6ES7518-4FP00-0AB0

Data sheet



SIMATIC S7-1500F, CPU 1518F-4 PN/DP, central processing unit with 9 MB work memory for program and 60 MB for data, 1st interface: PROFINET IRT with 2-port switch, 2nd interface: PROFINET RT, 3rd interface: PROFINET basic services, 4th interface: PROFIBUS, 1 ns bit-performance, SIMATIC Memory Card required

General information	
Product type designation	CPU 1518F-4PN/DP
HW functional status	FS11
Firmware version	V3.0
 FW update possible 	Yes
Product function	
● I&M data	Yes; I&M0 to I&M3
• Isochronous mode	Yes; Distributed and central; with minimum OB $6x$ cycle of $125~\mu s$ (distributed) and 1 ms (central)
Engineering with	
 STEP 7 TIA Portal configurable/integrated from version 	V18 (FW V3.0) / V13 (FW V1.5) or higher
Configuration control	
via dataset	Yes
Display	
Screen diagonal [cm]	6.1 cm
Control elements	
Number of keys	6
Mode selector switch	1
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Mains buffering	
 Mains/voltage failure stored energy time 	5 ms
Repeat rate, min.	1/s
Input current	
Current consumption (rated value)	1.55 A
Current consumption, max.	1.9 A
Inrush current, max.	1.9 A; Rated value
l²t	0.4 A ² ·s
Power	
Infeed power to the backplane bus	12 W
Power consumption from the backplane bus (balanced)	30 W
Power loss	
Power loss, typ.	24 W
Memory	
Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes
Work memory	

a integrated (for program)	Q Mhyte
integrated (for program) integrated (for data)	9 Mbyte
• integrated (for data)	60 Mbyte
Load memory	00 Ob. 4-
Plug-in (SIMATIC Memory Card), max.	32 Gbyte
Backup	V
maintenance-free	Yes
CPU processing times	
for bit operations, typ.	1 ns
for word operations, typ.	2 ns
for fixed point arithmetic, typ.	2 ns
for floating point arithmetic, typ.	6 ns
CPU-blocks	
Number of elements (total)	20 000; Blocks (OB, FB, FC, DB) and UDTs
DB	
Number range	1 60 999; subdivided into: number range that can be used by the user: 1
	59 999, and number range of DBs created via SFC 86: 60 000 60 999
• Size, max.	16 Mbyte; For DBs with absolute addressing, the max. size is 64 KB
FB	
Number range	0 65 535
• Size, max.	1 Mbyte
FC	
Number range	0 65 535
Size, max.	1 Mbyte
OB	
• Size, max.	1 Mbyte
 Number of free cycle OBs 	100
 Number of time alarm OBs 	20
 Number of delay alarm OBs 	20
 Number of cyclic interrupt OBs 	20; with minimum OB 3x cycle of 100 µs
 Number of process alarm OBs 	50
 Number of DPV1 alarm OBs 	3
Number of isochronous mode OBs	3
 Number of technology synchronous alarm OBs 	2
Number of startup OBs	100
Number of asynchronous error OBs	4
Number of synchronous error OBs	2
Number of diagnostic alarm OBs	1
Nesting depth	
per priority class	24
Counters, timers and their retentivity	27
S7 counter • Number	2 048
	2 048
Retentivity	Voc
— adjustable	Yes
IEC counter	A ()
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 (incl. timers, counters, flags), max.	768 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 700 KB
Extended retentive data area (incl. timers, counters, flags), max.	20 Mbyte; When using PS 6 0W 24/48/60 V DC HF
Flag	

• Size, max.	16 kbyte
Number of clock memories	8; 8 clock memory bit, grouped into one clock memory byte
Data blocks	
 Retentivity adjustable 	Yes
Retentivity preset	No
Local data	
per priority class, max.	64 kbyte; max. 16 KB per block
Address area	
Number of IO modules	16 384; max. number of modules / submodules
I/O address area	
• Inputs	32 kbyte; All inputs are in the process image
Outputs	32 kbyte; All outputs are in the process image
per integrated IO subsystem	
— Inputs (volume)	32 kbyte; max. 32 KB via X1; max. 8 KB via X2 or X4
— Outputs (volume)	32 kbyte; max. 32 KB via X1; max. 8 KB via X2 or X4
per CM/CP	32 kbyte, max. 32 kb via X1, max. 3 kb via X2 di X4
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
Subprocess images • Number of subprocess images may	32
Number of subprocess images, max. Hardware configuration.	OE
Hardware configuration	CA A distributed I/O content in the last of the last o
Number of distributed IO systems	64; A distributed I/O system is characterized not only by the integration of distributed I/O via PROFINET or PROFIBUS communication modules, but also by the connection of I/O via AS-i master modules or links (e.g. IE/PB-Link)
Number of DP masters	
• integrated	1
• Via CM	8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total
Number of IO Controllers	
• integrated	2
• Via CM	8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total
Rack	moorted in total
Modules per rack, max.	32; CPU + 31 modules
Number of lines, max.	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
Deviation per day, max.	10 s; Typ.: 2 s
Operating hours counter	· · · · VE = -
Number	16
Clock synchronization	
• supported	Yes
• to DP, master	Yes
• in AS, master	Yes
• in AS, slave	Yes
on Ethernet via NTP	Yes
Interfaces	160
	2
Number of PROFINET interfaces	3
Number of PROFIBUS interfaces	1
1. Interface	
Interface types	V V
• RJ 45 (Ethernet)	Yes; X1
 Number of ports 	
	2
• integrated switch	2 Yes
Protocols	Yes

Yes PROFINET IO Device • SIMATIC communication Yes • Open IE communication Yes; Optionally also encrypted Web server Yes Media redundancy Yes **PROFINET IO Controller** Services - PG/OP communication Yes - Isochronous mode Yes - Direct data exchange Yes; Requirement: IRT and isochronous mode (MRPD optional) - IRT - PROFlenergy Yes; per user program - Prioritized startup Yes; Max. 32 PROFINET devices - Number of connectable IO Devices, max. 512; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET - Of which IO devices with IRT, max. 64 - Number of connectable IO Devices for RT, max. 512 - of which in line max 512 - Number of IO Devices that can be simultaneously 8; in total across all interfaces activated/deactivated, max. - 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 125 µs 125 µs - for send cycle of 187.5 μs 187.5 μs - 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 — With IRT and parameterization of "odd" send cycles Update time = set "odd" send clock (any multiple of 125 $\mu s:375~\mu s,\,625~\mu s \dots 3$ 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 - Isochronous mode - IRT Yes; Minimum send cycle of 250 µs - PROFlenergy Yes; per user program Shared device Yes 4 Number of IO Controllers with shared device, max. - activation/deactivation of I-devices Yes; per user program - Asset management record Yes; per user program 2. Interface Interface types • RJ 45 (Ethernet) Yes; X2 Number of ports 1 • integrated switch No Protocols Yes; IPv4 • IP protocol • PROFINET IO Controller Yes PROFINET IO Device Yes • SIMATIC communication Yes • Open IE communication Yes; Optionally also encrypted Web server Yes

 Media redundancy 	No
PROFINET IO Controller	
Services	
— PG/OP communication	Yes
Isochronous mode	No
— Direct data exchange	No
— IRT	No
— PROFlenergy	Yes; per user program
 Prioritized startup 	No
 Number of connectable IO Devices, max. 	128; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
 Number of connectable IO Devices for RT, max. 	128
— of which in line, max.	128
 Number of IO Devices that can be simultaneously activated/deactivated, max. 	8; in total across all interfaces
 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 RT	
— for send cycle of 1 ms	1 ms to 512 ms
PROFINET IO Device	
Services	
— PG/OP communication	Yes
— Isochronous mode	No
— ISOCHIONOUS Mode — IRT	No
— PROFlenergy	Yes; per user program
 Prioritized startup 	No
— Shared device	Yes
 Number of IO Controllers with shared device, max. 	4
 activation/deactivation of I-devices 	Yes; per user program
 Asset management record 	Yes; per user program
3. Interface	
Interface types	
RJ 45 (Ethernet)	Yes; X3
Number of ports	1
• integrated switch	No
Protocols	
110000013	
IP protocol	Vec: IDv/
IP protocol PROFINET IO Controller	Yes; IPv4
PROFINET IO Controller	No
PROFINET IO ControllerPROFINET IO Device	No No
PROFINET IO ControllerPROFINET IO DeviceSIMATIC communication	No No Yes
PROFINET IO ControllerPROFINET IO Device	No No
PROFINET IO ControllerPROFINET IO DeviceSIMATIC communication	No No Yes
 PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication 	No No Yes Yes; Optionally also encrypted
 PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server 	No No Yes Yes; Optionally also encrypted
PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server 4. Interface	No No Yes Yes; Optionally also encrypted
PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server 1. Interface Interface types	No No Yes Yes; Optionally also encrypted Yes
PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Interface Interface types RS 485	No No Yes Yes; Optionally also encrypted Yes
PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server 4. Interface Interface types RS 485 Number of ports Protocols	No No Yes Yes; Optionally also encrypted Yes Yes; X4
PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Interface Interface types RS 485 Number of ports Protocols PROFIBUS DP master	No No Yes Yes; Optionally also encrypted Yes Yes; X4 1
PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Interface Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP slave	No No Yes Yes; Optionally also encrypted Yes Yes; X4 1 Yes No
PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Interface Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP slave SIMATIC communication	No No Yes Yes; Optionally also encrypted Yes Yes; X4 1
PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server 4. Interface Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP slave SIMATIC communication PROFIBUS DP master	No No Yes Yes; Optionally also encrypted Yes Yes; X4 1 Yes No Yes
PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server 4. Interface Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP slave SIMATIC communication PROFIBUS DP master Number of connections, max.	No No Yes Yes; Optionally also encrypted Yes Yes; X4 1 Yes No Yes 48; for the integrated PROFIBUS DP interface
PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server 4. Interface Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP slave SIMATIC communication PROFIBUS DP master	No No Yes Yes; Optionally also encrypted Yes Yes; X4 1 Yes No Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i,
PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server 4. Interface Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP slave SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max.	No No Yes Yes; Optionally also encrypted Yes Yes; X4 1 Yes No Yes 48; for the integrated PROFIBUS DP interface
PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Interface Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP slave SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Services	No No Yes Yes; Optionally also encrypted Yes Yes; X4 1 Yes No Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Interface Interface Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP slave SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Services — PG/OP communication	No No Yes Yes; Optionally also encrypted Yes Yes; X4 1 Yes No Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Yes
PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Interface Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP slave SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Services	No No Yes Yes; Optionally also encrypted Yes Yes; X4 1 Yes No Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Interface Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP slave SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Services — PG/OP communication	No No Yes Yes; Optionally also encrypted Yes Yes; X4 1 Yes No Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Yes
PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Interface Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP slave SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Services — PG/OP communication — Equidistance	No No Yes Yes; Optionally also encrypted Yes Yes; X4 1 Yes No Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Yes Yes
PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Interface Interface Interface types RS 485 Number of ports Protocols PROFIBUS DP master PROFIBUS DP slave SIMATIC communication PROFIBUS DP master Number of connections, max. Number of DP slaves, max. Services PG/OP communication Equidistance Isochronous mode	No No Yes Yes; Optionally also encrypted Yes Yes; X4 1 Yes No Yes 48; for the integrated PROFIBUS DP interface 125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Yes Yes Yes

In the Authorses of the CPU 1518 From the Authorses of the CPU 1518 Authorses of the CPU 1518 From the Authorses of the CPU 1518 From the Authorses of the CPU and connected CPs / CMs Number of connections, max. Number of connections, max. Number of connections, max. Number of connections reserved for ESHMUveb Number of ST routing paths Helyen Chrowdring Wes Resturbing redundancy Media redundancy Media redundancy Media redundancy Media redundancy MRP Interconnection, supported MRP Pitter of stations in the ring read. MRP Pitter of stations in the ring max. MRP Connections with the ring max. Solidatic communication ST routing PORC on mornication of stations in the ring max. Solidatic communication For continuation, as server PORC on mornication of stations in the ring max. Solidatic communication For continuation, as server PORC on mornication of the ring max. Solidatic communication of the ring max. Solidatic communication For continuation, as server PORC on max. PORT of connections per port, supported New Solidatic communication For continuation of the ring max. Solidatic communication PORT of connections per port, supported New Solidatic communication PORT of connections per port, supported POR	RJ 45 (Ethernet)	
- Noting Automosphation - Automosphation - Automosphation - Automosphation - Industrial Ethernet status LED R6 486 - Transmission rate, max - Total Protection - Number of connections, max. - Number of connections, max. - Number of connections, max. - Number of connections was integrated interfaces of the CPU and connected CPs / CMs - Number of connections value interfaces - Number of connections, max. - However of reculting paths - However of stations in the ring, max. - Sintal Communication - PSIGOP communication - PSIGO		Yes
Authoropolition Authoropolition Industrial Ethernet status LED Yes PROFISSA Industrial Ethernet status LED Yes Yes V48 Industrial Ethernet status LED PROFISSA Number of connections Industrial Number of connections, max. Number of connections, max. Number of connections, max. Number of connections reserved for ES-HAllweb Number of Connections Number of Connections Heaving a reserved for ES-HAllweb Number of Connections for Es-HAllweb Number of Connections Heaving a reserved for ES-HAllweb Number of Connections for Security policies Number of Connections Number of Number of Connections Number of Connections Number of Connections Number of Connections N	•	
+ Autocrasing - Industrial Ethernet status LED - Transmission rate, max - Transmission rate, max - PROFisars - Number of connections, max Number of connections, max Number of connections, max Number of connections was integrated interfaces - Number of Connections was integrated interfaces - Number of S7 routing paths - Nedial rectandancy - Medial rectandancy - Medial rectandancy - MiRP March Path Path Path Path Path Path Path Pat	·	
* Additional Ethement status LED **RS 485 **Transmission ratio, max.** **Protocols **Protocols **PROFicials** **Number of connections.** **Number of connections.** **Number of connections.** **Number of connections userved for ESHMIlweb **Number of 187 fouring parts **H-Syre forwarding **H-S	-	
### Transmission rate, max. ### Transmission rate, max. ### Transmission rate, max. ### Transmission rate, max. ### Number of connections, max. ### Number of connections wis integrated interfaces ### H-Sync forwarding ###	-	
PROFIsate Profit		165
Protocols PROFisafe PROFis		12 Mbit/o
PROFISE Number of connections	·	12 Midles
Number of connections max. Number of connections reserved for ESA-Mill/web Number of connections via integrated interfaces Number of connections via integrated interfaces Number of connections via integrated interfaces Number of stronging paths H-Syno forwarding Media redundancy Media redundancy MRP MRP MRP interconnection, supported MRP Client MRPD Switchover time on line break, typ. Number of stations in the ring, max. PGPOP communication PGPOP communication PGPOP communication PGROP com		Voc: \/2.4 \/2.6
Number of connections, max. Number of connections reserved for ES/HMI/liveb Number of connections in linegrated interfaces Number of S7 routing paths A Windher of S7 routing paths A Windham of Mindham of S7 routing paths A Windham of Mindham of S7 routing paths A Windham of Mindham of S7 routing paths A Windham of S7 routing on the Mindham of S7 routing paths of S7 routing on the Friend, typ. - Number of stations in the ring, max. A S7 routing Yes, experimental server - S7 routing Yes, experimental server - S7 rouminication, as client - S7 routing Yes - S7 rouminication, as client - S7 routing Yes - S7 rouminication, as client - S7 routing Yes - S8 routing Yes - Ye		Tes, VZ.47 VZ.0
Number of connections reserved for ESH-Mil/web Number of ST routing paths Number of ST routing paths Net Number of selections via integrated interfaces and supported via PROFIBUS Net Number of selection via integrated interfaces and supported via PROFIBUS Net Number of selection via integrated interfaces and supported via password NRP Ves. MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager. MRP Client NRP Client Ves. MRP Numbrager according to IEC 62439-2 Edition 3.0 NRP Manager. MRP Client Ves. MRP Pounds according to IEC 62439-2 Edition 3.0 NRP Manager. MRP Client Ves. MRP Pounds according to IEC 62439-2 Edition 3.0 NRP Manager. MRP Client Ves. MRP Pounds according to IEC 62439-2 Edition 3.0 NRP Manager. MRP Client Ves. MRP Pounds according to IEC 62439-2 Edition 3.0 NRP Manager. MRP Client NRP Ves. Requirement IRT NRP Client Ves. Requirement IRT NRP Client NRP		29.4: via integrated interfaces of the CDLL and connected CDs / CMs
Number of S7 routing paths Redundancy mode * H-Sync forwarding Media redundancy — MRPI interconnection, supported — MRP interconnection in the ring, max — Solidatic communication — PC/OP communication — PC/OP communication — Yes, sendyption with TLS V1.3 pre-selected — Ves encryption with TLS V1.3 pre-selected — Ves		
Number of S7 routing paths Redundancy mode **H-Ksync forwarding Modia redundancy — Media redundancy — MRP MRP interconnection, supported — Switchover time on line break, typ. — Number of stations in the ring, max. **PG/OP communication **PG/OP co		
Redundancy mode + I-Sync forwarding + Media redundancy - MRP - MRP		
Media redundancy — Media redundancy — MRP — MRP — MRP MPR Client — MRP MPR Client — MRPD Yes, SMPP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MPR Client — MRPD Yes, sa MPR P ring node according to IEC 62439-2 Edition 3.0	The state of the s	64, in total, only 16 57-Routing connections are supported via PROFIBOS
Media redundancy - Media redundancy - MRP MRP MRP MRP MRP MRP Client Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client - MRP interconnection, supported - MRP Client - MRPD - MRPD - Switchover time on line break, typ Number of stations in the ring, max. 50 SIMATIC communication - PCAPD communication - PCAPD communication - ST routing - ST continumication, as server - ST continumication, as server - ST communication, as server - ST communication, as server - ST communication, as client - User data per job, max. See online help (S7 communication, user data size) Open IE communication - TCPIP - Data length, max several passive connections per port, supported - ISO-on-TCP (RFC 1006) - Data length, max UDP - Data length, max UDP multicast - Ves - SNMP - ODC UA - Runtime license required - PCP UA Client - Application authentication - Security policies - Standard and user pages - Ves; Large* license required - PCP UA Client - Security policies - Available security policies: None, Basic 258Rsa 15, Basi	•	Voc
- Media redundancy - MRP Media redundancy Yes, MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager. MRP Client - MRP Interconnection, supported Yes, as MRP ring node according to IEC 62439-2 Edition 3.0 Yes; Requirement: IRT - Switchover time on line break, typ 200 ms; For MRP, bumplass for MRPD - Number of stations in the ring, max. 50 SIMATIC communication - Ves; encryption with TLS V1.3 pre-selected	, ,	Tes
- MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client - MRPD interconnection, supported Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 - MRPD - Switchover time on line break, typ. 20 ms; For MRP, bumpless for MRPD - Switchover time on line break, typ. 50 ms; For MRP, bumpless for MRPD - Number of stations in the ring, max. 50 SIMATIC communication - FCIOP Communication - FCIOP Communication - ST routing Yes - State record routing Yes - State record routing Yes - ST communication, as server - ST communication, as server - ST communication, as client Yes - See online help (ST communication, user data size) Open IE communication - TCPIP Yes - Data length, max. 5ee online help (ST communication, user data size) Open IE communication - TCPIP Yes - Data length, max. 64 kbyte - Data length, max. 64 kbyte - Data length, max. 64 kbyte - Data length, max. 7es - UDP multicast Yes; 128 multicast circuits (of which max. 5 via X1) - UDP Data length, max. 7es - UDP multicast Yes; 128 multicast circuits (of which max. 5 via X1) - DHCP Yes - SNMP Yes - SNMP Yes - SNMP Yes - LLDP Yes - Encryption Yes; Standard and user pages - LLDP Yes - Encryption Yes; Standard and user pages - HTTP Yes; Standard and user pages - West TTTP - Yes; Standard and user pages - West TTTP - Popication authentication Yes; Data Access (registred Read/Write), Method Call - Papication authentication Yes - Security policies - Security policies - Naviable security policies: None, Basic128Rsa15, Basic256Rsa15, - Basic256Sha256 - User authentication - Naviable security policies: None, Basic128Rsa15, Basic256Rsa15, - Security policies - Naviable of connections, max Number of connections, max Number of connections one call of	•	only via 1st interface (Y1)
MRP Client - MRP interconnection, supported	•	
- MRP interconnection, supported - MRPD - Mitchover time on line break, typ Switchover time on line break, typ Number of stations in the ring, max. 50 SIMATIC communication - PC/ICP communication - ST routing - St routing - ST couring - ST couring - ST communication, as server - ST communication, as cellent - User data per job, max See online help (ST communication, user data size) - Data length, max several passive connections per port, supported - ISO-on-TCP (RFC1006) - Data length, max UDP - Data length, max UDP multicast - SNMP - SNMP - SNMP - SNMP - Personal sequence - PCP See - LLDP - Encrypton Web server - HTTP - Yes: Standard and user pages - Ferryption supported - See outly policies - Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic2	— IVINT	
- MRPD - Switchover time on line break, typ Number of stations in the ring, max. 50 SIMATIC communication • PG/OP communication • ST communication, as server • ST communication, as server • ST communication, as client • User data per job, max. • User data per job, max. • See online help (S7 communication, user data size) Open IE communication • TCP/IP - Data length, max several passive connections per port, supported • ISO-on-TCP (RFC1008) - Data length, max. • UUP - Data length, max. • UUP multicast • UPP multicast • Ves; 128 multicast circuits (of which max. 5 via X1) • DHCP • DNS • SNMP • Yes • SNMP • OCP • LLDP • CECTOPION • Pes • Encryption Web server • HTTP • Yes; Standard and user pages • HTTPS OPE UA Client - Application authentication - Security policies - Available security policies: None, Basict 28Rsa 15, Basic 256Rsa 1	 MRP interconnection, supported 	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0
Switchover time on line break, typ Number of stations in the ring, max. 50 SIMATIC communication • PG/OP communication • S7 routing • S7 routing • S7 communication, as server • S7 communication, as client • See online help (S7 communication, user data size) Open IE communication • TCP/IP — Data length, max. — several passive connections per port, supported • ISO-on-TCP (RFC1006) — Data length, max. • UDP — Ves • NSMP • Pes • NSMP • Pes • NSMP • DCP • LLIDP • LEncyption Web server • HTTP • Yes; Standard and user pages • HTTPS OPC UA Client — Application authentication — Security policies — Saica (Schazze) • Pumber of connections, max. • Number of notes of the client interfaces, recommended max. — Number of elonetists for one call of 300	**	
Number of stations in the ring, max. SIMATIC communication PG/OP communication S7 routing Data record routing S7 communication, as server S8 communication, as server S8 communication TCP/IP Data length, max. S8 communication		
SIMATIC communication PC/G/OP communication, as server PC/G/OP communication PC/G/OP communic	**	
PG/OP communication ST routing Pes Data record routing Pes ST communication, as server ST communication, as server ST communication, as client Pes ST communication, as client Pes User data per job, max Pes Postal length, max. See online help (S7 communication, user data size) Poen IE communication FTCP/IP Pata length, max. Several passive connections per port, supported Pes ISO-on-TCP (RFC1006) Pes Data length, max. Several passive connections per port, supported Pes ISO-on-TCP (RFC1006) Pes Data length, max. Pupp Data length, max. Pes; 128 multicast circuits (of which max. 5 via X1) PhCP Pes DNS Pes SNMP Pes SNMP Pes DCP Pes Encryption Web server HTTP HTTP Pes; Standard and user pages Pet UAD PROPED Pes (Pes; Standard and user pages) Pet UA Pes (Pata and and user pages) Pet UA Client Pes (Pata and and user pages) Pet UA Pet		
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ISO-on-TCP (RFC1006) — Data length, max. UDP — Data length, max. — UDP multicast DHCP DNS SNMP DCP LLDP Encryption Web server ITTP HTTP OPC UA Client — Application authentication — Security policies — User authentication — Number of connections, max. — Number of elements for one call of Ves 4 kbyte 5 kbyte; 1 472 bytes for UDP broadcast 4 kbyte 5 kianuit sation 4 kbyte 4 kbyte 5 kbyte, 1472 bytes for UDP broadcast 4 kbyte 4	•	·
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 Number of nodes of the client interfaces, recommended max. Number of elements for one call of 300 		
— Number of elements for one call of 300	— Number of nodes of the client interfaces,	
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max.	
Number of elements for one call of	20
OPC_UA_NameSpaceGetIndexList, max.	
 Number of elements for one call of OPC_UA_MethodGetHandleList, max. 	100
 Number of simultaneous calls of the client instructions for session management, per connection, max. 	1
 Number of simultaneous calls of the client instructions for data access, per connection, max. 	5
 Number of registerable nodes, max. 	5 000
 Number of registerable method calls of OPC_UA_MethodCall, max. 	100
 Number of inputs/outputs when calling OPC_UA_MethodCall, max. 	20
OPC UA Server	Yes; Data Access (Read, Write, Subscribe), Method Call, Alarms & Condition (A&C), Custom Address Space
 Application authentication 	Yes
— Security policies	available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256, Aes128Sha256RsaOaep, Aes256Sha256RsaPss
User authentication	"anonymous" or by user name & password
 — GDS support (certificate management) 	Yes
— Number of sessions, max.	64
 Number of accessible variables, max. 	200 000
 Number of registerable nodes, max. 	50 000
 Number of subscriptions per session, max. 	50
— Sampling interval, min.	10 ms
 — Publishing interval, min. 	10 ms
 Number of server methods, max. 	100
 Number of inputs/outputs per server method, max. 	20
 Number of monitored items, recommended max. 	24 000; for 1 s sampling interval and 1 s send interval
 Number of server interfaces, max. 	10 of each "Server interfaces" / "Companion specification" type and 20 of the type "Reference namespace"
 Number of nodes for user-defined server interfaces, max. 	30 000
 Alarms and Conditions 	Yes
 Number of program alarms 	400
 Number of alarms for system diagnostics 	200
Further protocols	
• MODBUS	Yes; MODBUS TCP
Isochronous mode	
Equidistance	Yes
S7 message functions	
Number of login stations for message functions, max.	64
Program alarms	Yes
Number of configurable program messages, max.	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH
Number of loadable program messages in RUN, max.	5 000
Number of simultaneously active program alarms	
 Number of program alarms 	4 000
 Number of alarms for system diagnostics 	1 000
Number of alarms for motion technology objects	480
Test commissioning functions	
Joint commission (Team Engineering)	Yes; Parallel online access possible for up to 10 engineering systems
Status block	Yes; Up to 16 simultaneously (in total across all ES clients)
Single step	No
Number of breakpoints	20
Status/control	
Status/control variable	Yes; without fail-safe
• Variables	inputs/outputs, bit memories, DBs, peripheral I/Os (without fail-safe), times, counters
Number of variables, max.	
Number of variables, max.— of which status variables, max.	200; per job

Forcing	
Forcing	Yes; without fail-safe
 Forcing, variables 	peripheral inputs/outputs (without fail-safe)
 Number of variables, max. 	200
Diagnostic buffer	
• present	Yes
Number of entries, max.	3 200
— of which powerfail-proof	1 000
Traces	
Number of configurable Traces	8; Up to 512 KB of data per trace are possible
Interrupts/diagnostics/status information	of the contract of the contrac
Diagnostics indication LED	
RUN/STOP LED	Yes
• ERROR LED	Yes
MAINT LED	Yes
Connection display LINK TX/RX	Yes
Supported technology objects	V N T
Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
Number of available Motion Control resources for	15 360
technology objects	
Required Motion Control resources	
per speed-controlled axis	40
per positioning axis	80
— per synchronous axis	160
— per external encoder	80
— per output cam	20
— per cam track	160
— per probe	40
Positioning axis	40
Number of positioning axes at motion control cycle	140
of 4 ms (typical value) — Number of positioning axes at motion control cycle — Number of positioning axes at motion control cycle	192
of 8 ms (typical value)	102
Controller	
PID_Compact	Yes; Universal PID controller with integrated optimization
PID_3Step	Yes; PID controller with integrated optimization for valves
PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
High-speed counter	Yes
Standards, approvals, certificates	
Highest safety class achievable in safety mode	
Performance level according to ISO 13849-1	PLe
SIL acc. to IEC 61508	SIL 3
Probability of failure (for service life of 20 years and repair time	
Low demand mode: PFDavg in accordance with SIL3	< 2.00E-05
High demand/continuous mode: PFH in accordance with SIL3	< 1.00E-09
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	0 °C
• horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
 vertical installation, min. 	0 °C
• vertical installation, max.	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
Altitude during operation relating to sea level	
Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
configuration / header	5 555 m, reconscions for installation attitudes > 2 500 m, 556 manual
Conniguration / neader	

configuration / programming / header	
Programming language	
— LAD	Yes; incl. failsafe
— FBD	Yes; incl. failsafe
— STL	Yes
— SCL	Yes
— CFC	either CFC or failsafe functionality
— GRAPH	Yes
Know-how protection	
 User program protection/password protection 	Yes
 Copy protection 	Yes
Block protection	Yes
Access protection	
 protection of confidential configuration data 	Yes
 Password for display 	Yes
 Protection level: Write protection 	Yes
 Protection level: Read/write protection 	Yes
 Protection level: Write protection for Failsafe 	Yes
 Protection level: Complete protection 	Yes
programming / cycle time monitoring / header	
 lower limit 	adjustable minimum cycle time
• upper limit	adjustable maximum cycle time
Dimensions	
Width	175 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	2 079 g

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