## Data sheet



SIPLUS S7-1500 CPU 1516-3 PN/DP -40 ... +60 GRAD C STARTUP -20 GRAD C WITH CONFORMAL COATING BASED ON 6ES7516-3AN01-0AB0 . CENTRAL PROCESSING UNIT WITH WORKING MEMORY 1 MB FOR PROGRAM AND 5 MB FOR DATA, 1. INTERFACE: PROFINET IRT WITH 2 PORT SWITCH, 2. INTERFACE: ETHERNET, 3. INTERFACE: PROFIBUS, 10 NS BIT-PERFORMANCE, SIMATIC MEMORY CARD NECESSARY

Figure similar

General information	
Product type designation	CPU 1516-3 PN/DP
Display	
Screen diagonal (cm)	6.1 cm
Control elements	
Number of keys	6
Mode selector switch	1
Supply voltage	
Type of supply voltage	24 V DC
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
Input current	
Input current Current consumption (rated value)	0.85 A
	0.85 A 2.4 A; Rated value

Power	
Power consumption from the backplane bus	6.7 W
(balanced)	
Infeed power to the backplane bus	12 W
Power loss	
Power loss, typ.	7 W
Memory	
SIMATIC memory card required	Yes
Work memory	
• integrated (for program)	1 Mbyte
• integrated (for data)	5 Mbyte
Load memory	
Plug-in (SIMATIC Memory Card), max.	2 Gbyte
Backup	
maintenance-free	Yes
CPU processing times	
for bit operations, typ.	10 ns
for word operations, typ.	12 ns
for fixed point arithmetic, typ.	16 ns
for floating point arithmetic, typ.	64 ns
CPU-blocks	
Number of blocks (total)	6 000
DB	
Number, max.	6 000; Number range: 1 to 65535
● Size, max.	5 Mbyte
FB	
Number, max.	5 998; Number range: 1 to 65535
• Size, max.	512 kbyte
FC	
Number, max.	5 999; Number range: 1 to 65535
• Size, max.	512 kbyte
ОВ	
● Size, max.	512 kbyte
<ul> <li>Number of free cycle OBs</li> </ul>	100
Number of time alarm OBs	20
Number of delay alarm OBs	20
Number of cyclic interrupt OBs	20
Number of process alarm OBs	50
Number of DPV1 alarm OBs	3
Number of isochronous mode OBs	2
Number of technology synchronous alarm OBs	2
OJ - J	

<ul><li>Number of startup OBs</li></ul>	100
<ul> <li>Number of asynchronous error OBs</li> </ul>	4
<ul> <li>Number of synchronous error OBs</li> </ul>	2
<ul> <li>Number of diagnostic alarm OBs</li> </ul>	1
Nesting depth	
• per priority class	24
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
Retentivity	
— adjustable	Yes
IEC counter	
Number	Any (only limited by the main memory)
Retentivity	
— adjustable	Yes
S7 times	
• Number	2 048
Retentivity	
— adjustable	Yes
IEC timer	
• Number	Any (only limited by the main memory)
Retentivity	
— adjustable	Yes
Data areas and their retentivity	
retentive data area in total (incl. times, counters,	512 kbyte; Available retentive memory for bit memories, timers,
flags), max.	counters, DBs, and technology data (axes): 472 KB
Flag	
<ul><li>Number, max.</li></ul>	16 kbyte
Number of clock memories	8; 8 clock memory bits, grouped into one clock memory byte
Local data	
<ul><li>per priority class, max.</li></ul>	64 kbyte; max. 16 KB per block
Address area	
Number of IO modules	8 192
I/O address area	
• Inputs	32 kbyte; All inputs are in the process image
<ul><li>Outputs</li></ul>	32 kbyte; All outputs are in the process image
per integrated IO subsystem	
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
per CM/CP	
— Inputs (volume)	8 kbyte

— Outputs (volume)	8 kbyte
Subprocess images	
Number of subprocess images, max.	32
Hardware configuration	
Number of distributed IO systems	10
Number of DP masters	
• integrated	1
● Via CM	8; A maximum of 8 CMs (PROFINET + PROFIBUS) can be inserted in total
Number of IO Controllers	
• integrated	1
Rack	
Modules per rack, max.	32; CPU + 31 modules
<ul> <li>Number of lines, max.</li> </ul>	1
PtP CM	
Number of PtP CMs	the number of connectable PtP CMs is only limited by the number of available slots
Time of day	
Clock	
• Type	Hardware clock
Backup time	6 wk; At 40 °C ambient temperature, typically
<ul> <li>Deviation per day, max.</li> </ul>	10 s; Typ.: 2 s
Clock synchronization	
• supported	Yes
• to DP, master	Yes
• in AS, master	Yes
• in AS, slave	Yes
• on Ethernet via NTP	Yes
Interfaces	
Number of PROFINET interfaces	2
Number of PROFIBUS interfaces	1
1. Interface	
Interface types	
Number of ports	2
• integrated switch	Yes
• RJ 45 (Ethernet)	Yes
Functionality	
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
SIMATIC communication	Yes
Open IE communication	Yes

Web server	Yes
Media redundancy	Yes
2. Interface	
Interface types	1
Number of ports	
• integrated switch	No
• RJ 45 (Ethernet)	Yes
Functionality	N
PROFINET IO Controller	No 
PROFINET IO Device	No
<ul> <li>SIMATIC communication</li> </ul>	Yes
Open IE communication	Yes
Web server	Yes
3. Interface	
Interface types	
Number of ports	1
• RS 485	Yes
Functionality	
PROFIBUS DP master	Yes
PROFIBUS DP slave	No
<ul> <li>SIMATIC communication</li> </ul>	Yes
Interface types	
RJ 45 (Ethernet)	
• 100 Mbps	Yes
<ul> <li>Autonegotiation</li> </ul>	Yes
Autocrossing	Yes
Industrial Ethernet status LED	Yes
RS 485	
Transmission rate, max.	12 Mbit/s
Protocols	
Number of connections	
Number of connections, max.	256
<ul> <li>Number of connections reserved for ES/HMI/web</li> </ul>	10
<ul> <li>Number of connections via integrated interfaces</li> </ul>	128
PROFINET IO Controller	
Services	
— PG/OP communication	Yes
— S7 routing	Yes

la a de mana a constante	Yes
— Isochronous mode	Yes
— Open IE communication	Yes
— IRT	
— MRP	Yes; As MRP redundancy manager and/or MRP client; max. number of devices in the ring: 50
— PROFlenergy	Yes
<ul><li>— Prioritized startup</li></ul>	Yes; Max. 32 PROFINET devices
<ul> <li>Number of connectable IO Devices, max.</li> </ul>	256; In total, up to 768 distributed I/O devices can be connected via CPs/CMs via PROFIBUS or PROFINET.
— Of which IO devices with IRT, max.	64
<ul> <li>Number of connectable IO Devices for RT, max.</li> </ul>	256
— of which in line, max.	256
<ul> <li>Number of IO Devices that can be simultaneously activated/deactivated, max.</li> </ul>	8
— Number of IO Devices per tool, max.	8
— Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
Update time for IRT	
— for send cycle of 250 μs	250 μs to 4 ms
— for send cycle of 500 μs	500 μs to 8 ms
— for send cycle of 1 ms	1 ms to 16 ms
— for send cycle of 2 ms	2 ms to 32 ms
— for send cycle of 4 ms	4 ms to 64 ms
<ul><li>— With IRT and parameterization of "odd" send cycles</li></ul>	Update time = set "odd" send clock (any multiple of 125 $\mu$ s: 375 $\mu$ s, 625 $\mu$ s 3 875 $\mu$ s)
Update time for RT	
— for send cycle of 250 μs	250 μs to 128 ms
— for send cycle of 500 μs	500 μs to 256 ms
— for send cycle of 1 ms	1 ms to 512 ms
— for send cycle of 2 ms	2 ms to 512 ms
— for send cycle of 4 ms	4 ms to 512 ms
PROFINET IO Device	
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	Yes
— Open IE communication	Yes
— IRT	Yes
— MRP	Yes
— PROFlenergy	Yes
SIMATIC communication	

S7 communication, as server S7 communication, as client Ves User data per job, max. See online help (S7 communication, user data size)  Per le communication TCP/IP Data length, max. See online help (S7 communication, user data size)  Pes Second Per length, max. See online help (S7 communication, user data size)  Pes See Online help (S7 communication, user data size)  Pes See See Online help (S7 communication, user data size)  Pes See See See See See See See See See S		
User data per job, max.  Open IE communication  * TCP/IP  — Data length, max.  4 Kbyte  - Data length, max.  6 DHCP  No  - Data length, max.  7 Wes  - DHCP  8 SNMP  9 SNMP  9 DCP  1 LDP  9 Yes  1 LDP  9 Web server  1 HTTP  9 Yes: Standard and user-defined pages  1 HTTP  9 Yes: Standard and user-defined pages  PROFIBUS DP master  Services  - PG/OP communication  9 Yes  - ST routing  1 Sochronous mode  - Equidistance  - Number of DP slaves  1 CPs/CMs via PROFIBUS or PROFIBUT.  Yes  Further protocols  1 MODBUS  1 Sex MODBUS TCP  Media redundancy  1 Switchover time on line break, typ.  2 Switchover time on line break, typ.  1 Switchover time on line break, typ.  2 Switchover time on line break, typ.  2 Switchover time on line break, typ.  2 Switchover time on line break, typ.  3 Switchover time on line break, typ.  4 Switchover time on line break, typ.  5 Wes  Sy message functions  Number of configurable alarms, max.  1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		
