## **SIEMENS**

## Data sheet

## 6ES7215-1HF40-0XB0

SIMATIC S7-1200F, CPU 1215 FC, compact CPU, DC/DC/relay, 2 PROFINET ports, onboard I/O: 14 DI 24 V DC; 10 DO relay 2 A, 2 AI 0-10 V DC, 2 AO 0-20 mA DC, Power supply: DC 20.4-28.8 V DC, Program/data memory 150 KB



General information	
Product type designation	CPU 1215FC DC/DC/relay
Firmware version	V4.2
Engineering with	
<ul> <li>Programming package</li> </ul>	STEP 7 V14 or higher
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Load voltage L+	
<ul> <li>Rated value (DC)</li> </ul>	24 V
<ul> <li>permissible range, lower limit (DC)</li> </ul>	20.4 V
• permissible range, upper limit (DC)	28.8 V
Input current	
Current consumption (rated value)	500 mA; CPU only
Current consumption, max.	1 500 mA; CPU with all expansion modules

Inrush current, max.	12 A; at 28.8 V DC
l²t	0.5 A <sup>2</sup> ·s
Output current	
for backplane bus (5 V DC), max.	1 600 mA; Max. 5 V DC for SM and CM
Encoder supply 24 V encoder supply	
• 24 V	L+ minus 4 V DC min.
• Z4 V	
Power loss	
Power loss, typ.	12 W
Memory	
Work memory	
• integrated	150 kbyte
• expandable	No
Load memory	
• integrated	4 Mbyte
<ul> <li>Plug-in (SIMATIC Memory Card), max.</li> </ul>	with SIMATIC memory card
Backup	
• present	Yes
maintenance-free	Yes
• without battery	Yes
CPU processing times	
for bit operations, typ.	0.08 μs; / instruction
for word operations, typ.	1.7 μs; / instruction
for floating point arithmetic, typ.	2.3 µs; / instruction
CPU-blocks	
Number of blocks (total)	DBs, FCs, FBs, counters and timers. The maximum number of
	addressable blocks ranges from 1 to 65535. There is no
	restriction, the entire working memory can be used
OB	Limited only by DAM for code
• Number, max.	Limited only by RAM for code
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags),	10 kbyte
max.	
Flag	9 khuta: Siza of hit moment address area
Number, max.	8 kbyte; Size of bit memory address area
Local data	16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2
<ul> <li>per priority class, max.</li> </ul>	to 26: 6 KB
Address area	
Process image	

<ul> <li>Outputs, adjustable</li> <li>1 kbyte</li> <li>Hardware configuration</li> <li>Number of modules per system, max.</li> <li>3 comm. modules, 1 signal board, 8 signal modules</li> <li>Time of day</li> <li>Clock</li> <li>Hardware clock (real-time)</li> <li>Yes</li> <li>Backup time</li> <li>Bookup time</li> <li>Deviation per day, max.</li> <li>Evaluation per day, max.</li> <li>Bost price</li> <li>Deviation per day, max.</li> <li>Source/sink input</li> <li>Number of digital inputs</li> <li>It integrated</li> <li>of which inputs usable for technological</li> <li>functions</li> <li>Source/sink input</li> <li>Number of simultaneously controllable inputs</li> <li>all mounting positions</li> <li>- up to 40°C, max.</li> <li>It</li> <li>Input days (or rated value (DC)</li> <li>24 V</li> <li>for signal '0°</li> <li>at '14.</li> <li>for or signal '0°</li> <li>for signal '0°</li> <li>at '2.8 ms</li> <li>for interrupt inputs</li> <li>- parameterizable</li> <li>Yes</li> <li>for interrupt inputs</li> <li>- parameterizable</li> <li>yes</li> <li>for technological functions</li> <li>- parameterizable</li> <li>yes</li> <li>for interrupt inputs</li> <li>- parameterizable</li> <li>Yes</li> <li>for interrupt inputs</li> <li>- parameterizable</li> <li>yes</li> <li>for interrupt inputs</li> <li>- parameterizable</li> <li>Single phase: 3 @ 100 kHz &amp; 3 @ 30 kHz, differential: 3 @ 80 kHz &amp; 3 @ 30 kHz</li> <li>cable length</li> <li>shielded, max.</li> <li>single phase: 3 @ 100 kHz &amp; 3 @ 30 kHz, differential: 3 @ 80 kHz &amp; 3 @ 30 kHz</li> <li>on shielded, max.</li> <li>a) 00 W with DC, 200 W with AC</li> <li>Output delay with resistive load</li> </ul>	<ul> <li>Inputs, adjustable</li> </ul>	1 kbyte
Hardware of modules per system, max.       3 comm. modules, 1 signal board, 8 signal modules         Time of day       Clock         • Hardware clock (real-time)       Yes         • Backup time       480 h; Typical         • Deviation per day, max.       60 stromth at 25 °C         Digital inputs       14: Integrated         • of which inputs usable for technological functions       6: HSC (High Speed Counting)         functions       14: Integrated         • of which inputs usable for technological functions       6: HSC (High Speed Counting)         functions       14         Number of simultaneously controllable inputs       14         all mounting positions       –         – up to 40 °C, max.       14         Input voltage       .         • for signal °C*       5 V DC at 1 mA         • for signal °C*       5 V DC at 2.5 mA         Input delay (for rated value of input voltage)       .         for standard inputs       _         – parameterizable       Yes; 0.2 ms, 0.4 ms, 0.8 ms, 1.8 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four         – at "0" to "1", min.       0.2 ms         – parameterizable       Yes         for interrupt inputs       –         – parameterizable       Yes      <	• • •	
Number of modules per system, max.       3 comm. modules, 1 signal board, 8 signal modules         Time of day         Clock       •         •       Hardware clock (real-time)       Yes         •       Backup time       480 h; Typical         •       Deviation per day, max.       60 s/month at 25 °C         Digital inputs       14; Integrated       6; HSC (High Speed Counting)         •       of which inputs usable for technological functions       6; HSC (High Speed Counting)         Source/sink input       Yes         Number of simultaneously controllable inputs       all mounting positions         -       - up to 40 °C, max.       14         Input voltage       24 V         • for signal °C       5 V DC at 1 mA         • for signal °C       5 V DC at 2.5 mA         Input delay (for rated value of input voltage)       for         for standard inputs       - parameterizable         - parameterizable       Yes; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four         - at °0° to °1°, min.       0.2 ms         - at °0° to °1°, max.       12.8 ms         for interrupt inputs       - parameterizable         - parameterizable       Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kH		-
Time of day         Clock         • Hardware clock (real-time)       Yes         • Backup time       480 h; Typical         • Deviation per day, max.       60 s/month at 25 °C         Digital inputs       14; Integrated         • of which inputs usable for technological functions       6, HSC (High Speed Counting)         Source/sink input       Yes         Number of signal rule       Yes         • Rated value (DC)       24 V         • for signal rule       Yes; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four         - parameterizable       Yes; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four         - at rule rule rule       Yes; 0.2 ms         - at rule rule rule       Yes; 0.2 ms         - parameterizable       Yes         • rule rule rule       Yes         for interrupt inputs       -         - parameterizable       Yes         for interrupt inputs       -         - parameterizable       Yes         for technological functions       Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz </td <td></td> <td></td>		
Clock         • Hardware clock (real-time)       Yes         • Backup time       480 h; Typical         • Deviation per day, max.       60 s/month at 25 °C         Digital inputs       14; Integrated         • of which inputs usable for technological functions       6: HSC (High Speed Counting)         Source/sink input       Yes         Number of simultaneously controllable inputs       6: HSC (High Speed Counting)         all mounting positions      up to 40 °C, max.        up to 40 °C, max.       14         Input voltage       -         • Rated value (DC)       24 V         • for signal °0°       5 V DC at 1 mA         • for signal °1°       15 V DC at 2.5 mA         Input delay (for rated value of input voltage)       for standard inputs         - parameterizable       Yes: 0.2 ms, 0.4 ms, 0.8 ms, 1.8 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four         - a tro" to "1", min.       0.2 ms         - a tro" to "1", max.       12.8 ms         for interrupt inputs       -         - parameterizable       Yes         Muter of digital outputs       Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz         Cable length       • shielded, max.       500 m; 50 m for technological functions      <	Number of modules per system, max.	3 comm. modules, 1 signal board, 8 signal modules
• Hardware clock (real-time)       Yes         • Backup time       480 h; Typical         • Deviation per day, max.       60 s/month at 25 °C         Digital inputs         • of which inputs usable for technological functions         Source/sink input       Yes         Number of simultaneously controllable inputs       14; Integrated         • of which inputs usable for technological functions       6; HSC (High Speed Counting)         Source/sink input       Yes         Number of simultaneously controllable inputs       14         all mounting positions       - up to 40 °C, max.         - up to 40 °C, max.       14         Input voltage       -         • Fated value (DC)       24 V         • for signal °C       5 V DC at 1 mA         • for signal °C       5 V DC at 2.5 mA         Input delay (for rated value of input voltage)       -         for standard inputs       -         - parameterizable       Yes: 0.2 ms. 0.4 ms. 0.8 ms. 1.6 ms. 3.2 ms. 6.4 ms and 12.8 ms. selectable in groups of four         - at °° to *1°, max.       12.8 ms         for interrupt inputs       -         - parameterizable       Yes         for technological functions       -         - parameterizable       Single	Time of day	
Horebox price     480 h; Typical       • Backup time     480 h; Typical       • Deviation per day, max.     60 s/month at 25 °C       Pigital inputs     14; Integrated       • of which inputs usable for technological functions     6; HSC (High Speed Counting)       Source/sink linput     Yes       Number of simultaneously controllable inputs     14       all mounting positions     -       - up to 40 °C, max.     14       Input voltage     -       • Rated value (DC)     24 V       • for signal °0°     5 V DC at 1 mA       • for signal °1°     15 V DC at 2.5 mA       Input voltage     -       - parameterizable     Yes; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four       - parameterizable     Yes       - at "0" to "1", min.     0.2 ms       - parameterizable     Yes       for iterrupt inputs     -       - parameterizable     Yes       Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz       Cable length     -       • shielded, max.     500 m; 50 m for technological functions       • unshielded, max.     500 m; 50 m for technological functions: No       Dipital outputs     10; Relays       Switching capacity of the outputs     2 A       • with resistive load, m	Clock	
• Deviation per day, max.       60 s/month at 25 °C         Digital inputs       14; Integrated         • of which inputs usable for technological functions       6; HSC (High Speed Counting)         Source/sink input       Yes         Number of simultaneously controllable inputs       14         all mounting positions       14         — up to 40 °C, max.       14         Input voltage       50 VDC at 1 mA         • for signal °0°       5 VDC at 2.5 mA         Input delay (for rated value of input voltage)       50 VDC at 2.5 mA         Input delay (for rated value of input voltage)       7 Ves; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four         - a t °0° to "1", min.       0.2 ms         - at °0° to "1", max.       12.8 ms         for interrupt inputs       Yes         - parameterizable       Yes         - parameterizable       Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz         for technological functions       500 m; 50 m for technological functions         - parameterizable       Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz         unshielded, max.       500 m; 50 m for technological functions         • unshielded, max.       500 m; 50 m for technological functions         unshie	<ul> <li>Hardware clock (real-time)</li> </ul>	Yes
Digital inputs         • of which inputs usable for technological functions         Source/sink input         Yes         Number of simultaneously controllable inputs         all mounting positions         - up to 40 °C, max.         14         Input voltage         • Rated value (DC)       24 V         • for signal °0°       5 V DC at 1 mA         • for signal °1°       5 V DC at 2.5 mA         Input voltage       -         • or standard inputs       Ves; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four         - at °0° to "1", max.       12.8 ms         for interrupt inputs       -         - parameterizable       Yes         for technological functions       -         - parameterizable       Yes         for technological functions       -         - parameterizable       Yes         for technological functions       -         - parameterizable       Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz         Cable length       -         • shielded, max.       300 m; 50 m for technological functions         • unshielded, max.       300 m; for technological functions: No         Digital outputs	Backup time	480 h; Typical
Number of digital inputs       14; Integrated         • of which inputs usable for technological functions       6; HSC (High Speed Counting)         Source/sink input       Yes         Number of simultaneously controllable inputs       all mounting positions	<ul> <li>Deviation per day, max.</li> </ul>	60 s/month at 25 °C
• of which inputs usable for technological functions       6; HSC (High Speed Counting)         Source/sink input       Yes         Number of simultaneously controllable inputs       Input voltage	Digital inputs	
functions         Yes           Number of simultaneously controllable inputs         all mounting positions           -up to 40°C, max.         14           Input voltage         stated value (DC)           • Rated value (DC)         24 V           • for signal "0"         5 V DC at 1 mA           • for signal "1"         15 V DC at 2.5 mA           Input delay (for rated value of input voltage)         for standard inputs           - parameterizable         Yes; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four           - at "0" to "1", min.         0.2 ms           - at "0" to "1", max.         12.8 ms           for interrupt inputs         -           - parameterizable         Yes           - bineided, max.         500 m; 50 m for technological functions           - on lamb leade, max.         2 A           Number of digital outputs         10; Relays           Switching capacity of the outputs         2 A           o man		14; Integrated
Number of simultaneously controllable inputs         all mounting positions        up to 40 °C, max.         14         Input voltage         • Rated value (DC)       24 V         • for signal '0''       5 V DC at 1 mA         • for signal '1''       15 V DC at 2.5 mA         Input delay (for rated value of input voltage)       -         for standard inputs       -        parameterizable       Yes; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four        at '0'' to '1'', min.       0.2 ms        at '0'' to '1'', max.       12.8 ms         for interrupt inputs       -        parameterizable       Yes         for technological functions       -        parameterizable       Yes         for technological functions       -        parameterizable       Yes         for technological functions       -        parameterizable       Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz         for technological functions       -         unshielded, max.       300 m; for technological functions         unshielded, max.       300 m; for technological functions         with resistive load, max.       2 A		6; HSC (High Speed Counting)
all mounting positions       14         Input voltage       24 V         • Rated value (DC)       24 V         • for signal "0"       5 V DC at 1 mA         • for signal "1"       15 V DC at 2.5 mA         Input delay (for rated value of input voltage)       for standard inputs         - parameterizable       Yes; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four         - at "0" to "1", min.       0.2 ms         - at "0" to "1", max.       12.8 ms         for interrupt inputs       -         - parameterizable       Yes         for technological functions       -         - parameterizable       Yes         for technological functions       -         - parameterizable       Yes         for technological functions       -         - parameterizable       Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz         Cable length       -         • shielded, max.       500 m; 50 m for technological functions         • unshielded, max.       300 m; for technological functions: No         Digital outputs       10; Relays         Switching capacity of the outputs       2A         • with resistive load, max.       2 A         • on lamp loa	Source/sink input	Yes
up to 40 °C, max.14Input voltage• Rated value (DC)24 V• for signal "0"5 V DC at 1 mA• for signal "1"15 V DC at 2.5 mAInput delay (for rated value of input voltage)for standard inputs• for standard inputs parameterizableYes; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four- at "0" to "1", min.0.2 ms- at "0" to "1", max.12.8 msfor interrupt inputs parameterizableYesfor technological functionsSingle phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHzCable lengthSingle phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz• shielded, max.500 m; 50 m for technological functions• unshielded, max.500 m; 50 m for technological functions• unshielded, max.300 m; for technological functions• unshielded, max.10; RelaysSwitching capacity of the outputs10; Relays• with resistive load, max.2 A• on lamp load, max.30 W with DC, 200 W with AC	Number of simultaneously controllable inputs	
Input voltage         • Rated value (DC)       24 V         • for signal "0"       5 V DC at 1 mA         • for signal "1"       15 V DC at 2.5 mA         Input delay (for rated value of input voltage)       for standard inputs         • or standard inputs	all mounting positions	
<ul> <li>Rated value (DC)</li> <li>24 V</li> <li>for signal "0"</li> <li>5 V DC at 1 mA</li> <li>for signal "1"</li> <li>15 V DC at 2.5 mA</li> </ul> Input delay (for rated value of input voltage) for standard inputs <ul> <li>- parameterizable</li> <li>Yes; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four</li> <li>- at "0" to "1", min.</li> <li>0.2 ms</li> <li>- at "0" to "1", max.</li> <li>12.8 ms</li> </ul> for interrupt inputs <ul> <li>- parameterizable</li> <li>Yes</li> <li>for technological functions</li> <li>- parameterizable</li> <li>Single phase: 3 @ 100 kHz &amp; 3 @ 30 kHz, differential: 3 @ 80 kHz &amp; 3 @ 30 kHz</li> </ul> Cable length <ul> <li>• shielded, max.</li> <li>• unshielded, max.</li> <li>300 m; 50 m for technological functions</li> <li>• unshielded, max.</li> <li>300 m; for technological functions</li> <li>Number of digital outputs</li> <li>10; Relays</li> </ul> Switching capacity of the outputs <ul> <li>2 A</li> <li>• on lamp load, max.</li> <li>2 A</li> <li>30 W with DC, 200 W with AC</li> </ul>	— up to 40 °C, max.	14
Induct outputs5 V DC at 1 mA• for signal "1"15 V DC at 2.5 mAInput delay (for rated value of input voltage)5 v DC at 2.5 mAfor standard inputs parameterizableYes; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four- at "0" to "1", min.0.2 ms- at "0" to "1", max.12.8 msfor interrupt inputs parameterizableYesfor technological functions parameterizableSingle phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHzCable length-• shielded, max.500 m; 50 m for technological functions• unshielded, max.500 m; for technological functions• unshielded, max.300 m; for technological functionswith resistive load, max.2 A• on lamp load, max.2 A• on lamp load, max.30 W with DC, 200 W with AC	Input voltage	
• for signal "1"       15 V DC at 2.5 mA         Input delay (for rated value of input voltage)       for standard inputs         • parameterizable       Yes; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four         - at "0" to "1", min.       0.2 ms         - at "0" to "1", max.       12.8 ms         for interrupt inputs       -         - parameterizable       Yes         for technological functions       -         - parameterizable       Yes         for technological functions       -         - parameterizable       Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz         Cable length       500 m; 50 m for technological functions         • shielded, max.       500 m; 50 m for technological functions         • unshielded, max.       300 m; for technological functions: No         Digital outputs         Number of digital outputs       10; Relays         Switching capacity of the outputs       2 A         • on lamp load, max.       2 A         • on lamp load, max.       30 W with DC, 200 W with AC	Rated value (DC)	24 V
Input delay (for rated value of input voltage) for standard inputs - parameterizable - at "0" to "1", min. - at "0" to "1", max. - at "0" to "1", max. - at "0" to "1", max. - at "0" to "1", max. for interrupt inputs - parameterizable Yes for technological functions - parameterizable Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz Cable length • shielded, max. • unshielded, max. • unshielded, max. • unshielded, max. • unshielded, max. • unshielded, max. 2 A • on lamp load, max. 2 A • on lamp load, max. 2 A 30 W with DC, 200 W with AC	● for signal "0"	5 V DC at 1 mA
for standard inputs	● for signal "1"	15 V DC at 2.5 mA
parameterizableYes; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four at "0" to "1", min.0.2 ms at "0" to "1", max.12.8 msfor interrupt inputs parameterizableYesfor technological functions parameterizableSingle phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHzCable length• shielded, max.500 m; 50 m for technological functions• unshielded, max.300 m; for technological functions: NoDigital outputs10; RelaysSwitching capacity of the outputs2 A• on lamp load, max.30 W with DC, 200 W with AC	Input delay (for rated value of input voltage)	
.selectable in groups of four- at "0" to "1", min.0.2 ms- at "0" to "1", max.12.8 msfor interrupt inputsYes- parameterizableYesfor technological functionsSingle phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHzCable lengthSingle phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz• shielded, max.500 m; 50 m for technological functions• unshielded, max.500 m; 50 m for technological functionsNumber of digital outputs10; RelaysSwitching capacity of the outputs2 A• with resistive load, max.2 A• on lamp load, max.30 W with DC, 200 W with AC	for standard inputs	
	— parameterizable	
for interrupt inputs       Yes         — parameterizable       Yes         for technological functions       Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz         — parameterizable       Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz         Cable length       Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz         • shielded, max.       500 m; 50 m for technological functions         • unshielded, max.       300 m; for technological functions: No         Digital outputs       10; Relays         Switching capacity of the outputs       10; Relays         • with resistive load, max.       2 A         • on lamp load, max.       30 W with DC, 200 W with AC	— at "0" to "1", min.	0.2 ms
— parameterizableYesfor technological functions— parameterizableSingle phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHzCable length• shielded, max.500 m; 50 m for technological functions• unshielded, max.500 m; 50 m for technological functions• unshielded, max.300 m; for technological functions: NoDigital outputsNumber of digital outputs10; RelaysSwitching capacity of the outputs2 A• with resistive load, max.30 W with DC, 200 W with AC	— at "0" to "1", max.	12.8 ms
for technological functions	for interrupt inputs	
— parameterizableSingle phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHzCable length•• shielded, max.500 m; 50 m for technological functions• unshielded, max.300 m; for technological functions: NoDigital outputs10; RelaysSwitching capacity of the outputs10; Relays• with resistive load, max.2 A• on lamp load, max.30 W with DC, 200 W with AC	— parameterizable	Yes
kHz & 3 @ 30 kHzCable length• shielded, max.500 m; 50 m for technological functions• unshielded, max.300 m; for technological functions: NoDigital outputsNumber of digital outputs10; RelaysSwitching capacity of the outputs2 A• with resistive load, max.2 A• on lamp load, max.30 W with DC, 200 W with AC	for technological functions	
<ul> <li>shielded, max.</li> <li>unshielded, max.</li> <li>unshielded, max.</li> <li>300 m; for technological functions: No</li> </ul> Digital outputs Number of digital outputs 10; Relays Switching capacity of the outputs • with resistive load, max. 2 A • on lamp load, max. 30 W with DC, 200 W with AC	— parameterizable	
<ul> <li>unshielded, max.</li> <li>300 m; for technological functions: No</li> </ul> Digital outputs Number of digital outputs 10; Relays Switching capacity of the outputs • with resistive load, max. • on lamp load, max. 30 W with DC, 200 W with AC	Cable length	
Digital outputs       10; Relays         Number of digital outputs       10; Relays         Switching capacity of the outputs       2 A         • with resistive load, max.       2 A         • on lamp load, max.       30 W with DC, 200 W with AC	• shielded, max.	500 m; 50 m for technological functions
Number of digital outputs       10; Relays         Switching capacity of the outputs       • with resistive load, max.         • on lamp load, max.       2 A         30 W with DC, 200 W with AC	• unshielded, max.	300 m; for technological functions: No
Switching capacity of the outputs         • with resistive load, max.         • on lamp load, max.         2 A         30 W with DC, 200 W with AC	Digital outputs	
<ul> <li>with resistive load, max.</li> <li>on lamp load, max.</li> <li>2 A</li> <li>30 W with DC, 200 W with AC</li> </ul>	Number of digital outputs	10; Relays
• on lamp load, max. 30 W with DC, 200 W with AC	Switching capacity of the outputs	
	• with resistive load, max.	2 A
Output delay with resistive load	• on lamp load, max.	30 W with DC, 200 W with AC
	Output delay with resistive load	

• "0" to "1", max.	10 ms; max.
• "1" to "0", max.	10 ms; max.
Relay outputs	
<ul> <li>Number of relay outputs</li> </ul>	10
<ul> <li>Number of operating cycles, max.</li> </ul>	mechanically 10 million, at rated load voltage 100 000
Cable length	
<ul> <li>shielded, max.</li> </ul>	500 m
• unshielded, max.	150 m
Analasianuta	
Analog inputs Number of analog inputs	2
Input ranges	2
• Voltage	Yes
Input ranges (rated values), voltages	1.00
• 0 to +10 V	Yes
- Input resistance (0 to 10 V)	≥100k ohms
Cable length	
	100 m; twisted and shielded
<ul> <li>shielded, max.</li> </ul>	
Analog outputs	
Number of analog outputs	2
Output ranges, current	
• 0 to 20 mA	Yes
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
<ul> <li>Resolution with overrange (bit including sign),</li> </ul>	10 bit
max.	
<ul> <li>Integration time, parameterizable</li> </ul>	Yes
<ul> <li>Conversion time (per channel)</li> </ul>	625 µs
Analog value generation for the outputs	
Integration and conversion time/resolution per channel	
<ul> <li>Resolution with overrange (bit including sign),</li> </ul>	10 bit
max.	
Freedor	
Encoder Connectable encoders	
2-wire sensor	Yes
- 2-wiie sensoi	
1. Interface	
Interface type	PROFINET
Physics	Ethernet
Isolated	Yes
automatic detection of transmission rate	
	Yes
Autonegotiation	Yes Yes

Autocrossing	Yes
Interface types	
Number of ports	2
• integrated switch	Yes
Protocols	
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
SIMATIC communication	Yes
Open IE communication	Yes
Web server	Yes
Media redundancy	Yes; as MRP client
PROFINET IO Controller	
Transmission rate, max.	100 Mbit/s
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	No
— IRT	No
— MRP	Yes; as MRP client
— MRPD	No
— PROFlenergy	No
— Prioritized startup	Yes
<ul> <li>Number of IO devices with prioritized</li> </ul>	16
startup, max.	
<ul> <li>— Number of connectable IO Devices, max.</li> </ul>	16
<ul> <li>— Number of connectable IO Devices for RT,</li> </ul>	16
max.	
— of which in line, max.	16
<ul> <li>Activation/deactivation of IO Devices</li> </ul>	Yes
<ul> <li>— Number of IO Devices that can be simultaneously activated/deactivated, max.</li> </ul>	8
— Updating time	The minimum value of the update time also depends on the communication component set for PROFINET IO, on the number of IO devices and the quantity of configured user data.
PROFINET IO Device	
Services	
- PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	No
— IRT	No
— MRP	Yes; as MRP client
— MRPD	No

— PROFlenergy	Yes
— Shared device	Yes
— Number of IO Controllers with shared	2
device, max.	2
Protocols	
Supports protocol for PROFINET IO	Yes
PROFIBUS	Yes; CM 1243-5 (master) or CM 1242-5 (slave) required
AS-Interface	Yes; CM 1243-2 required
Protocols (Ethernet)	Yes
• TCP/IP	
• DHCP	No
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Open IE communication	
• TCP/IP	Yes
— Data length, max.	8 kbyte
<ul> <li>ISO-on-TCP (RFC1006)</li> </ul>	Yes
— Data length, max.	8 kbyte
• UDP	Yes
— Data length, max.	1 472 byte
Web server	
supported	Yes
<ul> <li>User-defined websites</li> </ul>	Yes
Further protocols	
• MODBUS	Yes
Communication functions	
S7 communication	
• supported	Yes
• as server	Yes
• as client	Yes
• User data per job, max.	See online help (S7 communication, user data size)
Number of connections	
• overall	16; dynamically
Test commissioning functions	
Status/control	
Status/control variable	Yes
Variables	Inputs/outputs, memory bits, DBs, distributed I/Os, timers,
- anabio	counters
Forcing	
Forcing	Yes

Diagnostic buffer	
• present	Yes
Traces	
<ul> <li>Number of configurable Traces</li> </ul>	2
<ul> <li>Memory size per trace, max.</li> </ul>	512 kbyte
Interrupts/diagnostics/status information	
Diagnostics indication LED	
RUN/STOP LED	Yes
• ERROR LED	Yes
• MAINT LED	Yes
Integrated Functions	
Number of counters	6
Counting frequency (counter) max.	100 kHz
Frequency measurement	Yes
controlled positioning	Yes
Number of position-controlled positioning axes, max.	8
Number of positioning axes via pulse-direction interface	Up to 4 with SB 1222
PID controller	Yes
Number of alarm inputs	4
Potential separation	
Potential separation digital inputs	
<ul> <li>Potential separation digital inputs</li> </ul>	500V AC for 1 minute
<ul> <li>between the channels, in groups of</li> </ul>	1
Potential separation digital outputs	
<ul> <li>Potential separation digital outputs</li> </ul>	Relays
<ul> <li>between the channels</li> </ul>	No
<ul> <li>between the channels, in groups of</li> </ul>	2
EMC	
Interference immunity against discharge of static electric	city
<ul> <li>Interference immunity against discharge of static electricity acc. to IEC 61000-4-2</li> </ul>	Yes
— Test voltage at air discharge	8 kV
— Test voltage at contact discharge	6 kV
Interference immunity to cable-borne interference	
Interference immunity to cable-borne interference	
<ul> <li>Interference immunity to cable-borne interference</li> <li>Interference immunity on supply lines acc. to IEC 61000-4-4</li> </ul>	Yes
<ul> <li>Interference immunity on supply lines acc. to</li> </ul>	Yes

<ul> <li>Interference immunity on supply lines acc. to IEC 61000-4-5</li> </ul>	Yes
Interference immunity against conducted variable disturb	pance induced by high-frequency fields
<ul> <li>Interference immunity against high-frequency radiation acc. to IEC 61000-4-6</li> </ul>	Yes
Emission of radio interference acc. to EN 55 011	
<ul> <li>Limit class A, for use in industrial areas</li> </ul>	Yes; Group 1

• Limit class B, for use in residential areas Yes; When ap

Yes; When appropriate measures are used to ensure compliance with the limits for Class B according to EN 55011

Degree and class of protection	
IP degree of protection	IP20
Standards, approvals, certificates	
CE mark	Yes
UL approval	Yes
cULus	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes
Marine approval	Yes
Highest safety class achievable in safety mode	
<ul> <li>Performance level according to ISO 13849-1</li> </ul>	PLe
• SIL acc. to IEC 61508	SIL 3

## Ambient conditions

Free fall	
<ul> <li>Fall height, max.</li> </ul>	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	0 °C
• max.	55 °C
<ul> <li>horizontal installation, min.</li> </ul>	0°0
<ul> <li>horizontal installation, max.</li> </ul>	55 °C
<ul> <li>vertical installation, min.</li> </ul>	0°0
<ul> <li>vertical installation, max.</li> </ul>	45 °C
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Air pressure acc. to IEC 60068-2-13	
• Operation, min.	795 hPa
<ul> <li>Operation, max.</li> </ul>	1 080 hPa
<ul> <li>Storage/transport, min.</li> </ul>	660 hPa
<ul> <li>Storage/transport, max.</li> </ul>	1 080 hPa
Relative humidity	

• Operation, max.	95 %; no condensation
Vibrations	
<ul> <li>Vibration resistance during operation acc. to IEC 60068-2-6</li> </ul>	2 g (m/s²) wall mounting, 1 g (m/s²) DIN rail
<ul> <li>Operation, tested according to IEC 60068-2-6</li> </ul>	Yes
Shock testing	
<ul> <li>tested according to IEC 60068-2-27</li> </ul>	Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value), duration 11 ms
Pollutant concentrations	
<ul> <li>SO2 at RH &lt; 60% without condensation</li> </ul>	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
Configuration	
Programming	
Programming language	
— LAD	Yes; incl. failsafe
— FBD	Yes; incl. failsafe
— SCL	Yes
Know-how protection	
<ul> <li>User program protection/password protection</li> </ul>	Yes
Copy protection	Yes
Block protection	Yes
Access protection	
<ul> <li>Protection level: Write protection</li> </ul>	Yes
<ul> <li>Protection level: Read/write protection</li> </ul>	Yes
<ul> <li>Protection level: Complete protection</li> </ul>	Yes
Cycle time monitoring	
● adjustable	Yes
Dimensions	
Width	130 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	585 g
last modified:	07/10/2020