes
• to DP, master	Yes; With DP slave only slave clock
• to DP, slave	Yes
• on Ethernet via NTP	Yes; As client
Interfaces	
Interfaces/bus type	1x MPI/PROFIBUS DP, 1x PROFINET (3 ports)
1. Interface	
Interface type	Integrated RS 485 interface
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	May only be used for external terminating resistor
Interface types	V
• RS 485	Yes
Design of the connection	2x M12 B-coded
Protocols	V
• MPI	Yes
PROFIBUS DP master	Yes
PROFIBUS DP slave	Yes
Point-to-point connection	No
MPI	40 M W
Transmission rate, max.	12 Mbit/s
Services	
— PG/OP communication	Yes
— Routing	Yes

Global data communication	Yes
Global data communication S7 basic communication	Yes
	Yes
— S7 communication	No
— S7 communication, as client	Yes
— S7 communication, as server PROFIBUS DP master	res
	12 Mbit/s
Transmission rate, max.	
Number of DP slaves, max.	124
Services	Yes
— PG/OP communication	
— 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 slaves 	Yes
 Direct data exchange (slave-to-slave communication) 	Yes; as subscriber
— DPV1	Yes
Address area	
— Inputs, max.	2 048 byte
— Outputs, max.	2 048 byte
User data per DP slave	
— Inputs, max.	244 byte
— Outputs, max.	244 byte
PROFIBUS DP slave	
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
Services	
— 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
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte

2. Interface	
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
Interface types	
Number of ports	3
• integrated switch	Yes
 Design of the connection 	Ethernet (2x M12 D-coded; 1x RJ45)
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 slave 	No
Open IE communication	Yes; Via TCP/IP, ISO on TCP, and UDP
Web server	Yes
Media redundancy	Yes
PROFINET IO Controller	
Transmission rate, max.	100 Mbit/s
Services	
— PG/OP communication	Yes
— Routing	Yes
— S7 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
— 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	128
option "high flexibility"	
— of which in line, max.	61
 Number of connectable IO Devices for RT, 	128
max.	
— 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	$250~\mu s,500~\mu s,1$ 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)
Address area	
— Inputs, max.	2 048 byte
— Outputs, max.	2 048 byte
 User data consistency, max. 	1 024 byte
PROFINET IO Device	
Services	
— PG/OP communication	Yes
— Routing	Yes
— S7 routing	Yes
— S7 communication	Yes; With loadable FBs, max. configurable connections: 14, max. number of instances: 32
— Isochronous mode	No
— IRT	Yes
— PROFlenergy	Yes; With SFB 73 / 74 prepared for loadable PROFlenergy 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, max.	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
 Keep-alive function, supported 	Yes
Protocols	
Redundancy mode	
Media redundancy	
 Switchover time on line break, typ. 	200 ms; PROFINET MRP
 Number of stations in the ring, max. 	50
Open IE communication	
• 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
Web server	
• supported	Yes
 User-defined websites 	Yes
 Number of HTTP clients 	5
Communication functions	
PG/OP communication	Yes
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
·	22 byte
 Size of GD packet (of which consistent), max. S7 basic communication 	22 byte
	Yes
• supported	76 byte
User data per job, max. User data per job (of which consistent) may	76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with
User data per job (of which consistent), max.	X_PUT or X_GET as server)
S7 communication	
• 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)
PROFINET CBA (at set setpoint communication load)	
Setpoint for the CPU communication load	50 %
 Number of remote interconnection partners 	32
 Number of functions, master/slave 	30
 Total of all master/slave connections 	1 000
 Data length of all incoming connections master/slave, max. 	4 000 byte
 Data length of all outgoing connections master/slave, 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
Remote interconnections with acyclic transmission	
— Sampling frequency: Sampling time, 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
Remote interconnections with cyclic transmission	
— Transmission frequency: Transmission interval, min.	1 ms
 Number of incoming interconnections 	200
 Number of outgoing interconnections 	200

— Data length of all incoming	2 000 byte	
interconnections, max.	0.0001	
 Data length of all outgoing interconnections, max. 	2 000 byte	
 Data length per connection, max. 	450 byte	
HMI variables via PROFINET (acyclic)		
 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	
PROFIBUS proxy functionality		
— 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, 	0	
min.		
 adjustable for S7 basic communication, 	14	
max.		