Open IE communication  • TCP/IP  — Data length, max. • ISO-on-TCP (RFC1006) — Data length, max. • UDP — Data length, max. • UDP — Data length, max. • UDP — Data length, max. • I 472 byte  • DHCP • No • SNMP • DCP • LLDP  Web server • LLDP  Web server • HTTP  PG/OP communication — S7 routing — S8 routing — S9 routing	<ul> <li>S7 communication, as client</li> </ul>	Yes
TCP/IP Data length, max. 64 kbyte  650-on-TCP (RFC1006) Data length, max. 64 kbyte  10DP Yes Data length, max. 1472 byte  Data length, max. 1472 byte  DHCP No SNMP SNMP Yes  DCP Yes  LIDP Yes  LIDP Yes  HTTP Yes: Standard and user-defined pages  HTTPS Yes: Standard and user-defined pages  PROFIBUS DP master  Services  PG/OP communication Yes Services  PG/OP communication Yes Equidistance Number of DP slaves Yes  Yes: MODBUS TCP  Media redundancy  Sochronous mode Switchover time on line break, typ. Number of stations for message functions, max. Since S		See online help (S7 communication, user data size)
— Data length, max.  • ISO-on-TCP (RFC1006) — Data length, max.  • UDP — Data length, max.  • 1472 byte  • DHCP No • SNMP • SNMP • CCP • LLDP • Yes  • LLDP  Web server • HTTP • HTTPS • Yes; Standard and user-defined pages  PROFIBUS DP master  Services — PG/OP communication — S7 routing — Isochronous mode — Equidistance — Number of DP slaves  Further protocols • MOBUS  Media redundancy • Switchover time on line break, typ. • Number of stations in the ring, max.  For message functions  Ves  For message functions Number of onfigurable alarms, max.  Number of onfigurable alarms, max.  Number of simultaneously active alarms in alarm  1 000  Number of simultaneously active alarms in alarm  1 472 byte  448 byte  448 byte  448 byte  449 byte  449 byte  449 byte  440 byte  441 byte  442 byte  448 byte	Open IE communication	
In Item Protection  Ite	• TCP/IP	Yes
- Data length, max.  • UDP  - Data length, max.  • UDP  - Data length, max.  • 1 472 byte  • DHCP  • SNMP  • SNMP  • DCP  • LLDP  Web server  • HTTP  • HTTP  • Yes; Standard and user-defined pages  • HTTPS  PROFIBUS DP master  Services  - PG/OP communication - S7 routing - Isochronous mode - Equidistance - Number of DP slaves  • MODBUS  • MODBUS  Media redundancy  • Switchover time on line break, typ. • Number of stations in the ring, max.  57 message functions  Number of login stations for message functions, max.  Block related messages  Yes  1000  Ves  Yes  - Ves  1000  Yes  Yes  MODBUS  Media redundancy  • Switchover time on line break, typ. • Switchover time on lin	— Data length, max.	64 kbyte
UDP Data length, max.  1 472 byte  DHCP No SNMP Yes SNMP Yes DCP Yes LLDP Web server  HTTP Yes; Standard and user-defined pages PROFIBUS DP master  Services  PRO/OP communication Sr routing Yes Lsochronous mode Equidistance Number of DP slaves Further protocols MoDBUS Web in the ring, max.  Sochronous operation (application synchronized up to terminal) Equidistance Yes Sochronous operation (applications max.  Number of configurable alarms, max.  Number of configurable alarms, max.  Number of configurable alarms, max.  10 000  Number of simultaneously active alarms in alarm  1 472 byte 1472 byte 147	• ISO-on-TCP (RFC1006)	Yes
