## **SIEMENS**

## **Data sheet**

## 6AG1516-3FN02-2AB0



SIPLUS S7-1500 CPU 1516F-3 PN/DP based on 6ES7516-3FN02-0AB0 with conformal coating, -40...+60 °C, central processing unit with work memory 1.5 MB for program and 5 MB for data, 1st interface: PROFINET IRT with 2-port switch, 2nd interface: PROFINET RT, 3rd interface: PROFIBUS, 10 ns bit performance, SIMATIC Memory Card required

Figure similar

General information	
Product type designation	CPU 1516F-3 PN/DP
Product function	
I&M data	Yes; I&M0 to I&M3
Isochronous mode	Yes; Distributed and central; with minimum OB 6x cycle of 375 µs (distributed) and 1 ms (central)
Engineering with	
<ul> <li>STEP 7 TIA Portal configurable/integrated from version</li> </ul>	see entry ID: 109746275
Configuration control	
via dataset	Yes
Display	
Screen diagonal [cm]	6.1 cm
Control elements	
Number of keys	8
Mode buttons	2
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	
<ul> <li>Mains/voltage failure stored energy time</li> </ul>	5 ms
<ul> <li>Repeat rate, min.</li> </ul>	1/s
Input current	
Current consumption (rated value)	0.85 A
Current consumption, max.	1.1 A
Inrush current, max.	2.4 A; Rated value
l <sup>2</sup> t	0.02 A <sup>2</sup> ·s
Power	
Infeed power to the backplane bus	12 W
Power consumption from the backplane bus (balanced)	6.7 W
Power loss	
Power loss, typ.	7 W
Memory	
Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes
Work memory	

a integrated (for program)	1.5 Mbyta
• integrated (for program)	1.5 Mbyte
integrated (for data)	5 Mbyte
Load memory	20.01.4
Plug-in (SIMATIC Memory Card), max.  Packura	32 Gbyte
Backup	Von
maintenance-free	Yes
CPU processing times	40
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 elements (total)	8 000; 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.	5 Mbyte; For DBs with absolute addressing, the max. size is 64 KB
FB	
<ul><li>Number range</li></ul>	0 65 535
• Size, max.	1 Mbyte
FC	
Number range	0 65 535
• Size, max.	1 Mbyte
OB	
• Size, max.	1 Mbyte
<ul> <li>Number of free cycle OBs</li> </ul>	100
<ul> <li>Number of time alarm OBs</li> </ul>	20
<ul> <li>Number of delay alarm OBs</li> </ul>	20
<ul> <li>Number of cyclic interrupt OBs</li> </ul>	20; With minimum OB 3x cycle of 250 µs
<ul> <li>Number of process alarm OBs</li> </ul>	50
<ul> <li>Number of DPV1 alarm OBs</li> </ul>	3
<ul> <li>Number of isochronous mode OBs</li> </ul>	3
<ul> <li>Number of technology synchronous alarm OBs</li> </ul>	2
<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
Number of diagnostic alarm OBs	1
Nesting depth	
<ul> <li>per priority class</li> </ul>	24; Up to 8 possible for F-blocks
Counters, timers and their retentivity	
S7 counter	
<ul><li>Number</li></ul>	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 (incl. timers, counters, flags), max.	512 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 472 KB

Extended retentive data area (incl. timers, counters, flags),	5 Mbyte; When using PS 6 0W 24/48/60 V DC HF
max.	
Flag	
• Size, max.	16 kbyte
Number of clock memories	8; 8 clock memory bit, grouped into one clock memory byte
Data blocks	
<ul> <li>Retentivity adjustable</li> </ul>	Yes
Retentivity preset	No
Local data	
per priority class, max.	64 kbyte; max. 16 KB per block
Address area	
Number of IO modules	8 192; max. number of modules / submodules
I/O address area	
<ul><li>Inputs</li></ul>	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)	8 kbyte
— Outputs (volume)	8 kbyte
per CM/CP	
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
Subprocess images	
<ul> <li>Number of subprocess images, max.</li> </ul>	32
Hardware configuration	
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	
<ul><li>integrated</li></ul>	2
• Via CM	8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total
Rack	
<ul> <li>Modules per rack, max.</li> </ul>	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	
Number	16
Clock synchronization	
<ul><li>supported</li></ul>	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	
RJ 45 (Ethernet)	Yes; X1
→ NO → (Euleriel)	100, 7(1

No. 1 Control	
Number of ports	2
• integrated switch	Yes
Protocols	V 15.4
IP protocol     IP protocol     IP protocol	Yes; IPv4
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
SIMATIC communication	Yes
Open IE communication	Yes; Optionally also encrypted
Web server	Yes
Media redundancy	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0
PROFINET IO Controller	
Services	V
— PG/OP communication	Yes
— Isochronous mode	Yes
Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)
— IRT	Yes
— PROFlenergy	Yes
— Prioritized startup	Yes; Max. 32 PROFINET devices
Number of connectable IO Devices, max.	256; 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
<ul> <li>Number of connectable IO Devices for RT, max.</li> </ul>	256
— of which in line, max.	256
Number of IO Devices that can be	8: in total across all interfaces
simultaneously activated/deactivated, max.	o, in total across all interfaces
<ul> <li>Number of IO Devices per tool, max.</li> </ul>	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	$250~\mu s$ to 4 ms; Note: In the case of IRT with isochronous mode, the minimum update time of 375 $\mu s$ of the isochronous OB is decisive
— 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	Voc
— PG/OP communication	Yes
— Isochronous mode	No Voc
— IRT	Yes Voca per user program
— PROFlenergy     — Shared device	Yes; per user program
	Yes 4
Number of IO Controllers with shared device, max.	
Asset management record	Yes; per user program
2. Interface	
Interface types	
• RJ 45 (Ethernet)	Yes; X2
Number of ports	1
• integrated switch	No
Protocols	
IP protocol	Yes; IPv4

PROFINET IO Device Yes	es
	es
• SIMATIC communication Ye	es
Open IE communication Yes	es; Optionally also encrypted
• Web server	es
Media redundancy	0
PROFINET IO Controller	
Services	
— PG/OP communication Ye	es
— Isochronous mode No	0
Direct data exchange	0
— IRT No	0
— PROFlenergy Ye	es
— Prioritized startup	0
— Number of connectable IO Devices, max.	2; In total, up to 1 000 distributed I/O devices can be connected via S-i, PROFIBUS or PROFINET
<ul><li>— Number of connectable IO Devices for RT, max.</li></ul>	2
— of which in line, max.	2
<ul><li>Number of IO Devices that can be</li><li>8;</li></ul>	; in total across all interfaces
simultaneously activated/deactivated, max.	
— Number of IO Devices per tool, max.	
sh	he minimum value of the update time also depends on communication hare set for PROFINET IO, on the number of IO devices, and on the uantity of configured user data
Update time for RT	
·	ms to 512 ms
PROFINET IO Device	THE COTE HE
Services	
	es
— Isochronous mode	
— IRT No	
	es; per user program
— Prioritized startup	
·	es
Number of IO Controllers with shared device, 4	
max.	
Asset management record Yes	es; per user program
3. Interface	
Interface types	
•	es: X3
Number of ports	00, 70
Protocols	
	es
PROFIBUS DP slave  PROFIBUS DP slave  No.	
	es
PROFIBUS DP master	Or for the interreted DDOFID IO DD interfere
	8; for the integrated PROFIBUS DP interface
	25; In total, up to 1 000 distributed I/O devices can be connected via S-i, PROFIBUS or PROFINET
Services	O I, THOUBOOK THOU INET
	es
	es es
·	
	es
	es
Interface types	
RJ 45 (Ethernet)	
• 100 Mbps Ye	es
· · · · · · · · · · · · · · · · · · ·	
• Autonegotiation Ye	es
• Autonegotiation Ye	es es

RS 485	
• Transmission rate, max.	12 Mbit/s
Protocols	
PROFIsafe	Yes
Number of connections	
Number of connections, max.	256; via integrated interfaces of the CPU and connected CPs / CMs
Number of connections reserved for ES/HMI/web	10
Number of connections via integrated interfaces	128
Number of S7 routing paths	16
Redundancy mode	
H-Sync forwarding	Yes
Media redundancy	
— Media redundancy	only via 1st interface (X1)
— MRP	Yes; MRP Automanager acc. to IEC 62439-2 Edition 2.0; MRP Manager; MRP Client; max. number of devices in the ring: 50
— MRPD	Yes; Requirement: IRT
<ul> <li>Switchover time on line break, typ.</li> </ul>	200 ms; For MRP, bumpless for MRPD
— Number of stations in the ring, max.	50
SIMATIC communication	
S7 routing	Yes
Data record routing	Yes
S7 communication, as server	Yes
• S7 communication, as client	Yes
User data per job, max.	See online help (S7 communication, user data size)
Open IE communication	
• TCP/IP	Yes
— Data length, max.	64 kbyte
<ul> <li>several passive connections per port, supported</li> </ul>	Yes
<ul><li>ISO-on-TCP (RFC1006)</li></ul>	Yes
— Data length, max.	64 kbyte
• UDP	Yes
— Data length, max.	2 kbyte; 1 472 bytes for UDP broadcast
— UDP multicast	Yes; Max. 5 multicast circuits
• DHCP	No
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Web server	
• HTTP	Yes; Standard and user pages
• HTTPS	Yes; Standard and user pages
OPC UA	
Runtime license required	Yes
OPC UA Client	Yes
<ul> <li>Application authentication</li> </ul>	Yes
— Security policies	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
<ul> <li>User authentication</li> </ul>	"anonymous" or by user name & password
<ul> <li>Number of connections, max.</li> </ul>	10
<ul> <li>Number of nodes of the client interfaces, max.</li> </ul>	2 000
<ul> <li>Number of elements for one call of OPC_UA_NodeGetHandleList/OPC_UA_ReadList/C max.</li> </ul>	300
<ul> <li>Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max.</li> </ul>	20
<ul> <li>Number of elements for one call of OPC_UA_MethodGetHandleList, max.</li> </ul>	100
<ul> <li>Number of simultaneous calls of the client instructions per connection (except OPC_UA_ReadList,OPC_UA_WriteList,OPC_UA_M max.</li> </ul>	1
Number of simultaneous calls of the client instructions	5

OPC IIA Deadlist OPC IIA Writelist and	
OPC_UA_ReadList,OPC_UA_WriteList and OPC_UA_MethodCall, max.	
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, custom address
<ul> <li>Application authentication</li> </ul>	space Yes
— Application authentication     — Security policies	Available security policies: None, Basic128Rsa15, Basic256Rsa15,
* 1	Basic256Sha256
— User authentication	"anonymous" or by user name & password
Number of sessions, max.	48
Number of accessible variables, max.	100 000
Number of registerable nodes, max.	20 000
<ul> <li>Number of subscriptions per session, max.</li> </ul>	20
<ul><li>— Sampling interval, min.</li></ul>	100 ms
— Publishing interval, min.	200 ms
<ul> <li>Number of server methods, max.</li> </ul>	50
<ul> <li>Number of inputs/outputs per server method, max.</li> </ul>	20
<ul> <li>Number of monitored items, max.</li> </ul>	2 000; for 1 s sampling interval and 1 s send interval
<ul> <li>Number of server interfaces, max.</li> </ul>	10; or 20, depending on type of server interface
<ul> <li>Number of nodes for user-defined server</li> </ul>	5 000
interfaces, max.	
Further protocols	Voc. MODDIIS TOD
MODBUS	Yes; MODBUS TCP
Isochronous mode	
Equidistance	Yes
S7 message functions	
Number of login stations for message functions, max.	32
Program alarms	Yes
	Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH
Program alarms  Number of configurable program messages, max.  Number of loadable program messages in RUN, max.	10 000; Program messages are generated by the "Program_Alarm"
Program alarms  Number of configurable program messages, max.	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH
Program alarms  Number of configurable program messages, max.  Number of loadable program messages in RUN, max.	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH
Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Number of simultaneously active program alarms	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000
Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Number of simultaneously active program alarms  • Number of program alarms	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000
Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Number of simultaneously active program alarms  • Number of program alarms  • Number of alarms for system diagnostics	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000  1 000 200
Program alarms  Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Number of simultaneously active program alarms  Number of program alarms  Number of alarms for system diagnostics  Number of alarms for motion technology objects	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000  1 000 200
Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Number of simultaneously active program alarms  Number of program alarms  Number of alarms for system diagnostics  Number of alarms for motion technology objects  Test commissioning functions	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000  1 000 200 160
Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Number of simultaneously active program alarms  • Number of program alarms  • Number of alarms for system diagnostics  • Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000  1 000 200 160  Yes; Parallel online access possible for up to 8 engineering systems
Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Number of simultaneously active program alarms  Number of program alarms  Number of alarms for system diagnostics  Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000  1 000 200 160  Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients)
Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Number of simultaneously active program alarms  Number of program alarms  Number of alarms for system diagnostics  Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block  Single step	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000  1 000 200 160  Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No
Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Number of simultaneously active program alarms  Number of program alarms  Number of alarms for system diagnostics  Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block  Single step  Number of breakpoints	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000  1 000 200 160  Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No
Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Number of simultaneously active program alarms  Number of program alarms  Number of alarms for system diagnostics  Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block  Single step  Number of breakpoints  Status/control	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000  1 000 200 160  Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8
Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Number of simultaneously active program alarms  Number of program alarms  Number of alarms for system diagnostics  Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block  Single step  Number of breakpoints  Status/control  Status/control variable	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000  1 000 200 160  Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8
Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Number of simultaneously active program alarms  Number of program alarms  Number of alarms for system diagnostics  Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block  Single step  Number of breakpoints  Status/control  Status/control variable  Variables  Number of variables, max.	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000  1 000 200 160  Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Number of simultaneously active program alarms  Number of program alarms  Number of alarms for system diagnostics  Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block  Single step  Number of breakpoints  Status/control  Status/control  Status/control variable  Variables	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000  1 000 200 160  Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job
Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Number of simultaneously active program alarms  Number of program alarms  Number of alarms for system diagnostics  Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block  Single step  Number of breakpoints  Status/control  Status/control variable  Variables  Number of variables, max.  — of which status variables, max.	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000  1 000 200 160  Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Number of simultaneously active program alarms  Number of program alarms  Number of alarms for system diagnostics  Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block  Single step  Number of breakpoints  Status/control  Status/control  Variables  Number of variables, max.  — of which status variables, max.  — of which control variables, max.	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000  1 000 200 160  Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job
Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Number of simultaneously active program alarms  Number of program alarms  Number of alarms for system diagnostics  Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block  Single step  Number of breakpoints  Status/control  Status/control  Variables  Number of variables, max.  of which status variables, max.  of which control variables, max.	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000  1 000 200 160  Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job 200; per job
Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Number of simultaneously active program alarms  Number of program alarms  Number of alarms for system diagnostics  Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block Single step  Number of breakpoints  Status/control  Status/control  Status/control variable  Variables  Number of variables, max.  of which status variables, max.  of which control variables, max.  Forcing  Forcing, variables	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000  1 000 200 160  Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters  200; per job 200; per job
Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Number of simultaneously active program alarms  Number of program alarms  Number of alarms for system diagnostics  Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block  Single step  Number of breakpoints  Status/control  Status/control variable  Variables  Number of variables, max.  of which status variables, max.  Forcing  Forcing, variables  Number of variables, max.	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000  1 000 200 160  Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters  200; per job 200; per job
Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Number of simultaneously active program alarms  Number of program alarms  Number of alarms for system diagnostics  Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block  Single step  Number of breakpoints  Status/control  Status/control variable  Variables  Number of variables, max.  of which status variables, max.  of which control variables, max.  Forcing  Forcing, variables  Number of variables, max.  Diagnostic buffer	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000  1 000 200 160  Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job 200; per job Peripheral inputs/outputs 200
Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Number of simultaneously active program alarms  Number of program alarms  Number of alarms for system diagnostics  Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block  Single step  Number of breakpoints  Status/control  Status/control variable  Variables  Number of variables, max.  of which status variables, max.  of which control variables, max.  Forcing  Forcing  Forcing, variables  Number of variables, max.  Diagnostic buffer  present	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000  1 000 200 160  Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job 200; per job Peripheral inputs/outputs 200 Yes
Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Number of simultaneously active program alarms  Number of program alarms  Number of alarms for system diagnostics  Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block Single step  Number of breakpoints  Status/control  Status/control  Variables  Number of variables, max.  of which status variables, max.  of which control variables, max.  Forcing  Forcing  Forcing, variables  Number of variables, max.  Diagnostic buffer  present  Number of entries, max.	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000  1 000 200 160  Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job 200; per job Peripheral inputs/outputs 200  Yes 3 200
Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Number of simultaneously active program alarms  Number of program alarms  Number of alarms for system diagnostics  Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block  Single step  Number of breakpoints  Status/control  Status/control  Variables  Number of variables, max.  of which status variables, max.  of which control variables, max.  Forcing  Forcing, variables  Number of variables, max.  Diagnostic buffer  present  Number of entries, max.  of which powerfail-proof	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000  1 000 200 160  Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job 200; per job Peripheral inputs/outputs 200  Yes 3 200
Program alarms Number of configurable program messages, max.  Number of loadable program messages in RUN, max.  Number of simultaneously active program alarms  Number of program alarms  Number of alarms for system diagnostics  Number of alarms for motion technology objects  Test commissioning functions  Joint commission (Team Engineering)  Status block  Single step  Number of breakpoints  Status/control  Status/control  Status/control variable  Variables  Number of variables, max.  of which status variables, max.  of which control variables, max.  Forcing  Forcing, variables  Number of variables, max.  Diagnostic buffer  present  Number of entries, max.  of which powerfail-proof	10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000  1 000 200 160  Yes; Parallel online access possible for up to 8 engineering systems Yes; Up to 8 simultaneously (in total across all ES clients) No 8  Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job 200; per job Peripheral inputs/outputs 200  Yes 3 200 500

FRUNKS TOP LED FROR LED FROR LED FOR ACTIVE FOR ACTIVE LED FOR ACT	Diagnostics indication LED	
FRROR IED	Diagnostics indication LED	Voc
NaMNT LED     STOP ACTIVE LED     SOPP ACTIVE LED     SOPP ACTIVE LED     SOPP ACTIVE LED     SOPPHINE SUBJECT STATES  **Supported technology objects  Motion Control     Number of available Motion Control resources for technology objects  **Number of available Motion Control resources     SOPPHINE STATES     SOPPHINE ST		
Stop ACTIVE LED Oceaned on display LINK TX/RX  Supposed tichnology objects  Notion Control  Number of available Motion Control resources for technology objects  Required Motion Control resources Per speed controlled axes Per speed controlled axes Per speed controlled axes Per synchronous axis Per external encoder Per output cam Per output cam Per orbitoning axis Per per probe Per output cam Per output cam Per output cam Per probe Per output cam P		
Connection display LINK TXRX  Motion Control  Number of available Motion Control resources for technology objects  Permission Motion Control resources for technology objects  - Number of available Motion Control resources for technology objects  - per speed-controlled axis - per speed-controlled axis - per synchronous axis - per synchronous axis - per synchronous axis - per output cam - per output cam - per output cam - per probe - Positioning axis - Number of positioning axes at motion control cycle of nor in (typical value) - Number of positioning axes at motion control cycle of nor in (typical value) - Number of positioning axes at motion control cycle of nor in (typical value) - Number of positioning axes at motion control cycle of nor in (typical value) - Number of positioning axes at motion control cycle of nor in (typical value) - Number of positioning axes at motion control cycle of nor in (typical value) - Number of positioning axes at motion control cycle of nor (typical value) - Number of positioning axes at motion control cycle of nor (typical value) - Number of positioning axes at motion control cycle of nor (typical value) - Number of positioning axes at motion control cycle of nor (typical value) - Number of positioning axes at motion control cycle of nor (typical value) - Number of positioning axes at motion control cycle of nor (typical value) - Number of positioning axes at motion control cycle of nor (typical value) - Number of positioning axes at motion control cycle of nor (typical value) - Number of positioning axes at motion control cycle of nor (typical value) - Number of positioning axes at motion control cycle of nor (typical value) - Number of positioning axes at motion control cycle of nor (typical value) - Number of positioning axes at motion control cycle of nor (typical value) - Number of positioning axes at motion control cycle of nor (typical value) - Number of positioning axes at motion control cycle of nor (typical value) - Number of positioning axes at motion control cycle o		
Notine Control		
Motion Control  Number of available Motion Control resources for technology objects  Required Motion Control resources for technology objects  Required Motion Control resources  — per speed-controlled axis — per synchronous axis — per synchronous axis — per synchronous axis — per synchronous axis — per output cam — per output cam — per output cam — per probe — Par output cam — per probe — Pastitoring axis — Number of positioning axes at motion control cycle of 4 ms (typical value) — Number of positioning axes at motion control cycle of 3 ms (typical value)  Controller  PIPL_Compact PIPL_Compact PIPL_Step — PiPL-Temp — Yes; Universal PID controller with integrated optimization for valves PIPL-Temp — Yes; PID controller with integrated optimization for temperature  Counting and measuring — High-speed counter  Yes  Standards, approvals, certificates  PIPL Standards, approvals, certificate		Yes
Number of available Motion Control resources for technology objects Required Motion Control resources Per speed controlled axis Per speed controlled axis Per synchronous saxis Per synchronous saxis Per oxideral encoder Per output cam Per port ou		V NI TI I I I I I I I I I I I I I I I I I
Number of available Motion Control resources for technology objects  Required Motion Control resources  — per speed-controlled axis — per synchronous axis — per synchronous axis — per synchronous axis — per synchronous axis — per ceternal encoder — per output cam — per output cam — per proble — per proble — Per output cam — per proble — Positioning axis — Number of positioning axes at motion control cycle of 4 ms (typical value) — Positioning axis — Number of positioning axes at motion control cycle of 8 ms (typical value) — Number of positioning axes at motion control cycle of 8 ms (typical value) — Number of positioning axes at motion control cycle of 8 ms (typical value) — Number of positioning axes at motion control cycle of 8 ms (typical value) — Number of positioning axes at motion control cycle of 8 ms (typical value) — Number of positioning axes at motion control cycle of 8 ms (typical value) — Number of positioning axes at motion control cycle of 8 ms (typical value)  Controller  PID_Compact PiD_Compa	Motion Control	
per speed controlled axis per external encoder per output cam per cent rack per output cam per cam track per probe Positioning axis Number of positioning axes at motion control cycle of 4 ms (typical value) Number of positioning axes at motion control cycle of 4 ms (typical value) Number of positioning axes at motion control cycle of 4 ms (typical value) Number of positioning axes at motion control cycle of 4 ms (typical value) Number of positioning axes at motion control cycle of 4 ms (typical value) Number of positioning axes at motion control cycle of 4 ms (typical value)  Controller Per positioning axes at motion control cycle of 4 ms (typical value) PID_Compact PID_Compact PID_Sitep		, ,
per positioning axis per vorthronous axis per output cam per output cam per output cam per proble per output cam per proble per p	<ul> <li>Required Motion Control resources</li> </ul>	
- per synchronous axis - per external encoder - per output cam - per cam track - per probe - Positioning axis - Number of positioning axes at motion control cycle of 4 ms (typical value) - Number of positioning axes at motion control cycle of 4 ms (typical value) - Number of positioning axes at motion control cycle of 8 ms (typical value) - Number of positioning axes at motion control cycle of 8 ms (typical value) - Number of positioning axes at motion control cycle of 8 ms (typical value) - Number of positioning axes at motion control cycle of 8 ms (typical value) - PID_Compact - PID_Compact - PID_Compact - PID_Compact - PID_Compact - PID_Temp - Yes; PID controller with integrated optimization for valves - Yes; PID controller with integrated optimization for valves - PID_Temp - Yes; PID controller with integrated optimization for temperature - PID_Temp - Yes; PID controller with integrated optimization for temperature - PID_Temp - Yes; PID controller with integrated optimization for temperature - PER output in the pressure and temperature of the province of the provin	<ul> <li>per speed-controlled axis</li> </ul>	40
- per output cam - per output cam - per output cam - per cam track - per probe - Positioning axis - Number of positioning axes at motion control cycle of 4 ms (typical value) - Number of positioning axes at motion control cycle of 4 ms (typical value) - Number of positioning axes at motion control cycle of 8 ms (typical value) - Number of positioning axes at motion control cycle of 8 ms (typical value) - Number of positioning axes at motion control cycle of 8 ms (typical value) - Number of positioning axes at motion control cycle of 8 ms (typical value) - Number of positioning axes at motion control cycle of 8 ms (typical value) - Number of positioning axes at motion control cycle of 8 ms (typical value) - Number of positioning axes at motion control of 4 ms (typical value) - Number of positioning axes at motion control of 4 ms (typical value) - Number of positioning axes at motion control of 4 ms (typical value) - Number of 4 ms (typical value) - Positioning axes at motion control of 7 cycle of 8 ms (typical value) - Positioning axes at motion control of 7 cycle of 9 ms (typical value) - Positioning axes at motion control of 9 ms (typical value) - Positioning axes at motion control of 9 ms (typical value) - Positioning axes at motion control of 9 ms (typical value) - Positioning axes at motion control of 9 ms (typical value) - Positioning axes at motion control of 9 ms (typical value) - Positioning axes at motion control of 9 ms (typical value) - Notice of 1 m	<ul><li>per positioning axis</li></ul>	80
per output cam per cam track per probe 40	— per synchronous axis	160
	— per external encoder	80
	— per output cam	20
Positioning axis  Number of positioning axes at motion control cycle of 4 ms (typical value)  Number of positioning axes at motion control cycle of 8 ms (typical value)  Controller  PID_Compact PID_Compact PID_Step PD-Temp PD-Temp PD-Temp Counting and measuring High-speed counter  Standards, approvals, certificates  Highest safety class achievable in safety mode Performance level according to ISO 13849-1 Stl. acc. to IEC 61508 Probability of failure (for service life of 20 years and repair time of 100 hours)  — Low demand mode: PFDavg in accordance with SiL3 — High demand/continuous mode: PFH in accordance with SiL3 Ambient temperature during operation  • horizontal installation, min. • horizontal installation, min. • horizontal installation, min. • horizontal installation, min. • vertical installation elititude above sea level, max. • Ambient temperature during storage/transportation • min. • max.  Ambient are meperature-barometric pressure-airlitude  Power of the first fi	— per cam track	160
Positioning axis  Number of positioning axes at motion control cycle of 4 ms (typical value)  Number of positioning axes at motion control cycle of 8 ms (typical value)  Number of positioning axes at motion control cycle of 8 ms (typical value)  Controller  PID_Compact PID_Compact PID_Temp Yes; PID controller with integrated optimization for valves PID-Temp Yes; PID controller with integrated optimization for valves Yes; PID controller with integrated optimization for temperature  Counting and measuring PID-Temp Yes  Standards, approvals, certificates  Highest safety class achievable in safety mode Performance level according to ISO 13849-1 Stl. acc. to IEC 61508 Stl. acc. to IEC	— per probe	40
cycle of 4 ms (typical value)  - Number of positioning axes at motion control cycle of 8 ms (typical value)  Controller  PID_Compact  PID_Step  PID-Temp  Counting and measuring  High-speed counter  Standards, approvals, certificates  Highest safety class achievable in safety mode  Performance level according to ISO 13849-1  SIL acc. to IEC 61508  Probability of failure (for service life of 20 years and repair time of 100 hours)  - Low demand mode: PPDavg in accordance with SIL3  Ambient conditions  Ambient conditions  Norizontal installation, min.  Norizontal installation, min.  Norizontal installation, min.  Performance  Performance devel according to ISO 1849-1  SIL 3  Ambient conditions  Ambient emperature during operation  Norizontal installation, min.  Norizontal installation installation installation altitudes > 2 000 m, see entry ID: 109763260 altitude  Relative humidity  With condensation, tested in accordance with IEC 60088-2-38, max.  Resistance  Coolants and lubricants  Pesistance  Coolants and lubricants  Norizontal installation  Pesistance  Norizontal installation in the air and lubricants  Norizontal installation in the air and lubricants	·	
Controller PID_Compact PID_Compact PID_Step PID_Temp Possible vest pide outler Pide safety class achievable in safety mode Performance level according to ISO 13849-1 SIL acc. to IEC 61508 Probability of failure (for service life of 20 years and repair time of 100 hours) Probability of failure (for service life of 20 years and repair time of 100 hours) Probability of failure (for service life of 20 years and repair time of 100 hours) Probability of failure (for service life of 20 years and repair time of 100 hours) Probability of failure (for service life of 20 years and repair time of 100 hours) Probability of failure (for service life of 20 years and repair time of 100 hours) Probability of failure (for service life of 20 years and repair time of 100 hours) Probability of failure (for service life of 20 years and repair time of 100 hours) Probability of failure (for service life of 20 years and repair time of 100 hours) Probability of failure (for service life of 20 years and repair time of 100 hours) Probability of failure (for service life of 20 years and repair time of 100 hours) Probability of failure (for service life of 20 years and repair time of 100 hours) Probability of failure (for service life of 20 years and repair time of 100 hours) Probability of failure (for service life of 20 years and repair time of 100 hours) Probability of failure (for service life of 20 years and repair time of 100 hours) Probability of failure (for service life of 20 years and repair time of 100 hours) Probability of failure (for service life of 20 years and repair time of 100 hours) Probability of failure (for service life of 20 years and repair time of 100 hours) Probability of failure (for service life of 20 years and repair time of 100 hours) Probability of failure (for service life of 20 years and repair time of 100 hours) Probability of failure (for	<ul> <li>Number of positioning axes at motion control</li> </ul>	7
PID_Compact PID_3Step PID_1Femp PID_1Femp Counting and measuring High-speed counter Plandards, approvals, certificates Pligh-speed counter Standards, approvals, certificates Plighest afety class achievable in safety mode Performance level according to ISO 13849-1 SIL acc. to IEC 61508 Probability of failure (for service life of 20 years and repair time of 100 hours)  — Low demand mode: PFDavg in accordance with SIL3 — High demand/continuous mode: PFH in accordance with SIL3 — High demand/continuous mode: PFH in accordance with SIL3  Ambient conditions  Ambient temperature during operation Portical installation, min. Portical installation, min. Portical installation, min. Portical installation, max. Portical installation, max. Portical installation, max. Portical installation, min. Portical installation installation installation installation altitudes via installation altitudes via inst		14
PID_SStep PID-Temp Yes; PID controller with integrated optimization for valves Yes; PID controller with integrated optimization for valves 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 SIL acc. to IEC 61508 Probability of failure (for service life of 20 years and repair time of 100 hours)  — Low demand mode: PFDavg in accordance with SIL3 — High demand/continuous mode: PFH in accordance with SIL3  Ambient temperature during operation Phorizontal installation, min. Phorizontal installation, min. Phorizontal installation, min. Povertical installation, min. Povertical installation, min. Povertical installation, max.  Anbient temperature during storage/transportation  Ambient	Controller	
Counting and measuring     High-speed counter  Standards, approvals, certificates  Highest safety class achievable in safety mode     Performance level according to ISO 13849-1     SIL acc. to IEC 61508     Probability of failure (for service life of 20 years and repair time of 100 hours)     — Low demand mode: PFDavg in accordance with SIL3     — High demand/continuous mode: PFH in accordance with SIL3     — High demand/continuous mode: PFH in accordance with SIL3  Ambient conditions  Ambient conditions  Ambient conditions  Ambient standardin, max.     • horizontal installation, min.     • horizontal installation, min.     • vertical installation, min.     • vertical installation, max.     • A0 °C; = Tmax; display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off  Ambient temperature during storage/transportation     • min.     • max.     • A0 °C  Altitude during operation relating to sea level  • Installation altitude above sea level, max.     • Ambient air temperature-barometric pressure-altitude  Relative humidity  • With condensation, tested in accordance with IEC 60068-2-38, max.     • Ambient air temperature-barometric pressure-altitude  Resistance  Coolants and lubricants  Ves; Incl. diesel and oil droplets in the air and lubricants	<ul> <li>PID_Compact</li> </ul>	Yes; Universal PID controller with integrated optimization
Counting and measuring	PID_3Step	Yes; PID controller with integrated optimization for valves
