## **SIEMENS**

## Data sheet

6ES7214-2BD23-0XB0

\*\*\*Spare part\*\*\* SIMATIC S7-200, CPU 224XP Compact unit, AC power supply 14DI DC/10DO relay, 2 AI, 1 AO, 12/16 KB progr./10 KB data, 2 PPI/user-programmable interface



Figure similar

Supply voltage	
Rated value (AC)	
• 120 V AC	Yes
• 230 V AC	Yes
Load voltage L+	
Rated value (DC)	24 V
<ul> <li>permissible range, lower limit (DC)</li> </ul>	5 V
• permissible range, upper limit (DC)	30 V
Load voltage L1	
• Rated value (AC)	100 V; 100 V AC to 230 V AC
<ul> <li>permissible range, lower limit (AC)</li> </ul>	5 V
<ul> <li>permissible range, upper limit (AC)</li> </ul>	250 V
<ul> <li>permissible frequency range, lower limit</li> </ul>	47 Hz
<ul> <li>permissible frequency range, upper limit</li> </ul>	63 Hz
In a contract to the contract	
Input current	
Inrush current, max.	20 A; at 264 V

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from supply voltage L1, max.	220 mA; 35 to 100 mA (240 V); 70 to 220 mA (120 V); output current for expansion modules (5 V DC) 600 mA
	current for expansion modules (5 v bo) 666 ma
Encoder supply	
24 V encoder supply	
• 24 V	Yes; Permissible range: 20.4V to 28.8V
Short-circuit protection	Yes; electronic at 280 mA
<ul><li>Output current, max.</li></ul>	280 mA
Power loss	
Power loss, typ.	11 W
Летогу	
Number of memory modules (optional)	1; pluggable memory module, content identical with integral EEPROM; can additionally store recipes, data logs and other files
Work memory	
• integrated (for program)	16 kbyte; 12 KB with active run-time edit
• integrated (for data)	10 kbyte
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.	100 h; (min. 70 h at 40 °C); 200 days (typ.) with optional battery module
CPU processing times	
for bit operations, max.	0.22 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
	32 767
— upper limit	
— upper limit S7 times	
· ·	256

— adjustable	Yes; via high-performance capacitor or battery
— upper limit	64
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
<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	
<ul> <li>Analog inputs/outputs, max.</li> </ul>	38; 2 onboard inputs and 1 output, also max. 28 inputs and 7 outputs (EM) or max. 0 inputs and 14 outputs (EM)
<ul> <li>Digital inputs/outputs, max.</li> </ul>	168; max. 94 inputs and 74 outputs (CPU + EM)
<ul> <li>AS-Interface inputs/outputs, max.</li> </ul>	62; AS-Interface A/B slaves (CP 243-2)
• •	
Digital inputs	
	14
Digital inputs	14 Yes; optionally, per group
Digital inputs  Number of digital inputs	
Digital inputs  Number of digital inputs  Source/sink input	
Digital inputs  Number of digital inputs  Source/sink input  Input voltage	Yes; optionally, per group
Digital inputs  Number of digital inputs  Source/sink input  Input voltage  • Rated value (DC)	Yes; optionally, per group 24 V
Digital inputs  Number of digital inputs  Source/sink input  Input voltage  • Rated value (DC)  • for signal "0"	Yes; optionally, per group  24 V  0V to 5V; 0V to 1V (I0.3 to I0.5)
Digital inputs  Number of digital inputs  Source/sink input  Input voltage  • Rated value (DC)  • for signal "0"  • for signal "1"	Yes; optionally, per group  24 V  0V to 5V; 0V to 1V (I0.3 to I0.5)
Digital inputs  Number of digital inputs  Source/sink input  Input voltage  • Rated value (DC)  • for signal "0"  • for signal "1"  Input current	Yes; optionally, per group  24 V  0V to 5V; 0V to 1V (I0.3 to I0.5)  min. 15 V; min. 4 V (I 0.3 to I 0.5)
Digital inputs  Number of digital inputs  Source/sink input  Input voltage  • Rated value (DC)  • for signal "0"  • for signal "1"  Input current  • for signal "1", typ.	Yes; optionally, per group  24 V  0V to 5V; 0V to 1V (I0.3 to I0.5)  min. 15 V; min. 4 V (I 0.3 to I 0.5)
Digital inputs  Number of digital inputs  Source/sink input  Input voltage  • Rated value (DC)  • for signal "0"  • for signal "1"  Input current  • for signal "1", typ.  Input delay (for rated value of input voltage)	Yes; optionally, per group  24 V  0V to 5V; 0V to 1V (I0.3 to I0.5)  min. 15 V; min. 4 V (I 0.3 to I 0.5)
Digital inputs  Number of digital inputs  Source/sink input  Input voltage  Rated value (DC)  for signal "0"  for signal "1"  Input current  for signal "1", typ.  Input delay (for rated value of input voltage)  for standard inputs	Yes; optionally, per group  24 V  0V to 5V; 0V to 1V (I0.3 to I0.5)  min. 15 V; min. 4 V (I 0.3 to I 0.5)  2.5 mA; 8 mA for I0.3 to I0.5
Digital inputs  Number of digital inputs  Source/sink input  Input voltage  • Rated value (DC) • for signal "0" • for signal "1"  Input current • for signal "1", typ.  Input delay (for rated value of input voltage)  for standard inputs — parameterizable	Yes; optionally, per group  24 V  0V to 5V; 0V to 1V (I0.3 to I0.5)  min. 15 V; min. 4 V (I 0.3 to I 0.5)  2.5 mA; 8 mA for I0.3 to I0.5  Yes; all
Digital inputs  Number of digital inputs  Source/sink input  Input voltage  • Rated value (DC)  • for signal "0"  • for signal "1"  Input current  • for signal "1", typ.  Input delay (for rated value of input voltage)  for standard inputs  — parameterizable  — at "0" to "1", min.	Yes; optionally, per group  24 V  0V to 5V; 0V to 1V (I0.3 to I0.5)  min. 15 V; min. 4 V (I 0.3 to I 0.5)  2.5 mA; 8 mA for I0.3 to I0.5  Yes; all  0.2 ms
Digital inputs  Number of digital inputs  Source/sink input  Input voltage  Rated value (DC)  for signal "0"  for signal "1"  Input current  for signal "1", typ.  Input delay (for rated value of input voltage)  for standard inputs  parameterizable  at "0" to "1", min.  at "0" to "1", max.	Yes; optionally, per group  24 V  0V to 5V; 0V to 1V (I0.3 to I0.5)  min. 15 V; min. 4 V (I 0.3 to I 0.5)  2.5 mA; 8 mA for I0.3 to I0.5  Yes; all  0.2 ms
Digital inputs  Number of digital inputs  Source/sink input  Input voltage  • Rated value (DC) • for signal "0" • for signal "1"  Input current • for signal "1", typ.  Input delay (for rated value of input voltage)  for standard inputs  — parameterizable — at "0" to "1", min. — at "0" to "1", max.  for interrupt inputs	Yes; optionally, per group  24 V  0V to 5V; 0V to 1V (I0.3 to I0.5)  min. 15 V; min. 4 V (I 0.3 to I 0.5)  2.5 mA; 8 mA for I0.3 to I0.5  Yes; all  0.2 ms  12.8 ms
Digital inputs  Number of digital inputs  Source/sink input  Input voltage  • Rated value (DC) • for signal "0" • for signal "1"  Input current • for signal "1", typ.  Input delay (for rated value of input voltage)  for standard inputs — parameterizable — at "0" to "1", min. — at "0" to "1", max.  for interrupt inputs — parameterizable  — parameterizable — at "0" to "1", max.	Yes; optionally, per group  24 V  0V to 5V; 0V to 1V (I0.3 to I0.5)  min. 15 V; min. 4 V (I 0.3 to I 0.5)  2.5 mA; 8 mA for I0.3 to I0.5  Yes; all  0.2 ms  12.8 ms
Digital inputs  Number of digital inputs  Source/sink input  Input voltage  • Rated value (DC) • for signal "0" • for signal "1"  Input current • for signal "1", typ.  Input delay (for rated value of input voltage)  for standard inputs  — parameterizable — at "0" to "1", min. — at "0" to "1", max.  for interrupt inputs — parameterizable for technological functions	Yes; optionally, per group  24 V  0V to 5V; 0V to 1V (I0.3 to I0.5)  min. 15 V; min. 4 V (I 0.3 to I 0.5)  2.5 mA; 8 mA for I0.3 to I0.5  Yes; all  0.2 ms  12.8 ms  Yes; I 0.0 to I 0.3

Digital outputs   10; Relays   Short-circuit protection   No; to be provided externally   Switching capacity of the outputs   0 with resistive load, max.   2 A   0 no lamp load, max.   200 W; 30 W with DC, 200 W with AC   Output voltage   1 or signal "1", min.   L+VL1   Cutput current   1 or signal "1" rated value   2 A   0 no signal "1" rated value   2 A   0 no signal "1" rated value   0 no signal "0" residual current, max.   0 mA   Output delay with resistive load   0 ms; all outputs   0 ms; all o	• unshielded, max.	300 m; not for high-speed signals
Short-circuit protection  Switching capacity of the outputs  • with resistive load, max. • on lamp load, max. • on lamp load, max. 200 W; 30 W with DC, 200 W with AC  Output voltage • for signal "1" min.  Cutput current • for signal "3" rated value • for signal "0" residual current, max.  Output delay with resistive load • "0" to "1", max. • "1" to "0", max. • 10 ms; all outputs • "1" to "0", max. 10 ms; all outputs  • for uprating  Switching frequency • of the pulse outputs, with resistive load, max.  Total current of the outputs (per group) all mounting positions — up to 40 °C, max. • "10 A  Relay outputs • Number of relay outputs, integrated • Number of relay outputs, integrated • Number of perating cycles, max.  10 00 000; mechanically 10 million, at rated load voltage 100 000  Cable length • shielded, max. • unshielded, max. • unshielded, max.  10 max  11 Interface Interface type  Integrated RS 485 interface  Integrated RS 485 interface  Integrated RS 485 interface	Digital outputs	
Switching capacity of the outputs  • with resistive load, max.  • on lamp load, anax.  • or signal "1", min.  Cutput output  • for signal "1" rated value  • for upture law with resistive load  • "0" to "1", max.  • "1" to "0", max.  • for uprating  No  Switching frequency  • of the pulse outputs, with resistive load, max.  1 Hz  Total current of the outputs (per group)  all mounting positions  — up to 40 "C, max.  horizontal installation  — up to 55 "C, max.  Relay outputs  • Number of relay outputs  • Number of relay outputs, integrated  • Number of relay outputs, integrated  • Number of perating cycles, max.  10 000 000; mechanically 10 million, at rated load voltage 100 000  Cable length  • shelded, max.  • unshielded, max.  • so on  • shelded, max.  • so on  • shelded, max.  • so on  • shelded, max.  • shelded on the shelded 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 linetface bype  Integrated RS 485 interface		10; Relays
with resistive load, max.     on lamp load, max.     200 W; 30 W with DC, 200 W with AC  Output vortage     for signal "1", min.     L+/L1  Output current     for signal "1" rated value     for signal "0" residual current, max.     0 mA  Output delay with resistive load     *"0" to "1", max.     10 ms; all outputs     *"1" to "0", max.  Parallel switching of two outputs     for uprating     No  Switching frequency     of the pulse outputs, with resistive load, max.  Total current of the outputs (per group)     all mounting positions     — up to 40 "C, max.     horizontal installation     — up to 55 "C, max.  Relay outputs     Number of relay outputs     Number of relay outputs, integrated     Number of operating cycles, max.  Cable length     shielded, max.     unshielded, max.     unshielded, max.     unshielded, max.     unshielded, max.     unshielded encoders  Connectable encoders  - 2-wire sensor     — permissible quiescent current (2-wire sensor), max.  1 Interface Interface type  Integrated RS 485 interface  Integrated RS 485 interface  Integrated RS 485 interface	Short-circuit protection	No; to be provided externally
on lamp load, max.  Output voltage     for signal "1", min.  L+/L1  Output current     for signal "1" rated value     for signal "0" residual current, max.  O mA  Output delay with resistive load     "0" to "1", max.     10 ms; all outputs     "1" to "0", max.  Parallel switching of two outputs     for uprating     No  Switching frequency     of the pulse outputs, with resistive load, max.  Total current of the outputs (per group)     all mounting positions     — up to 40 "C, max.  horizontal installation     — up to 55 "C, max.  Relay outputs  Number of relay outputs, integrated Number of perating cycles, max.  10 000 000; mechanically 10 million, at rated load voltage 100 000  Cable length Shielded, max.  John Manalog 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  Integrated RS 485 interface  Integrated RS 485 interface	Switching capacity of the outputs	
Output voltage  • for signal "1" min.  Output current  • for signal "1" rated value • for signal "0" residual current, max.  • for signal "0" residual current, max.  • for to "1", max. • "1" to "0", max. • for uprating  No  Switching frequency • of the pulse outputs, with resistive load, max.  Total current of the outputs (per group)  all mounting positions — up to 40 "C, max.  horizontal installation — up to 55 "C, max.  10 A  Relay outputs • Number of relay outputs, integrated • Number of operating cycles, max.  10 000000; mechanically 10 million, at rated load voltage 100 000  Cable length • shielded, max. • unshielded, max. • unshielded encoders • 2-wire sensor — permissible quiescent current (2-wire sensor), max.  1. Interface Interface type  Integrated RS 485 interface	with resistive load, max.	2 A
• for signal "1", min.     Output current     • for signal "1" rated value     • for signal "0" residual current, max.     O mA  Output delay with resistive load     • "0" to "1", max.     • "1" to "0", max.     Parallel switching of two outputs     • for uprating     Switching frequency     • of the pulse outputs, with resistive load, max.  Total current of the outputs (per group)     all mounting positions     — up to 40 "C, max.  horizontal installation     — up to 55 "C, max.  Relay outputs  • Number of relay outputs     • Number of relay outputs, integrated     • Number of operating cycles, max.  Cable length     • shielded, max.     • unshielded, max.  * unshielded, max.  * unshielded, max.  * unshielded encoders  Connectable encoders  • 2-wire sensor     — permissible quiescent current (2-wire sensor), max.  1. Interface  Interface  Interface  Interface  Interface  Integrated RS 485 interface	• on lamp load, max.	200 W; 30 W with DC, 200 W with AC
Output current  • for signal "1" rated value • for signal "0" residual current, max.  O mA  Output delay with resistive load  • "0" to "1", max. • "1" to "0", max. 10 ms; all outputs  • for uprating No  Switching frequency • of the pulse outputs, with resistive load, max.  Total current of the outputs (per group) all mounting positions — up to 40 °C, max.  horizontal installation — up to 55 °C, max.  Relay outputs • Number of relay outputs, integrated • Number of operating cycles, max.  10 000 000; mechanically 10 million, at rated load voltage 100 000  Cable length • shielded, max. • unshielded, max. • unshielded, max.  • 2-wire sensor — permissible quiescent current (2-wire sensor), max.  1. Interface Interface Interface Interface type  Integrated RS 485 interface	Output voltage	
• for signal "1" rated value     • for signal "0" residual current, max.     0 mA  Output delay with resistive load     • "0" to "1", max.     • "1" to "0", max.     • To the pulse outputs, with resistive load, max.  Parallel switching of two outputs     • for uprating     No  Switching frequency     • of the pulse outputs, with resistive load, max.  Total current of the outputs (per group)     all mounting positions     — up to 40 °C, max.     horizontal installation     — up to 55 °C, max.  Relay outputs     • Number of relay outputs, integrated     • Number of relay outputs, integrated     • Number of operating cycles, max.  10 000 000; mechanically 10 million, at rated load voltage 100 000  Cable length     • shielded, max.     • unshielded, 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.  I. Interface  Interface  Interface type  Integrated RS 485 interface	● for signal "1", min.	L+/L1
for signal "0" residual current, max.	Output current	
Output delay with resistive load  • "0" to "1", max.  • "1" to "0", max.  10 ms; all outputs  • for uprating  No  Switching frequency  • of the pulse outputs, with resistive load, max.  1 Hz  Total current of the outputs (per group)  all mounting positions  — up to 40 °C, max.  horizontal installation  — up to 55 °C, max.  10 A  Relay outputs  • Number of relay outputs integrated  • Number of relay outputs, integrated  • Number of operating cycles, max.  10 000 000; mechanically 10 million, at rated load voltage 100 000  Cable length  • shielded, max.  • unshielded, max.  • unshielded, max.  • unshielded, max.  • unshielded, max.  • 2; Analog potentiometer; resolution 8 bit  Encoder  Connectable encoders  • 2-wire sensor  — permissible quiescent current (2-wire sensor), max.  1. Interface  Integrated RS 485 interface	● for signal "1" rated value	2 A
* "0" to "1", max.     * "1" to "0", max.     * "1" to "0", max.  Parallel switching of two outputs      * for uprating  No  Switching frequency      * of the pulse outputs, with resistive load, max.  Total current of the outputs (per group) all mounting positions      * up to 40 °C, max.  horizontal installation      * up to 55 °C, max.  Relay outputs      * Number of relay outputs, integrated     * Number of operating cycles, max.  Cable length      * shielded, max.     * unshielded, max.      * unshielded, max.      * Unshielded, max.      * Unshielded, max.      * Soo m  Analog inputs  Number of analog potentiometers      * 2-wire sensor      * - permissible quiescent current (2-wire sensor), max.  1. Interface  Interface Interface type  Integrated RS 485 interface  Integrated RS 485 interface	• for signal "0" residual current, max.	0 mA
• "1" to "0", max.  Parallel switching of two outputs • for uprating No  Switching frequency • of the pulse outputs, with resistive load, max.  Total current of the outputs (per group) all mounting positions — up to 40 °C, max. horizontal installation — up to 55 °C, max.  Relay outputs • Number of relay outputs • Number of relay outputs, integrated • Number of operating cycles, max.  10 000 000; mechanically 10 million, at rated load voltage 100 000  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	Output delay with resistive load	
Parallel switching of two outputs  • for uprating  No  Switching frequency  • of the pulse outputs, with resistive load, max.  Total current of the outputs (per group)  all mounting positions  — up to 40 °C, max.  horizontal installation  — up to 55 °C, max.  Relay outputs  • Number of relay outputs  • Number of relay outputs, integrated  • Number of operating cycles, max.  10 000 000; mechanically 10 million, at rated load voltage 100 000  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	• "0" to "1", max.	10 ms; all outputs
• for uprating  Switching frequency • of the pulse outputs, with resistive load, max.  Total current of the outputs (per group)  all mounting positions — up to 40 °C, max. horizontal installation — up to 55 °C, max.  Relay outputs • Number of relay outputs, integrated • Number of operating cycles, max.  Cable length • shielded, max. • unshielded, max.  • unshielded, max.  So0 m • unshielded, max.  150 m  Analog inputs  Encoder  Connectable encoders • 2-wire sensor — permissible quiescent current (2-wire sensor), max.  1. Interface Interface Interface Interface yee	• "1" to "0", max.	10 ms; all outputs
Switching frequency  • of the pulse outputs, with resistive load, max.  Total current of the outputs (per group)  all mounting positions  — up to 40 °C, max.  horizontal installation  — up to 55 °C, max.  10 A  Relay outputs  • Number of relay outputs  • Number of operating cycles, max.  10 000 000; mechanically 10 million, at rated load voltage 100 000  Cable length  • shielded, max.  • unshielded, 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 Interface Vpe  Integrated RS 485 interface	Parallel switching of two outputs	
of the pulse outputs, with resistive load, max.  Total current of the outputs (per group)  all mounting positions  — up to 40 °C, max.  horizontal installation — up to 55 °C, max.  10 A  Relay outputs  Number of relay outputs  Number of operating cycles, max.  10 000 000; mechanically 10 million, at rated load voltage 100 000  Cable length  shielded, max.  unshielded, max.  unshielded, max.  To max.  So 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.  Interface  Interface lengters	• for uprating	No
Total current of the outputs (per group)  all mounting positions  — up to 40 °C, max.  horizontal installation — up to 55 °C, max.  Relay outputs  • Number of relay outputs • Number of relay outputs, integrated • Number of operating cycles, max.  10 000 000; mechanically 10 million, at rated load voltage 100 000  Cable length  • shielded, max. • unshielded, 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	Switching frequency	
all mounting positions  — up to 40 °C, max.  horizontal installation  — up to 55 °C, max.  10 A  Relay outputs  • Number of relay outputs  • Number of perating cycles, max.  10 000 000; mechanically 10 million, at rated load voltage 100 000  Cable length  • shielded, max.  • unshielded, 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	• of the pulse outputs, with resistive load, max.	1 Hz
up to 40 °C, max. 10 A  horizontal installation up to 55 °C, max. 10 A  Relay outputs  • Number of relay outputs 10 • Number of relay outputs, integrated 10 • Number of operating cycles, max. 10 000 000; mechanically 10 million, at rated load voltage 100 000  Cable length • shielded, max. 500 m • unshielded, max. 150 m  Analog inputs  Number of analog potentiometers 2; Analog potentiometer; resolution 8 bit  Encoder  Connectable encoders  • 2-wire sensor Yes permissible quiescent current (2-wire sensor), max.  1. Interface  Interface type Integrated RS 485 interface	Total current of the outputs (per group)	
horizontal installation — up to 55 °C, max.  Relay outputs  • Number of relay outputs 10 • Number of pelay outputs, integrated 10 • Number of operating cycles, max. 10 000 000; mechanically 10 million, at rated load voltage 100 000  Cable length  • shielded, max. 500 m • unshielded, max. 150 m  Analog inputs  Number of analog potentiometers 2; Analog potentiometer; resolution 8 bit  Encoder  Connectable encoders  • 2-wire sensor Yes — permissible quiescent current (2-wire sensor), max.  1. Interface Interface type  Integrated RS 485 interface	all mounting positions	
- up to 55 °C, max.  Relay outputs  Number of relay outputs  Number of relay outputs, integrated  Number of operating cycles, max.  10 000 000; mechanically 10 million, at rated load voltage 100 000  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.  Interface  Interface type  Integrated RS 485 interface	— up to 40 °C, max.	10 A
Relay outputs  Number of relay outputs, integrated Number of operating cycles, max.  10 000 000; mechanically 10 million, at rated load voltage 100 000  Cable length shielded, max. unshielded, max.  Iso m  So 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.  I. Interface  Interface  Interface type  Integrated RS 485 interface	horizontal installation	
<ul> <li>Number of relay outputs</li> <li>Number of relay outputs, integrated</li> <li>Number of operating cycles, max.</li> <li>10 000 000; mechanically 10 million, at rated load voltage 100 000</li> <li>Cable length</li> <li>shielded, max.</li> <li>unshielded, max.</li> <li>unshielded, max.</li> <li>150 m</li> </ul> Analog inputs Number of analog potentiometers <ul> <li>2; Analog potentiometer; resolution 8 bit</li> </ul> Encoder Connectable encoders <ul> <li>2-wire sensor</li> <li>permissible quiescent current (2-wire sensor), max.</li> </ul> 1 mA Interface Interface type Integrated RS 485 interface	— up to 55 °C, max.	10 A
<ul> <li>Number of relay outputs, integrated</li> <li>Number of operating cycles, max.</li> <li>10 000 000; mechanically 10 million, at rated load voltage 100 000</li> <li>Cable length</li> <li>shielded, max.</li> <li>unshielded, max.</li> <li>150 m</li> <li>Analog inputs</li> <li>Number of analog potentiometers</li> <li>2; Analog potentiometer; resolution 8 bit</li> <li>Encoder</li> <li>Connectable encoders</li> <li>2-wire sensor</li> <li>permissible quiescent current (2-wire sensor), max.</li> <li>Interface</li> <li>Interface</li> <li>Integrated RS 485 interface</li> </ul>	Relay outputs	
Number of operating cycles, max.  10 000 000; mechanically 10 million, at rated load voltage 100 000  Cable length  shielded, max.  unshielded, max.  500 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	Number of relay outputs	10
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	<ul> <li>Number of relay outputs, integrated</li> </ul>	10
shielded, max.     unshielded, max.  Analog inputs  Number of analog potentiometers  2; Analog potentiometer; resolution 8 bit  Encoder  Connectable encoders  2; Analog potentiometer; resolution 8 bit  I ma  Yes  — permissible quiescent current (2-wire sensor), max.  1. Interface  Interface Interface Interface  Integrated RS 485 interface	<ul> <li>Number of operating cycles, max.</li> </ul>	10 000 000; mechanically 10 million, at rated load voltage 100 000
unshielded, max.  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	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  Interface type  Integrated RS 485 interface	• shielded, max.	500 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	• unshielded, 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		
Encoder  Connectable encoders  • 2-wire sensor — permissible quiescent current (2-wire sensor), max.  1. Interface Interface type Integrated RS 485 interface		2: Analog potentiometer: resolution 8 hit
Connectable encoders  • 2-wire sensor — permissible quiescent current (2-wire sensor), max.  1. Interface Interface type Integrated RS 485 interface	Number of analog potentiometers	2, Alialog potentionneter, resolution o bit
2-wire sensor     — permissible quiescent current (2-wire sensor), max.  1. Interface Interface type Integrated RS 485 interface		
— permissible quiescent current (2-wire sensor), max.  1. Interface Interface type Integrated RS 485 interface	Connectable encoders	
1. Interface Interface type Integrated RS 485 interface	• 2-wire sensor	
1. Interface Interface type Integrated RS 485 interface		1 mA
Interface type Integrated RS 485 interface	sensor), max.	
Interface type Integrated RS 485 interface	1. Interface	
Physics RS 485		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.	19.2 kbit/s
• Transmission rate, max.	187.5 kbit/s
2. 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
Integrated Functions	
Number of counters	6; High-speed counters (2 to 200 kHz and 4 to 30 kHz), 32 bit (incl. sign), can be used as up/down counters or for connecting incremental encoders with 2 pulse trains offset by 90° (max. 1 to 100 kHz and 3 to 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.	200 kHz
Number of alarm inputs	4; 4 rising edges and/or 4 falling edges
Potential separation	
Potential separation digital inputs	
• between the channels	Yes
<ul> <li>between the channels, in groups of</li> </ul>	6 and 8

• between the channels	Yes; Relays
• between the channels, in groups of	3 and 4
Permissible potential difference	
between different circuits	500 V DC between 24 V DC and 5 V DC; 1500 V AC between 24 V DC and 230 V AC
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
• vertical installation, max.	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 %
Operation, max.	95 %; RH class 2 in accordance with IEC 1131-2
Configuration	
Configuration Programming	
	Bit logic instructions, compare instructions, timer instructions, 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
Programming	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
Programming  • 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 free cycle (OB 1), interrupt-controller, time-controlled (1 to 255
Programming  • Command set  • Program processing	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 free cycle (OB 1), interrupt-controller, time-controlled (1 to 255 ms)
Programming  Command set  Program processing  Program organization	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 free cycle (OB 1), interrupt-controller, time-controlled (1 to 255 ms)  1 OB, 1 DB, 1 SDB subroutines with/without parameter transfer
Programming  • Command set  • Program processing  • Program organization  • Number of subroutines, max.	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 free cycle (OB 1), interrupt-controller, time-controlled (1 to 255 ms)  1 OB, 1 DB, 1 SDB subroutines with/without parameter transfer
Programming  Command set  Program processing  Program organization  Number of subroutines, max.  Programming language	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 free cycle (OB 1), interrupt-controller, time-controlled (1 to 255 ms)  1 OB, 1 DB, 1 SDB subroutines with/without parameter transfer
<ul> <li>Programming</li> <li>Command set</li> <li>Program processing</li> <li>Program organization</li> <li>Number of subroutines, max.</li> <li>Programming language</li> <li>LAD</li> </ul>	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 free cycle (OB 1), interrupt-controller, time-controlled (1 to 255 ms)  1 OB, 1 DB, 1 SDB subroutines with/without parameter transfer 64
Programming  • Command set  • Program processing  • Program organization  • Number of subroutines, max.  Programming language  — LAD  — FBD	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 free cycle (OB 1), interrupt-controller, time-controlled (1 to 255 ms)  1 OB, 1 DB, 1 SDB subroutines with/without parameter transfer 64
Programming  Command set  Program processing  Program organization  Number of subroutines, max.  Programming language  — LAD — FBD — STL	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 free cycle (OB 1), interrupt-controller, time-controlled (1 to 255 ms)  1 OB, 1 DB, 1 SDB subroutines with/without parameter transfer 64
Programming  • Command set  • Program processing  • Program organization  • Number of subroutines, max.  Programming language  — LAD  — FBD — STL  Know-how protection	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 free cycle (OB 1), interrupt-controller, time-controlled (1 to 255 ms)  1 OB, 1 DB, 1 SDB subroutines with/without parameter transfer 64  Yes Yes Yes
Programming	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 free cycle (OB 1), interrupt-controller, time-controlled (1 to 255 ms)  1 OB, 1 DB, 1 SDB subroutines with/without parameter transfer 64  Yes Yes Yes

Width	140 mm
Height	80 mm
Depth	62 mm
Weights	
Weight, approx.	440 g

09/25/2019

last modified: