## **SIEMENS**

## **Data sheet**

6ES7151-8AB01-0AB0



SIMATIC DP, IM151-8 PN/DP CPU f. ET200S, 192 KB work memory, int. PROFINET interface (with three RJ45 ports) as IO controller, without battery MMC required

General information	
HW functional status	01
Firmware version	V3.2
Product function	
Isochronous mode	No
Engineering with	
Programming package	as of STEP 7 V5.5 or as of STEP 7 TIA Portal V11
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
external protection for power supply lines (recommendation)	2 A min.
Mains buffering	
<ul> <li>Mains/voltage failure stored energy time</li> </ul>	5 ms
Input current	
Inrush current, typ.	1.8 A
l²t	0.13 A²·s
from supply voltage 1L+, max.	352 mA; 426 mA with DP master module
Output current	
for backplane bus (5 V DC), max.	700 mA
Power loss	
Power loss, typ.	5.5 W
Memory	
Work memory	
• integrated	192 kbyte
expandable	No
Load memory	
Plug-in (MMC)	Yes
Plug-in (MMC), max.	8 Mbyte
<ul> <li>Data management on MMC (after last programming), min.</li> </ul>	10 y
Backup	
• present	Yes; Ensured by SIMATIC Micro Memory Card (maintenance-free)
CPU processing times	
for bit operations, typ.	0.06 μs

or word operations, typ.	0.12 µs
or fixed point arithmetic, typ.	0.16 μs
or floating point arithmetic, typ.	0.59 μs
PU-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><li>Number, max.</li></ul>	1 024; Number range: 1 to 16000
• Size, max.	64 kbyte
FB	
<ul><li>Number, max.</li></ul>	1 024; Number range: 0 to 7999
• Size, max.	64 kbyte
FC	
<ul><li>Number, max.</li></ul>	1 024; Number range: 0 to 7999
Size, max.	64 kbyte
OB	
<ul><li>Number, max.</li></ul>	See S7-300 operation list
• Size, max.	64 kbyte
<ul> <li>Number of free cycle OBs</li> </ul>	1; OB 1
<ul> <li>Number of time alarm OBs</li> </ul>	1; OB 10
<ul> <li>Number of delay alarm OBs</li> </ul>	2; OB 20, 21
<ul> <li>Number of cyclic interrupt OBs</li> </ul>	4; OB 32, 33, 34, 35
<ul> <li>Number of process alarm OBs</li> </ul>	1; OB 40
<ul> <li>Number of DPV1 alarm OBs</li> </ul>	3; OB 55, 56, 57
<ul> <li>Number of isochronous mode OBs</li> </ul>	1; OB 61; only for PROFINET
<ul> <li>Number of startup OBs</li> </ul>	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)
<ul> <li>Number of synchronous error OBs</li> </ul>	2; OB 121, 122
Nesting depth	
per priority class	16
<ul> <li>additional within an error OB</li> </ul>	4
ounters, 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 — upper limit	999
— upper limit	
• present	Yes
• Type	SFB
S7 times	Of D
Number	256
Retentivity	200
— adjustable	Yes
— lower limit	0
	255
— upper limit	
— preset	No retentivity
Time range	40
— lower limit	10 ms
— upper limit	9 990 s
IEC timer	

• Type	SFB
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	64 kbyte
Flag	
• Size, max.	256 byte
Retentivity available	Yes
<ul> <li>Retentivity preset</li> </ul>	MB 0 to MB 15
<ul> <li>Number of clock memories</li> </ul>	8; 1 memory byte
Data blocks	
<ul> <li>Retentivity adjustable</li> </ul>	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	0.0401.4
— Inputs	2 048 byte
— Outputs	2 048 byte
Process image  • Inputs, adjustable	2 048 byte
	· · · · · · · · · · · · · · · · · · ·
<ul><li>Outputs, adjustable</li><li>Inputs, default</li></ul>	2 048 byte 128 byte
Outputs, default	128 byte
Subprocess images	120 0910
Number of subprocess images, max.	1; With PROFINET IO, the length of the user data is limited to 1600
	bytes
Digital channels	
• Inputs	16 336
— of which central	496
• Outputs	16 336
— of which central	496
Analog channels	4 004
• Inputs	1 021
— of which central	124
<ul><li>Outputs</li><li>— of which central</li></ul>	1 021 124
	124
Hardware configuration	CO. Controlled
Number of modules per system, max.  Mounting rail	63; Centralized
Number of mounting rails that can be used	1
Length of mounting rail, max.	Station width: ≤ 1 m or < 2 m
Time of day	Station Width 2 Till of 32 III
Clock	
Hardware clock (real-time)	Yes
retentive and synchronizable	Yes
Backup time	6 wk; At 40 °C ambient temperature, typically
Deviation per day, max.	10 s; Typ.: 2 s
Behavior of the clock following POWER-ON	Clock continues running after POWER OFF