- Data length, max.  - DHCP  - SNMP  - DCP  - LLDP  - Ves  - LLDP  Web server  - HTTP  - HTTPS  - Yes; Standard and user-defined pages - HTTPS  - Yes; Standard and user-defined pages  - HTTPS  - Yes; Standard and user-defined pages  - HTTPS  - Yes; Standard and user-defined pages  - PG/OP communication - S7 routing - Isochronous mode - Equidistance - Number of DP slaves  - Number of DP slaves  - Activation/deactivation of DP slaves  - MODBUS  - Number of stations in the ring, max.  - Switchover time on line break, typ Switchover time on line break, typ Number of stations in the ring, max.  - Sochronous mode  Isochronous operation (application synchronized up to terminal)  Equidistance  - Yes  - Yes  - Svinchover time on geration (application synchronized up to terminal)  Equidistance - Yes  - Yes  - Yes  - Number of login stations for message functions, max.  - Solock related messages - Yes  - Number of configurable alarms, max.  - 10 000  - Number of simultaneously active alarms in alarm - 1000	— Data length, max.	64 kbyte
DHCP SNMP SNMP DCP LLDP Yes  ULDP Yes  Web server  HTTP Yes; Standard and user-defined pages HTTPS Yes; Standard and user-defined pages PROFIBUS DP master  Services  PG/OP communication Sor routing Yes Sorvices  PG/OP communication Yes Sorvices  PG/OP distributed I/O devices can be connected via CPs/CMs via PROFIBUS or PROFINET. Yes  Further protocols  PG/OP distributed I/O devices can be connected via CPs/CMs via PROFIBUS or PROFINET.  PACTIVATION OF SORVICES AND OF SOR	• UDP	Yes
SMMP DCP LLDP Yes  Web server  HTTP HTTPS Yes; Standard and user-defined pages PROFIBUS DP master  Services  PG/OP communication Services  PG/OP communication Yes Lsochronous mode Equidistance Number of DP slaves  Further protocols  MODBUS Yes; NoDBUS TCP  Media redundancy Switchover time on line break, typ. Number of stations in the ring, max.  Solutions  Number of login stations for message functions, max.  Number of configurable alarms, max.  10 000  Number of simultaneously active alarms in alarm  10 000  Ves  Yes  Standard and user-defined pages Yes  Standard and user-defined pages  Yes  Standard and user-defined pages  Yes  Standard and user-defined pages  Yes  Standard and user-defined pages  Yes  Standard and user-defined pages  Yes  Standard and user-defined pages  Yes  Standard and user-defined pages  Yes  Standard and user-defined pages  Yes  Standard and user-defined pages  Yes  Standard and user-defined pages  Yes  Standard and user-defined pages  Yes  Standard and user-defined pages  Yes  Standard and user-defined pages  Yes  Standard and user-defined pages  Yes  Number of configurable alarms, max.  10 000  Number of simultaneously active alarms in alarm  1 000	— Data length, max.	1 472 byte
DCP LLDP Yes  Web server  HTTP HTTP Yes; Standard and user-defined pages HTTPS Yes; Standard and user-defined pages PROFIBUS DP master  Services  PG/OP communication Yes Strouting Inschronous mode Equidistance Number of DP slaves Further protocols  MODBUS Yes; Standard and user-defined pages  PROFIBUS DP master  Services  PG/OP communication Yes Services PG/OP communication Yes Services PG/OP communication Yes Services PG/OP communication Yes	• DHCP	No
● LLDP  Web server  ● HTTP  HTTPS  Yes; Standard and user-defined pages  PROFIBUS DP master  Services  — PG/OP communication — S7 routing — Isochronous mode — Equidistance — Number of DP slaves  — Activation/deactivation of DP slaves  Further protocols  ● MODBUS  Media redundancy  ● Switchover time on line break, typ. ● Number of stations in the ring, max.  Sorvices  Yes  Further protocols  ● Number of stations in the ring, max.  Sorvices  Yes  Further protocols  ● Switchorous goperation (application synchronized up to terminal)  Equidistance  Yes  Yes  Yes  Number of login stations for message functions, max.  Block related messages  Number of configurable alarms, max.  Number of simultaneously active alarms in alarm  Number of simultaneously active alarms in alarm  Number of simultaneously active alarms in alarm  10 000	• SNMP	Yes
Web server  HTTP Yes; Standard and user-defined pages Yes; Standard and user-defined pages PROFIBUS DP master  Services  PG/OP communication Services  PG/OP communication Yes Isochronous mode Pequidistance Number of DP slaves  Activation/deactivation of DP slaves  Further protocols  MODBUS  Media redundancy Switchover time on line break, typ. Number of stations in the ring, max.  Sochronous mode Scochronous operation (application synchronized up to terminal) Equidistance Yes  Yes  Pres  Purply Pres Pres Pres Pres Pres Pres Pres Pres	• DCP	Yes
• HTTP • HTTPS FROFIBUS DP master  Services	• LLDP	Yes
PROFIBUS DP master  Services  - PG/OP communication Yes - S7 routing Yes - Isochronous mode Yes - Equidistance Yes - Number of DP slaves 125; In total, up to 768 distributed I/O devices can be connected via CPs/CMs via PROFIBUS or PROFINET Activation/deactivation of DP slaves Yes  Further protocols - MODBUS Yes; MODBUS TCP  Media redundancy - Switchover time on line break, typ Number of stations in the ring, max.  Sochronous mode  Isochronous operation (application synchronized up to terminal) - Equidistance - Yes  S7 message functions Number of login stations for message functions, max.  Block related messages - Yes  Number of configurable alarms, max.  10 000  Number of simultaneously active alarms in alarm  1 000	Web server	
Services  - PG/OP communication Yes - S7 routing Yes - Isochronous mode Yes - Equidistance Yes - Number of DP slaves 125; In total, up to 768 distributed I/O devices can be connected via CPs/CMs via PROFIBUS or PROFINET.  - Activation/deactivation of DP slaves Yes  Further protocols  • MODBUS Yes; MODBUS TCP  Media redundancy  • Switchover time on line break, typ. 200 ms • Number of stations in the ring, max. 50  Sochronous mode  Isochronous operation (application synchronized up to terminal)  Equidistance Yes  Number of login stations for message functions, max. 32  Block related messages Yes  Number of configurable alarms, max. 10 000  Number of simultaneously active alarms in alarm 1000	• HTTP	Yes; Standard and user-defined pages
Services  - PG/OP communication Yes - S7 routing Yes - Isochronous mode Yes - Equidistance Yes - Number of DP slaves 125; In total, up to 768 distributed I/O devices can be connected via CPs/CMs via PROFIBUS or PROFINET Activation/deactivation of DP slaves Yes  Further protocols  • MODBUS Yes; MODBUS TCP  Media redundancy • Switchover time on line break, typ. 200 ms • Number of stations in the ring, max. 50  Isochronous mode  Isochronous operation (application synchronized up to terminal) Equidistance Yes  Number of login stations for message functions, max. 32  Block related messages Yes  Number of configurable alarms, max. 10 000  Number of simultaneously active alarms in alarm 1 000	• HTTPS	Yes; Standard and user-defined pages
— PG/OP communication Yes — S7 routing Yes — Isochronous mode Yes — Equidistance Yes — Number of DP slaves 125; In total, up to 768 distributed I/O devices can be connected via CPs/CMs via PROFIBUS or PROFINET. — Activation/deactivation of DP slaves Yes; MODBUS TCP  Modia redundancy • Switchover time on line break, typ. 200 ms • Number of stations in the ring, max. 50  Isochronous mode  Isochronous operation (application synchronized up to terminal) Equidistance Yes  Number of login stations for message functions, max. 32  Block related messages Yes  Number of configurable alarms, max. 10 000  Number of simultaneously active alarms in alarm 1 000	PROFIBUS DP master	
— S7 routing — Isochronous mode — Equidistance — Number of DP slaves — Activation/deactivation of DP slaves  Further protocols  • MODBUS  Media redundancy • Switchover time on line break, typ. • Number of stations in the ring, max.  Sochronous mode  Isochronous operation (application synchronized up to terminal)  Equidistance  Yes  Yes  Yes  Number of login stations for message functions, max.  Number of configurable alarms, max.  Number of simultaneously active alarms in alarm  Yes  Yes  Yes  Yes  Yes  Yes  Yes  Number of simultaneously active alarms in alarm  Yes  125; In total, up to 768 distributed I/O devices can be connected via CPs/CMs via PROFIBUS or PROFINET.  Yes  Yes  Yes; MODBUS TCP  Yes  200 ms  50  Yes  Yes  Yes  Number of login stations for message functions, max.  32  Rought Page 125; In total, up to 768 distributed I/O devices can be connected via CPs/CMs via PROFIBUS or PROFIBUS or PROFINET.  Yes  Yes; MODBUS TCP  Yes  Yes  10 000  Number of simultaneously active alarms in alarm  Yes  10 000	Services	
- Isochronous mode - Equidistance - Number of DP slaves - Number of DP slaves - Activation/deactivation of DP slaves  - Activation/deactivation of DP slaves  Further protocols  • MODBUS  Media redundancy • Switchover time on line break, typ. • Number of stations in the ring, max.  Sochronous mode Isochronous operation (application synchronized up to terminal)  Equidistance  Yes  Ves  Yes  Ves  Yes  Yes  Sochronous mode  Isochronous operation (application synchronized up to terminal)  Equidistance  Yes  Sochronous mode  Sochronous mode  Isochronous operation (application synchronized up to terminal)  Equidistance  Yes  Number of login stations for message functions, max.  Block related messages  Number of configurable alarms, max.  10 000  Number of simultaneously active alarms in alarm  1 000	— PG/OP communication	Yes
- Equidistance - Number of DP slaves - Number of DP slaves - Activation/deactivation of DP slaves  - Activation/deactivation of DP slaves  Further protocols  • MODBUS  Media redundancy  • Switchover time on line break, typ. • Number of stations in the ring, max.  Sochronous mode  Isochronous mode  Isochronous operation (application synchronized up to terminal)  Equidistance  Yes  Ves  Yes; MODBUS TCP  **Source of Stations**  **Yes**  **Number of login stations for message functions, max.  **32**  **Block related messages  **Yes**  **Number of configurable alarms, max.  **10 000  **Number of simultaneously active alarms in alarm**  1 000	— S7 routing	Yes
- Number of DP slaves - Number of DP slaves - Activation/deactivation of DP slaves  Further protocols  • MODBUS  • Switchover time on line break, typ. • Number of stations in the ring, max.  Scochronous mode  Isochronous operation (application synchronized up to terminal)  Equidistance  Yes  Number of login stations for message functions, max.  125; In total, up to 768 distributed I/O devices can be connected via CPs/CMs via PROFIBUS or PROFINET.  Yes  MODBUS Yes; MODBUS TCP  200 ms  50  Sochronous mode  Yes  Isochronous mode  Yes  Sochronous operation (application synchronized up to terminal)  Equidistance  Yes  Number of login stations for message functions, max.  32  Block related messages  Number of configurable alarms, max.  10 000  Number of simultaneously active alarms in alarm  1 000	— Isochronous mode	Yes
via CPs/CMs via PROFIBUS or PROFINET.  — Activation/deactivation of DP slaves  Further protocols  • MODBUS  Yes; MODBUS TCP  Media redundancy  • Switchover time on line break, typ.  • Number of stations in the ring, max.  Soochronous mode  Isochronous operation (application synchronized up to terminal)  Equidistance  Yes  Soor message functions  Number of login stations for message functions, max.  Block related messages  Number of configurable alarms, max.  Number of simultaneously active alarms in alarm  1 000	— Equidistance	Yes
Further protocols  • MODBUS  Yes; MODBUS TCP  Media redundancy  • Switchover time on line break, typ. • Number of stations in the ring, max.  Sochronous mode  Isochronous operation (application synchronized up to terminal)  Equidistance  Yes  Sochronous operations  Number of login stations for message functions, max.  Block related messages  Number of configurable alarms, max.  10 000  Number of simultaneously active alarms in alarm  1 000	— Number of DP slaves	
Media redundancy Switchover time on line break, typ. Number of stations in the ring, max.  Sochronous mode Isochronous operation (application synchronized up to terminal) Equidistance Yes  Number of login stations for message functions, max.  Block related messages Number of configurable alarms, max.  Number of simultaneously active alarms in alarm  Yes; MODBUS TCP  200 ms 50  Yes  50  Yes  1000	<ul> <li>Activation/deactivation of DP slaves</li> </ul>	Yes
Media redundancy  Switchover time on line break, typ. Number of stations in the ring, max.  Sochronous mode  Isochronous operation (application synchronized up to terminal)  Equidistance  Yes  S7 message functions  Number of login stations for message functions, max.  Block related messages  Number of configurable alarms, max.  Number of simultaneously active alarms in alarm  1 000	Further protocols	
Switchover time on line break, typ. Number of stations in the ring, max.  Sochronous mode  Isochronous operation (application synchronized up to terminal)  Equidistance  Yes  S7 message functions  Number of login stations for message functions, max.  Block related messages  Number of configurable alarms, max.  Number of simultaneously active alarms in alarm  1 000	• MODBUS	Yes; MODBUS TCP
Number of stations in the ring, max.    Sochronous mode   Sochronous operation (application synchronized up to terminal)   Yes	Media redundancy	
Isochronous mode Isochronous operation (application synchronized up to terminal) Equidistance Yes  S7 message functions Number of login stations for message functions, max. Block related messages Number of configurable alarms, max. Number of simultaneously active alarms in alarm 1 000	Switchover time on line break, typ.	200 ms
Isochronous operation (application synchronized up to terminal)  Equidistance  Yes  S7 message functions  Number of login stations for message functions, max.  Block related messages  Number of configurable alarms, max.  Number of simultaneously active alarms in alarm  1 000	<ul> <li>Number of stations in the ring, max.</li> </ul>	50
to terminal)  Equidistance  Yes  S7 message functions  Number of login stations for message functions, max.  Block related messages  Number of configurable alarms, max.  Number of simultaneously active alarms in alarm  1 000		
S7 message functions  Number of login stations for message functions, max.  Block related messages  Number of configurable alarms, max.  Number of simultaneously active alarms in alarm  1 000		Yes
Number of login stations for message functions, max.  Block related messages  Yes  Number of configurable alarms, max.  10 000  Number of simultaneously active alarms in alarm  1 000	Equidistance	Yes
Block related messages  Number of configurable alarms, max.  Number of simultaneously active alarms in alarm  1 000	S7 message functions	
Number of configurable alarms, max.  10 000  Number of simultaneously active alarms in alarm  1 000		32
Number of simultaneously active alarms in alarm 1 000		Yes
		10 000
		1 000

Test commissioning functions	
Status block	Yes; up to 8 simultaneously
Single step	No
Status/control	
Status/control variable	Yes
<ul><li>Variables</li></ul>	Inputs, outputs, memory bits, DB, times, counters
<ul> <li>Number of variables, max.</li> </ul>	
<ul> <li>of which status variables, max.</li> </ul>	200; per job
<ul><li>of which control variables, max.</li></ul>	200; per job
Forcing	
Forcing, variables	Inputs, outputs
<ul> <li>Number of variables, max.</li> </ul>	200
Diagnostic buffer	
• present	Yes
Number of entries, max.	
— of which powerfail-proof	500
Interrupts/diagnostics/status information	
Diagnostics indication LED	
RUN/STOP LED	Yes
• ERROR LED	Yes
MAINT LED	Yes
<ul> <li>Connection display LINK TX/RX</li> </ul>	Yes
Supported technology objects	
Motion Control	Yes
<ul> <li>Speed-controlled axis</li> </ul>	
<ul> <li>Number of speed-controlled axes, max.</li> </ul>	20; Up to 20 axes in total (speed-controlled, positioning axis, external encoders) are supported
<ul><li>Positioning axis</li></ul>	
<ul> <li>Number of positioning axes, max.</li> </ul>	20; Up to 20 axes in total (speed-controlled, positioning axis, external encoders) are supported
External encoders	
<ul> <li>Number of external encoders, max.</li> </ul>	20; Up to 20 axes in total (speed-controlled, positioning axis, external encoders) are supported
Controller	
PID_Compact	Yes; Universal PID controller with integrated optimization
PID_3Step	Yes; PID controller with integrated optimization for valves
Counting and measuring	
High-speed counter	Yes
Ambient conditions	
Ambient temperature during operation  • horizontal installation, min.	-40 °C; = Tmin; Startup @ -20 °C

<ul><li>horizontal installation, max.</li></ul>	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• vertical installation, min.	-40 °C; = Tmin; Startup @ -20 °C
<ul><li>vertical installation, max.</li></ul>	40 °C; Display: 40 °C, at an operating temperature of typically 40
	°C, the display is switched off
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Extended ambient conditions	
<ul> <li>relative to ambient temperature-atmospheric pressure-installation altitude</li> </ul>	Tmin Tmax at 1080 hPa 795 hPa (-1000 m +2000 m) // Tmin (Tmax - 10K) at 795 hPa 658 hPa (+2000 m +3500 m) // Tmin (Tmax - 20K) at 658 hPa 540 hPa (+3500 m +5000 m)
Relative humidity	
<ul> <li>With condensation, tested in accordance</li> </ul>	100 %; RH incl. condensation / frost (no commissioning in
with IEC 60068-2-38, max.	bedewed state), horizontal installation
Resistance	
<ul> <li>against biologically active substances /</li> </ul>	Yes; Class 3B2 mold, fungus and dry rot spores (with the
conformity with EN 60721-3-3	exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
<ul> <li>against chemically active substances /</li> </ul>	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN
conformity with EN 60721-3-3	60068-2-52 (degree of severity 3). The supplied connector covers
	must remain on the unused interfaces during operation!
against mechanically active substances /	Yes; Class 3S4 incl. sand, dust. The supplied connector covers
conformity with EN 60721-3-3	must remain on the unused interfaces during operation!
Configuration	

Configuration	
Programming	
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes
— GRAPH	Yes; As of STEP 7 V12 SP1
Know-how protection	
User program protection	Yes
Copy protection	Yes
<ul> <li>Block protection</li> </ul>	Yes
Access protection	
Password for display	Yes
<ul> <li>Protection level: Write protection</li> </ul>	Yes
<ul> <li>Protection level: Read/write protection</li> </ul>	Yes
<ul> <li>Protection level: Complete protection</li> </ul>	Yes
Cycle time monitoring	
	<u> </u>

<ul><li>lower limit</li><li>upper limit</li></ul>	adjustable minimum cycle time adjustable maximum cycle time
Dimensions	
Width	70 mm
Height	147 mm
Depth	129 mm
Weights Weight, approx.	845 g
Other	
Note:	At temperatures below 0 °C legibility may be restricted and representation of dynamic contents may be slower
last modified:	10/08/2016