## **SIEMENS**

## Data sheet

6ES7214-1AD22-0XB0

\*\*\* SPARE PART\*\*\* SIMATIC S7-200, CPU 224, COMPACT UNIT, DC POWER SUPPLY 14 DI DC/10 DO DC, 8 KB CODE/5 KB DATA, PROFIBUS DP EXTENDABLE

	PROFIBUS DP EXTENDABLE
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
Load voltage L+	
Rated value (DC)	24 V
<ul><li>permissible range, lower limit (DC)</li></ul>	20.4 V
• permissible range, upper limit (DC)	28.8 V
Input current	
Inrush current, max.	10 A; at 28.8 V
from supply voltage L+, max.	700 mA; 110 mA to 700 mA, output current for expansion modules
	(5 V DC) 660 mA
Encoder supply	
24 V encoder supply	

Encoder supply 24 V encoder supply	
	Voc: permissible range: 15.4 to 20.0 \/
• 24 V	Yes; permissible range: 15.4 to 28.8 V
<ul> <li>Short-circuit protection</li> </ul>	Yes; electronic at 600 mA
<ul> <li>Output current, max.</li> </ul>	280 mA
Power loss	

Power loss, typ.	7 W
Memory	
Number of memory modules (optional)	1; pluggable memory module, content identical with integral EEPROM
Work memory	
• integrated (for program)	8 kbyte
• integrated (for data)	5 kbyte
Backup	
• present	Yes; Program: Entire program maintenance-free on integral

Backup	
• present	Yes; Program: Entire program maintenance-free on integral
	EEPROM, programmable via CPU; data: Entire DB 1 loaded from
	PG/PC maintenance-free on integral EEPROM, current values of
	DB 1 in RAM, retentive memory bits, timers, counters, etc.
	maintenance-free via high-performance capacitor; optional battery
	for long-term buffering

## Battery

Backup battery

Backup time, max.	190 h; (min. 120 h at 40 $^{\circ}\text{C}$ ); 200 days (typ.) with optional battery module
CPU processing times	
for bit operations, max.	0.37 µs
Counters, timers and their retentivity	
S7 counter	
• Number	256
Retentivity	
— adjustable	Yes; via high-performance capacitor or battery
— lower limit	1
— upper limit	256
Counting range	
— lower limit	0
— upper limit	32 767
S7 times	
Number	256
Retentivity	
— adjustable	Yes; via high-performance capacitor or battery
— upper limit	65
Time range	
— lower limit	1 ms
— upper limit	54 min; 4 timers: 1 ms to 30 s; 16 timers: 10 ms to 5 min; 236 timers: 100 ms to 54 min
Data areas and their retentivity	
Flag	
Number, max.	32 byte
Retentivity available	Yes; M 0.0 to M 31.7
<ul> <li>of which retentive with battery</li> </ul>	0 to 255, via high-performance capacitor or battery, adjustable
<ul> <li>of which retentive without battery</li> </ul>	0 to 112 in EEPROM, adjustable
Hardware configuration	
Number of expansion units, max.	7; Only expansion modules of the S7-22x series can be used. Due to the limited output current, the use of expansion modules may be limited.
connectable programming devices/PCs	SIMATIC PG/PC, standard PC
Expansion modules	
Analog inputs/outputs, max.	35; max. 28 inputs and 7 outputs (EM) or max. 0 inputs and 14 outputs (EM)
• Digital inputs/outputs, max.	168; max. 94 inputs and 74 outputs (CPU + EM)
<ul> <li>AS-Interface inputs/outputs, max.</li> </ul>	31; AS-Interface slaves (CP 243-2)
Digital inputs	
Number of digital inputs	14

Source/sink input	Yes; optionally, per group
Input voltage	
Rated value (DC)	24 V
• for signal "0"	0 to 5 V
• for signal "1"	min. 15 V
Input current	
• for signal "1", typ.	4 mA
Input delay (for rated value of input voltage)	
for standard inputs	
— parameterizable	Yes; all
— at "0" to "1", min.	0.2 ms
— at "0" to "1", max.	12.8 ms
for interrupt inputs	
— parameterizable	Yes; I 0.0 to I 0.3
for technological functions	
— parameterizable	Yes; (E 0.0 to E 1.5) 30 kHz
Cable length	
• shielded, max.	500 m; Standard input: 500 m, high-speed counters: 50 m
• unshielded, max.	300 m; not for high-speed signals
- unanicided, max.	occini, necroi nigir opeca ciginalo
Digital outputs	
Number of digital outputs	10; Transistor
Short-circuit protection	No; to be provided externally
Limitation of inductive shutdown voltage to	1 W
Switching capacity of the outputs	0.75 A
with resistive load, max.	0.75 A
• on lamp load, max.	5 W
Output voltage	
● for signal "1", min.	20 V DC
Output current	
• for signal "1" rated value	750 mA
• for signal "0" residual current, max.	10 μA
Output delay with resistive load	