Behavior of the clock following expiry of backup	Clock continues to run with the time at which the power failure occurred
period	
Operating hours counter	
• Number	1
Number/Number range	0
Range of values	0 to 2 <sup>31</sup> hours (when using SFC 101)
Granularity	1h
• retentive	Yes; Must be restarted at each restart

Clask averabranization	
Clock synchronization	Voc
• supported	Yes
• to MPI, master	No
• to MPI, slave	No
• to DP, master	Yes; With DP master module
• to DP, slave	Yes; With DP master module
in AS, master	No
• in AS, slave	No
on Ethernet via NTP	Yes; As client
Interfaces	
Interfaces/bus type	1x PROFINET (3 RJ45 ports)
1. Interface	
Interface type	PROFINET
Isolated	Yes
automatic detection of transmission rate	Yes
Autonegotiation	Yes
Autocrossing	Yes
Change of IP address at runtime, supported	Yes
Interface types	
RJ 45 (Ethernet)	Yes
Number of ports	3; RJ45
integrated switch	Yes
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
Point-to-point connection	No
PROFINET IO Controller	140
Transmission rate, max.	100 Mbit/s; full duplex
Services	100 Mibitos, full duplox
— PG/OP communication	Yes
— Routing	Yes; With DP master module
— S7 communication	Yes; with loadable FBs
Isochronous mode	Yes; OB 61; only for PROFINET IO
— ISOCITIONOUS Mode  — IRT	Yes
— IRT — Shared device	Yes
Prioritized startup	Yes 32
<ul> <li>Number of IO devices with prioritized startup, max.</li> </ul>	5 <u>Z</u>
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	128
"high flexibility"	61
— of which in line, max.	
<ul> <li>Number of connectable IO Devices for RT, max.</li> </ul>	128
— of which in line, max.	128
<ul> <li>Activation/deactivation of IO Devices</li> </ul>	Yes
<ul> <li>Number of IO Devices that can be simultaneously activated/deactivated, max.</li> </ul>	8
<ul> <li>— IO Devices changing during operation (partner ports), supported</li> </ul>	Yes
<ul> <li>Number of IO Devices per tool, max.</li> </ul>	8

<ul> <li>Device replacement without swap medium</li> </ul>	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	Minimum value depends on communication share set for PROFINET
— Opuating time	I/O, on the number of I/O devices, and on the number of configured user
	data items.
<ul><li>Updating times</li></ul>	$250~\mu s$ to $512~ms$ (depends on operating mode; for more details, refer to
	Operating Instructions, "Interface Module IM151-8 PN/DP CPU")
Address area	Oliberta
— Inputs, max.	2 kbyte
— Outputs, max.	2 kbyte
— User data consistency, max.	1 024 byte; with PROFINET I/O
PROFINET IO Device	
Services	Yes
— PG/OP communication	
<ul><li>— Routing</li><li>— S7 communication</li></ul>	Yes
	Yes; with loadable FBs
— Isochronous mode	No Voc
— 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,	2
max.	-
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
<ul> <li>User data per submodule, max.</li> </ul>	1 024 byte
PROFINET CBA	
acyclic transmission	Yes
<ul> <li>cyclic transmission</li> </ul>	Yes
Open IE communication	
<ul> <li>Number of connections, max.</li> </ul>	8
<ul> <li>Local port numbers used at the system end</li> </ul>	0, 20, 21, 23, 25, 80, 102, 135, 161, 443, 8080, 34962, 34963, 34964,
	65532, 65533, 65534, 65535
2. Interface	
Interface type	External interface via master module 6ES7138-4HA00-0AB0
Isolated	Yes
Interface types	
• RS 485	Yes
Protocols	
• MPI	No
<ul> <li>PROFINET IO Controller</li> </ul>	No
PROFINET IO Device	No
PROFINET CBA	No
<ul> <li>PROFIBUS DP master</li> </ul>	Yes
<ul> <li>PROFIBUS DP slave</li> </ul>	No
Open IE communication	No
Web server	No
PROFIBUS DP master	
<ul> <li>Transmission rate, max.</li> </ul>	12 Mbit/s
<ul> <li>Number of DP slaves, max.</li> </ul>	32; Per station
Services	
<ul><li>— PG/OP communication</li></ul>	Yes
— Routing	Yes
<ul> <li>Global data communication</li> </ul>	No
<ul> <li>S7 basic communication</li> </ul>	Yes; I blocks only
— S7 communication	Yes

<ul> <li>S7 communication, as client</li> </ul>	No
<ul> <li>S7 communication, as server</li> </ul>	Yes
— Equidistance	Yes
<ul> <li>Isochronous mode</li> </ul>	No
— SYNC/FREEZE	Yes
<ul> <li>Activation/deactivation of DP slaves</li> </ul>	Yes
<ul> <li>Number of DP slaves that can be</li> </ul>	8
simultaneously activated/deactivated, max.	
<ul> <li>Direct data exchange (slave-to-slave</li> </ul>	Yes
communication)	
— 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
Protocols	
Redundancy mode	
Media redundancy	
— MRP	Yes
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 for connection type 01H, max.	1 460 byte
	•
Data length for connection type 11H, max.	32 768 byte
<ul> <li>— several passive connections per port, supported</li> </ul>	Yes
• ISO-on-TCP (RFC1006)	Yes; via integrated PROFINET interface and loadable FBs
<ul> <li>Number of connections, max.</li> </ul>	8
— Data length, max.	32 768 byte
• UDP	Yes; via integrated PROFINET interface and loadable FBs
<ul> <li>Number of connections, max.</li> </ul>	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
Data record routing	Yes; With DP master module
Global data communication	Tes, With Dr master module
	Nie
• supported	No
S7 basic communication	Vac I blacks
• supported	Yes; I blocks
User data per job, max.	76 byte
User data per job (of which consistent), max.	76 byte
S7 communication	
• supported	Yes
• as server	Yes
as client	Yes; via integrated PROFINET interface and loadable FBs
a do onorit	
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, 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, max.  PROFINET CBA (at set setpoint communication load)	the SFCs/FCs of S7 Communication)
User data per job, max.  PROFINET CBA (at set setpoint communication load)      Setpoint for the CPU communication load	the SFCs/FCs of S7 Communication) 50 %
User data per job, max.  PROFINET CBA (at set setpoint communication load)	the SFCs/FCs of S7 Communication)

<ul> <li>Total of all master/slave connections</li> </ul>	1 000
<ul> <li>Data length of all incoming connections master/slave, max.</li> </ul>	4 000 byte
<ul> <li>Data length of all outgoing connections master/slave, max.</li> </ul>	4 000 byte
<ul> <li>Number of device-internal and PROFIBUS interconnections</li> </ul>	500
<ul> <li>Data length of device-internal und PROFIBUS interconnections, max.</li> </ul>	4 000 byte
Data length per connection, max.	1 400 byte
Remote interconnections with acyclic transmission	
— Sampling interval, min.	500 ms
Number of incoming interconnections	100
Number of incoming interconnections	100
Data length of all incoming interconnections, max.	2 000 byte
<ul> <li>Data length of all outgoing interconnections, max.</li> </ul>	2 000 byte
<ul> <li>Data length per connection, max.</li> </ul>	1 400 byte
Remote interconnections with cyclic transmission	
<ul> <li>Transmission frequency: Transmission interval, min.</li> </ul>	1 ms
<ul> <li>Number of incoming interconnections</li> </ul>	200
<ul> <li>Number of outgoing interconnections</li> </ul>	200
<ul> <li>Data length of all incoming interconnections, max.</li> </ul>	2 000 byte
<ul> <li>Data length of all outgoing interconnections, max.</li> </ul>	2 000 byte
<ul> <li>Data length per connection, max.</li> </ul>	450 byte
HMI variables via PROFINET (acyclic)	
<ul> <li>Number of stations that can log on for HMI variables (PN OPC/iMap)</li> </ul>	3; 2x PN OPC/1x iMap
<ul> <li>HMI variable updating</li> </ul>	500 ms
<ul> <li>Number of HMI variables</li> </ul>	200
<ul> <li>Data length of all HMI variables, max.</li> </ul>	2 000 byte
PROFIBUS proxy functionality	
— supported	Yes
<ul> <li>Number of linked PROFIBUS devices</li> </ul>	16
<ul> <li>Data length per connection, max.</li> </ul>	240 byte; Slave-dependent
PAR server	
• supported	Yes
Number of connections	
overall	12
usable for PG communication	11
— reserved for PG communication	1
<ul> <li>adjustable for PG communication, min.</li> </ul>	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
	0
— adjustable for S7 basic communication, min.	10
<ul> <li>adjustable for S7 basic communication, max.</li> <li>usable for S7 communication</li> </ul>	
■ usable for St Communication	10; with loadable FBs
adjustable for C7 as managed = +1 = -	10
— adjustable for S7 communication, max.	20
• total number of instances, max.	32
	32 4; With DP master module

Process diagnostic messages simultaneously active Alarm-S blocks, max.  Test commissioning functions  Status block Yes, Up to 2 simultaneously Status block Yes, Up to 2 simultaneously Status block Status block Status block Status block Status block Status block Status control variable Status control Status control variable Status variables Status variables, max St		
Selection   Sele		communication
Status block		
Status block   Yes; Up to 2 simultaneously   Single step   Yes	-	300
Single step	Test commissioning functions	
Number of breakpoints  Status/control variable  Status/control variable  Variables  Inputs, outputs, memory bits, DB, times, counters  Inputs, outputs, memory	Status block	Yes; Up to 2 simultaneously
Status/control variable  Veriables  Variables  Number of variables, max.  of which satus variables, max.  14  Forcing  F	Single step	Yes
Status/control variable     Variables     Variables     Number of variables, max.     — of which status variables, max.     — of which control variables, max.     It  Forcing     Forcing     Forcing, variables     Forcing, variables     Forcing, variables     Number of variables, max.     10  Diagnostic buffer  • present     Number of entries, max.     — adjustable     No     — of which powerfail-proof     No     — of which powerfail-proof     Interrupts/diagnostic/status information  Alarms     Ves  Diagnostics function  Diagnostics function  Ves  Diagnostics indication LED  • for maintenance     □ Ves; MT     □ Ves; MT     □ Ves; MT     □ Ves; MT     □ Ves; MF     □ Ves      □ V	Number of breakpoints	4
Variables Number of variables, max.  — of which status variables, max.  — of which status variables, max.  — of which control variables, max.  14  Forcing Forcing Forcing Forcing, Fo	Status/control	
Number of variables, max.	<ul> <li>Status/control variable</li> </ul>	Yes
of which status variables, max.	<ul><li>Variables</li></ul>	Inputs, outputs, memory bits, DB, times, counters
Forcing	<ul> <li>Number of variables, max.</li> </ul>	30
Forcing     • Forcing     • Forcing     • Forcing, variables   I/O     • Forcing	<ul><li>of which status variables, max.</li></ul>	30
Forcing, variables     Forcing, variables     Forcing, variables     Forcing, variables     Forcing, variables     Number of variables, max.     Diagnostic buffer     Present     Foresent     Fo	— of which control variables, max.	14
Forcing, variables Number of variables, max.  Forcing, variables, max.  Number of variables, max.  - adjustable No - of which powerfall-proof Interrupts/diagnostics/status information  Alarms Alarms Ves Diagnostics function Plagnostics function Ves Diagnostics indication LED  • for maintenance • Bus fault BF (red) • Group error SF (red) • Group error SF (red) • Bus activity PROFINET (green) Ves; P1-/P2-/P3-Link  Potential steparation  Detween PROFIBUS DP and all other circuit components Ves Ves Ves Ves Ves Ves Ves Ves Ves Ve	Forcing	
Number of variables, max.  Diagnostic buffer	<ul><li>Forcing</li></ul>	Yes
Diagnostic buffer  • present  • Number of entries, max.  — adjustable — of which powerfail-proof  Interrupts/diagnostics/status information  Alarms  Diagnostics function  Diagnostics indication LED  • for maintenance • Bus fault BF (red) • Group error SF (red) • Bus activity PROFINET (green)  Potential separation  between PROFIBUS DP and all other circuit components  Isolation tested with  Configuration  Configuration  Configuration  Configuration  System functions (SFC) • System functions (SFC) • System functions (SFC) • System function blocks (SFB)  Programming language  — LAD — FBD — SCL — CFC — GRAPH — HiGraph®  Know-how protection/password protection • User program protection function protection protection protection protection function protection protection protection function functio	<ul> <li>Forcing, variables</li> </ul>	I/O
Present     Number of entries, max.     Adjustable     Of which powerfail-proof     100; Only the last 100 entries are retained  Interrupts/diagnostics/status information  Alarms     Ves     Diagnostics function     Yes     Diagnostics function  Diagnostics indication LED     Formaintenance     Bus fault BF (red)     Group error SF (red)     Admitioning 24 voltage supply ON (green)     Bus activity PROFINET (green)     Ves; P1-/P2-/P3-Link  Potential separation  between PROFIBUS DP and all other circuit components     Isolation tested with     Solotion  Isolation tested with     Soloty DC  Degree and class of protection  IP degree of protection  Configuration  Configuration  Configuration software     STEP 7     Yes; V5.5 or higher  Programming     Command set     Nesting levels     System function blocks (SFB)     Programming language  — LAD     Yes     System function blocks (SFB)     Programming language  — LAD     Yes     STL     System function blocks (SFB)     Programming language  — LAD     Yes     STL     SCL     Yes     SCL     Yes; Optional     Yes     CRAPH     Herrich All Services     Programming     Vese rooper of protection      User program protection/password protection     Ves     Solotke encryption     Ves     With S7 block Privacy	Number of variables, max.	10
Number of entries, max.  — adjustable — of which powerfail-proof 100; Only the last 100 entries are retained  Interrupts/diagnostics/status information  Alarms Diagnostics function Ves Diagnostics indication LED  • for maintenance • for maintenance • Bus fault BF (red) • Gorup error SF (red) • Monitoring 24 V voltage supply ON (green) • Bus activity PROFINET (green)  Potential separation  between PROFIBUS DP and all other circuit components  Isolation  Isolation tested with Degree and class of protection  IP degree of protection  Configuration  Configuration software • STEP 7  Programming • Command set • Nesting levels • System functions (SFC) • System functions (SFC) • System functions (SFC) • System function blocks (SFB) Programming language  — LAD — FBD — STL — SCL — GRAPH — HiGraph®  Know-how protection/password protection • User program protection/password protection protection/password protection/password protection/password protection/password protection/password pr	Diagnostic buffer	
adjustable	• present	Yes
Interrupts/diagnostics/status information  Alarms  Per Diagnostics function  For maintenance  • For maintenance  • Bus fault BF (red)  • Group error SF (red)  • Bus fault BF (red)  • Bus activity PROFINET (green)  Potential separation  Between PROFIBUS DP and all other circuit components  Isolation  Isolation tested with  500 V DC  Degree and class of protection  IP degree of protection  IP degree of protection  Configuration  Configuration  • STEP 7  Yes; V5.5 or higher  Programming  • Command set  • Nesting levels  • System functions (SFC)  • System function blocks (SFB)  Programming language  — LAD  — FBD — STL — SCL — SCL — CFC — GRAPH — HiGraph®  Know-how protection  • User program protection/password protection  • User program protection Yes; With S7 block Privacy	<ul> <li>Number of entries, max.</li> </ul>	500
Interrupts/diagnostics/status information	— adjustable	No
Alarms Diagnostics function Diagnostics function Pyes Diagnostics function Or maintenance Of maintenance Of sus fault BF (red) Of sus activity PROFINET (green) Of sus activity PROFIBUS DP and all other circuit components Of sus activity PROFIBUS DP and all other circuit components Of sus activity PROFINET (green) Of sus activity PROFINET (gr	<ul><li>of which powerfail-proof</li></ul>	100; Only the last 100 entries are retained
Diagnostics function Yes  Diagnostics indication LED  • for maintenance • Bus fault BF (red) • Group error SF (red) • Monitoring 24 V voltage supply ON (green) • Bus activity PROFINET (green)  Potential separation  between PROFIBUS DP and all other circuit components  Isolation  Isolation tested with  Degree and class of protection  IP degree of protection  IP degree of protection  IP degree of protection  Configuration  Configuration  Configuration  Configuration  • STEP 7  Programming  • Command set • Nesting levels • System functions (SFC) • System functions (SFC) • System function blocks (SFB)  Programming language  — LAD — FBD — STL — SCL — SCL — Yes — STL — SCL — GRAPH — HiGraph®  Know-how protection  • User program protection/password protection  • User program protection/password protection  • Stes, With S7 block Privacy	Interrupts/diagnostics/status information	
Diagnostics indication LED	Alarms	Yes
Diagnostics indication LED	Diagnostics function	Yes
• for maintenance     • Bus fault BF (red)     • Group error SF (red)     • Group error SF (red)     • Monitoring 24 V voltage supply ON (green)     • Bus activity PROFINET (green)     Potential separation     between PROFIBUS DP and all other circuit components     Isolation     Isolation     Isolation lested with     500 V DC     Degree and class of protection     IP degree of protection     IP degree of protection		
Group error SF (red)     Monitoring 24 V voltage supply ON (green)     Bus activity PROFINET (green)      Potential separation      between PROFIBUS DP and all other circuit components      Isolation  Isolation tested with      Degree and class of protection  IP degree of protection  Configuration  Configuration Software      STEP 7      Yes; V5.5 or higher  Programming      Command set     Nesting levels     System function s(SFC)     System function blocks (SFB)  Programming language      — LAD     — FBD     — STL     — SSL     — SSL     — SSL     — SSL     — SSL     — SCL     — GRAPH     — HiGraph®  Know-how protection      Uses program protection/password protection     Suse instructory     Yes     Nesting language      Ves; Optional     Yes; Optional     Yes; Optional     Ves; Optional     Yes; Optional     Yes; Optional     Yes; Optional     Yes; Optional     Yes; Optional     Ves; Optional	-	Yes; MT
Group error SF (red)     Monitoring 24 V voltage supply ON (green)     Bus activity PROFINET (green)      Potential separation      between PROFIBUS DP and all other circuit components      Isolation  Isolation tested with      Degree and class of protection  IP degree of protection  Configuration  Configuration Software      STEP 7      Yes; V5.5 or higher  Programming      Command set     Nesting levels     System function s(SFC)     System function blocks (SFB)  Programming language      — LAD     — FBD     — STL     — SSL     — SSL     — SSL     — SSL     — SSL     — SCL     — GRAPH     — HiGraph®  Know-how protection      Uses program protection/password protection     Suse instructory     Yes     Nesting language      Ves; Optional     Yes; Optional     Yes; Optional     Ves; Optional     Yes; Optional     Yes; Optional     Yes; Optional     Yes; Optional     Yes; Optional     Ves; Optional	<ul><li>Bus fault BF (red)</li></ul>	Yes; BF-PN
Monitoring 24 V voltage supply ON (green) Bus activity PROFINET (green) Yes; P1-/P2-/P3-Link  Potential separation between PROFIBUS DP and all other circuit components Isolation Isolation tested with 500 V DC  Degree and class of protection IP degree of protection Configuration Configuration Configurationsoftware STEP 7 Yes; V5.5 or higher  Programming  Command set Nesting levels System functions (SFC) System function blocks (SFB) System function blocks (SFB) Programming language  — LAD — FBD — STL — SCL — SCL — Yes; Optional — CFC — GRAPH — HiGraph® Know-how protection  Uses Program protection/password protection  Ves; With S7 block Privacy		
Bus activity PROFINET (green)  Potential separation  between PROFIBUS DP and all other circuit components  Isolation  Isolation  Isolation tested with  Degree and class of protection  IP degree of protection  Configuration  Configuration Software  STEP 7  Programming  Command set  Nesting levels  System functions (SFC)  System function blocks (SFB)  Programming language  LAD  FBD  System function blocks (SFB)  See instruction list  Programming language  CHAD  FBD  System function blocks (SFB)  See instruction list  Programming language  System function blocks (SFB)  See instruction list  Programming language  System function blocks (SFB)  See instruction list  Programming language  System function blocks (SFB)  See instruction list  Programming language  System function blocks (SFB)  See instruction list  Programming language  System function blocks (SFB)  See instruction list  Programming language  System function blocks (SFB)  See instruction list  Programming language  System function blocks (SFB)  See instruction list  Programming language  System function blocks (SFB)  See instruction list  System function blocks (SFB)  System function blocks (SFB)  See instruction list  System function blocks (SFB)  See instruction list  System function blocks (SFB)  System function		
Potential separation between PROFIBUS DP and all other circuit components Isolation Isolation tested with 500 V DC  Degree and class of protection IP degree of protection IP degree of protection Configuration Configuration Configuration software  • STEP 7 Yes; V5.5 or higher  Programming • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB)  Programming language  — LAD — FBD — STL — SCL — SCL — SCL — Yes; Optional — HiGraph® Know-how protection • User program protection/password protection • User program protection/password protection • Block encryption		Yes: P1-/P2-/P3-Link
between PROFIBUS DP and all other circuit components  Isolation  Isolation tested with 500 V DC  Degree and class of protection  IP degree of protection IP20  Configuration  Configuration  Configuration  Configuration  **Command set**  • STEP 7 Yes; V5.5 or higher  Programming  • Command set see instruction list  • Nesting levels 8  • System functions (SFC) see instruction list  Programming language  — LAD Yes — FBD Yes — STL Yes — SCL Yes; Optional — CFC Yes; Optional — HiGraph® Yes; Optional  Know-how protection  • User program protection/password protection • User program protection/password protection • Block encryption  Yes; With S7 block Privacy		
Isolation tested with 500 V DC  Degree and class of protection  IP degree of protection  Configuration  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  Programming language  - LAD Yes - FBD Yes - STL Yes - SCL Yes; Optional - CFC Yes; Optional - HiGraph® Yes; Optional  Know-how protection  • User program protection/password protection • User program protection/password protection • User program protection/password protection • Block encryption  Yes; With S7 block Privacy		Yes
Isolation tested with   500 V DC		103
Degree and class of protection		500 V DC
P degree of protection		500 V DC
Configuration  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  Programming language  — LAD Yes — FBD Yes — STL Yes — STL Yes; Optional — OFC Yes; Optional — HiGraph® Yes; Optional  Know-how protection • User program protection/password protection • User program protection/password protection • User program protection/password protection • Block encryption  Yes; With S7 block Privacy		ID00
Configuration software  STEP 7  Yes; V5.5 or higher  Programming  Command set See instruction list System functions (SFC) System function blocks (SFB)  Programming language  LAD Yes FBD Yes STL SCL SCL Yes; Optional HiGraph®  Know-how protection User program protection/password protection SITE Yes Yes Optional Yes; Optional		IP20
STEP 7  Programming  Command set See instruction list Nesting levels System functions (SFC) System function blocks (SFB)  Programming language  - LAD - FBD - STL - SCL - SCL - CFC - GRAPH - HiGraph®  Know-how protection User program protection/password protection Block encryption  Yes; V5.5 or higher  see instruction list  8  Yes see instruction list  Yes yes yes optional Yes Optional Yes; Optional		
Programming  Command set See instruction list System functions (SFC) See instruction list System function blocks (SFB) See instruction list Programming language  LAD Yes - FBD Yes - STL Yes - SCL Yes; Optional - CFC GRAPH HGraph® Yes; Optional HiGraph®  Know-how protection User program protection/password protection Block encryption See instruction list Yes yes yes yes yes instruction list Yes yes yes instruction list	-	
Command set  Nesting levels  System functions (SFC)  System function blocks (SFB)  Programming language	• STEP 7	Yes; V5.5 or higher
<ul> <li>Nesting levels</li> <li>System functions (SFC)</li> <li>see instruction list</li> <li>System function blocks (SFB)</li> <li>see instruction list</li> </ul> Programming language <ul> <li>LAD</li> <li>FBD</li> <li>Yes</li> <li>STL</li> <li>Yes</li> <li>SCL</li> <li>Yes; Optional</li> <li>CFC</li> <li>GRAPH</li> <li>HiGraph®</li> <li>Know-how protection</li> <li>User program protection/password protection</li> <li>Block encryption</li> </ul> Yes <ul> <li>See instruction list</li> <li>Yes</li> <li>Optional</li> <li>Yes</li> <li>Optional</li> <li>Yes</li> <li>Optional</li> <li>Yes</li> <li>Optional</li> </ul> Yes <ul> <li>Optional</li> <li>Yes</li> <li>Optional</li></ul>	Programming	
<ul> <li>System functions (SFC)</li> <li>System function blocks (SFB)</li> <li>See instruction list</li> <li>Programming language</li> <li>— LAD</li> <li>— FBD</li> <li>— STL</li> <li>— SCL</li> <li>— SCL</li> <li>— Yes; Optional</li> <li>— CFC</li> <li>— GRAPH</li> <li>— HiGraph®</li> <li>Know-how protection</li> <li>— User program protection/password protection</li> <li>— Block encryption</li> <li>See instruction list</li> <li>Yes</li> <li>Optional</li> <li>Yes; Optional</li> <li>Yes; Optional</li> <li>Yes; Optional</li> <li>Yes; Optional</li> <li>Yes; Optional</li> </ul>	Command set	see instruction list
<ul> <li>◆ System function blocks (SFB)</li> <li>Programming language</li> <li>— LAD</li> <li>— FBD</li> <li>— STL</li> <li>— SCL</li> <li>— CFC</li> <li>— GRAPH</li> <li>— HiGraph®</li> <li>Know-how protection</li> <li>◆ User program protection/password protection</li> <li>◆ Block encryption</li> </ul> see instruction list Yes Yes Optional Yes; Optional Yes Yes Second Privacy Yes Yes With S7 block Privacy		8
Programming language  — LAD — FBD — FBD — Yes — STL — SCL — SCL — Yes; Optional — CFC — Yes; Optional — HiGraph® Yes; Optional — HiGraph® Yes; Optional  Ves; Optional Yes; Optional Yes; Optional Yes; Optional Yes; Optional		see instruction list
<ul> <li>— LAD</li> <li>— FBD</li> <li>— STL</li> <li>— SCL</li> <li>— CFC</li> <li>— GRAPH</li> <li>— HiGraph®</li> <li>Know-how protection</li> <li>● User program protection/password protection</li> <li>● Block encryption</li> <li>Yes</li> <li>Yes</li> <li>Yes</li> <li>Optional</li> <li>Optional<td>System function blocks (SFB)</td><td>see instruction list</td></li></ul>	System function blocks (SFB)	see instruction list
- FBD Yes - STL Yes - SCL Yes; Optional - CFC Yes; Optional - GRAPH Yes; Optional - HiGraph® Yes; Optional  Whow-how protection  • User program protection/password protection • Block encryption Yes; With S7 block Privacy		
- STL Yes - SCL Yes; Optional - CFC Yes; Optional - GRAPH Yes; Optional - HiGraph® Yes; Optional  **Now-how protection**  **User program protection/password protection Yes  **Block encryption**  **Yes*  **Yes*  **Optional*  **Yes*  **Optional*  **Yes*  *		Yes
- SCL Yes; Optional - CFC Yes; Optional - GRAPH Yes; Optional - HiGraph® Yes; Optional  Know-how protection  • User program protection/password protection • Block encryption Yes; With S7 block Privacy	— FBD	Yes
- CFC - GRAPH - HiGraph® - Ves; Optional - HiGraph® - Yes; Optional - Wes; Optional - Yes; Optional - Ves; Optional	— STL	Yes
— GRAPH Yes; Optional  — HiGraph® Yes; Optional  Know-how protection  ● User program protection/password protection  ● Block encryption Yes; With S7 block Privacy	— SCL	Yes; Optional
— HiGraph® Yes; Optional  Know-how protection  ● User program protection/password protection  ● Block encryption Yes; With S7 block Privacy	— CFC	Yes; Optional
Know-how protection  ■ User program protection/password protection  ■ Block encryption Yes; With S7 block Privacy	— GRAPH	Yes; Optional
<ul> <li>User program protection/password protection</li> <li>Block encryption</li> <li>Yes</li> <li>Yes; With S7 block Privacy</li> </ul>	— HiGraph®	Yes; Optional
Block encryption     Yes; With S7 block Privacy	Know-how protection	
	<ul> <li>User program protection/password protection</li> </ul>	Yes
Cycle time monitoring	Block encryption	Yes; With S7 block Privacy
-,	Cycle time monitoring	

<ul><li>lower limit</li><li>upper limit</li><li>adjustable</li><li>preset</li></ul>	1 ms 6 000 ms Yes 150 ms
Dimensions	
Width	120 mm; DP master module: 35 mm
Height	119.5 mm
Depth	75 mm
Weights	
Weight, approx.	320 g; DP master module: Approx. 100 g

last modified: 7/28/2021 🖸