SIEMENS

Data sheet

6ES7511-1CK01-0AB0



SIMATIC S7-1500 Compact CPU CPU 1511C-1PN, central processing unit with working memory 175 KB for program and 1 MB for data, 16 digital inputs, 16 digital outputs, 5 analog inputs, 2 analog outputs, 6 high speed counters, 4 high speed outputs for PTO/PWM/frequency output 1. interface: PROFINET IRT with 2 port switch, 60 NS bit-performance, incl. front connector push-in, SIMATIC memory card necessary

Figure similar

General information	
Product type designation	CPU 1511C-1 PN
HW functional status	FS03
Firmware version	V2.9
Product function	
● I&M data	Yes; I&M0 to I&M3
Isochronous mode	Yes; With minimum OB 6x cycle of 625 µs (distributed)
Engineering with	
STEP 7 TIA Portal configurable/integrated from version	V17 (FW V2.9) / V15 (FW V2.5) or higher; with older TIA Portal versions configurable as 6ES7511-1CK00-0AB0
Configuration control	
via dataset	Yes
Display	
Screen diagonal [cm]	3.45 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; 20.4 V DC, for supplying the digital inputs/outputs
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Mains buffering	
Mains/voltage failure stored energy time	5 ms; Refers to the power supply on the CPU section
Repeat rate, min.	1/s
Input current	
Current consumption (rated value)	0.8 A; Without load; 9.8 A: CPU + load
Current consumption, max.	1 A; Without load; 10 A: CPU + load
Inrush current, max.	1.9 A; Rated value
l²t	0.34 A ² ·s
Digital inputs	
 from load voltage L+ (without load), max. 	20 mA; per group
Digital outputs	
• from load voltage L+, max.	30 mA; Per group, without load
output voltage / header	
Rated value (DC)	24 V
Encoder supply	
Effective Supply	
Number of outputs	1; One common 24 V encoder supply

• 24 V	Yes; L+ (-0.8 V)
Short-circuit protection	Yes
Output current, max.	1 A
Power	
Infeed power to the backplane bus	10 W
Power consumption from the backplane bus (balanced)	8.5 W
Power loss	
Power loss, typ.	11.8 W
Memory	
Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes
Work memory	
integrated (for program)	175 kbyte
integrated (for data)	1 Mbyte
Load memory	
Plug-in (SIMATIC Memory Card), max.	32 Gbyte
Backup	
maintenance-free	Yes
CPU processing times	
for bit operations, typ.	60 ns
for word operations, typ.	72 ns
for fixed point arithmetic, typ.	96 ns
for floating point arithmetic, typ.	384 ns
CPU-blocks	
Number of elements (total)	4 000; 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.	1 Mbyte; For DBs with absolute addressing, the max. size is 64 KB
Number range	0 65 535
• Size, max.	175 kbyte
FC	
Number range	0 65 535
• Size, max.	175 kbyte
ОВ	
• Size, max.	175 kbyte
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 500 μs
 Number of process alarm OBs 	50
 Number of DPV1 alarm OBs 	3
 Number of isochronous mode OBs 	1
 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	
S7 counter	
Number	2 048
Retentivity	
— adjustable	Yes
IEC counter	
Number	Any (only limited by the main memory)
Retentivity	
— adjustable	Yes

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.	128 kbyte; In total; available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 88 KB
Extended retentive data area (incl. timers, counters, flags), max.	1 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	1 024; 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)	8 kbyte
— Outputs (volume)	8 kbyte
per CM/CP	
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
Subprocess images	
Number of subprocess images, max.	32
Hardware configuration	
Number of distributed IO systems	32; 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	
● Via CM	4; A maximum of 4 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total
Number of IO Controllers	
integrated	1
Via CM	4; A maximum of 4 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total
Rack	
 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	
Number	16
Clock synchronization	
	Yes
Clock synchronization	
Clock synchronization • supported	Yes
Clock synchronization • supported • in AS, master	Yes Yes
Clock synchronization • supported • in AS, master • in AS, device	Yes Yes Yes

	40
integrated channels (DI)	16
Digital inputs, parameterizable	Yes
Source/sink input	P-reading
Input characteristic curve in accordance with IEC 61131, type 3	Yes
Digital input functions, parameterizable	V
Gate start/stop	Yes
• Capture	Yes
Synchronization	Yes
Input voltage	DO.
Type of input voltage Pated value (PO)	DC
Rated value (DC) for ping t C	24 V
• for signal "0"	-3 to +5V
• for signal "1"	+11 to +30V
Input current	0.5 \
• for signal "1", typ.	2.5 mA
Input delay (for rated value of input voltage)	
for standard inputs	V
— parameterizable	Yes; none / 0.05 / 0.1 / 0.4 / 1.6 / 3.2 / 12.8 / 20 ms
— at "0" to "1", min.	4 μs; for parameterization "none"
— at "0" to "1", max.	20 ms
— at "1" to "0", min.	4 μs; for parameterization "none"
— at "1" to "0", max.	20 ms
for interrupt inputs	Van Oana as for standard in other
— parameterizable	Yes; Same as for standard inputs
for technological functions	Van Oana as for standard in other
— parameterizable	Yes; Same as for standard inputs
Cable length	4 000 ms coo ms for to shape logical functionary demanding an input fraguescy.
• shielded, max.	1 000 m; 600 m for technological functions; depending on input frequency, encoder and cable quality; max. 50 m at 100 kHz
• unshielded, max.	600 m; for technological functions: No
Digital outputs	
Type of digital output	Transistor
integrated channels (DO)	16
integrated channels (DO) Current-sourcing	16 Yes; Push-pull output
Current-sourcing	Yes; Push-pull output
Current-sourcing Short-circuit protection	Yes; Push-pull output Yes; electronic/thermal
Current-sourcing Short-circuit protection • Response threshold, typ.	Yes; Push-pull output Yes; electronic/thermal 1.6 A with standard output, 0.5 A with high-speed output; see manual for details
Current-sourcing Short-circuit protection • Response threshold, typ. Limitation of inductive shutdown voltage to	Yes; Push-pull output Yes; electronic/thermal 1.6 A with standard output, 0.5 A with high-speed output; see manual for details -0.8 V
Current-sourcing Short-circuit protection • Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input	Yes; Push-pull output Yes; electronic/thermal 1.6 A with standard output, 0.5 A with high-speed output; see manual for details -0.8 V Yes
Current-sourcing Short-circuit protection • Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Accuracy of pulse duration	Yes; Push-pull output Yes; electronic/thermal 1.6 A with standard output, 0.5 A with high-speed output; see manual for details -0.8 V Yes Up to ±100 ppm ±2 µs at high-speed output; see manual for details
Current-sourcing Short-circuit protection • Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Accuracy of pulse duration minimum pulse duration	Yes; Push-pull output Yes; electronic/thermal 1.6 A with standard output, 0.5 A with high-speed output; see manual for details -0.8 V Yes Up to ±100 ppm ±2 µs at high-speed output; see manual for details
Current-sourcing Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Accuracy of pulse duration minimum pulse duration Digital output functions, parameterizable	Yes; Push-pull output Yes; electronic/thermal 1.6 A with standard output, 0.5 A with high-speed output; see manual for details -0.8 V Yes Up to ±100 ppm ±2 µs at high-speed output; see manual for details 2 µs; With High Speed output
Current-sourcing Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Accuracy of pulse duration minimum pulse duration Digital output functions, parameterizable Switching tripped by comparison values	Yes; Push-pull output Yes; electronic/thermal 1.6 A with standard output, 0.5 A with high-speed output; see manual for details -0.8 V Yes Up to ±100 ppm ±2 µs at high-speed output; see manual for details 2 µs; With High Speed output Yes; As output signal of a high-speed counter
Current-sourcing Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Accuracy of pulse duration minimum pulse duration Digital output functions, parameterizable Switching tripped by comparison values PWM output	Yes; Push-pull output Yes; electronic/thermal 1.6 A with standard output, 0.5 A with high-speed output; see manual for details -0.8 V Yes Up to ±100 ppm ±2 µs at high-speed output; see manual for details 2 µs; With High Speed output Yes; As output signal of a high-speed counter Yes
Current-sourcing Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Accuracy of pulse duration minimum pulse duration Digital output functions, parameterizable Switching tripped by comparison values PWM output — Number, max.	Yes; Push-pull output Yes; electronic/thermal 1.6 A with standard output, 0.5 A with high-speed output; see manual for details -0.8 V Yes Up to ±100 ppm ±2 µs at high-speed output; see manual for details 2 µs; With High Speed output Yes; As output signal of a high-speed counter Yes 4
Current-sourcing Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Accuracy of pulse duration minimum pulse duration Digital output functions, parameterizable Switching tripped by comparison values PWM output Number, max. Cycle duration, parameterizable	Yes; Push-pull output Yes; electronic/thermal 1.6 A with standard output, 0.5 A with high-speed output; see manual for details -0.8 V Yes Up to ±100 ppm ±2 µs at high-speed output; see manual for details 2 µs; With High Speed output Yes; As output signal of a high-speed counter Yes 4 Yes
Current-sourcing Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Accuracy of pulse duration minimum pulse duration Digital output functions, parameterizable Switching tripped by comparison values PWM output — Number, max. — Cycle duration, parameterizable — ON period, min.	Yes; Push-pull output Yes; electronic/thermal 1.6 A with standard output, 0.5 A with high-speed output; see manual for details -0.8 V Yes Up to ±100 ppm ±2 µs at high-speed output; see manual for details 2 µs; With High Speed output Yes; As output signal of a high-speed counter Yes 4 Yes 0 %
Current-sourcing Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Accuracy of pulse duration minimum pulse duration Digital output functions, parameterizable Switching tripped by comparison values PWM output Number, max. Cycle duration, parameterizable ON period, min. ON period, max.	Yes; Push-pull output Yes; electronic/thermal 1.6 A with standard output, 0.5 A with high-speed output; see manual for details -0.8 V Yes Up to ±100 ppm ±2 µs at high-speed output; see manual for details 2 µs; With High Speed output Yes; As output signal of a high-speed counter Yes 4 Yes 0 % 100 %
Current-sourcing Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Accuracy of pulse duration minimum pulse duration Digital output functions, parameterizable Switching tripped by comparison values PWM output Number, max. Cycle duration, parameterizable ON period, min. ON period, max. Resolution of the duty cycle	Yes; Push-pull output Yes; electronic/thermal 1.6 A with standard output, 0.5 A with high-speed output; see manual for details -0.8 V Yes Up to ±100 ppm ±2 µs at high-speed output; see manual for details 2 µs; With High Speed output Yes; As output signal of a high-speed counter Yes 4 Yes 0 % 100 % 0.0036 %; For S7 analog format, min. 40 ns
Current-sourcing Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Accuracy of pulse duration minimum pulse duration Digital output functions, parameterizable Switching tripped by comparison values PWM output Number, max. Cycle duration, parameterizable ON period, min. ON period, max. Resolution of the duty cycle Frequency output	Yes; Push-pull output Yes; electronic/thermal 1.6 A with standard output, 0.5 A with high-speed output; see manual for details -0.8 V Yes Up to ±100 ppm ±2 µs at high-speed output; see manual for details 2 µs; With High Speed output Yes; As output signal of a high-speed counter Yes 4 Yes 0 % 100 % 0.0036 %; For S7 analog format, min. 40 ns Yes 0.5 A; 0.1 A with high-speed output, i.e. when using a high-speed output; see
Current-sourcing Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Accuracy of pulse duration minimum pulse duration Digital output functions, parameterizable Switching tripped by comparison values PWM output Number, max. Cycle duration, parameterizable ON period, min. ON period, max. Resolution of the duty cycle Frequency output Switching capacity of the outputs	Yes; Push-pull output Yes; electronic/thermal 1.6 A with standard output, 0.5 A with high-speed output; see manual for details -0.8 V Yes Up to ±100 ppm ±2 µs at high-speed output; see manual for details 2 µs; With High Speed output Yes; As output signal of a high-speed counter Yes 4 Yes 0 % 100 % 0.0036 %; For S7 analog format, min. 40 ns Yes
Current-sourcing Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Accuracy of pulse duration minimum pulse duration Digital output functions, parameterizable Switching tripped by comparison values PWM output Number, max. Cycle duration, parameterizable ON period, min. ON period, max. Resolution of the duty cycle Frequency output Switching capacity of the outputs with resistive load, max.	Yes; Push-pull output Yes; electronic/thermal 1.6 A with standard output, 0.5 A with high-speed output; see manual for details -0.8 V Yes Up to ±100 ppm ±2 µs at high-speed output; see manual for details 2 µs; With High Speed output Yes; As output signal of a high-speed counter Yes 4 Yes 0 % 100 % 0.0036 %; For S7 analog format, min. 40 ns Yes 0.5 A; 0.1 A with high-speed output, i.e. when using a high-speed output; see manual for details 5 W; 1 W with high-speed output, i.e. when using a high-speed output; see
Current-sourcing Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Accuracy of pulse duration minimum pulse duration Digital output functions, parameterizable Switching tripped by comparison values PWM output Number, max. Cycle duration, parameterizable ON period, min. ON period, max. Resolution of the duty cycle Frequency output Switching capacity of the outputs with resistive load, max. on lamp load, max.	Yes; Push-pull output Yes; electronic/thermal 1.6 A with standard output, 0.5 A with high-speed output; see manual for details -0.8 V Yes Up to ±100 ppm ±2 µs at high-speed output; see manual for details 2 µs; With High Speed output Yes; As output signal of a high-speed counter Yes 4 Yes 0 % 100 % 0.0036 %; For S7 analog format, min. 40 ns Yes 0.5 A; 0.1 A with high-speed output, i.e. when using a high-speed output; see manual for details 5 W; 1 W with high-speed output, i.e. when using a high-speed output; see
Current-sourcing Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Accuracy of pulse duration minimum pulse duration Digital output functions, parameterizable Switching tripped by comparison values PWM output — Number, max. — Cycle duration, parameterizable — ON period, min. — ON period, min. — ON period, max. — Resolution of the duty cycle Frequency output Switching capacity of the outputs with resistive load, max. on lamp load, max.	Yes; Push-pull output Yes; electronic/thermal 1.6 A with standard output, 0.5 A with high-speed output; see manual for details -0.8 V Yes Up to ±100 ppm ±2 μs at high-speed output; see manual for details 2 μs; With High Speed output Yes; As output signal of a high-speed counter Yes 4 Yes 0 % 100 % 0.0036 %; For S7 analog format, min. 40 ns Yes 0.5 A; 0.1 A with high-speed output, i.e. when using a high-speed output; see manual for details 5 W; 1 W with high-speed output, i.e. when using a high-speed output; see manual for details
Current-sourcing Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Accuracy of pulse duration minimum pulse duration Digital output functions, parameterizable Switching tripped by comparison values PWM output Number, max. Cycle duration, parameterizable ON period, min. ON period, max. Resolution of the duty cycle Frequency output Switching capacity of the outputs with resistive load, max. on lamp load, max. Load resistance range lower limit	Yes; Push-pull output Yes; electronic/thermal 1.6 A with standard output, 0.5 A with high-speed output; see manual for details -0.8 V Yes Up to ±100 ppm ±2 μs at high-speed output; see manual for details 2 μs; With High Speed output Yes; As output signal of a high-speed counter Yes 4 Yes 0 % 100 % 0.0036 %; For S7 analog format, min. 40 ns Yes 0.5 A; 0.1 A with high-speed output, i.e. when using a high-speed output; see manual for details 5 W; 1 W with high-speed output, i.e. when using a high-speed output; see manual for details
Current-sourcing Short-circuit protection Response threshold, typ. Limitation of inductive shutdown voltage to Controlling a digital input Accuracy of pulse duration minimum pulse duration Digital output functions, parameterizable Switching tripped by comparison values PWM output Number, max. Cycle duration, parameterizable ON period, min. ON period, max. Resolution of the duty cycle Frequency output Switching capacity of the outputs with resistive load, max. on lamp load, max. Load resistance range lower limit upper limit	Yes; Push-pull output Yes; electronic/thermal 1.6 A with standard output, 0.5 A with high-speed output; see manual for details -0.8 V Yes Up to ±100 ppm ±2 μs at high-speed output; see manual for details 2 μs; With High Speed output Yes; As output signal of a high-speed counter Yes 4 Yes 0 % 100 % 0.0036 %; For S7 analog format, min. 40 ns Yes 0.5 A; 0.1 A with high-speed output, i.e. when using a high-speed output; see manual for details 5 W; 1 W with high-speed output, i.e. when using a high-speed output; see manual for details