● "0" to "1", max.	15 $\mu$ s; of the standard outputs, max. (Q 0.2 to Q 1.1) 15 $\mu$ s; of the pulse outputs, max. (Q 0.0 to Q 0.1) 2 $\mu$ s
• "1" to "0", max.	100 $\mu$ s; of the standard outputs, max. (Q 0.2 to Q 1.1) 100 $\mu$ s; of the pulse outputs, max. (Q 0.0 to Q 0.1) 10 $\mu$ s
Parallel switching of two outputs	
• for uprating	Yes
Switching frequency	
• of the pulse outputs, with resistive load, max.	20 kHz; Q0.0 to Q0.1
Total current of the outputs (per group)	
all mounting positions	

horizontal installation  — up to 55 °C, max.  3.75 A  Cable length  • shielded, max, • unshielded, max. 150 m  Analog inputs  Number of analog potentiometers 2; Analog potentiometer; resolution 8 bit  Encoder  Connectable encoders  • 2-wire sensor — permissible quiescent current (2-wire sensor), max.  1 Interface  Interface type Integrated RS 485 interface Physics RS 485  Protocols  • MPI  Yes, As MPI slave for data exchange with MPI masters (S7-300/S7-400 CPUs, OPs, TDs, Push Button Panels); S7-200-internal CPU/CPU communication is possible in the MPI network with restrictions; transmission rates: 19.2/187.5 kbit/s  • serial data exchange  Protocols  • serial data exchange  Protocols  • Serial data exchange  Yes, As freely programmable interface with interrupt facility for serial data exchange with hirt-party devices with ASCII protocol transfer rates: 1.2 / 2.4 / 4.8 / 9.6 / 19.2 / 38.4 / 57.6 / 115.2 kbps; the PC/PPI cable can also be used as RS 232/RS 485 converter  MPI  • Transmission rate, min. • Transmission rate, max.  19.2 kbit/s		0.75 A
- up to 55 °C, max.  2 shielded, max.  150 m  150 m  150 m  150 m  Analog inputs  Number of analog potentiometers  2; Analog potentiometer; resolution 8 bit  Encoder  Connectable encoders  2-wire sensor — permissible quiescent current (2-wire sensor), max.  1 Interface Interface type Integrated RS 485 interface Physics Protocols  • MPI  Yes; As MPI slave for data exchange with MPI masters (S7-300/S7-400 CPUs, OPs, TDs, Push Button Panels); S7-200-internal CPU/CPU communication is possible in the MPI network with restrictions; transmission rates 19,2/18/7.5 kbits  • PPI  Pes; with PPI protocol for program functions, HMI functions (TD 200, OP), S7-200-internal CPU/CPU communication: transmission rates 9,6/19,2/18/7.5 kbits  • serial data exchange  Yes; As freely programmable interface with interrupt facility for serial data exchange with hird-party devices with ASCII protocol transfer rates: 1.2 / 2.4 / 4.8 / 9.6 / 19.2 / 3.8 / 4.7 / 6.1 / 15.2 kbps; the PC/PPI cable can also be used as RS 232/RS 485 converter  MPI  • Transmission rate, min. • Transmission rate, max.  19.2 kbit/s  19.2 kbit/s  19.2 kbit/s  19.2 kbit/s  19.3 kbit/s  19.3 kbit/s  19.4 kbit/s  19.5 kbit/s  19.5 kbit/s  19.5 kbit/s  19.5 kbit/s  10.6 High-speed counters (30 kHz each), 32 bit (incl. sign), can be used as up/down counters or for connecting 2 incremental encoders with 2 pulse trains offset by 90 '(max. 20 kHz (/ WB counters)); parameterizable enable and reset input, interrupt facilities (incl. call of subroutine with any content) when the setpoint is reached; reversal in counting direction, etc.  Counting frequency (counter) max.  Number of pulse outputs  Number of pulse outputs  150 m  150 m	— up to 40 °C, max.	3.75 A
Cable length	horizontal installation	
• shielded, max.     • unshielded, max.     150 m  Analog inputs  Number of analog potentiometers     2: Analog potentiometer; resolution 8 bit  Encoder  Connectable encoders     • 2-wire sensor     — permissible quiescent current (2-wire sensor), max.  1. Interface Interface type Physics     RS 485  Protocols     • MPI     Yes: As MPI slave for data exchange with MPI masters (S7-300/S7-400 CPUs, OPs, 170s, Push Button Panels); S7-200-internal CPU/CPU communication is possible in the MPI network with restrictions; transmission rates: 19.2/187.5 kbit/s      • PPI     Yes: As feel programmable interface with interrupt facility for serial data exchange      • serial data exchange     * serial data exchange      * Transmission rate, min.     • Transmission rate, min.     • Transmission rate, max.  MIPI      * Transmission rate, max.  Integrated Functions  Number of counters  Output Description of the programmable interface with interrupt facility for serial data exchange with third-party devices with ASCII protocol transfer rates: 1.2 / 2.4 / 4.8 / 9.6 / 19.2 / 38.4 / 57.6 / 115.2 kbps; the PC/PPI cable can also be used as RS 232/RS 485 converter  MPI      * Transmission rate, min.     * Transmission rate, max.  Integrated Functions  Number of counters  Number of counters  Output Description of the public vincemental encoders with 2 pulse trains offset by 90' (max. 20 kHz (A/B counters)); parameterizable enable and reset input; interrupt facilities (incl. call of subroutine with any content) when the setpoint is reached; reversal in counting direction, etc.  Counting frequency (counter) max.  Number of pulse outputs  Output Description of pulse outputs  Output Description of pulse outputs  Output Description of the public vincemental encoders with 2 pulse trains offset by 90' (max. 20 kHz (A/B counters)); parameterizable enable and reset input; interrupt facilities (incl. call of subroutine with any content) when the setpoint is reached; reversal in counting direction, etc.  Output Description of pulse outputs	— up to 55 °C, max.	3.75 A
Interface type Physics One MPI  Serial data exchange  Serial data exchange with third-party devices with ASCII protocol transfer rates: 1.2 / 2.4 / 4.8 / 9.6 / 19.2 / 38.4 / 57.6 / 115.2 kbps; the PC/PPI cable can also be used as RS 232/RS 485 converter  MPI  Serial data exchange  Serial data exchange with third-party devices with ascillation of the party devices with ascillation of serial data exchange with third-party devices with ascillation of the party devices wit	Cable length	
Analog inputs  Number of analog potentiometers  2; Analog potentiometer; resolution 8 bit  Encoder  Connectable encoders  • 2-wire sensor — permissible quiescent current (2-wire sensor), max.  1. Interface type Integrated RS 485 interface Physics RS 485  Protocols  • MPI  Yes, As MPI slave for data exchange with MPI masters (S7-300/S7-400 CPUs, OPs, TDs, Push Button Panels); S7-200-internal CPU/CPU communication is possible in the MPI network with restrictions; transmission rates: 19,2/187.5 kbit/s  • PPI  Yes; with PPI protocol for program functions, HMI functions (TD 200, OP), S7-200-internal CPU/CPU communication; transmission rates: 19,2/187.5 kbit/s  • serial data exchange  • serial data exchange  Yes; As freely programmable interface with interrupt facility for serial data exchange with third-party devices with ASCII protocol transfer rates: 1.2 / 2.4 / 4.8 / 9.6 / 19.2 / 38.4 / 57.6 / 115.2 kbps; the PC/PPI cable can also be used as RS 232/RS 485 converter  MPI  • Transmission rate, min. • Transmission rate, max.  19.2 kbit/s  19.2 kbit/s  19.2 kbit/s  19.3 kbit/s  Integrated Functions  Number of counters  6; High-speed counters (30 kHz each), 32 bit (incl. sign), can be used as up/down counters or for connecting 2 incremental encoders with 2 pulse trains offset by 90° (max. 20 kHz (A/8 counters)); parameterizable enable and reset input, interrupt facilities (incl. call of subroutine with any conently when the setpoint is reached: reversal in counting direction, etc.  Counting frequency (counter) max.  Number of pulse outputs  1. Integrated Pulse outputs  2. High-speed outputs, 20 kHz, with interrupt option; pulse-width and frequency modulation option	• shielded, max.	150 m
Number of analog potentiometers  2; Analog potentiometer; resolution 8 bit  Encoder  Connectable encoders  • 2-wire sensor — permissible quiescent current (2-wire sensor), max.  1 Interface Interface type Integrated RS 485 interface Physics RS 485 Protocols  • MPI  • Yes; As MPI slave for data exchange with MPI masters (S7-300/S7-400 CPUs, OPs, TDs, Push Button Panels); S7-200-internal CPU/CPU communication is possible in the MPI network with restrictions; transmission rates: 19.2/187.5 kbit/s  • serial data exchange  • serial data exchange  * Yes; As freely programmable interface with interrupt facility for serial data exchange with hird-party devices with ASCII protocol transfer rates: 1.2 / 2.4 / 4.8 / 9.6 / 19.2 / 38.4 / 57.6 / 115.2 kbps; the PC/PPI cable can also be used as RS 232/RS 485 converter  MPI  • Transmission rate, min. • Transmission rate, max.  19.2 kbit/s  • Transmission rate, max.  19.2 kbit/s  19.2 kbit/s  19.3 kbit/s  19.4 kbit/s  19.5 kbit/s  19.6 High-speed counters (30 kHz each), 32 bit (incl. sign), can be used as up/down counters or for connecting 2 incremental encoders with 2 pulse trains offset by 90° (max. 20 kHz (A/B counters)); parameterizable enable and reset input, interrupt facilities (incl. call of subroutine with any content) when the setpoint is reached; reversal in counting direction, etc.  Counting frequency (counter) max.  Number of alarm inputs  4; 4 rising edges and/or 4 falling edges  2; High-speed outputs, 20 kHz, with interrupt option; pulse-width and frequency modulation option	• unshielded, max.	150 m
Connectable encoders	Analog inputs	
Onnectable encoders	Number of analog potentiometers	2; Analog potentiometer; resolution 8 bit
Permissible quiescent current (2-wire sensor), max.  Interface Interface type Physics Protocols      MPI      Yes, As MPI slave for data exchange with MPI masters (S7-300/S7-400 CPUs, OPs, TDs, Push Button Panels); S7-200-internal CPU/CPU communication is possible in the MPI network with restrictions; transmission rates: 19.2/187.5 kbit/s      Pepl     Yes, As MPI slave for data exchange with MPI masters (S7-300/S7-400 CPUs, OPs, TDs, Push Button Panels); S7-200-internal CPU/CPU communication is possible in the MPI network with restrictions; transmission rates: 19.2/187.5 kbit/s      Yes; with PPI protocol for program functions, HMI functions (TD 200, OP), S7-200-internal CPU/CPU communication; transmission rates 9.6/19.2/187.5 kbit/s      Yes; As freely programmable interface with interrupt facility for serial data exchange with third-party devices with ASCII protocol transfer rates: 1.2 / 2.4 / 4.8 / 9.6 / 19.2 / 38.4 / 57.6 / 115.2 kbps; the PC/PPI cable can also be used as RS 232/RS 485 converter  MPI      Transmission rate, min.     Transmission rate, min.     Transmission rate, max.  19.2 kbit/s  18.5 kbit/s  Integrated Functions  Number of counters      G; High-speed counters (30 kHz each), 32 bit (incl. sign), can be used as up/down counters or for connecting 2 incremental encoders with 2 pulse trains offset by 90° (max. 20 kHz (A/B counters)); parameterizable enable and rest puth, interrupt facilities (incl. call of subroutine with any content) when the setpoint is reached; reversal in counting direction, etc.  Counting frequency (counter) max.  30 kHz  Number of pulse outputs  Ves data and provide and provide and provide and frequency modulation option	Encoder	
— permissible quiescent current (2-wire sensor), max.  1. Interface Interface type Integrated RS 485 interface Physics RS 485 Protocols  • MPI  Yes, As MPI slave for data exchange with MPI masters (S7-300/S7-400 CPUs, OPs, TDs, Push Button Panels); S7-200-internal CPU/CPU communication is possible in the MPI network with restrictions; transmission rates: 19.2/187.5 kbit/s  • PPI  Yes; with PPI protocol for program functions, HMI functions (TD 200, OP), S7-200-internal CPU/CPU communication; transmission rates 9.6/19.2/187.5 kbit/s  • serial data exchange Yes; As freely programmable interface with interrupt facility for serial data exchange with third-party devices with ASCII protocol transfer rates: 1.2 / 2.4 / 4.8 / 9.6 / 19.2 / 38.4 / 57.6 / 115.2 kbps; the PC/PPI cable can also be used as RS 232/RS 485 converter  MPI  • Transmission rate, min. • Transmission rate, max.  19.2 kbit/s  19.2 kbit/s  Integrated Functions  Number of counters  6; High-speed counters (30 kHz each), 32 bit (incl. sign), can be used as up/down counters or for connecting 2 incremental encoders with 2 pulse trains offset by 90° (max. 20 kHz (A/B counters)); parameterizable enable and reset input; interrupt facilities (incl. call of subroutine with any content) when the setpoint is reached; reversal in counting direction, etc.  Counting frequency (counter) max.  Number of alarm inputs  4; 4 rising edges and/or 4 falling edges  Number of pulse outputs  2; High-speed outputs, 20 kHz, with interrupt option; pulse-width and frequency modulation option	Connectable encoders	
Interface type Interface type Physics RS 485 Protocols  MPI Yes, As MPI slave for data exchange with MPI masters (S7-300/S7-400 CPUs, OPs, TDs, Push Button Panels); S7-200-internal CPU/CPU communication is possible in the MPI network with restrictions; transmission rates: 19.2/187.5 kbit/s  PPI Yes; with PPI protocol for program functions, HMI functions (TD 200, OP), S7-200-internal CPU/CPU communication; transmission rates 9.6/19.2/187.5 kbit/s  Yes; As freely programmable interface with interrupt facility for serial data exchange Yes; As freely programmable interface with interrupt facility for serial data exchange with third-party devices with ASCII protocol transfer rates: 1.2 / 2.4 / 4.8 / 9.6 / 19.2 / 38.4 / 57.6 / 115.2 kbps; the PC/PPI cable can also be used as RS 232/RS 485 converter  MPI Transmission rate, min. 19.2 kbit/s 187.5 kbit/s  Integrated Functions  Number of counters 6; High-speed counters (30 kHz each), 32 bit (incl. sign), can be used as up/down counters or for connecting 2 incremental encoders with 2 pulse trains offset by 90° (max. 20 kHz (A/B counters)); parameterizable enable and reset input; interrupt facilities (incl. call of subroutine with any content) when the setpoint is reached; reversal in counting direction, etc.  Counting frequency (counter) max.  Number of alarm inputs 4; 4 rising edges and/or 4 falling edges Number of pulse outputs 2; High-speed outputs, 20 kHz, with interrupt option; pulse-width and frequency modulation option	• 2-wire sensor	Yes
Interface type Physics RS 485 Protocols  MPI Yes; As MPI slave for data exchange with MPI masters (S7-300/S7-400 CPUs, OPs, TDs, Push Button Panels); S7-200-internal CPU/CPU communication is possible in the MPI network with restrictions; transmission rates: 19.2/187.5 kbit/s  PPI Yes; with PPI protocol for program functions, HMI functions (TD 200, OP), S7-200-internal CPU/CPU communication; transmission rates 9.6/19.2/187.5 kbit/s  serial data exchange Yes; As freely programmable interface with interrupt facility for serial data exchange with third-party devices with ASCII protocol transfer rates: 1.2 / 2.4 / 4.8 / 9.6 / 19.2 / 38.4 / 57.6 / 115.2 kbps; the PC/PPI cable can also be used as RS 232/RS 485 converter  MPI  Transmission rate, min. 19.2 kbit/s  19.2 kbit/s  Integrated Functions  Number of counters  6; High-speed counters (30 kHz each), 32 bit (incl. sign), can be used as up/down counters or for connecting 2 incremental encoders with 2 pulse trains offset by 90° (max. 20 kHz (A/B counters)); parameterizable enable and reset input; interrupt facilities (incl. call of subroutine with any content) when the setpoint is reached; reversal in counting direction, etc.  Counting frequency (counter) max.  Number of alarm inputs  4; 4 rising edges and/or 4 falling edges  Number of pulse outputs  2; High-speed outputs, 20 kHz, with interrupt option; pulse-width and frequency modulation option		1 mA
Physics Protocols  Protocols  Yes; As MPI slave for data exchange with MPI masters (S7-300/S7-400 CPUs, OPs, TDs, Push Button Panels); S7-200-internal CPU/CPU communication is possible in the MPI network with restrictions; transmission rates: 19.2/187.5 kbit/s  PPI PPI Protocol for program functions, HMI functions (TD 200, OP), S7-200-internal CPU/CPU communication; transmission rates 9.6/19.2/187.5 kbit/s  Pes; As freely programmable interface with interrupt facility for serial data exchange with third-party devices with ASCII protocol transfer rates: 1.2 / 2.4 / 4.8 / 9.6 / 19.2 / 38.4 / 57.6 / 115.2 kbps; the PC/PPI cable can also be used as RS 232/RS 485 converter MPI  Transmission rate, min. Pransmission rate, max.  19.2 kbit/s  Integrated Functions  Number of counters  6; High-speed counters (30 kHz each), 32 bit (incl. sign), can be used as up/down counters or for connecting 2 incremental encoders with 2 pulse trains offset by 90° (max. 20 kHz (A/B counters)); parameterizable enable and reset input; interrupt facilities (incl. call of subroutine with any content) when the setpoint is reached; reversal in counting direction, etc.  Counting frequency (counter) max.  Number of alarm inputs  4; 4 rising edges and/or 4 falling edges  Number of pulse outputs  2; High-speed outputs, 20 kHz, with interrupt option; pulse-width and frequency modulation option	1. Interface	
Protocols  Protocols  Protocols  Personal Agents of the MPI slave for data exchange with MPI masters (S7-300/S7-400 CPUs, OPs, TDs, Push Button Panels); S7-200-internal CPU/CPU communication is possible in the MPI network with restrictions; transmission rates: 19.2/187.5 kbit/s  PPI Serial data exchange Protocol for program functions, HMI functions (TD 200, OP), S7-200-internal CPU/CPU communication; transmission rates 9.6/19.2/187.5 kbit/s  Pes; As freely programmable interface with interrupt facility for serial data exchange with third-party devices with ASCII protocol transfer rates: 1.2 / 2.4 / 4.8 / 9.6 / 19.2 / 38.4 / 57.6 / 115.2 kbps; the PC/PPI cable can also be used as RS 232/RS 485 converter MPI  Transmission rate, min. 19.2 kbit/s  Transmission rate, max. 187.5 kbit/s  Integrated Functions  Number of counters  6; High-speed counters (30 kHz each), 32 bit (incl. sign), can be used as up/down counters or for connecting 2 incremental encoders with 2 pulse trains offset by 90° (max. 20 kHz (A/B counters)); parameterizable enable and reset input; interrupt facilities (incl. call of subroutine with any content) when the setpoint is reached; reversal in counting direction, etc.  Counting frequency (counter) max. 30 kHz  Number of pulse outputs 4; 4 rising edges and/or 4 falling edges  Number of pulse outputs 2; High-speed outputs, 20 kHz, with interrupt option; pulse-width and frequency modulation option	Interface type	Integrated RS 485 interface
Yes; As MPI slave for data exchange with MPI masters (S7-300/S7-400 CPUs, OPs, TDs, Push Button Panels); S7-200-internal CPU/CPU communication is possible in the MPI network with restrictions; transmission rates: 19.2/187.5 kbit/s  PPI Yes; with PPI protocol for program functions, HMI functions (TD 200, OP), S7-200-internal CPU/CPU communication; transmission rates 9.6/19.2/187.5 kbit/s  serial data exchange Yes; As freely programmable interface with interrupt facility for serial data exchange with third-party devices with ASCII protocol transfer rates: 1.2 / 2.4 / 4.8 / 9.6 / 19.2 / 38.4 / 57.6 / 115.2 kbps; the PC/PPI cable can also be used as RS 232/RS 485 converter  MPI  Transmission rate, min. 19.2 kbit/s  187.5 kbit/s  Integrated Functions  Number of counters 6; High-speed counters (30 kHz each), 32 bit (incl. sign), can be used as up/down counters or for connecting 2 incremental encoders with 2 pulse trains offset by 90° (max. 20 kHz (A/B counters)); parameterizable enable and reset input; interrupt facilities (incl. call of subroutine with any content) when the setpoint is reached; reversal in counting direction, etc.  Counting frequency (counter) max. 30 kHz  Number of pulse outputs 2; High-speed outputs, 20 kHz, with interrupt option; pulse-width and frequency modulation option	Physics	RS 485
300/S7-400 CPUs, OPs, TDs, Push Button Panels); S7-200- internal CPU/CPU communication is possible in the MPI network with restrictions; transmission rates: 19.2/187.5 kbit/s  Yes; with PPI protocol for program functions, HMI functions (TD 200, OP), S7-200-internal CPU/CPU communication; transmission rates 9.6/19.2/187.5 kbit/s  • serial data exchange  Yes; As freely programmable interface with interrupt facility for serial data exchange with third-party devices with ASCII protocol transfer rates: 1.2 / 2.4 / 4.8 / 9.6 / 19.2 / 38.4 / 57.6 / 115.2 kbps; the PC/PPI cable can also be used as RS 232/RS 485 converter  MPI  • Transmission rate, min. • Transmission rate, max.  19.2 kbit/s  Integrated Functions  Number of counters  6; High-speed counters (30 kHz each), 32 bit (incl. sign), can be used as up/down counters or for connecting 2 incremental encoders with 2 pulse trains offset by 90° (max. 20 kHz (A/B counters)); parameterizable enable and reset input; interrupt facilities (incl. call of subroutine with any content) when the setpoint is reached; reversal in counting direction, etc.  Counting frequency (counter) max.  Number of alarm inputs  4; 4 rising edges and/or 4 falling edges  Number of pulse outputs  2; High-speed outputs, 20 kHz, with interrupt option; pulse-width and frequency modulation option	Protocols	
200, OP), S7-200-internal CPU/CPU communication; transmission rates 9.6/19.2/187.5 kbit/s  Yes; As freely programmable interface with interrupt facility for serial data exchange with third-party devices with ASCII protocol transfer rates: 1.2 / 2.4 / 4.8 / 9.6 / 19.2 / 38.4 / 57.6 / 115.2 kbps; the PC/PPI cable can also be used as RS 232/RS 485 converter  MPI  Transmission rate, min. 19.2 kbit/s  187.5 kbit/s  Integrated Functions  Number of counters  6; High-speed counters (30 kHz each), 32 bit (incl. sign), can be used as up/down counters or for connecting 2 incremental encoders with 2 pulse trains offset by 90° (max. 20 kHz (A/B counters)); parameterizable enable and reset input; interrupt facilities (incl. call of subroutine with any content) when the setpoint is reached; reversal in counting direction, etc.  Counting frequency (counter) max. 30 kHz  Number of pulse outputs  2; High-speed outputs, 20 kHz, with interrupt option; pulse-width and frequency modulation option	• MPI	300/S7-400 CPUs, OPs, TDs, Push Button Panels); S7-200-internal CPU/CPU communication is possible in the MPI network
serial data exchange with third-party devices with ASCII protocol transfer rates: 1.2 / 2.4 / 4.8 / 9.6 / 19.2 / 38.4 / 57.6 / 115.2 kbps; the PC/PPI cable can also be used as RS 232/RS 485 converter  MPI  • Transmission rate, min. • Transmission rate, max.  19.2 kbit/s  Integrated Functions  Number of counters  6; High-speed counters (30 kHz each), 32 bit (incl. sign), can be used as up/down counters or for connecting 2 incremental encoders with 2 pulse trains offset by 90° (max. 20 kHz (A/B counters)); parameterizable enable and reset input; interrupt facilities (incl. call of subroutine with any content) when the setpoint is reached; reversal in counting direction, etc.  Counting frequency (counter) max.  Number of alarm inputs  4; 4 rising edges and/or 4 falling edges  Number of pulse outputs  2; High-speed outputs, 20 kHz, with interrupt option; pulse-width and frequency modulation option	• PPI	200, OP), S7-200-internal CPU/CPU communication ;
● Transmission rate, min.  ● Transmission rate, max.  187.5 kbit/s  Integrated Functions  Number of counters  6; High-speed counters (30 kHz each), 32 bit (incl. sign), can be used as up/down counters or for connecting 2 incremental encoders with 2 pulse trains offset by 90° (max. 20 kHz (A/B counters)); parameterizable enable and reset input; interrupt facilities (incl. call of subroutine with any content) when the setpoint is reached; reversal in counting direction, etc.  Counting frequency (counter) max.  Number of alarm inputs  4; 4 rising edges and/or 4 falling edges  Number of pulse outputs  2; High-speed outputs, 20 kHz, with interrupt option; pulse-width and frequency modulation option	● serial data exchange	serial data exchange with third-party devices with ASCII protocol transfer rates: 1.2 / 2.4 / 4.8 / 9.6 / 19.2 / 38.4 / 57.6 / 115.2 kbps;
● Transmission rate, max.  Integrated Functions  Number of counters  6; High-speed counters (30 kHz each), 32 bit (incl. sign), can be used as up/down counters or for connecting 2 incremental encoders with 2 pulse trains offset by 90° (max. 20 kHz (A/B counters)); parameterizable enable and reset input; interrupt facilities (incl. call of subroutine with any content) when the setpoint is reached; reversal in counting direction, etc.  Counting frequency (counter) max.  Number of alarm inputs  4; 4 rising edges and/or 4 falling edges  Number of pulse outputs  2; High-speed outputs, 20 kHz, with interrupt option; pulse-width and frequency modulation option	MPI	
Number of counters  6; High-speed counters (30 kHz each), 32 bit (incl. sign), can be used as up/down counters or for connecting 2 incremental encoders with 2 pulse trains offset by 90° (max. 20 kHz (A/B counters)); parameterizable enable and reset input; interrupt facilities (incl. call of subroutine with any content) when the setpoint is reached; reversal in counting direction, etc.  Counting frequency (counter) max.  Number of alarm inputs  4; 4 rising edges and/or 4 falling edges  Number of pulse outputs  2; High-speed outputs, 20 kHz, with interrupt option; pulse-width and frequency modulation option	Transmission rate, min.	19.2 kbit/s
Number of counters  6; High-speed counters (30 kHz each), 32 bit (incl. sign), can be used as up/down counters or for connecting 2 incremental encoders with 2 pulse trains offset by 90° (max. 20 kHz (A/B counters)); parameterizable enable and reset input; interrupt facilities (incl. call of subroutine with any content) when the setpoint is reached; reversal in counting direction, etc.  Counting frequency (counter) max.  30 kHz  Number of alarm inputs  4; 4 rising edges and/or 4 falling edges  Number of pulse outputs  2; High-speed outputs, 20 kHz, with interrupt option; pulse-width and frequency modulation option	• Transmission rate, max.	187.5 kbit/s
used as up/down counters or for connecting 2 incremental encoders with 2 pulse trains offset by 90° (max. 20 kHz (A/B counters)); parameterizable enable and reset input; interrupt facilities (incl. call of subroutine with any content) when the setpoint is reached; reversal in counting direction, etc.  Counting frequency (counter) max.  30 kHz  Number of alarm inputs  4; 4 rising edges and/or 4 falling edges  Number of pulse outputs  2; High-speed outputs, 20 kHz, with interrupt option; pulse-width and frequency modulation option	Integrated Functions	
Number of alarm inputs  4; 4 rising edges and/or 4 falling edges  Number of pulse outputs  2; High-speed outputs, 20 kHz, with interrupt option; pulse-width and frequency modulation option		used as up/down counters or for connecting 2 incremental encoders with 2 pulse trains offset by 90° (max. 20 kHz (A/B counters)); parameterizable enable and reset input; interrupt facilities (incl. call of subroutine with any content) when the
Number of pulse outputs  2; High-speed outputs, 20 kHz, with interrupt option; pulse-width and frequency modulation option	Counting frequency (counter) max.	30 kHz
and frequency modulation option	Number of alarm inputs	4; 4 rising edges and/or 4 falling edges
Limit frequency (pulse) 20 kHz	Number of pulse outputs	
	Limit frequency (pulse)	20 kHz

Potential separation	
Potential separation digital inputs	
• between the channels	Yes
between the channels, in groups of	6; 6 and 8
Potential separation digital outputs	o, o unu o
between the channels	Yes; Optocoupler
	5
between the channels, in groups of	3
Permissible potential difference	
between different circuits	500 V DC between 24 V DC and 5 V DC
Degree and class of protection	
Degree of protection acc. to EN 60529	
● IP20	Yes
Ambient conditions	
Ambient temperature during operation	
<ul> <li>horizontal installation, min.</li> </ul>	0 °C
<ul><li>horizontal installation, max.</li></ul>	55 °C
<ul><li>vertical installation, min.</li></ul>	0°C
<ul><li>vertical installation, max.</li></ul>	45 °C
Air pressure acc. to IEC 60068-2-13	
• permissible range, lower limit	860 hPa
• permissible range, upper limit	1 080 hPa
Relative humidity	
Operation, min.	5 %
<ul><li>Operation, max.</li></ul>	95 %; RH class 2 in accordance with IEC 1131-2
Capfiguration	
Configuration Programming	
Command set	Bit logic instructions, compare instructions, timer instructions,
- Command Set	counter instructions, clock instructions, transmissions instructions, table instructions, logic instructions, shift and rotate instructions, conversion instructions, program control instructions, interrupt and
	communications instructions, logic stack instructions, integer maths, floating-point math instructions, numerical functions
<ul> <li>Program processing</li> </ul>	free cycle (OB 1), interrupt-controller, time-controlled (1 to 255 ms)
Program organization	1 OB, 1 DB, 1 SDB subroutines with/without parameter transfer
Number of subroutines, max.	64
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
Know-how protection	

User program protection/password protection	Yes; 3-stage password protection
Connection method	
Plug-in I/O terminals	Yes
Dimensions	
Width	120.5 mm
Height	80 mm
Depth	62 mm
Weights	
Weight, approx.	360 g
last modified:	08/16/2019