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		
Test commissioning functions Status block	Yes; Up to 2 simultaneously	
Single step	Yes	
Number of breakpoints	4	

Status/control variable Variables Inputs, outputs, memory bits, DB, times, counters Inputs, outputs, memory bits, DB, times, counters, and counters, counters, counters, counters, counters, counte	Status/control	
Number of variables, max. — of which status variables, max. — of which status variables, max. — of which control variables, max. 14 Forcing • Forcing • Forcing, variables • Number of variables, max. 10 Diagnostic buffer • present • Number of entries, max. — adjustable — preset • Number of entries, max. — adjustable — preset • No between backplane bus and electronics between backplane bus and electronics between backplane bus and all other circuit components between supply and all other circuits Yes Solation In general, 707 V DC (type test), Ethernet interface 1 500 V AC (for P1 and P2 on CM, for P3 on IM) Degree and class of protection P degree of protection P degree of protection IP65/67 Standards, approvals, certificates CE mark — Yes CSA approval OULus — Yes FM approval RCM (formerly C-TICK) — Yes Configuration software • STEP 7 — Yes; V5.5 or higher Programming • Command set • Nesting levels • System function blocks (SFB) • System function list • See instruction list • See instruction list • System function blocks (SFB)	Status/control variable	Yes
- of which status variables, max. - of which control variables, max. - of which control variables, max. - of which control variables, max. Forcing - Forcing - Forcing, variables - Number of variables, max. - 10 Diagnostic buffer - Present - Number of entries, max. adjustable - preset - 10 Potential separation between backplane bus and electronics between backplane bus and all other circuit components between supply and all other circuit yes Isolation 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) Degree and class of protection IP degree of protection IP degree of protection P degree of protection IP degree of protection IP degree of protection Ves CSA approval No	Variables	Inputs, outputs, memory bits, DB, times, counters
- of which status variables, max. 14 Forcing	Number of variables, max.	30
Forcing Forcing Forcing Forcing, variables Forcing,		30
Forcing Forcing, variables Forcing Foreset Foreset Forcing Foreset Forcing F		14
Forcing, variables Forcing, variables Number of variables, max. Diagnostic buffer Present Potential separation Endition 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) Degree and class of protection Pledgree of protection Early Agproval CCBA approval CULUS FM approval RCM (formerly C-TICK) Programming FOrcingularion Programming Pocamina (SFE) Programming Pocamina (SFE) Pogstem function solicus (SFB) Pessent Pessent Pessent Pess		
Forcing, variables Number of variables, max. Number of entries, max. - adjustable - present No - present Determine between backplane bus and electronics between backplane bus and all other circuit components between supply and all other circuits Solation Isolation tested with Degree and class of protection IP degree of protection P degree of protection Standards, approvals, certificates CE mark CSA approval Mo RCM (formerly C-TICK) Pes Configuration Configuration Configuration Configuration Programming Command set Nesting levels See instruction list		Yes
Number of variables, max. Diagnostic buffer present No No Diagnostic buffer Ves Number of entries, max. So0: Only the last 100 entries are retentive at power on/off Debta and present No Debta and present Potential separation Between backplane bus and electronics Detween backplane bus and all other circuit components Detween supply and all other circuits Ves Isolation 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) Degree and class of protection IP degree of protection		I/O
Diagnostic buffer • present • Number of entries, max. — adjustable — preset 10 Potential separation between backplane bus and electronics Detween backplane bus and all other circuit components between supply and all other circuits Isolation 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) Degree and class of protection IP degree of protection IP degree o		10
Present Number of entries, max. Adjustable Potential separation Between backplane bus and electronics Detween backplane bus and electronics Detween supply and all other circuit Components Bolation Isolation IP degree of protection IP degree of protection IP degree of protection IP Approval CULUS FM approval CUCING FM Approval COnfiguration Configuration Configuration Programming Command set No Solotion Yes Solotion Yes Solotion Yes Solotion IP Solotion IP 65/67 Standards, approvals, certificates CE mark Yes CSA approval No COnfiguration Configuration Configuration Configuration software STEP 7 Programming Command set Nesting levels See instruction list Solotion list See instruction list Solotion list Solotion Soloti	·	
Number of entries, max. — adjustable — preset 10 Potential separation between backplane bus and electronics between backplane bus and all other circuit components between supply and all other circuits between supply and all other circuits Solation 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) Degree and class of protection IP65/67 Standards, approvals, certificates CE mark Yes CSA approval Ves CSA approval No CULus FM approval No CULus FM approval No COnfiguration Configuration Configuration Configuration Configuration Configuration Configuration Configuration Configuration Command set See instruction list		Yes
adjustable preset 10 Potential separation between backplane bus and electronics between backplane bus and all other circuit components between supply and all other circuits Yes Isolation 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) Degree and class of protection IP degree of protection IP65/67 Standards, approvals, certificates CE mark CSA approval CULus Yes FM approval No RCM (formerly C-TICK) Yes Configuration Configuration Configuration software STEP 7 Programming Command set Nesting levels System functions (SFC) See instruction list	·	500; Only the last 100 entries are retentive at power on/off
Potential separation between backplane bus and electronics No between backplane bus and all other circuit components between supply and all other circuits Yes Isolation Isolation Usus Ipdae of protection IP65/67 Standards, approvals, certificates CE mark Yes CSA approval No cULus Yes FM approval No RCM (formerly C-TICK) Yes Configuration Configuration Configuration Command set See instruction list No System functions (SFC) See instruction list		
Potential separation between backplane bus and electronics between backplane bus and all other circuit components between supply and all other circuits Yes Isolation Isolation 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) Degree and class of protection IP degree of protection IP65/67 Standards, approvals, certificates CE mark CSA approval ANO CULus Yes FM approval No RCM (formerly C-TICK) Yes Configuration Configuration software • STEP 7 Programming • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) see instruction list • System function blocks (SFB)		10
between backplane bus and electronics between backplane bus and all other circuit components between supply and all other circuits Yes Isolation 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) Degree and class of protection IP degree of protection IP degree of protection IP degree of protection Ves CSA approvals, certificates CE mark Yes CSA approval No cULus Yes FM approval No RCM (formerly C-TICK) Yes Configuration Configuration Configuration Command set Nesting levels System function blocks (SFB) See instruction list		
between backplane bus and all other circuit components between supply and all other circuits Yes Isolation Isolation 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) Degree and class of protection IP degree of protection IP65/67 Standards, approvals, certificates CE mark CSA approval No CULus Yes FM approval RCM (formerly C-TICK) Yes Configuration Configuration Configuration software • STEP 7 Programming • Command set • Nesting levels • System function blocks (SFB) see instruction list	· · · · · · · · · · · · · · · · · · ·	No.
components between supply and all other circuits Yes Isolation In general, 707 V DC (type test), Ethernet interface 1 500 V AC (for P1 and P2 on CM, for P3 on IM) Degree and class of protection IP degree of protection IP65/67 Standards, approvals, certificates CE mark CSA approval No CULus Yes FM approval No RCM (formerly C-TICK) Yes Configuration Configuration Configuration Command set Nesting levels Nestystem functions (SFC) System function blocks (SFB) SINDAR (VIV) SINDAR	·	
Isolation 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) Degree and class of protection IP65/67 Standards, approvals, certificates CE mark Yes CSA approval No CULus Yes FM approval No RCM (formerly C-TICK) Yes Configuration Configuration software • STEP 7 Yes; V5.5 or higher Programming • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) In general, 707 V DC (type test), Ethernet interface 1 500 V AC (for P1 and P2 on CM, for P3 on IM) In general, 707 V DC (type test), Ethernet interface 1 500 V AC (for P1 and P2 on CM, for P3 on IM) In general, 707 V DC (type test), Ethernet interface 1 500 V AC (for P1 and P2 on CM, for P3 on IM) Pesson IM See instruction list See instruction list see instruction list	•	tes
Isolation 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) Degree and class of protection IP degree of protection IP65/67 Standards, approvals, certificates CE mark Ves CSA approval No cULus Yes FM approval RCM (formerly C-TICK) Yes Configuration Configuration Configuration software • STEP 7 Yes; V5.5 or higher Programming • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB)		Yes
In general, 707 V DC (type test), Ethernet interface 1 500 V AC (for P1 and P2 on CM, for P3 on IM) Degree and class of protection IP degree of protection IP65/67 Standards, approvals, certificates CE mark CSA approval No cULus FM approval RCM (formerly C-TICK) Configuration Configuration software • STEP 7 Programming • Command set • Nesting levels • System function blocks (SFB) In general, 707 V DC (type test), Ethernet interface 1 500 V AC (for P1 and P2 on CM, for P3 on IM) In general, 707 V DC (type test), Ethernet interface 1 500 V AC (for P1 and P2 on CM, for P3 on IM) In general, 707 V DC (type test), Ethernet interface 1 500 V AC (for P1 and P2 on CM, for P3 on IM) In general, 707 V DC (type test), Ethernet interface 1 500 V AC (for P1 and P2 on CM, for P3 on IM) In general, 707 V DC (type test), Ethernet interface 1 500 V AC (for P1 and P2 on IM) In general, 707 V DC (type test), est interface 1 500 V AC (for P1 and P2 on IM) In general, 707 V DC (type test), est interface 1 500 V AC (for P1 and P2 on IM) In general, 707 V DC (type test), est interface 1 500 V AC (for P1 and P2 on IM) In general, 707 V DC (type test), est interface 1 500 V AC (for P1 and P2 on IM) In general, 707 V DC (M) In general, 707 V DC		
Degree and class of protection IP degree of protection Standards, approvals, certificates CE mark CSA approval CULus FM approval RCM (formerly C-TICK) Configuration Configuration Configuration software • STEP 7 Programming • Command set • Nesting levels • System function blocks (SFB) (for P1 and P2 on CM, for P3 on IM) IP65/67 IP65/67 IP65/67 Yes Yes Yes Yes Yes Yes Yes Ves V		
Degree and class of protection IP degree of protection Standards, approvals, certificates CE mark CSA approval CULus Pes FM approval RCM (formerly C-TICK) Configuration Configuration Configuration software • STEP 7 Programming • Command set • Nesting levels • System function s(SFC) • System function blocks (SFB) See instruction list	Isolation tested with	
IP degree of protection Standards, approvals, certificates CE mark Yes CSA approval No CULus FM approval No RCM (formerly C-TICK) Yes Configuration Configuration software • STEP 7 Programming • Command set • Nesting levels • System function s(SFC) • System function blocks (SFB)		(IOI 1 T AND 1 2 ON CIVII, IOI 1 3 ON IIVI)
Standards, approvals, certificates CE mark CSA approval No cULus FM approval RCM (formerly C-TICK) Configuration Configuration software • STEP 7 Programming • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) Sves Yes Yes Yes Yes Yes Yes Yes	Degree and class of protection	
CE mark CSA approval No cULus Yes FM approval No RCM (formerly C-TICK) Yes Configuration Configuration software • STEP 7 Programming • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB)	IP degree of protection	IP65/67
CE mark CSA approval No cULus Yes FM approval No RCM (formerly C-TICK) Yes Configuration Configuration software • STEP 7 Programming • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB)	Standards, approvals, certificates	
CULus FM approval RCM (formerly C-TICK) Yes Configuration Configuration software • STEP 7 Programming • Command set • Nesting levels • System function (SFC) • System function blocks (SFB)		Yes
RCM (formerly C-TICK) Yes Configuration Configuration software • STEP 7 Yes; V5.5 or higher Programming • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) No Yes	CSA approval	No
Configuration Configuration software STEP 7 Programming Command set Nesting levels System functions (SFC) System function blocks (SFB) Yes; V5.5 or higher Yes; V5.5 or higher See instruction list see instruction list see instruction list see instruction list	cULus	Yes
Configuration Configuration software STEP 7 Yes; V5.5 or higher Programming Command set Nesting levels System functions (SFC) System function blocks (SFB) see instruction list see instruction list	• •	
Configuration software • STEP 7 Yes; V5.5 or higher Programming • Command set see instruction list • Nesting levels 8 • System functions (SFC) see instruction list • System function blocks (SFB) see instruction list	RCM (formerly C-TICK)	Yes
Configuration software • STEP 7 Yes; V5.5 or higher Programming • Command set see instruction list • Nesting levels 8 • System functions (SFC) see instruction list • System function blocks (SFB) see instruction list	Configuration	
Programming Command set see instruction list Nesting levels 8 System functions (SFC) see instruction list System function blocks (SFB) see instruction list		
 Command set Nesting levels System functions (SFC) System function blocks (SFB) see instruction list see instruction list 	• STEP 7	Yes; V5.5 or higher
 Nesting levels System functions (SFC) System function blocks (SFB) see instruction list see instruction list 	Programming	
 System functions (SFC) System function blocks (SFB) see instruction list 	Command set	see instruction list
• System function blocks (SFB) see instruction list	Nesting levels	8
-,	System functions (SFC)	see instruction list
Programming language	 System function blocks (SFB) 	see instruction list
	Programming language	

Yes
Yes
Yes
Yes; With S7 block Privacy
135 mm
130 mm
65 mm; 60 mm without cover for RJ45 socket; 65 mm with cover
6 B145 1 4
for RJ45 socket
for RJ45 socket

05/13/2020