High-speed counter  Standards, approvals, certificates  Highest safety class achievable in safety mode  ● Performance level according to ISO 13849-1  ● SIL acc. to IEC 61508  Probability of failure (for service life of 20 years and repair time of 100 hours)  — Low demand mode: PFDavg in accordance with SIL3  — High demand/continuous mode: PFH in accordance with SIL3  — High demand/continuous mode: PFH in accordance with SIL3  Ambient conditions  Ambient temperature during operation  ● horizontal installation, min.  ● horizontal installation, max.  Horizontal installation, max.  ● vertical installation, min.  ● vertical installation, min.  ● vertical installation, max.  40 °C; = Tmin; (incl. condensation/frost)  ● vertical installation, max.  40 °C; = Tmax; display: 50 °C, the display is switched off at an operating temperature of typically 50 °C  ■ vertical installation, max.  40 °C; = Tmax; display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off  Ambient temperature during storage/transportation  ● min.  ● nax.  Anbient air temperature during storage/transportation  ● min.  ● nax.  Anbient air temperature of vertical installation altitude above sea level, max.  ■ Anabient air temperature-barometric pressure-altitude  Relative humidity  ● With condensation, tested in accordance with IEC 60068=2-38, max.  ■ Resistante  Coolants and lubricants  — Resistante to commercially available coolants and lubricants  — Resistant to commercially available coolants and lubricants  PLe  SIL 3  P	PID-Temp	Yes; PID controller with integrated optimization for temperature
Standards, approvals, certificates  Highest safety class achievable in safety mode  • Performance level according to ISO 13849-1 • SiL acc. to IEC 61508 • C. 2.00E-05 • Timin (incl. condensation/frost) • OC; = Timax; display: 40 °C, the display is switched off at an operating temperature of typically 40 °C; = Timax; display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off  Ambient temperature during storage/transportation • min. • vertical installation, max. • Antient temperature during storage/transportation • min. • Acc 70 °C  Allitude during operation relating to sea level • Installation altitude above sea level, max. • Antient temperature-barometric pressure- altitude • Installation altitude above sea level, max. • Antient temperature-barometric pressure- altitude • Installation altitude above sea level, max. • Antient temperature-barometric pressure- altitude • Occ	Counting and measuring	
Highest safety class achievable in safety mode  Performance level according to ISO 13849-1  SIL acc. to IEC 61508  Probability of failure (for service life of 20 years and repair time of 100 hours)  — Low demand mode: PFDavg in accordance with SIL3  — High demand/continuous mode: PFH in accordance with SIL3  Ambient conditions  Ambient temperature during operation  • horizontal installation, min.  • horizontal installation, min.  • vertical installation, min.  • vertical installation, max.  • vertical installation of the installation altitude above sea level of the installation altitude above sea level, max.  • Ambient air temperature-barometric pressurealtitude  Relative humidity  • With condensation, tested in accordance with IEC 60068-2-38, max.  • Ambient and lubricants  — Resistant to commercially available coolants and lubricants  Yes; Incl. diesel and oil droplets in the air	High-speed counter	Yes
Performance level according to ISO 13849-1 SIL acc. to IEC 61508 SIL 3 Probability of failure (for service life of 20 years and repair time of 100 hours)  — Low demand mode: PFDavg in accordance with SIL3 — High demand/continuous mode: PFH in accordance with SIL3  Ambient conditions  Ambient conditions  Ambient since during operation  • horizontal installation, min. • horizontal installation, max.  • vertical installation, min. • vertical installation, max.  • vertical installation of typically 50 °C, the display is switched off at an operating temperature of typically 50 °C, the display is switched off  Ambient temperature during storage/transportation • min. • max.  • max. • To °C  Altitude during operation relating to sea level • Installation altitude above sea level, max. • Ambient air temperature-barometric pressurealtitude  Restrictions for installation altitudes > 2 000 m, see entry ID: 109763260 altitude  Relative humidity • With condensation, tested in accordance with IEC 60068-2-38, max.  Resistance  Coolants and lubricants  — Resistance  Coolants and lubricants  Yes; Incl. diesel and oil droplets in the air	Standards, approvals, certificates	
SIL acc. to IEC 61508  Probability of failure (for service life of 20 years and repair time of 100 hours)  — Low demand mode: PFDavg in accordance with SIL3  — High demand/continuous mode: PFH in accordance with SIL3  — High demand/continuous mode: PFH in accordance with SIL3  Ambient conditions  Ambient temperature during operation  • horizontal installation, min. • horizontal installation, max.  • vertical installation, min. • vertical installation, max.  • vertical installation of the display is switched off at an operating temperature of typically 50 °C; = Tmin;  • vertical installation of the display is switched off  Ambient temperature during storage/transportation  • min. • max.  • max.  • To °C  Allitude during operation relating to sea level  • Installation altitude above sea level, max. • Ambient air temperature-barometric pressure-altitude  Restrictions for installation altitudes > 2 000 m, see entry ID: 109763260  Relative humidity  • With condensation, tested in accordance with IEC 60068-2-38, max.  Resistance  Coolants and lubricants  — Resistant to commercially available coolants and lubricants  Yes; Incl. diesel and oil droplets in the air	Highest safety class achievable in safety mode	
Probability of failure (for service life of 20 years and repair time of 100 hours)  — Low demand mode: PFDavg in accordance with SIL3  — High demand/continuous mode: PFH in accordance with SIL3  Ambient conditions  Ambient temperature during operation  • horizontal installation, min. • horizontal installation, max. • horizontal installation, min. • vertical installation, min. • vertical installation, max. • vertical installation, max.  • vertical installation, max.  • vertical installation, max.  • vertical installation, max.  • vertical installation, max.  • vertical installation of the installation, max.  • vertical installation of the installation altitude above sea level, max. • Ambient air temperature-barometric pressure-altitude  Relative humidity • With condensation, tested in accordance with IEC 60068-2-38, max.  Resistance  Coolants and lubricants  Yes; Incl. diesel and oil droplets in the air and lubricants	<ul> <li>Performance level according to ISO 13849-1</li> </ul>	PLe
- Low demand mode: PFDavg in accordance with SIL3 - High demand/continuous mode: PFH in accordance with SIL3 - High demand/continuous mode: PFH in accordance with SIL3  Ambient conditions  Ambient temperature during operation • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max.  • vertical installation, max. • vertical installation, max.  • vertical installation, max.  • vertical installation, max.  • vertical installation, max.  • vertical installation, max.  • vertical installation, max.  • vertical installation, max.  • vertical installation, max.  • vertical installation, max.  • vertical installation, max.  • vertical installation, max.  • vertical installation, max.  • vertical installation, max.  • vertical installation, max.  • vertical installation, max.  • vertical installation, max.  • vertical installation, max.  • vertical installation, max.  • vertical installation accordance of typically 50 °C  • vertical installation of typically 50 °C  • vertical installation altitudes > 2 000 m, see manual  • vertical installation altitudes > 2 000 m, see manual  • restrictions for installation altitudes > 2 000 m, see entry ID: 109763260  • 100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation  • vertical installation of typically 50 °C  • 100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation  • vertical installation of typically 40 °C, at an operating temperature of	SIL acc. to IEC 61508	SIL 3
with SIL3  — High demand/continuous mode: PFH in accordance with SIL3  Ambient conditions  Ambient temperature during operation  • horizontal installation, min. • horizontal installation, max.  • vertical installation, min. • vertical installation, max.  • Vertical installation, min.  • Vertical installation max.  • Vertical installation altitude of the display is switched off at an operating temperature of typically 40 °C; = Tmax; display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off  Ambient temperature during storage/transportation  • min.  • Vertical installation altitude of the vertical installation altitudes > 2 000 m, see manual  • Installation altitude above sea level, max.  • Ambient air temperature-barometric pressure-  altitude  Relative humidity  • With condensation, tested in accordance with IEC 60068-2-38, max.  Resistance  Coolants and lubricants  • Resistance  Coolants and lubricants  Ves; Incl. diesel and oil droplets in the air	Probability of failure (for service life of 20 years and repa	ir time of 100 hours)
Ambient temperature during operation  • horizontal installation, min. • horizontal installation, max. • horizontal installation, min. • vertical installation, max. • vertical installation altive demperature of typically • vertical installation altive demperature of typically • vertical installation altive demperature of typically • vertical installation altive and operating temperature of typically • vertical installation altive and operating temperature of typically • vertical installation altive and operating temperature of typically • vertical installation altive and operating temperature of typically • vertical installation altive and operating temperature of typically • vertical installation altive and operating temperature of typically • vertical installation altive and operating temperature of typically • vertical installation altive and operating temperature of typically • vertical installation altive and operating temperature of typically • vertical installation altive and operating temperature of typically • vertical installation altive and operating temperature of typically • vertical installation altive and operating temperature of typically • vertical installation altive and operating temperature of typically • vertical installation of the display and operating temperature of typically • vertical installation altive and operating temperature of typica		< 2.00E-05
Ambient temperature during operation  • horizontal installation, min. • horizontal installation, max. • horizontal installation, max. • horizontal installation, max. • vertical installation, min. • vertical installation, max. • vertical installation, min. • vertical installation is switched off at an operating temperature of typically vertically vert	· · · · · · · · · · · · · · · · · · ·	< 1.00E-09
<ul> <li>horizontal installation, min.</li> <li>horizontal installation, min.</li> <li>horizontal installation, max.</li> <li>vertical installation, min.</li> <li>vertical installation, min.</li> <li>vertical installation, max.</li> <li>vertical installation, min.</li> <li>vertical installation, max.</li> <li>vertical installation, min.</li> <li>vertical installation and perating temperature of typically vertically and vertically switched off</li> <li>vertical installation and perating temperature of typically vertically switched off</li> <li>vertical installation and perating temperature of typically vertically switched off</li> <li>vertical installation and perating temperature of typically vertically switched off</li> <li>vertical installation and perating temperature of typically vertically switched off</li> <li>vertical installation and perating temperature of typically vertically switched off</li> <li>vertical installation and perating temperature of typically vertically switched off</li> <li>vertical installation and perating temperature of typically vertically switched off</li> <li>vertical installation of conditions of vertical installation and perating temperature of typically vertically switched off</li> <li>vertical installation of conditions of vertical installation and perating t</li></ul>	Ambient conditions	
<ul> <li>horizontal installation, max.</li> <li>60 °C; = Tmax; display: 50 °C, the display is switched off at an operating temperature of typically 50 °C</li> <li>vertical installation, min.</li> <li>vertical installation, max.</li> <li>40 °C; = Tmin</li> <li>40 °C; = Tmax; display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off</li> <li>Ambient temperature during storage/transportation</li> <li>min.</li> <li>max.</li> <li>max.</li> <li>Altitude during operation relating to sea level</li> <li>Installation altitude above sea level, max.</li> <li>Ambient air temperature-barometric pressurealtitude</li> <li>Relative humidity</li> <li>With condensation, tested in accordance with IEC 60068-2-38, max.</li> <li>Resistance</li> <li>Coolants and lubricants</li> <li>Resistant to commercially available coolants and lubricants</li> <li>Yes; Incl. diesel and oil droplets in the air</li> </ul>	Ambient temperature during operation	
temperature of typically 50 °C  • vertical installation, min.  • vertical installation, max.  • vertical installation, max.  40 °C; = Tmax; display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off  Ambient temperature during storage/transportation  • min.  • max.  • max.  Altitude during operation relating to sea level  • Installation altitude above sea level, max.  • Ambient air temperature-barometric pressure-altitude  Relative humidity  • With condensation, tested in accordance with IEC 60068-2-38, max.  Resistance  Coolants and lubricants  — Resistant to commercially available coolants and lubricants  Yes; Incl. diesel and oil droplets in the air	<ul> <li>horizontal installation, min.</li> </ul>	
vertical installation, max.  40 °C; = Tmax; display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off  Ambient temperature during storage/transportation      min.		temperature of typically 50 °C
Ambient temperature during storage/transportation  • min.  • max.  Altitude during operation relating to sea level  • Installation altitude above sea level, max.  • Ambient air temperature-barometric pressure-altitude  Relative humidity  • With condensation, tested in accordance with IEC 60068-2-38, max.  Resistance  Coolants and lubricants  — Resistant to commercially available coolants and lubricants  40 °C, the display is switched off  -40 °C  70 °C  5 000 m; Restrictions for installation altitudes > 2 000 m, see manual  Restrictions for installation altitudes > 2 000 m, see entry ID: 109763260  100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation		
<ul> <li>min.</li> <li>max.</li> <li>Altitude during operation relating to sea level</li> <li>Installation altitude above sea level, max.</li> <li>Ambient air temperature-barometric pressurealtitude</li> <li>Relative humidity</li> <li>With condensation, tested in accordance with IEC 60068-2-38, max.</li> <li>Resistance</li> <li>Coolants and lubricants</li> <li>Resistant to commercially available coolants and lubricants</li> <li>Yes; Incl. diesel and oil droplets in the air</li> </ul>	·	
<ul> <li>max.</li> <li>Altitude during operation relating to sea level</li> <li>Installation altitude above sea level, max.</li> <li>Ambient air temperature-barometric pressurealtitude</li> <li>Relative humidity</li> <li>With condensation, tested in accordance with IEC 60068-2-38, max.</li> <li>Resistance</li> <li>Coolants and lubricants</li> <li>Too °C</li> <li>70 °C</li> <li>70 °C</li> <li>70 °C</li> <li>70 °C</li> <li>70 °C</li> <li>8000 m; Restrictions for installation altitudes &gt; 2 000 m, see manual Restrictions for installation altitudes &gt; 2 000 m, see entry ID: 109763260 altitudes</li> <li>100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation</li> <li>Yes; Incl. diesel and oil droplets in the air</li> </ul>		
Altitude during operation relating to sea level  Installation altitude above sea level, max.  Ambient air temperature-barometric pressurealititude  Relative humidity  With condensation, tested in accordance with IEC 60068-2-38, max.  Resistance  Coolants and lubricants  Coolants and lubricants  Toolants and lubricants  Coolants and lubricants  South max.  5 000 m; Restrictions for installation altitudes > 2 000 m, see manual Restrictions for installation altitudes > 2 000 m, see entry ID: 109763260 altitudes  Restrictions for installation altitudes > 2 000 m, see manual Restrictions for installation altitudes > 2 000 m, see manual Restrictions for installation altitudes > 2 000 m, see manual Restrictions for installation altitudes > 2 000 m, see manual Restrictions for installation altitudes > 2 000 m, see manual Restrictions for installation altitudes > 2 000 m, see manual Restrictions for installation altitudes > 2 000 m, see manual Restrictions for installation altitudes > 2 000 m, see manual Nestrictions for installation altitudes > 2 000 m, see manual Petrophysical Accordance with IEC states and Indicate altitudes > 2 000 m, see manual Petrophysical Accordance with IEC states and Indicate altitudes > 2 000 m, see manual Petrophysical Accordance with IEC states and Indicate altitudes > 2 000 m, see manual Petrophysical Accordance with IEC states and Indicate altitudes > 2 000 m, see manual Petrophysical Accordance with IEC states and Indicate altitudes > 2 000 m, see manual Petrophysical Accordance with IEC states and Indicate altitudes > 2 000 m, see manual Petrophysical Accordance with IEC states and Indicate altitudes > 2 000 m, see manual Petrophysical Accordance with IEC states and Indicate altitudes > 2 000 m, see manual Petrophysical Accordance with IEC states and Indicate altitudes > 2 000 m, see manual Petrophysical Accordance with IEC states and Indicate altitudes > 2 000 m, see manual Petrophysical Accordance with IEC states and Indicate altitudes > 2 000 m, see manual Petrophysical Accordance wi		
<ul> <li>Installation altitude above sea level, max.</li> <li>Ambient air temperature-barometric pressurealtitude</li> <li>Relative humidity</li> <li>With condensation, tested in accordance with IEC 60068-2-38, max.</li> <li>Resistance</li> <li>Coolants and lubricants</li> <li>Installation altitudes &gt; 2 000 m, see entry ID: 109763260</li> <li>Restrictions for installation altitudes &gt; 2 000 m, see entry ID: 109763260</li> <li>Restrictions for installation altitudes &gt; 2 000 m, see entry ID: 109763260</li> <li>Restrictions for installation altitudes &gt; 2 000 m, see entry ID: 109763260</li> <li>Hour Horizontal installation altitudes &gt; 2 000 m, see entry ID: 109763260</li> <li>Hour Horizontal installation altitudes &gt; 2 000 m, see entry ID: 109763260</li> <li>Hour Horizontal installation altitudes &gt; 2 000 m, see entry ID: 109763260</li> <li>Hour Horizontal installation altitudes &gt; 2 000 m, see entry ID: 109763260</li> <li>Hour Horizontal installation altitudes &gt; 2 000 m, see entry ID: 109763260</li> <li>Hour Horizontal installation altitudes &gt; 2 000 m, see entry ID: 109763260</li> <li>Hour Horizontal installation altitudes &gt; 2 000 m, see entry ID: 109763260</li> <li>Hour Horizontal installation altitudes &gt; 2 000 m, see entry ID: 109763260</li> <li>Hour Horizontal installation altitudes &gt; 2 000 m, see entry ID: 109763260</li> <li>Hour Horizontal installation altitudes &gt; 2 000 m, see entry ID: 109763260</li> <li>Hour Horizontal installation altitudes &gt; 2 000 m, see entry ID: 109763260</li> <li>Hour Horizontal installation altitudes &gt; 2 000 m, see entry ID: 109763260</li> <li>Hour Horizontal installation altitudes &gt; 2 000 m, see entry ID: 109763260</li> <li>Hour Horizontal installation altitudes &gt; 2 000 m, see entry ID: 109763260</li> <li>Hour Horizontal installation altitudes &gt; 2 000 m, see entry ID: 109763260</li> <li>Hour Horizontal installation altitudes &gt; 2 000 m, see entry ID: 109763260</li> <li>Hour Horizont</li></ul>		70 °C
<ul> <li>◆ Ambient air temperature-barometric pressure-altitude</li> <li>Relative humidity</li> <li>◆ With condensation, tested in accordance with IEC 60068-2-38, max.</li> <li>Resistance</li> <li>Coolants and lubricants</li> <li>— Resistant to commercially available coolants and lubricants</li> <li>Pes; Incl. diesel and oil droplets in the air</li> </ul> Restrictions for installation altitudes > 2 000 m, see entry ID: 109763260 100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation Yes; Incl. diesel and oil droplets in the air		
altitude  Relative humidity  • With condensation, tested in accordance with IEC 60068-2-38, max.  Resistance  Coolants and lubricants  — Resistant to commercially available coolants and lubricants  Yes; Incl. diesel and oil droplets in the air		
With condensation, tested in accordance with IEC 60068-2-38, max.  Resistance  Coolants and lubricants  — Resistant to commercially available coolants and lubricants  Yes; Incl. diesel and oil droplets in the air	altitude	Restrictions for installation altitudes > 2 000 m, see entry ID: 109763260
60068-2-38, max. state), horizontal installation  Resistance  Coolants and lubricants  — Resistant to commercially available coolants and lubricants  Yes; Incl. diesel and oil droplets in the air	•	
Coolants and lubricants  — Resistant to commercially available coolants and lubricants  Yes; Incl. diesel and oil droplets in the air	60068-2-38, max.	
Resistant to commercially available coolants and lubricants  Yes; Incl. diesel and oil droplets in the air	Resistance	
and lubricants		
Use in stationary industrial systems	and lubricants	Yes; Incl. diesel and oil droplets in the air

— to biologically active substances according to Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request — to chemically active substances according to Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 EN 60721-3-3 (severity degree 3); \* Yes; Class 3S4 incl. sand, dust, \* - to mechanically active substances according to EN 60721-3-3 Use on ships/at sea - to biologically active substances according to Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna) EN 60721-3-6 — to chemically active substances according to Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 EN 60721-3-6 (severity degree 3); \* - to mechanically active substances according to Yes; Class 6S3 incl. sand, dust; \* EN 60721-3-6 Usage in industrial process technology - Against chemically active substances acc. to Yes; Class 3 (excluding trichlorethylene) EN 60654-4 Environmental conditions for process, Yes; Level GX group A/B (excluding trichlorethylene; harmful gas measuring and control systems acc. to ANSI/ISAconcentrations up to the limits of EN 60721-3-3 class 3C4 permissible); 71.04 level LC3 (salt spray) and level LB3 (oil) Remark Note regarding classification of environmental \* The supplied plug covers must remain in place over the unused conditions acc. to EN 60721, EN 60654-4 and interfaces during operation! ANSI/ISA-71.04 Conformal coating . Coatings for printed circuit board assemblies acc. to Yes; Class 2 for high reliability EN 61086 Protection against fouling acc. to EN 60664-3 Yes; Type 1 protection • Military testing according to MIL-I-46058C, Yes; Discoloration of coating possible during service life Amendment 7 Qualification and Performance of Electrical Yes; Conformal coating, Class A Insulating Compound for Printed Board Assemblies according to IPC-CC-830A configuration / header configuration / programming / header Programming language Yes; incl. failsafe - LAD — FBD Yes: incl. failsafe - STL Yes - SCL Yes — GRAPH Yes Know-how protection • User program protection/password protection Yes Copy protection Yes Block protection Yes Access protection Password for display Yes • Protection level: Write protection Yes; Specific write protection both for Standard and for Failsafe • Protection level: Read/write protection Yes • Protection level: Complete protection Yes programming / cycle time monitoring / header lower limit adjustable minimum cycle time upper limit adjustable maximum cycle time Width 70 mm Height 147 mm Depth 129 mm **Weights** Weight, approx. 560 g 11/3/2021 last modified: