SIEMENS

Data sheet

6ES7212-1HF40-0XB0

SIMATIC S7-1200, CPU 1212FC, compact CPU, DC/DC/relay, onboard I/O: 8 DI 24 V DC; 6 DO relay 2 A; 2 AI 0-10 V DC, Power supply: DC 20.4-28.8V DC, Program/data memory 100 KB



General information	
Product type designation	CPU 1212FC DC/DC/relay
Firmware version	V4.2
Engineering with	
 Programming package 	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
Load voltage L+	
Rated value (DC)	24 V
 permissible range, lower limit (DC) 	20.4 V
• permissible range, upper limit (DC)	28.8 V
Input current	
Current consumption (rated value)	400 mA; Typical
Inrush current, max.	12 A; at 28.8 V DC
l²t	0.5 A ² ·s

for backplane bus (5 V DC), max. 1 000 mA; Max. 5 V DC for SM and CM Encoder supply 24 V encoder supply 24 V encoder supply 24 V Permissible range: 20.4V to 28.8V Power loss Power loss Power loss, typ. 9 W Memory Work memory integrated 100 kbyte expandable No Load memory integrated 2 Mbyte plug-in (SIMATIC Memory Card), max. Backup present Yes maintenance-free Yes without battery Yes CPU processing times for bit operations, typ. 0.08 µs; / instruction for word operations, typ. 2.5 µs; / instruction CPU-blocks	Output current	
24 V encoder supply • 24 V Permissible range: 20.4V to 28.8V Power loss Power loss, typ. 9 W Memory 9 W Memory 9 W Memory 100 kbyte • integrated 100 kbyte • expandable No Load memory 100 kbyte • integrated 2 Mbyte • plug-in (SIMATIC Memory Card), max. with SIMATIC memory card Backup Ves • present Yes • maintenance-free Yes • without battery Yes CPU processing times 0.08 µs; / instruction for bit operations, typ. 1.7 µs; / instruction for floating point arithmetic, typ. 2.5 µs; / instruction CPU-blocks CPU-blocks		1 000 mA; Max. 5 V DC for SM and CM
24 V encoder supply • 24 V Permissible range: 20.4V to 28.8V Power loss Power loss, typ. 9 W Memory 9 W Memory 9 W Memory 100 kbyte • integrated 100 kbyte • expandable No Load memory 100 kbyte • integrated 2 Mbyte • plug-in (SIMATIC Memory Card), max. with SIMATIC memory card Backup Ves • present Yes • maintenance-free Yes • without battery Yes CPU processing times 0.08 µs; / instruction for bit operations, typ. 1.7 µs; / instruction for floating point arithmetic, typ. 2.5 µs; / instruction CPU-blocks CPU-blocks		
• 24 V Permissible range: 20.4V to 28.8V Power loss 9 W Power loss, typ. 9 W Memory 9 W Memory 100 kbyte • integrated 100 kbyte • expandable No Load memory 2 Mbyte • integrated 2 Mbyte • plug-in (SIMATIC Memory Card), max. with SIMATIC memory card Backup Yes • present Yes • maintenance-free Yes • without battery Yes CPU processing times 0.08 µs; / instruction for bit operations, typ. 0.08 µs; / instruction for goating point arithmetic, typ. 2.5 µs; / instruction CPU-blocks CPU-blocks		
Power loss Power loss, typ. 9 W Memory Memory 100 kbyte integrated 100 kbyte expandable No Load memory integrated 2 Mbyte integrated 2 Mbyte optimizer loss with SIMATIC memory card Backup opresent Yes omaintenance-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. 2.5 µs; / instruction		Permissible range: $20.41/$ to $28.81/$
Power loss, typ. 9 W Memory	• 24 V	
Memory Image: Second secon	Power loss	
Work memory 100 kbyte • integrated 100 kbyte • expandable No Load memory 2 Mbyte • integrated 2 Mbyte • Plug-in (SIMATIC Memory Card), max. with SIMATIC memory card Backup • • present Yes • maintenance-free Yes • without battery Yes CPU processing times 0.08 µs; / instruction for bit operations, typ. 1.7 µs; / instruction for floating point arithmetic, typ. 2.5 µs; / instruction CPU-blocks CPU-blocks	Power loss, typ.	9 W
Work memory 100 kbyte • integrated 100 kbyte • expandable No Load memory 2 Mbyte • integrated 2 Mbyte • Plug-in (SIMATIC Memory Card), max. with SIMATIC memory card Backup • • present Yes • maintenance-free Yes • without battery Yes CPU processing times 0.08 µs; / instruction for bit operations, typ. 1.7 µs; / instruction for floating point arithmetic, typ. 2.5 µs; / instruction CPU-blocks CPU-blocks	Memory	
• expandableNoLoad memory2 Mbyte• integrated2 Mbyte• Plug-in (SIMATIC Memory Card), max.with SIMATIC memory cardBackupYes• presentYes• maintenance-freeYes• without batteryYesCPU processing timesYesfor bit operations, typ.0.08 µs; / instructionfor kord operations, typ.1.7 µs; / instructionfor floating point arithmetic, typ.2.5 µs; / instructionCPU-blocksYes		
Load memory 2 Mbyte • integrated 2 Mbyte • Plug-in (SIMATIC Memory Card), max. with SIMATIC memory card Backup Yes • present Yes • maintenance-free Yes • without battery Yes CPU processing times Yes for bit operations, typ. 0.08 µs; / instruction for word operations, typ. 1.7 µs; / instruction for floating point arithmetic, typ. 2.5 µs; / instruction	● integrated	100 kbyte
Load memory 2 Mbyte • integrated 2 Mbyte • Plug-in (SIMATIC Memory Card), max. with SIMATIC memory card Backup Yes • present Yes • maintenance-free Yes • without battery Yes CPU processing times Yes for bit operations, typ. 0.08 µs; / instruction for word operations, typ. 1.7 µs; / instruction for floating point arithmetic, typ. 2.5 µs; / instruction	• expandable	No
• Plug-in (SIMATIC Memory Card), max. with SIMATIC memory card Backup Yes • present Yes • maintenance-free Yes • without battery Yes CPU processing times Yes for bit operations, typ. 0.08 μs; / instruction for word operations, typ. 1.7 μs; / instruction for floating point arithmetic, typ. 2.5 μs; / instruction	Load memory	
Backup Yes • present Yes • maintenance-free Yes • without battery Yes CPU processing times Yes for bit operations, typ. 0.08 µs; / instruction for word operations, typ. 1.7 µs; / instruction for floating point arithmetic, typ. 2.5 µs; / instruction	● integrated	2 Mbyte
• presentYes• maintenance-freeYes• without batteryYesCPU processing timesYesfor bit operations, typ.0.08 μs; / instructionfor word operations, typ.1.7 μs; / instructionfor floating point arithmetic, typ.2.5 μs; / instructionCPU-blocks		with SIMATIC memory card
• maintenance-free Yes • without battery Yes CPU processing times Yes for bit operations, typ. 0.08 μs; / instruction for word operations, typ. 1.7 μs; / instruction for floating point arithmetic, typ. 2.5 μs; / instruction	Backup	
• without battery Yes CPU processing times 0.08 μs; / instruction for bit operations, typ. 0.08 μs; / instruction for word operations, typ. 1.7 μs; / instruction for floating point arithmetic, typ. 2.5 μs; / instruction	● present	Yes
CPU processing times 0.08 µs; / instruction for bit operations, typ. 1.7 µs; / instruction for floating point arithmetic, typ. 2.5 µs; / instruction	• maintenance-free	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. 2.5 μs; / instruction CPU-blocks CPU-blocks	 without battery 	Yes
for bit operations, typ. 0.08 μs; / instruction for word operations, typ. 1.7 μs; / instruction for floating point arithmetic, typ. 2.5 μs; / instruction CPU-blocks 2.5 μs; / instruction		
for word operations, typ. 1.7 μs; / instruction for floating point arithmetic, typ. 2.5 μs; / instruction CPU-blocks 2.5 μs; / instruction		
for floating point arithmetic, typ. 2.5 µs; / instruction CPU-blocks 2.5 µs; / instruction		
CPU-blocks		
	for hoating point antimetic, typ.	2.5 µs; / Instruction
Number of blocks (total) DBs_ECs_EBs_counters and timers_The maximum number of	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		-
OB restriction, the entire working memory can be used	OP	restriction, the entire working memory can be used
		Limited only by RAM for code
Number, max. Limited only by RAM for code	• Number, max.	
Data areas and their retentivity	Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), 10 kbyte		10 kbyte
max.		
Flag		
Number, max. 4 kbyte; Size of bit memory address area		4 KDyte; Size of bit memory address area
Local data		
• per priority class, max. 16 kbyte; Priority class 1 (program cycle): 16 KB, priority class 2 to 26: 6 KB	 per priority class, max. 	
Address area	Address area	
I/O address area		
Inputs 1 024 byte	Inputs	1 024 byte
Outputs 1 024 byte	Outputs	1 024 byte

 Inputs, adjustable Ikbyte Outputs, adjustable Ikbyte Outputs, adjustable Ikbyte Independence Independence Scomm. modules, 1 signal board, 2 signal modules Independence Independence	Process image	
Hardware configuration Number of woldes per system, max. 3 comm. modules, 1 signal board, 2 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 8; Integrated • of which inputs usable for technological functions 6; HSC (High Speed Counting) Source/sink input Yes Number of simultaneously controllable inputs 8 all mounting positions	 Inputs, adjustable 	1 kbyte
Hardware configuration Number of modules per system, max. 3 comm. modules, 1 signal board, 2 signal modules Time of day Clock • Hardware clock (real-time) • Hardware clock (real-time) Yes • Backup time 480 h; Typical • Or which inputs usable for technological functions 6; HSC (High Speed Counting) • Or which inputs usable for technological functions 6; HSC (High Speed Counting) Source/sink input Yes Number of simultaneously controllable inputs 8 all mounting positions - - up to 40 °C, max. 8 Input voltage • for signal °C 24 V • for signal °C 5 V DC at 1 mA • for signal °C 5 V DC at 2.5 mA Input current • for signal °T, type. • for signal °T, type. 1 mA Input deay (for rated value of input voltage) 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 °D' to °T, max. 12.8 ms for interrupt inputs - parameterizable - parameterizable Yes Digital outputs 6 Switching c	• Outputs, adjustable	1 kbyte
Number of modules per system, max. 3 comm. modules, 1 signal board, 2 signal modules Time of day Clock • • Hardware clock (real-time) Yes • Backup time 480 h; Typical • Deviation per day, max. 60 e/month at 25 °C Digital inputs 8: Integrated • of which inputs usable for technological functions 8: Integrated • Source/sink input Yes Number of simultaneously controllable inputs 8 all mounting positions - - up to 40 °C, max. 8 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 • • for signal °1°, typ. 1 mA Input delay (for rated value of input voltage) for signal °1°, min. • for signal °1°, max. 1.2 ms - parameterizable Ves Digital outputs - • for interrupt inputs - - parameterizable Yes Digital outputs 6 Switching capacity of th		
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 8; Integrated • of which inputs usable for technological functions 8; HSC (High Speed Counting) functions Yes Number of signal rout Yes • for signal rout Yes • for signal rout 5 V DC at 1 mA • for signal rout 1 mA Input deve (DC) 24 V • for signal rout 1 mA Input deve (DC) 24 V • for signal rout 1 mA Input deve (DC) 24 V • for signal rout 1 mA Input develue of input voltage) for standard inputs		2 comments modules, 4 circul board, 2 circul modules
Clock • 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 • of which inputs usable for technological functions 8; Integrated • Source/sink input Yes Number of simultaneously controllable inputs 8 all mouthing positions	Number of modules per system, max.	3 comm. modules, 1 signal board, 2 signal modules
• Hardware clock (real-time) Yes • Backup time 480 h; Typical • Deviation per day, max. 60 s/month at 25 °C Digital inputs 8; Integrated • of which inputs usable for technological functions 6; HSC (High Speed Counting) Source/sink input Yes Number of simultaneously controllable inputs 8 all mounting positions 8 - up to 40 °C, max. 8 Input voltage - • Rated value (DC) 24 V • for signal °1° 5 VDC at 1 mA • for signal °1° 5 VDC at 2.5 mA Input delay (for rated value of input voltage) - • for signal °1°, typ. 1 mA Input delay (for rated value of input voltage) - • for signal °1°, typ. 1 mA Input delay (for rated value of input voltage) - for interrupt inputs - - parameterizable 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 6 Switching capacity of the outputs	Time of day	
Backup time 480 h; Typical • Deviation per day, max. 60 s/month at 25 °C Digital inputs 8; Integrated • of which inputs usable for technological functions 8; Integrated • of which inputs usable for technological functions 8; Integrated • Source/sink input Yes Number of simultaneously controllable inputs 8 all mounting positions	Clock	
• Deviation per day, max. 60 s/month at 25 °C Digital inputs 8: Integrated • of which inputs usable for technological functions 8: Integrated Source/sink input Yes Number of simultaneously controllable inputs 8 all mounting positions	 Hardware clock (real-time) 	Yes
Digital inputs 8; Integrated • of which inputs usable for technological functions 8; Integrated Source/sink input Yes Number of simultaneously controllable inputs 9 all mounting positions 9 - up to 40 °C, max. 8 Input voltage 9 • Rated value (DC) 24 V • for signal °0° 5 V DC at 1 mA • for signal °1° 10 VD Cat 2.5 mA Input current 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. 0.2 ms - at °0° to °1°, max. 12.8 ms for interrupt inputs - - at °0° to °1°, max. 2 A Number of digital outputs 6 Switching capacity of the outputs 4 • on lamp load, max. 2 A • on lamp load, max. 30 W with DC, 200 W with AC Output delay with resistive load 10 ms; max. • "0° to °1°, max. 10 ms; max.	Backup time	480 h; Typical
Number of digital inputs 8; 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 —up to 40 °C, max. 8 Input voltage • Kated value (DC) • 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 signal "1", typ. for signal "1", typ. 1 mA Input delay (for rated value of input voltage) 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 0.2 ms — at "0" to "1", min. 0.2 ms — at "0" to "1", max. 12.8 ms for interrupt inputs — parameterizable — parameterizable Yes Digital outputs 6 Switching capacity of the outputs 6 with resistive load, max. 2 A • on lamp load, max. 30 W with DC, 200 W with AC Output delay with resistive load 10 ms; max. • "0" to "1", max. 10 ms; max.	 Deviation per day, max. 	60 s/month at 25 °C
• of which inputs usable for technological functions6; HSC (High Speed Counting)Source/sink inputYesNumber of simultaneously controllable inputs8Input voltage8	Digital inputs	
functions Yes Source/sink input Yes Number of simultaneously controllable inputs all mounting positions	Number of digital inputs	8; Integrated
Number of simultaneously controllable inputs all mounting positions		6; HSC (High Speed Counting)
all mounting positions 8 up to 40 °C, max. 8 Input voltage 5 • 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 current 1 mA • for signal "1", typ. 1 mA Input delay (for rated value of input voltage) 5 v DC at max for standard inputs 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. 0.2 ms - at "0" to "1", max. 12.8 ms for interrupt inputs - - parameterizable Yes Digital outputs 6 Switching capacity of the outputs 6 on lamp load, max. 2 A • on lamp load, max. 2 A • "0" to "1", max. 10 ms; max. • "1" to "0", max. 10 ms; max.	Source/sink input	Yes
up to 40 °C, max.8Input 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 current• for signal "1", typ.1 mAInput delay (for rated value of input voltage)for standard inputs- parameterizable0.2 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 inputsYesDigital outputs6Switching capacity of the outputs6Switching capacity of the outputs2 A• on lamp load, max.2 A• 0" to "1", max.10 ms; max.• "1" to "0", max.10 ms; max.• "1" to "0", max.10 ms; max.	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 current 1 mA • for signal "1", typ. 1 mA Input delay (for rated value of input voltage) 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 0.2 ms - at "0" to "1", min. 0.2 ms - at "0" to "1", max. 12.8 ms for interrupt inputs - - parameterizable Yes Digital outputs 6 Switching capacity of the outputs 6 Switching capacity of the outputs 0.2 W with DC, 200 W with AC Output delay with resistive load 10 ms; max. • "0" to "1", max. 10 ms; max.	all mounting positions	
• 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 current 1 mA • for signal "1", typ. 1 mA Input delay (for rated value of input voltage) 1 mA for standard inputs 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	— up to 40 °C, max.	8
For signal "0"5 V DC at 1 mA• for signal "1"15 V DC at 2.5 mAInput current1 mA• for signal "1", typ.1 mAInput delay (for rated value of input voltage)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- parameterizable0.2 ms- at "0" to "1", min.0.2 ms- at "0" to "1", max.12.8 msfor interrupt inputs parameterizableYesDigital outputs6Switching capacity of the outputs6Switching capacity of the outputs30 W with DC, 200 W with ACOutput delay with resistive load10 ms; max.• "1" to "0", max.10 ms; max.• "1" to "0", max.10 ms; max.	Input voltage	
istrational "1" 15 V DC at 2.5 mA Input current 1 mA Input delay (for rated value of input voltage) 1 mA for standard inputs 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 Yes Digital outputs 6 Switching capacity of the outputs 6 Switching capacity of the outputs 30 W with DC, 200 W with AC Output delay with resistive load 10 ms; max. • "0" to "1", max. 10 ms; max.	 Rated value (DC) 	24 V
Input current • for signal "1", typ. 1 mA Input delay (for rated value of input voltage) for standard inputs - parameterizable 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 Digital outputs 6 Switching capacity of the outputs • with resistive load, max. 2 A • on lamp load, max. 2 A • on lamp load, max. 10 ms; max. • "1" to "0", max. 10 ms; max.	● for signal "0"	5 V DC at 1 mA
• for signal "1", typ. 1 mA Input delay (for rated value of input voltage) 6 for standard inputs 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 Digital outputs 6 Switching capacity of the outputs 6 switching capacity of the outputs 30 W with DC, 200 W with AC Output delay with resistive load 10 ms; max. • "1" to "0", max. 10 ms; max.	● for signal "1"	15 V DC at 2.5 mA
Input delay (for rated value of input voltage)for standard inputs- parameterizable0.2 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 parameterizableYesDigital outputsNumber of digital outputs6Switching capacity of the outputs2 A• with resistive load, max.2 A• on lamp load, max.30 W with DC, 200 W with ACOutput delay with resistive load10 ms; max.• "1" to "0", max.10 ms; max.• "1" to "0", max.10 ms; max.	Input current	
for standard inputs	● for signal "1", typ.	1 mA
— parameterizable0.2 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 inputsYes— parameterizableYesDigital outputsNumber of digital outputs6Switching capacity of the outputs6• with resistive load, max.2 A• on lamp load, max.30 W with DC, 200 W with ACOutput delay with resistive load10 ms; max.• "0" to "1", max.10 ms; max.• "1" to "0", max.10 ms; max.	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 parameterizableYesDigital outputsNumber of digital outputs6Switching capacity of the outputs6• with resistive load, max.2 A• on lamp load, max.30 W with DC, 200 W with ACOutput delay with resistive load10 ms; max.• "0" to "1", max.10 ms; max.• "1" to "0", max.10 ms; max.	for standard inputs	
at "0" to "1", max.12.8 msfor interrupt inputsYes parameterizableYesDigital outputsNumber of digital outputs6Switching capacity of the outputs6Switching capacity of the outputs2 A• with resistive load, max.2 A• on lamp load, max.30 W with DC, 200 W with ACOutput delay with resistive load10 ms; max.• "0" to "1", max.10 ms; max.• "1" to "0", max.10 ms; max.	— parameterizable	
for interrupt inputs Yes — parameterizable Yes Digital outputs 6 Number of digital outputs 6 Switching capacity of the outputs 2 A • with resistive load, max. 30 W with DC, 200 W with AC Output delay with resistive load 10 ms; max. • "1" to "0", max. 10 ms; max.	— at "0" to "1", min.	0.2 ms
— parameterizableYesDigital outputs6Number of digital outputs6Switching capacity of the outputs2 A• with resistive load, max.2 A• on lamp load, max.30 W with DC, 200 W with ACOutput delay with resistive load10 ms; max.• "0" to "1", max.10 ms; max.• "1" to "0", max.10 ms; max.	— at "0" to "1", max.	12.8 ms
Digital outputs 6 Number of digital outputs 6 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 Output delay with resistive load 10 ms; max. • "0" to "1", max. 10 ms; max. • "1" to "0", max. 10 ms; max.	for interrupt inputs	
Number of digital outputs 6 Switching capacity of the outputs 9 • with resistive load, max. 2 A • on lamp load, max. 30 W with DC, 200 W with AC Output delay with resistive load 10 ms; max. • "0" to "1", max. 10 ms; max. • "1" to "0", max. 10 ms; max.	— parameterizable	Yes
Switching capacity of the outputs • with resistive load, max. 2 A • on lamp load, max. 30 W with DC, 200 W with AC Output delay with resistive load 10 ms; max. • "0" to "1", max. 10 ms; max. • "1" to "0", max. 10 ms; max.	Digital outputs	
• with resistive load, max.2 A• on lamp load, max.30 W with DC, 200 W with ACOutput delay with resistive load10 ms; max.• "0" to "1", max.10 ms; max.• "1" to "0", max.10 ms; max.		6
• on lamp load, max. 30 W with DC, 200 W with AC Output delay with resistive load 10 ms; max. • "0" to "1", max. 10 ms; max. • "1" to "0", max. 10 ms; max.	Switching capacity of the outputs	
Output delay with resistive load • "0" to "1", max. 10 ms; max. 10 ms; max.	• with resistive load, max.	2 A
• "0" to "1", max. 10 ms; max. • "1" to "0", max. 10 ms; max.	• on lamp load, max.	30 W with DC, 200 W with AC
• "1" to "0", max. 10 ms; max.	Output delay with resistive load	
	• "0" to "1", max.	10 ms; max.
Switching frequency	• "1" to "0", max.	10 ms; max.
	Switching frequency	

	1 Hz
• of the pulse outputs, with resistive load, max.	1112
Relay outputs	6
Number of relay outputs	6
Cable length	500
• shielded, max.	500 m
 unshielded, max. 	150 m
Analog inputs	
Number of analog inputs	2
Input ranges	
Voltage	Yes
Input ranges (rated values), voltages	
• 0 to +10 V	Yes
— Input resistance (0 to 10 V)	≥100k ohms
Cable length	
• shielded, max.	100 m; twisted and shielded
Analog outputs	
Number of analog outputs	0
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
 Resolution with overrange (bit including sign), 	10 bit
max.	
 Integration time, parameterizable 	Yes
 Conversion time (per channel) 	625 µs
Encoder	
Connectable encoders	
• 2-wire sensor	Yes
1. Interface	
Interface type	PROFINET
Isolated	Yes
automatic detection of transmission rate	Yes
Autonegotiation	Yes
Autocrossing	Yes
Interface types	
● RJ 45 (Ethernet)	Yes
Number of ports	1
integrated switch	Yes
Protocols	
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
SIMATIC communication	Yes

 Open IE communication 	Yes
Web server	Yes
PROFINET IO Controller	
 Transmission rate, max. 	100 Mbit/s
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	No
— IRT	No
— MRP	No
— MRPD	No
- PROFlenergy	No
— Prioritized startup	Yes
 — Number of IO devices with prioritized startup, max. 	16
— Number of connectable IO Devices, max.	16
 — Number of connectable IO Devices for RT, max. 	16
— of which in line, max.	16
- Activation/deactivation of IO Devices	Yes
 Number of IO Devices that can be simultaneously activated/deactivated, max. 	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	No
— MRPD	No
— PROFlenergy	Yes
— Shared device	Yes
— Number of IO Controllers with shared 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)

• TCP/IP	Yes
• DHCP	No
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Open IE communication	
• TCP/IP	Yes
— Data length, max.	8 kbyte
 ISO-on-TCP (RFC1006) 	Yes
— Data length, max.	8 kbyte
• UDP	Yes
— Data length, max.	1 472 byte
Web server	
• supported	Yes
 User-defined websites 	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)
Test commissioning functions	
Status/control	
Status/control variable	Yes
Variables	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
Forcing	
• Forcing	Yes
Diagnostic buffer	
• present	Yes
Traces	
 Number of configurable Traces 	2
 Memory size per trace, max. 	512 kbyte
Integrated Functions	
Number of counters	4
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 pulse outputs	4
Potential separation	
Potential separation digital inputs	
 Potential separation digital inputs 	500V AC for 1 minute
 between the channels, in groups of 	1
Potential separation digital outputs	
 Potential separation digital outputs 	Relays
 between the channels 	No
 between the channels, in groups of 	1
Permissible potential difference	
between different circuits	500 V DC between 24 V DC and 5 V DC
EMC	
Interference immunity against discharge of static electri	city
 Interference immunity against discharge of static electricity acc. to IEC 61000-4-2 	Yes
— Test voltage at air discharge	8 kV
 Test voltage at contact discharge 	6 kV
Interference immunity to cable-borne interference	
 Interference immunity on supply lines acc. to IEC 61000-4-4 	Yes
 Interference immunity on signal cables acc. to IEC 61000-4-4 	Yes
Interference immunity against voltage surge	
 Interference immunity on supply lines acc. to IEC 61000-4-5 	Yes
Interference immunity against conducted variable distur	bance induced by high-frequency fields
 Interference immunity against high-frequency radiation acc. to IEC 61000-4-6 	Yes
Emission of radio interference acc. to EN 55 011	
 Limit class A, for use in industrial areas 	Yes; Group 1
 Limit class B, for use in residential areas 	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	
 Performance level according to ISO 13849-1 	PLe
• SIL acc. to IEC 61508	SIL 3
Ambient conditions	
Free fall	0.2 m five times, in made to select
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	0.00
• min.	0 °C
• max.	55 °C
 horizontal installation, min. 	0°C
 horizontal installation, max. 	55 °C
• vertical installation, min.	0°C
 vertical installation, max. 	45 °C
Ambient temperature during storage/transportation	
● min.	-40 °C
• max.	70 °C
Air pressure acc. to IEC 60068-2-13	
 Storage/transport, min. 	660 hPa
 Storage/transport, max. 	1 139 hPa
Altitude during operation relating to sea level	
 Installation altitude, min. 	-1 000 m
 Installation altitude, max. 	2 000 m
Relative humidity	
• Operation, max.	95 %; no condensation
Vibrations	
 Vibration resistance during operation acc. to IEC 60068-2-6 	2 g (m/s ²) wall mounting, 1 g (m/s ²) DIN rail
 Operation, tested according to IEC 60068-2-6 	Yes
Shock testing	
• tested according to IEC 60068-2-27	Yes; IEC 68, Part 2-27 half-sine: strength of the shock 15 g (peak value), duration 11 ms
Pollutant concentrations	
 SO2 at RH < 60% without condensation 	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	
 User program protection/password protection 	Yes
Copy protection	Yes
Block protection	Yes
Cycle time monitoring	
● adjustable	Yes
Dimensions	
Width	90 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	385 g
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