• for signal "1", min.	23.2 V; L+ (-0.8 V)
Output current	
for signal "1" rated value	0.5 A; 0.1 A with high-speed output, i.e. when using a high-speed output,
for single HAII and socially and the	observe derating; see manual for details
• for signal "1" permissible range, min.	2 mA
• for signal "1" permissible range, max.	0.6 A; 0.12 A with high-speed output, i.e. when using a high-speed output, observe derating; see manual for details
• for signal "0" residual current, max.	0.5 mA
Output delay with resistive load	
• "0" to "1", max.	200 µs
• "1" to "0", max.	500 μs; Load-dependent
for technological functions	
— "0" to "1", max.	5 µs; Depending on the output used, see additional description in manual
— "1" to "0", max.	5 µs; Depending on the output used, see additional description in manual
Parallel switching of two outputs	
• for logic links	Yes; for technological functions: No
• for uprating	No
for redundant control of a load	Yes; for technological functions: No
Switching frequency	
with resistive load, max.	100 kHz; For high-speed output, 100 Hz for standard output
with inductive load, max.	0.5 Hz; Acc. to IEC 60947-5-1, DC-13; observe derating curve
with inductive load, max. on lamp load, max.	10 Hz
	10 112
Total current of the outputs	0.5 At one additional description in the manual
Current per channel, max. Current per group, max.	0.5 A; see additional description in the manual
Current per group, max.	8 A; see additional description in the manual
Current per power supply, max.	4 A; 2 power supplies for each group, current per power supply max. 4 A, see additional description in manual
for technological functions	
— Current per channel, max.	0.5 A; see additional description in the manual
Relay outputs	
Number of relay outputs	0
Cable length	
• shielded, max.	1 000 m; 600 m for technological functions; depending on output frequency, load, and cable quality; max. 50 m at 100 kHz
• unshielded, max.	600 m; for technological functions: No
Analog inputs	
Number of analog inputs	5; 4x for U/I, 1x for R/RTD
 For current measurement 	4; max.
 For voltage measurement 	·, · · · · · · ·
 For resistance/resistance thermometer measurement 	4; max.
■ 1 OF Tesistance/resistance thempothetel measurement	
permissible input voltage for voltage input (destruction limit), max.	4; max.
permissible input voltage for voltage input (destruction limit),	4; max.
permissible input voltage for voltage input (destruction limit), max. permissible input current for current input (destruction limit),	4; max. 1 28.8 V
permissible input voltage for voltage input (destruction limit), max. permissible input current for current input (destruction limit), max.	4; max. 1 28.8 V 40 mA 1 ms; Dependent on the parameterized interference frequency suppression; for
permissible input voltage for voltage input (destruction limit), max. permissible input current for current input (destruction limit), max. Cycle time (all channels), min.	4; max. 1 28.8 V 40 mA 1 ms; Dependent on the parameterized interference frequency suppression; for details, see conversion procedure in manual
permissible input voltage for voltage input (destruction limit), max. permissible input current for current input (destruction limit), max. Cycle time (all channels), min. Technical unit for temperature measurement adjustable	4; max. 1 28.8 V 40 mA 1 ms; Dependent on the parameterized interference frequency suppression; for details, see conversion procedure in manual
permissible input voltage for voltage input (destruction limit), max. permissible input current for current input (destruction limit), max. Cycle time (all channels), min. Technical unit for temperature measurement adjustable Input ranges (rated values), voltages	4; max. 1 28.8 V 40 mA 1 ms; Dependent on the parameterized interference frequency suppression; for details, see conversion procedure in manual Yes; °C/°F/K
permissible input voltage for voltage input (destruction limit), max. permissible input current for current input (destruction limit), max. Cycle time (all channels), min. Technical unit for temperature measurement adjustable Input ranges (rated values), voltages • 0 to +10 V	4; max. 1 28.8 V 40 mA 1 ms; Dependent on the parameterized interference frequency suppression; for details, see conversion procedure in manual Yes; °C/°F/K Yes; Physical measuring range: ± 10 V
permissible input voltage for voltage input (destruction limit), max. permissible input current for current input (destruction limit), max. Cycle time (all channels), min. Technical unit for temperature measurement adjustable Input ranges (rated values), voltages • 0 to +10 V — Input resistance (0 to 10 V)	4; max. 1 28.8 V 40 mA 1 ms; Dependent on the parameterized interference frequency suppression; for details, see conversion procedure in manual Yes; °C/°F/K Yes; Physical measuring range: ± 10 V 100 kΩ
permissible input voltage for voltage input (destruction limit), max. permissible input current for current input (destruction limit), max. Cycle time (all channels), min. Technical unit for temperature measurement adjustable Input ranges (rated values), voltages • 0 to +10 V — Input resistance (0 to 10 V) • 1 V to 5 V	4; max. 1 28.8 V 40 mA 1 ms; Dependent on the parameterized interference frequency suppression; for details, see conversion procedure in manual Yes; $^{\circ}\text{C}/^{\circ}\text{F}/\text{K}$ Yes; Physical measuring range: \pm 10 V 100 k Ω Yes; Physical measuring range: \pm 10 V
permissible input voltage for voltage input (destruction limit), max. permissible input current for current input (destruction limit), max. Cycle time (all channels), min. Technical unit for temperature measurement adjustable Input ranges (rated values), voltages • 0 to +10 V — Input resistance (0 to 10 V) • 1 V to 5 V — Input resistance (1 V to 5 V)	4; max. 1 28.8 V 40 mA 1 ms; Dependent on the parameterized interference frequency suppression; for details, see conversion procedure in manual Yes; $^{\circ}\text{C}/^{\circ}\text{F}/\text{K}$ Yes; Physical measuring range: \pm 10 V 100 k Ω Yes; Physical measuring range: \pm 10 V 100 k Ω
permissible input voltage for voltage input (destruction limit), max. permissible input current for current input (destruction limit), max. Cycle time (all channels), min. Technical unit for temperature measurement adjustable Input ranges (rated values), voltages • 0 to +10 V — Input resistance (0 to 10 V) • 1 V to 5 V — Input resistance (1 V to 5 V) • -10 V to +10 V	4; max. 1 28.8 V 40 mA 1 ms; Dependent on the parameterized interference frequency suppression; for details, see conversion procedure in manual Yes; °C/°F/K Yes; Physical measuring range: \pm 10 V 100 k Ω Yes; Physical measuring range: \pm 10 V 100 k Ω Yes
permissible input voltage for voltage input (destruction limit), max. permissible input current for current input (destruction limit), max. Cycle time (all channels), min. Technical unit for temperature measurement adjustable Input ranges (rated values), voltages • 0 to +10 V — Input resistance (0 to 10 V) • 1 V to 5 V — Input resistance (1 V to 5 V) • -10 V to +10 V — Input resistance (-10 V to +10 V)	4; max. 1 28.8 V 40 mA 1 ms; Dependent on the parameterized interference frequency suppression; for details, see conversion procedure in manual Yes; °C/°F/K Yes; Physical measuring range: \pm 10 V 100 k Ω Yes; Physical measuring range: \pm 10 V 100 k Ω Yes 100 k Ω
permissible input voltage for voltage input (destruction limit), max. permissible input current for current input (destruction limit), max. Cycle time (all channels), min. Technical unit for temperature measurement adjustable Input ranges (rated values), voltages • 0 to +10 V — Input resistance (0 to 10 V) • 1 V to 5 V — Input resistance (1 V to 5 V) • -10 V to +10 V — Input resistance (-10 V to +10 V) • -5 V to +5 V — Input resistance (-5 V to +5 V)	4; max. 1 28.8 V 40 mA 1 ms; Dependent on the parameterized interference frequency suppression; for details, see conversion procedure in manual Yes; °C/°F/K Yes; Physical measuring range: \pm 10 V 100 k Ω Yes; Physical measuring range: \pm 10 V 100 k Ω Yes 100 k Ω Yes 100 k Ω Yes 100 k Ω Yes; Physical measuring range: \pm 10 V
permissible input voltage for voltage input (destruction limit), max. permissible input current for current input (destruction limit), max. Cycle time (all channels), min. Technical unit for temperature measurement adjustable Input ranges (rated values), voltages • 0 to +10 V — Input resistance (0 to 10 V) • 1 V to 5 V — Input resistance (1 V to 5 V) • -10 V to +10 V — Input resistance (-10 V to +10 V) • -5 V to +5 V	4; max. 1 28.8 V 40 mA 1 ms; Dependent on the parameterized interference frequency suppression; for details, see conversion procedure in manual Yes; $^{\circ}\text{C}/^{\circ}\text{F}/\text{K}$ Yes; Physical measuring range: \pm 10 V 100 k Ω Yes; Physical measuring range: \pm 10 V 100 k Ω Yes 100 k Ω Yes; Physical measuring range: \pm 10 V 100 k Ω Yes; Physical measuring range: \pm 10 V 100 k Ω
permissible input voltage for voltage input (destruction limit), max. permissible input current for current input (destruction limit), max. Cycle time (all channels), min. Technical unit for temperature measurement adjustable Input ranges (rated values), voltages • 0 to +10 V — Input resistance (0 to 10 V) • 1 V to 5 V — Input resistance (1 V to 5 V) • -10 V to +10 V — Input resistance (-10 V to +10 V) • -5 V to +5 V — Input resistance (-5 V to +5 V) Input ranges (rated values), currents • 0 to 20 mA	4; max. 1 28.8 V 40 mA 1 ms; Dependent on the parameterized interference frequency suppression; for details, see conversion procedure in manual Yes; °C/°F/K Yes; Physical measuring range: \pm 10 V 100 k Ω Yes; Physical measuring range: \pm 10 V 100 k Ω Yes 100 k Ω Yes; Physical measuring range: \pm 10 V 100 k Ω Yes; Physical measuring range: \pm 10 V 100 k Ω
permissible input voltage for voltage input (destruction limit), max. permissible input current for current input (destruction limit), max. Cycle time (all channels), min. Technical unit for temperature measurement adjustable Input ranges (rated values), voltages • 0 to +10 V — Input resistance (0 to 10 V) • 1 V to 5 V — Input resistance (1 V to 5 V) • -10 V to +10 V — Input resistance (-10 V to +10 V) • -5 V to +5 V — Input resistance (-5 V to +5 V) Input ranges (rated values), currents • 0 to 20 mA — Input resistance (0 to 20 mA)	4; max. 1 28.8 V 40 mA 1 ms; Dependent on the parameterized interference frequency suppression; for details, see conversion procedure in manual Yes; °C/°F/K Yes; Physical measuring range: \pm 10 V 100 k Ω Yes; Physical measuring range: \pm 10 V 100 k Ω Yes 100 k Ω Yes; Physical measuring range: \pm 10 V 100 k Ω Yes; Physical measuring range: \pm 10 V 100 k Ω Yes; Physical measuring range: \pm 20 mA 50 Ω ; Plus approx. 55 ohm for overvoltage protection by PTC
permissible input voltage for voltage input (destruction limit), max. permissible input current for current input (destruction limit), max. Cycle time (all channels), min. Technical unit for temperature measurement adjustable Input ranges (rated values), voltages • 0 to +10 V — Input resistance (0 to 10 V) • 1 V to 5 V — Input resistance (1 V to 5 V) • -10 V to +10 V — Input resistance (-10 V to +10 V) • -5 V to +5 V — Input resistance (-5 V to +5 V) Input ranges (rated values), currents • 0 to 20 mA — Input resistance (0 to 20 mA) • -20 mA to +20 mA	4; max. 1 28.8 V 40 mA 1 ms; Dependent on the parameterized interference frequency suppression; for details, see conversion procedure in manual Yes; °C/°F/K Yes; Physical measuring range: \pm 10 V 100 k Ω Yes; Physical measuring range: \pm 10 V 100 k Ω Yes 100 k Ω Yes; Physical measuring range: \pm 10 V 100 k Ω Yes; Physical measuring range: \pm 10 V 100 k Ω Yes; Physical measuring range: \pm 20 mA 50 Ω ; Plus approx. 55 ohm for overvoltage protection by PTC Yes
permissible input voltage for voltage input (destruction limit), max. permissible input current for current input (destruction limit), max. Cycle time (all channels), min. Technical unit for temperature measurement adjustable Input ranges (rated values), voltages • 0 to +10 V — Input resistance (0 to 10 V) • 1 V to 5 V — Input resistance (1 V to 5 V) • -10 V to +10 V — Input resistance (-10 V to +10 V) • -5 V to +5 V — Input resistance (-5 V to +5 V) Input ranges (rated values), currents • 0 to 20 mA — Input resistance (0 to 20 mA)	4; max. 1 28.8 V 40 mA 1 ms; Dependent on the parameterized interference frequency suppression; for details, see conversion procedure in manual Yes; °C/°F/K Yes; Physical measuring range: \pm 10 V 100 k Ω Yes; Physical measuring range: \pm 10 V 100 k Ω Yes 100 k Ω Yes; Physical measuring range: \pm 10 V 100 k Ω Yes; Physical measuring range: \pm 10 V 100 k Ω Yes; Physical measuring range: \pm 20 mA 50 Ω ; Plus approx. 55 ohm for overvoltage protection by PTC

 Ni 100 — Input resistance (Ni 100) Pt 100 Pt 100 Input resistance (Pt 100) Input ranges (rated values), resistors 0 to 150 ohms Input resistance (0 to 150 ohms) 10 MΩ Input resistance (0 to 150 ohms) 10 MΩ Yes; Physical measuring range: 0 600 ohms Input resistance (0 to 300 ohms) Yes; Physical measuring range: 0 600 ohms Input resistance (0 to 600 ohms) Yes Input resistance (0 to 600 ohms) O MΩ Cable length shielded, max. 800 m; for U/I, 200 m for R/RTD Analog outputs integrated channels (AO) Yes Voltage output, short-circuit protection 	Input ranges (rated values), resistance thereesester	
- Input resistance (Ni 100) - Pi 100 - Pi 100 - Imput resistance (Pi 100) - Imput resistance (To 150 ohms) - Imput resistance (10 500 ohms) - Imput resistance (10 50	Input ranges (rated values), resistance thermometer	Vae: Standard/climate
Pet 100 —Input resistance (Pt 100) Input renges (gread values), insistors ● 10 1 50 orns ■ Pet resistance (0 to 150 orns) ■ 10 MΩ ● 10 500 orns ■ Pet resistance (1 to 300 orns) ■ 10 MΩ ● 10 500 orns ■ Pet resistance (1 to 300 orns) ■ Pet resistance (1 to 100 or		
Import residence (PT 100) Input ranges (rated values), resistors - 10 to 150 dhms - Input resistance (0 to 150 dhms) - Input resistance (0 to 300 dhms) - Input resistance (0 to 600 dhms) - I		
Input ranges (rated values), resistors		
O to 150 chms		JO MIZ
Input resistance (0 to 500 ohms) O to 300 ohms Input resistance (0 to 300 ohms) O to 600 ohms Input resistance (0 to 600 ohms) Input resistance (0 to 600 oh		Very District or a confirmation of a confirmatio
■ 0 to 300 chms		
Injust cesistance (0 to 300 ohms)		
• 0 to 800 chms		
- Input resistance (0 to 600 ohms) Cable length shelded, max. 800 m; for U/I, 200 m for R/RTD Analog outputs integrated channels (AO) 2 Votage output, short-circuit protection Cycle time (all channels), min. 1 ms; Dependent on the parameterized interference frequency suppression; for details, see convertison procedure in manual Output ranges, voitage • 0 to 10 V • 1 Vto 5 V • 10 V to +10 V Output ranges, current • 0 to 20 mA • 20 m AA • 20 m AA to +20 mA • 20 m AA to +20 mA • 4 m A to 20 mA • with votage outputs, capacitive load, max. • with votage outputs, capacitive load, max. • with current outputs, max. • with current outputs, max. • with current outputs, inductive load, max. • with current outputs, inductive load, max. • with current outputs, inductive load, max. • with current outputs, min. • Resolution with overrange (bit including sign), max. • Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Stip: Medium • Yes • Stip: M		
* shelded, max. * votage output, short-circuit protection * Ves * Votage output, short-circuit protection * Ves * Output ranges, votage * 0 to 10 V * 1 V to 5 V * 10 V to 14 V * 10 V to 14 V * 29 * - 10 V to 140 V * 20 mA Ves * - 20 mA to 20 mA * - 4 m kto 20 mA * - 3 m kto 20 mA * - 4 m kto 20 mA * - 3 m kto 20 mA * - 4 m kto 20 mA * - 20 m kto 20 mA * - 2		
Anslog outputs Integrated channels (AO) 2 Voltage output, short-circuit protection Cycle time (all channels), min. Output ranges, voltage • 0 to 10 V • 1 V to 5 V • 1 0 V to +10 V Output ranges, current • 0 to 20 mA • 20 mA • 4 mA to 20 mA • 4 mA to 20 mA • with voltage outputs, appacitive load, max. • with voltage outputs, capacitive load, max. • with current outputs, max. • with current outputs, inductive load, max. • with current outputs, max. • shelded, max. • answer owner over the inputs Integration and conversion frime/resolution per channel • Resolution with overrange (bit including sign), max. • integration and conversion for the outputs Integration and conversion interference frequency suppression for interference frequency filin ht z • parameterizable • Step: None • Step: None • Step: None • Step: None • Step: Index • Step: None • Step: Index • Connection of signal encoders • for resistance measurement with two-wire connection • for outputs measurement and a -wire transducer • for outputs measurement and a -wire transducer • for outputs measurement and a -wire transducer • for output measurement with two-wire connection		10 ΜΩ
Analog outputs integrated channels (AO) Cycle time (all channels, min. Cycle time (all cycle time) Oto 10 V Yes -10 V to +10 V Yes -10 V to +10 V Yes -10 V to +10 V Yes -20 mA to +20 mA -20 mA to +20 mA -20 mA to +20 mA -4 m Ato 20 mA -4 m Ato 20 mA -4 m Ato 20 mA -4 with current outputs, min. -4 with current outputs, inductive load, max. -4 with current outputs, inductive load, max. -4 with current outputs, inductive load, max. -4 min current outputs, inductive load -5 consocial outputs -6 for resistive load -6 for inductive load -6 for inductive load -6 for corrent measurement outputs, with min	-	
integrated channels (AO) Votage output, short-crout protection Cycle time (all channels), min. Output ranges, voltage • 0 to 10 V • 10 to 10 V • 11 V to 5 V • 1-10 V to +10 V Ves • 1-10 V to +10 V • 20 mA • 20 mA to +20 mA • 20 mA to +20 mA • 4 mA to 20 mA • 4 mA to 20 mA • 4 mA to 20 mA • with outrent outputs, max. • with outrent outputs, max. • with current outputs, inductive load, max. • to 00 fo		800 m; for U/I, 200 m for R/RTD
Voltage output, short-circuit protection Cycle time (all channels), min. details, see conversion procedure in manual Output ranges, voltage 0 to 10 1V 1	Analog outputs	
Cycle time (all channels), min. 1 ms. Dependent on the parameterized interference frequency suppression; for details, see conversion procedure in manual Output ranges, voltage • 10 to 10 V • 1 V to 5 V • 10 V to +10 V Cuput ranges, current • 0 to 20 mA • 20 mA to +20 mA • 4 mA to 20 mA • 4 mA to 20 mA • with voltage outputs, min. • with voltage outputs, capacitive load, max. • with current outputs, max. • with current outputs, inductive load, max. • with current outputs, inductive load, max. • with output subject of the inputs Integration of conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration of measured values • parameterizable • parameterizable • parameterizable • Step: None • Step: None • Step: None • Step: Iwd • Step: High Analog value generation for the outputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration and conversion time/resolution • Step: Iwd • Resolution with overrange (bit including sign), max. • Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Step: Iwd • For resistive load • For current measurement as 4-wire transducer • For output manuser • For output manuser • For output manuser • For output manuser • For output in manual • Fees output in manual • Fees output in manuser • For output in manuser •	integrated channels (AO)	2
Output ranges, voltage • 0 to 10 V • 10 V to 5 V • 10 V to 10 V • 10 V to 10 V • 2 Ves • 10 V to 10 V Output ranges, current • 0 to 20 mA • 20 mA to +20 mA • 4 mA to 20 mA Load impedance (in reter range of output) • with voltage outputs, min. • with voltage outputs, min. • with voltage outputs, min. • with current outputs, min. • with voltage outputs, inductive load, max. • with current outputs, inductive load • Integration with overrange (bit including sign), max. • Integration of measured values • parameterizable • Step: Ivon • For resistive load • Resolution with overrange (bit including sign), max. • Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration of signal encoders • For rotage measurement as 4-wire transducer • For or output measurement as 4-wire transducer • For output measurement as 4-wire transducer • For or output measurement with two-wire connection	Voltage output, short-circuit protection	Yes
Output ranges, voltage	Cycle time (all channels), min.	1 ms; Dependent on the parameterized interference frequency suppression; for
• 0 to 10 V • 1 V to 5 V • 10 V to +10 V • 2 Ves • 10 V to +10 V • 10 to 20 mA • 20 mA to 20 mA • 20 mA to 10 x 0 mA • 4 mA to 20 mA • 5 man to 20 mA • 6		details, see conversion procedure in manual
• 1 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	· · · · · · · · · · · · · · · · · · ·	
10 V to +10 V Output ranges, current 0 to 20 mA 0 20 mA 20 mA Yes 4 mA to 20 mA 4 who 10 20 mA 6 with voltage outputs, min. 1 kΩ 6 with voltage outputs, capacitive load, max. 100 nF 6 with current outputs, max. 100 nF 6 with current outputs, inductive load, max. 100 nF 100 mB		
Output ranges, current • 10 to 20 mA • -20 mA to +20 mA • -4 mA to 20 mA • 4 mA to 20 mA • 4 mA to 20 mA • 4 mA to 20 mA • with voltage outputs, min. • with voltage outputs, apacitive load, max. • with current outputs, inductive load, max. • on maximum maxi	• 1 V to 5 V	Yes
O to 20 mA - 20 mA to +20 mA - 4 mA to 20 mA - 4 mA to 20 mA - with voltage outputs, min. - with voltage outputs, max. - with current outputs, max. - with current outputs, inductive load, max. - outputs, inductive load, inductive load, max. - outputs, inductive load - outputs, max. - outputs, max outputs,		Yes
- 20 mA to +20 mA - 4 mA to 20 mA - 4 mA to 20 mA - 4 mA to 20 mA Load impedance (in rated range of output) - with voltage outputs, min with voltage outputs, capacitive load, max with current outputs, max with current outputs, inductive load, max with current outputs, inductive load, max with current outputs, inductive load, max. Cable length - shielded, max. Analog value generation for the inputs Integration and conversion time/resolution per channel - Resolution with overrange (bit including sign), max integration time, parameterizable - ves; 2.5 / 16.67 / 20 / 100 ms, acts on all channels - integration time, parameterizable - parameterizable - parameterizable - parameterizable - parameterizable - parameterizable - Step: None - Step: None - Step: None - Step: High - Yes - Step: High - Yes - Step: High - Yes Analog value generation for the outputs Integration and conversion time/resolution per channel - Resolution with overrange (bit including sign), max. 16 bit Settling time - for resistive load - for inductive load - 2.5 ms - for capacitive load - for inductive load - for inductive load - for inductive load - for inductive load - for resistance measurement - for current measurement as 4-wire transducer - for resistance measurement with two-wire connection - Yes	Output ranges, current	
4 mA to 20 mA Load impedance (in rated range of output) with voltage outputs, min. with voltage outputs, capacitive load, max. with current outputs, max. with current outputs, inductive load, max. 1 mH Cable length white current outputs, inductive load, max. 1 mH Cable length white current outputs, inductive load, max. 200 m Analog value generation for the inputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. integration and conversion time/resolution per channel integration inte, parameterizable	• 0 to 20 mA	Yes
Load impedance (in rated range of output) • with voltage outputs, min. • with voltage outputs, max. • with current outputs, max. • with current outputs, inductive load, max. • with current outputs, inductive load, max. • with current outputs, inductive load, max. • with current outputs, inductive load, max. 1 mH Cable length • shielded, max. Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Interference voltage suppression for interference frequency f1 in Hz Smoothing of measured values • parameterizable • Step: None • Step: None • Step: low • Step: Hedium • Step: High Analog value generation for the outputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Settling time • for resistive load • for capacitive load • for current measurement as 4-wire transducer • for current measurement as 4-wire transducer • for resistance measurement with two-wire connection Yes	• -20 mA to +20 mA	Yes
 with voltage outputs, min. with voltage outputs, capacitive load, max. with current outputs, max. with current outputs, inductive load, max. 1 mH Cable length shielded, max. Analog value generation for the inputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration time, parameterizable Integration time, parameterizable interference voltage suppression for interference frequency 1f in Hz Smoothing of measured values Step: None Step: None Step: None Step: Medium Yes Step: High Yes Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. 16 bit Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. 16 bit Settling time for respistive load for capacitive load for or capacitive load for inductive load for inductive load for or current measurement for ourrent measurement for ourrent measurement as 4-wire transducer for current measurement as 4-wire transducer for current measurement as 4-wire transducer for current measurement with two-wire connection Yes	• 4 mA to 20 mA	Yes
 with voltage outputs, capacitive load, max. with current outputs, max. with current outputs, inductive load, max. 1 mH Cable length shielded, max. 200 m Analog value generation for the inputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration time, parameterizable Integration generation for the inputs Smoothing of measured values parameterizable Step: None Step: None Step: Medium Yes Step: High Yes Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. 16 bit Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. 16 bit Settling time for resistive load for capacitive load 2.5 ms for inductive load 2.5 ms Encoder Connection of signal encoders for ournent measurement Yes for current measurement as 4-wire transducer Yes for our resistance measurement with two-wire connection Yes	Load impedance (in rated range of output)	
with current outputs, inductive load, max. with current outputs, inductive load, max. 1 mH Cable length shielded, max. Analog value generation for the inputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltages suppression for interference frequency ff in Hz Smoothing of measured values parameterizable Step: None Step: None Step: None Step: Medium Step: Medium Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Setting time for resistive load for capacitive load for capacitive load for capacitive load for or capacitive load For voltage measurement For voltage measurement For voltage measurement as 4-wire transducer For resistance measurement with two-wire connection For resistance measurement with two-wire co	with voltage outputs, min.	1 kΩ
with current outputs, inductive load, max. Cable length shielded, max. Analog value generation for the inputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz. Smoothing of measured values Parameterizable Step: None Step: None Step: None Step: Medium Step: High Yes Step: High Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. 16 bit Yes Yes Yes Step: High Yes Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. 16 bit Settling time for resistive load for resistive load for ordactive load for ovoltage measurement for voltage measurement for ovoltage measurement for ovoltage measurement as 4-wire transducer for ovoresistance measurement with two-wire connection Yes	 with voltage outputs, capacitive load, max. 	100 nF
Cable length • shielded, max. Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Interference voltage suppression for interference frequency f1 in Hz Smoothing of measured values • parameterizable • Step: None • Step: None • Step: Iow • Step: High Analog value generation for the outputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Settling time • for resistive load • for capacitive load • for or apacitive load • for voltage measurement • for voltage measurement • for voltage measurement as 4-wire transducer • for current measurement as 4-wire transducer • for cresistance measurement with two-wire connection Yes 16 bit 200 m Analog value generation for the inputs 16 bit 16 bit 17 ms 18 bit 19 ms 19 ms 10 ms 11 ms 12 ms 13 ms 14 bit 15 ms 16 bit 16 bit 17 ms 18 ms 19 ms 19 ms 19 ms 10 ms 10 ms 10 ms 10 ms 10 ms 11 ms 12 ms 13 ms 14 bit 15 ms 16 bit 16 bit 17 ms 18 ms 19 ms 19 ms 19 ms 10	with current outputs, max.	500 Ω
shielded, max. 200 m Analog value generation for the inputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Interference voltage suppression for interference frequency f1 in Hz Smoothing of measured values Parameterizable Yes Step: None Yes Step: None Yes Step: High Yes Step: High Yes Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. 16 bit Settling time for resistive load 1.5 ms for inductive load 2.5 ms Encoder Connection of signal encoders for voltage measurement as 4-wire transducer Yes for ourrent measurement as 4-wire transducer Yes for current measurement as 4-wire transducer Yes for resistance measurement with two-wire connection Yes		1 mH
Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration time, parameterizable Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz Smoothing of measured values parameterizable Step: None Step: None Step: None Step: High Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Settling time for resistive load for capacitive load for inductive load for inductive load for ovitage measurement for ovitage measurement as 4-wire transducer for resistance measurement with two-wire connection Yes	Cable length	
Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration time, parameterizable Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz Smoothing of measured values parameterizable Step: None Step: None Step: None Step: High Yes Step: High Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Settling time for resistive load for capacitive load for inductive load Settling time Connection of signal encoders for voltage measurement as 4-wire transducer frequency f1 in Hz Yes; 2.5 / 16.67 / 20 / 100 ms, acts on all channels 400 / 60 / 50 / 10 Yes; 2.5 / 16.67 / 20 / 100 ms, acts on all channels 400 / 60 / 50 / 10 Yes; 2.5 / 16.67 / 20 / 100 ms, acts on all channels 400 / 60 / 50 / 10 Yes Yes Yes Step: Medium Yes Step: Medium Yes Step: Medium Yes Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. 16 bit Settling time for resistive load Settling time for organization and conversion time/resolution per channel for organization and conversion time/resolution per channel for organization and conversion time/resolution per channel For resistative load Settling time for organization and conversion time/resolution per channel for resistation with overrange (bit including sign), max. For voltage measurement Yes for voltage measurement as 4-wire transducer Yes for current measurement with two-wire connection Yes	• shielded, max.	200 m
Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz Smoothing of measured values Parameterizable Step: None Step: None Step: low Step: Medium Yes Step: High Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Settling time for capacitive load for inductive load For inductive load For ovoltage measurement For ovoltage measurement as 4-wire transducer For resistance measurement with two-wire connection Yes 16 bit Yes 400 / 60 / 50 / 10 Yes 400 / 60 / 50 / 10 Yes 400 / 60 / 50 / 10 The Set Set Set Set Set Set Set Set Set Se	Analog value generation for the inputs	
Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz Smoothing of measured values Parameterizable Step: None Step: None Step: None Step: High Yes Step: High Yes Step: High Yes The solution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Settling time for capacitive load for capacitive load for inductive load Connection of signal encoders for voltage measurement for current measurement as 4-wire transducer for resistance measurement with two-wire connection Yes 16 bit Yes 400 / 60 / 50 / 10 The set, 20 / 100 ms, acts on all channels 400 / 60 / 50 / 10 The set, 20 / 100 ms, acts on all channels 400 / 60 / 50 / 10 The set, 20 / 100 ms, acts on all channels 400 / 60 / 50 / 10 The set, 20 / 100 ms, acts on all channels 400 / 60 / 50 / 10 The set, 20 / 100 ms, acts on all channels 400 / 60 / 50 / 10 The set, 20 / 100 ms, acts on all channels 400 / 60 / 50 / 10 The set, 20 / 100 ms, acts on all channels 400 / 60 / 50 / 10 The set, 20 / 100 ms, acts on all channels 400 / 60 / 50 / 10 The set, 20 / 100 ms, acts on all channels 400 / 60 / 50 / 10 The set, 20 / 100 ms, acts on all channels 400 / 60 / 50 / 10 The set, 20 / 100 ms, acts on all channels 400 / 60 / 50 / 10 The set, 20 / 100 ms, acts on all channels 400 / 60 / 50 / 10 The set, 20 / 100 ms, acts on all channels 400 / 60 / 50 / 10 The set, 20 / 100 ms, acts on all channels 400 / 60 / 50 / 10 The set, 20 / 10 ms, acts on all channels 400 / 60 / 50 / 10 The set, 20 / 10 ms, acts on all channels 400 / 60 / 50 / 10 The set, 20 / 10 ms, acts on all channels 400 / 60 / 50 / 10 The set, 20 / 10 ms, acts on all channels 400 / 60 / 50 / 10 The set, 20 / 10 ms, 20 / 10 The set, 20 / 10 ms, 20 / 10 The set, 20 / 10 ms, 20 / 10 The set, 20 / 10 ms, 20 / 10 The set, 20 / 10 ms, 20 / 10 The set, 20 / 10 m	Integration and conversion time/resolution per channel	
Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz Smoothing of measured values Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion of the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max.		16 bit
Interference voltage suppression for interference frequency f1 in Hz Smoothing of measured values Interference voltage suppression for interference frequency f1 in Hz Smoothing of measured values Interference voltage suppression for interference frequency f1 in Hz Smoothing of measured values Yes Step: None Yes Step: low Yes Step: High Yes Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Settling time Integration and conversion time/resolution per channel Set		
frequency f1 in Hz Smoothing of measured values • parameterizable • Step: None • Step: None • Step: low • Step: High Analog value generation for the outputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. Settling time • for resistive load • for capacitive load • for inductive load • for inductive load • for or diagnal encoders • for voltage measurement • for current measurement as 4-wire transducer • for resistance measurement with two-wire connection Yes	-	
parameterizable Step: None Step: None Step: low Step: Medium Yes Step: High Yes Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. 16 bit Settling time for resistive load for capacitive load for inductive load for inductive load Encoder Connection of signal encoders for outputs for outputs for outputs Free Connection of signal encoders for voltage measurement for outputs transducer For resistance measurement with two-wire connection Yes	0 11	
Step: None Step: None Step: low Step: Medium Step: High Yes Step: High Yes Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Settling time for resistive load for capacitive load for capacitive load for inductive load Sencoder Connection of signal encoders for voltage measurement for ourrent measurement as 4-wire transducer for resistance measurement with two-wire connection Yes	Smoothing of measured values	
Step: low Step: Medium Step: High Yes Step: High Yes Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. 16 bit Settling time for resistive load for capacitive load for inductive load for inductive load Encoder Connection of signal encoders for overland over transducer for current measurement as 4-wire transducer for resistance measurement with two-wire connection Yes	parameterizable	Yes
Step: low Step: Medium Step: High Yes Step: High Yes Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. 16 bit Settling time for resistive load for capacitive load for inductive load for inductive load Encoder Connection of signal encoders for overland over transducer for current measurement as 4-wire transducer for resistance measurement with two-wire connection Yes	Step: None	Yes
Step: High Step: High Yes Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Settling time for resistive load for capacitive load for capacitive load for inductive load for inductive load Fincoder Connection of signal encoders for voltage measurement for current measurement as 4-wire transducer for resistance measurement with two-wire connection Yes	·	Yes
Step: High Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Settling time for resistive load for capacitive load for capacitive load for inductive load Settling time for voltage measurement for voltage measurement as 4-wire transducer for current measurement with two-wire connection Yes	·	Yes
Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Settling time for resistive load for capacitive load for inductive load 2.5 ms for inductive load Connection of signal encoders for voltage measurement for current measurement as 4-wire transducer for resistance measurement with two-wire connection Yes	•	
Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Settling time of or resistive load for capacitive load for inductive load for inductive load Encoder Connection of signal encoders of or voltage measurement for current measurement as 4-wire transducer of or resistance measurement with two-wire connection Yes		
Resolution with overrange (bit including sign), max. Settling time of resistive load for capacitive load for inductive load for inductive load Encoder Connection of signal encoders of ro voltage measurement for current measurement as 4-wire transducer for resistance measurement with two-wire connection Yes of resistance measurement with two-wire connection 1.5 ms 2.5 ms Encoder Yes		
Settling time • for resistive load • for capacitive load • for inductive load • for inductive load 2.5 ms Encoder Connection of signal encoders • for voltage measurement • for current measurement as 4-wire transducer • for resistance measurement with two-wire connection Yes	-	16 bit
for resistive load for capacitive load for inductive load for inductive load for inductive load for inductive load for voltage measurement for voltage measurement as 4-wire transducer for resistance measurement with two-wire connection for resistance measurement with two-wire connection		TO DIC
for capacitive load of for inductive load of for current measurement of for current measurement as 4-wire transducer of for resistance measurement with two-wire connection of for resistance measurement with two-wire connection	·	1.5 ms
for inductive load 2.5 ms Encoder Connection of signal encoders for voltage measurement for current measurement as 4-wire transducer for resistance measurement with two-wire connection Yes		
Encoder Connection of signal encoders • for voltage measurement Yes • for current measurement as 4-wire transducer Yes • for resistance measurement with two-wire connection Yes	•	
Connection of signal encoders • for voltage measurement • for current measurement as 4-wire transducer • for resistance measurement with two-wire connection Yes		£.0 III0
 for voltage measurement for current measurement as 4-wire transducer for resistance measurement with two-wire connection Yes Yes 		
 for current measurement as 4-wire transducer for resistance measurement with two-wire connection Yes	·	
• for resistance measurement with two-wire connection Yes	-	
	 for current measurement as 4-wire transducer 	
• for resistance measurement with three-wire connection Yes	• for resistance measurement with two-wire connection	Yes
	• for resistance measurement with three-wire connection	Yes
• for resistance measurement with four-wire connection Yes	for resistance measurement with four-wire connection	Yes
Connectable encoders	Connectable encoders	

• 2-wire sensor	Yes
permissible quiescent current (2-wire sensor), max.	1.5 mA
Encoder signals, incremental encoder (asymmetrical)	
Input voltage	24 V
Input frequency, max.	100 kHz
Counting frequency, max.	400 kHz; with quadruple evaluation
Signal filter, parameterizable	Yes
 Incremental encoder with A/B tracks, 90° phase offset 	Yes
 Incremental encoder with A/B tracks, 90° phase offset 	Yes
and zero track	
• pulse encoder	Yes
 pulse encoder with direction 	Yes
pulse encoder with one impulse signal per count direction	Yes
Errors/accuracies	
Linearity error (relative to input range), (+/-)	0.1 %
Temperature error (relative to input range), (+/-)	0.005 %/K
Crosstalk between the inputs, max.	-60 dB
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.05 %
Output ripple (relative to output range, bandwidth 0 to 50 kHz), (+/-)	0.02 %
Linearity error (relative to output range), (+/-)	0.15 %
Temperature error (relative to output range), (+/-)	0.005 %/K
Crosstalk between the outputs, max.	-80 dB
Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)	0.05 %
Operational error limit in overall temperature range	
Voltage, relative to input range, (+/-)	0.3 %
• Current, relative to input range, (+/-)	0.3 %
Resistance, relative to input range, (+/-)	0.3 %
Resistance thermometer, relative to input range, (+/-)	Pt100 Standard: ±2 K, Pt100 Climate: ±1 K, Ni100 Standard: ±1.2 K, Ni100
 Voltage, relative to output range, (+/-) 	Climate: ±1 K 0.3 %
Current, relative to output range, (+/-)	0.3 %
Basic error limit (operational limit at 25 °C)	
Voltage, relative to input range, (+/-)	0.2 %
• Current, relative to input range, (+/-)	0.2 %
Resistance, relative to input range, (+/-)	0.2 %
• Resistance thermometer, relative to input range, (+/-)	Pt100 Standard: ±1 K, Pt100 Climate: ±0.5 K, Ni100 Standard: ±0.6 K, Ni100 Climate: ±0.5 K
 Voltage, relative to output range, (+/-) 	0.2 %
Current, relative to output range, (+/-)	0.2 %
Interference voltage suppression for $f = n \times (f1 + /- 1 \%)$, $f1 = interference$	
Series mode interference (peak value of interference < rated value of input range), min.	30 dB
Common mode voltage, max.	10 V
Common mode interference, min.	60 dB; at 400 Hz: 50 dB
Interfaces	
Number of PROFINET interfaces	1
1. Interface	
Interface types	
• RJ 45 (Ethernet)	Yes; X1
Number of ports	2
• integrated switch	Yes
Protocols	
• 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
	Yes
Media redundancy	165
PROFINET IO Controller	

Convince	
Services	Voc
— PG/OP communication	Yes
— Isochronous mode	Yes
— Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)
— IRT	Yes
— PROFlenergy	Yes; per user program
— Prioritized startup	Yes; Max. 32 PROFINET devices
 Number of connectable IO Devices, max. 	128; In total, up to 256 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. 	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 IRT	configured user data
	250 up to 4 mg; Note: In the cope of IDT with inach record the minimum
— for send cycle of 250 μs	250 μs to 4 ms; Note: In the case of IRT with isochronous mode, the minimum update time of 625 μs of the isochronous OB is decisive
— for send cycle of 500 μs	$500~\mu s$ to 8 ms; Note: In the case of IRT with isochronous mode, the minimum update time of $625~\mu s$ of the isochronous OB is decisive
— 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 μs : 375 μs , 625 μs 3 875 $\mu s)$
Update time for RT	
— for send cycle of 250 μs	250 μs to 128 ms
— for send cycle of 500 μs	500 μs to 256 ms
— for send cycle of 1 ms	1 ms to 512 ms
— for send cycle of 2 ms	2 ms to 512 ms
— for send cycle of 4 ms	4 ms to 512 ms
PROFINET IO Device	
Services	
 PG/OP communication 	Yes
— Isochronous mode	No
— IRT	Yes
— PROFlenergy	Yes; per user program
— 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
Interface types	
RJ 45 (Ethernet)	
• 100 Mbps	Yes
Autonegotiation	Yes
Autoriossing	Yes
Industrial Ethernet status LED	Yes
	160
Protocols	
Number of connections	On the late worked interference for ODIL 1
Number of connections, max. Number of connections are a second for EQUINITY and the second for EQUINITY and	96; 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	64
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 according to IEC 62439-2 Edition 2.0, MRP Manager;
MDD interesting a survey of	MRP Client
MRP interconnection, supported	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0

	V 2 1 1 1 1 2 7
— MRPD	Yes; Requirement: IRT
Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD
— Number of stations in the ring, max.	50
SIMATIC communication	Voc. operation with TLC 1/1.2 are calcuted
PG/OP communication S7 routing	Yes; encryption with TLS V1.3 pre-selected Yes
S7 routingS7 communication, as server	Yes
S7 communication, as server S7 communication, as client	Yes
User data per job, max.	
Open IE communication	See online help (S7 communication, user data size)
• TCP/IP	Yes
— Data length, max.	64 kbyte
several passive connections per port, supported	Yes
• ISO-on-TCP (RFC1006)	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	Yes
• DNS	Yes
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Encryption	Yes; Optional
Web server	
• HTTP	Yes; Standard and user pages
• HTTPS	Yes; Standard and user pages
OPC UA	
Runtime license required	Yes; "Small" license required
OPC UA Client	Yes
 Application authentication 	Yes
— Security policies	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
 User authentication 	"anonymous" or by user name & password
Number of connections, max.	4
 Number of nodes of the client interfaces, recommended max. 	1 000
 Number of elements for one call of OPC_UA_NodeGetHandleList/OPC_UA_ReadList/OPC_U max. 	300
 Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max. 	20
 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, custom address space
— Application authentication— Security policies	Yes Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
— User authentication	"anonymous" or by user name & password
— OSE autheritication — GDS support (certificate management)	Yes
Number of sessions, max.	32
Number of sessions, max. Number of accessible variables, max.	50 000
Number of accessible variables, max. Number of registerable nodes, max.	10 000
Number of registerable riodes, max. Number of subscriptions per session, max.	20

Compling interval min	100 ms
— Sampling interval, min.	500 ms
— Publishing interval, min.	
Number of server methods, max.	20
Number of inputs/outputs per server method, max.	20
Number of monitored items, recommended max.	1 000; 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. 	1 000
 Alarms and Conditions 	Yes
 Number of program alarms 	100
 Number of alarms for system diagnostics 	50
Further protocols	
• MODBUS	Yes; MODBUS TCP
Isochronous mode	
Equidistance	Yes
S7 message functions	
Number of login stations for message functions, max.	32
Program alarms	Yes
Number of configurable program messages, max.	5 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH
Number of loadable program messages in RUN, max.	2 500
	2 000
Number of simultaneously active program alarms	600
Number of program alarms Number of alarma for pustom diagnostics	600
Number of alarms for system diagnostics	100
Number of alarms for motion technology objects	80
Test commissioning functions	
Joint commission (Team Engineering)	Yes; Parallel online access possible for up to 5 engineering systems
Status block	Yes; Up to 8 simultaneously (in total across all ES clients)
Single step	No
Number of breakpoints	8
Status/control	
Status/control variable	Yes
 Variables 	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
 Number of variables, max. 	
of which status variables, max.	200; per job
— of which control variables, max.	200; per job
Forcing	
• Forcing	Yes
 Forcing, variables 	Peripheral inputs/outputs
Number of variables, max.	200
Diagnostic buffer	
• present	Yes
 Number of entries, max. 	1 000
— of which powerfail-proof	500
Traces	
Number of configurable Traces	4; Up to 512 KB of data per trace are possible
Interrupts/diagnostics/atatus information	
Interrupts/diagnostics/status information	
Alarms	
	Yes
Alarms	Yes Yes
Alarms • Diagnostic alarm	
Alarms • Diagnostic alarm • Hardware interrupt	
Alarms • Diagnostic alarm • Hardware interrupt Diagnoses	Yes
Alarms	Yes Yes; for analog inputs/outputs, see description in manual
Alarms • Diagnostic alarm • Hardware interrupt Diagnoses • Monitoring the supply voltage • Wire-break	Yes
Alarms • Diagnostic alarm • Hardware interrupt Diagnoses • Monitoring the supply voltage • Wire-break • Short-circuit • A/B transition error at incremental encoder	Yes Yes Yes; for analog inputs/outputs, see description in manual Yes; for analog outputs, see description in manual
Alarms	Yes Yes Yes; for analog inputs/outputs, see description in manual Yes; for analog outputs, see description in manual Yes
Alarms Diagnostic alarm Hardware interrupt Diagnoses Monitoring the supply voltage Wire-break Short-circuit A/B transition error at incremental encoder Diagnostics indication LED RUN/STOP LED	Yes Yes; for analog inputs/outputs, see description in manual Yes; for analog outputs, see description in manual Yes Yes
Alarms • Diagnostic alarm • Hardware interrupt Diagnoses • Monitoring the supply voltage • Wire-break • Short-circuit • A/B transition error at incremental encoder Diagnostics indication LED • RUN/STOP LED • ERROR LED	Yes Yes Yes; for analog inputs/outputs, see description in manual Yes; for analog outputs, see description in manual Yes Yes
Alarms • Diagnostic alarm • Hardware interrupt Diagnoses • Monitoring the supply voltage • Wire-break • Short-circuit • A/B transition error at incremental encoder Diagnostics indication LED • RUN/STOP LED	Yes Yes; for analog inputs/outputs, see description in manual Yes; for analog outputs, see description in manual Yes Yes

 Monitoring of the supply voltage (PWR-LED) 	Yes
Channel status display	Yes
 for channel diagnostics 	Yes; For analog inputs/outputs
Connection display LINK TX/RX	Yes
Supported technology objects	
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 technology objects 	800
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	
Number of positioning axes at motion control cycle of 4 ms (typical value)	5
Number of positioning axes at motion control cycle of 8 ms (typical value)	10
Controller	
PID_Compact	Yes; Universal PID controller with integrated optimization
• PID_Compact • PID_3Step	Yes; PID controller with integrated optimization for valves
• PID_33tep	Yes; PID controller with integrated optimization for temperature
·	Tes, FID controller with integrated optimization for temperature
Counting and measuring • High-speed counter	Yes
Integrated Functions	165
Counting functions	Von
Country reasons parameterizable	Yes
Counter response parameterizable Hardware gets via digital input	Yes
Hardware gate via digital input Software gate	Yes Yes
Software gate Event controlled stop	Yes
Event-controlled stop Cycobraniantian via digital input	
Synchronization via digital input Counting range, parameterizable	Yes
Counting range, parameterizable	Yes
Comparator	Or now count abounds one manual for dataile
Number of comparators Direction dependency:	2; per count channel; see manual for details
Direction dependency	Yes
— Can be changed from user program	Yes
Position detection	V
Incremental acquisition Suitable for S7 4500 Metion Control	Yes
Suitable for S7-1500 Motion Control Magazina functions	Yes
Measuring functions	Von
Measuring time, parameterizable Dynamic measurement paried adjustment	Yes
Dynamic measurement period adjustment Number of thresholds, perometerizable.	Yes
Number of thresholds, parameterizable	2
Measuring range	0.04 Hz
— Frequency measurement, min.	0.04 Hz
— Frequency measurement, max.	400 kHz; with quadruple evaluation
Cycle duration measurement, min.	2.5 μs
Cycle duration measurement, max.	25 s
Accuracy	400
— Frequency measurement	100 ppm; depending on measuring interval and signal evaluation
Cycle duration measurement	100 ppm; depending on measuring interval and signal evaluation
Velocity measurement	100 ppm; depending on measuring interval and signal evaluation
Potential separation	
Potential separation digital inputs	
• between the channels	No
between the channels, in groups of	16
Potential separation digital outputs	

between the channels	No
between the channels, in groups of	16
Potential separation channels	10
between the channels and backplane bus	Yes
Between the channels and load voltage L+	No
Isolation	110
Isolation tested with	707 V DC (type test)
Ambient conditions	To V Do (typo tott)
Ambient temperature during operation	
horizontal installation, min.	-25 °C; No condensation
horizontal installation, max.	60 °C; note derating data for onboard I/O in the manual. Display: 50 °C, at an
TIONZONIAI IIISTAIIATION, MAX.	operating temperature of typically 50 °C, the display is switched off
 vertical installation, min. 	-25 °C; No condensation
vertical installation, max.	40 °C; note derating data for onboard I/O in the manual. 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	
configuration / programming / header	
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes
— 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: Complete protection	Yes
programming / cycle time monitoring / header	
• lower limit	adjustable minimum cycle time
upper limit	adjustable maximum cycle time
Dimensions	
Width	85 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	1 050 g

last modified: 7/13/2024 🖸