

## SIMATIC S7-1200 Basic Controllers

Central processing units  
Standard CPUs

### CPU 1212C

#### Overview



- Controller for intro to S7 with basic expansion options
- Expandable by:
  - 1 signal board (SB), battery board (BB) or communication board (CB)
  - 2 signal modules (SM)
  - Max. 3 communication modules (CM)

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#### Technical specifications

Article number	6ES7212-1BE40-0XB0	6ES7212-1AE40-0XB0	6ES7212-1HE40-0XB0
	CPU 1212C, AC/DC/Relay, 8DI/6DQ/2AI	CPU 1212C, DC/DC/DC, 8DI/6DQ/2AI	CPU 1212C, DC/DC/Relay, 8DI/6DQ/2AI
<b>General information</b>			
Product type designation	CPU 1212C AC/DC/relay	CPU 1212C DC/DC/DC	CPU 1212C DC/DC/relay
<b>Engineering with</b>			
• Programming package	STEP 7 V14 or higher	STEP 7 V14 or higher	STEP 7 V14 or higher
<b>Supply voltage</b>			
Rated value (DC)		Yes	Yes
• 24 V DC			
Rated value (AC)	Yes		
• 120 V AC	Yes		
• 230 V AC	Yes		
<b>Encoder supply</b>			
<b>24 V encoder supply</b>			
• 24 V	20.4 to 28.8V	L+ minus 4 V DC min.	L+ minus 4 V DC min.
<b>Power loss</b>			
Power loss, typ.	11 W	9 W	9 W
<b>Memory</b>			
<b>Work memory</b>			
• integrated	75 kbyte	75 kbyte	75 kbyte
<b>Load memory</b>			
• integrated	2 Mbyte	2 Mbyte	2 Mbyte
• Plug-in (SIMATIC Memory Card), max.	with SIMATIC memory card	with SIMATIC memory card	with SIMATIC memory card
<b>Backup</b>			
• without battery	Yes	Yes	Yes
<b>CPU processing times</b>			
for bit operations, typ.	0.08 µs; / instruction	0.08 µs; / instruction	0.08 µs; / instruction
for word operations, typ.	1.7 µs; / instruction	1.7 µs; / instruction	1.7 µs; / instruction
for floating point arithmetic, typ.	2.3 µs; / instruction	2.3 µs; / instruction	2.3 µs; / instruction
<b>Data areas and their retentivity</b>			
<b>Flag</b>			
• Number, max.	4 kbyte; Size of bit memory address area	4 kbyte; Size of bit memory address area	4 kbyte; Size of bit memory address area
<b>Process image</b>			
• Inputs, adjustable	1 kbyte	1 kbyte	1 kbyte
• Outputs, adjustable	1 kbyte	1 kbyte	1 kbyte

## Technical specifications (continued)

Article number	<b>6ES7212-1BE40-0XB0</b> CPU 1212C, AC/DC/Relay, 8DI/6DQ/2AI	<b>6ES7212-1AE40-0XB0</b> CPU 1212C, DC/DC/DC, 8DI/6DQ/2AI	<b>6ES7212-1HE40-0XB0</b> CPU 1212C, DC/DC/Relay, 8DI/6DQ/2AI
<b>Time of day</b>			
<b>Clock</b>			
• Hardware clock (real-time)	Yes	Yes	Yes
<b>Digital inputs</b>			
Number of digital inputs	8; Integrated	8; Integrated	8; Integrated
• of which inputs usable for technological functions	4; HSC (High Speed Counting)	4; HSC (High Speed Counting)	4; HSC (High Speed Counting)
<b>Digital outputs</b>			
Number of digital outputs	6; Relays	6	6; Relays
• of which high-speed outputs		4; 100 kHz Pulse Train Output	
<b>Analog inputs</b>			
Number of analog inputs	2	2	2
<b>Input ranges</b>			
• Voltage	Yes	Yes	Yes
<b>Analog outputs</b>			
Number of analog outputs	0	0	0
<b>1. Interface</b>			
Interface type	PROFINET	PROFINET	PROFINET
Physics	Ethernet	Ethernet	Ethernet
<b>Protocols</b>			
• PROFINET IO Controller	Yes	Yes	Yes
• PROFINET IO Device	Yes	Yes	Yes
• SIMATIC communication	Yes	Yes	Yes
• Open IE communication	Yes	Yes	Yes
• Web server	Yes	Yes	Yes
• Media redundancy	No	No	No
<b>Protocols</b>			
<b>Open IE communication</b>			
• TCP/IP	Yes	Yes	Yes
• ISO-on-TCP (RFC1006)	Yes	Yes	Yes
• UDP	Yes	Yes	Yes
<b>Web server</b>			
• supported	Yes	Yes	Yes
<b>Communication functions</b>			
<b>S7 communication</b>			
• supported	Yes	Yes	Yes
<b>Number of connections</b>			
• overall	16; dynamically	16; dynamically	16; dynamically
<b>Integrated Functions</b>			
Number of counters	4	4	4
Counting frequency (counter) max.	100 kHz	100 kHz	100 kHz
Frequency measurement	Yes	Yes	Yes
controlled positioning	Yes	Yes	Yes
Number of position-controlled positioning axes, max.	8	8	8
Number of positioning axes via pulse-direction interface	Up to 4 with SB 1222	4; With integrated outputs	Up to 4 with SB 1222
PID controller	Yes	Yes	Yes
Number of alarm inputs	4	4	4
Number of pulse outputs	4	4	4
Limit frequency (pulse)		100 kHz	

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#### Technical specifications (continued)

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<b>Ambient conditions</b>			
<b>Ambient temperature during operation</b>			
• min.	-20 °C	-20 °C	-20 °C
• max.	60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical	60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical	60 °C; Number of simultaneously activated inputs or outputs 4 or 3 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 or 6 at 55 °C horizontal or 45 °C vertical
<b>Pollutant concentrations</b>			
• SO <sub>2</sub> at RH < 60% without condensation	SO <sub>2</sub> : < 0.5 ppm; H <sub>2</sub> S: < 0.1 ppm; RH < 60% condensation-free	SO <sub>2</sub> : < 0.5 ppm; H <sub>2</sub> S: < 0.1 ppm; RH < 60% condensation-free	SO <sub>2</sub> : < 0.5 ppm; H <sub>2</sub> S: < 0.1 ppm; RH < 60% condensation-free
<b>Configuration</b>			
<b>Programming</b>			
<b>Programming language</b>			
- LAD	Yes	Yes	Yes
- FBD	Yes	Yes	Yes
- SCL	Yes	Yes	Yes
<b>Dimensions</b>			
Width	90 mm	90 mm	90 mm
Height	100 mm	100 mm	100 mm
Depth	75 mm	75 mm	75 mm
<b>Weights</b>			
Weight, approx.	425 g	370 g	385 g

#### Ordering data

#### Article No.

#### Article No.

##### CPU 1212C

**Compact CPU, AC/DC/relay;**  
Integrated program/data memory 75 KB, load memory 2 MB;  
Wide-range power supply 85 ... 264 V AC;  
Boolean execution times 0.1 μs per operation;  
8 digital inputs,  
6 digital outputs (relays),  
2 analog inputs;  
Expandable by up to 3 communication modules, 2 signal modules and 1 signal board/communication board;  
Digital inputs can be used as HSC at 100 kHz

**6ES7212-1BE40-0XB0**

**Compact CPU, DC/DC/DC;**  
Integrated program/data memory 75 KB, load memory 2 MB;  
Power supply 24 V DC;  
Boolean execution times 0.1 μs per operation;  
8 digital inputs,  
6 digital outputs,  
2 analog inputs;  
Expandable by up to 3 communication modules, 2 signal modules, and 1 signal board/communication board;  
Digital inputs can be used as HSC at 100 kHz,  
24 V DC digital outputs can be used as pulse outputs (PTO) or pulse-width modulated outputs (PWM) at 100 kHz

**6ES7212-1AE40-0XB0**

**Compact CPU, DC/DC/relay;**  
Integrated program/data memory 75 KB, load memory 2 MB;  
power supply 24 V DC;  
Boolean execution times 0.1 μs per operation;  
8 digital inputs,  
6 digital outputs (relays),  
2 analog inputs;  
expandable by up to 3 communication modules, 2 signal modules, and 1 signal board/communication board;  
digital inputs can be used as HSC at 100 kHz

**6ES7212-1HE40-0XB0**

##### SB 1221 signal board

4 inputs, 5 V DC, 200 kHz

**6ES7221-3AD30-0XB0**

4 inputs, 24 V DC, 200 kHz

**6ES7221-3BD30-0XB0**

##### SB 1222 signal board

4 outputs, 5 V DC, 0.1 A, 200 kHz

**6ES7222-1AD30-0XB0**

4 outputs, 24 V DC, 0.1 A, 200 kHz

**6ES7222-1BD30-0XB0**

##### SB 1223 signal board

2 inputs, 24 V DC,  
IEC type 1 current sinking;  
2 x 24 V DC transistor outputs,  
0.5 A, 5 W;  
can be used as HSC at  
up to 30 kHz

**6ES7223-0BD30-0XB0**

2 inputs, 5 V DC, 200 kHz  
2 outputs 5 V DC, 0.1 A, 200 kHz

**6ES7223-3AD30-0XB0**

2 inputs, 24 V DC, 200 kHz  
2 outputs 24 V DC, 0.1 A, 200 kHz

**6ES7223-3BD30-0XB0**

##### SB 1231 signal board

1 analog input, ±10 V with 12 bits or  
0 ... 20 mA with 11 bits

**6ES7231-4HA30-0XB0**

Ordering data	Article No.	Article No.
<b>SB 1231 thermocouple signal board</b> 1 input +/- 80 mV, resolution 15 bits + sign, thermocouples type J, K	6ES7231-5QA30-0XB0	
<b>SB 1231 RTD signal board</b> 1 input for resistance temperature sensors Pt 100, Pt 200, Pt 500, Pt 1000, resolution 15 bits + sign	6ES7231-5PA30-0XB0	
<b>SB 1232 signal board</b> 1 analog output, ±10 V with 12 bits or 0 to 20 mA with 11 bits	6ES7232-4HA30-0XB0	
<b>CB 1241 RS 485 communication board</b> For point-to-point connection, with 1 RS 485 interface	6ES7241-1CH30-1XB0	
<b>BB1297 battery board</b> For long-term backup of real-time clock, can be plugged into the signal board slot; battery (CR1025) is not included in scope of supply	6ES7297-0AX30-0XA0	
<b>Digital input simulator SIM 1274 simulator module (optional)</b> 8 input switches, for CPU 1211C / CPU 1212C	6ES7274-1XF30-0XA0	
<b>Analog input simulator SIM 1274 simulator module (optional)</b> 2 potentiometers	6ES7274-1XA30-0XA0	
<b>SIMATIC Memory Card (optional)</b> 4 MB 12 MB 24 MB 256 MB 2 GB 32 GB	6ES7954-8LC03-0AA0 6ES7954-8LE03-0AA0 6ES7954-8LF03-0AA0 6ES7954-8LL03-0AA0 6ES7954-8LP02-0AA0 6ES7954-8LT03-0AA0	
<b>Extension cable for two-tier configuration</b> For connecting digital/analog signal modules; length 2 m	6ES7290-6AA30-0XA0	
<b>Starter box CPU 1212C AC/DC/relay</b> Complete offer SIMATIC S7-1200, starter box, comprising: CPU 1212C AC/DC/relay, simulator, STEP 7 BASIC CD, manual CD, info material, in Systainer	6ES7212-1BD34-4YB0	
<b>Terminal block (spare part)</b> For CPU 1212C AC/DC/relay • For DI, with 14 screws, tin-coated, coded; 4 units • For DQ, with 8 screws, tin-coated, coded; 4 units • For AI, with 3 screws, gold-plated; 4 units	6ES7292-1AP40-0XA0 6ES7292-1AH40-0XA0 6ES7292-1BC30-0XA0	
<b>Terminal block (spare part) (cont.)</b> For CPU 1212C DC/DC/DC • For DI, with 14 screws, tin-coated; 4 units • For DQ, with 8 screws, tin-coated; 4 units • For AI, with 3 screws, gold-plated; 4 units For CPU 1212C DC/DC/relay • For DI, with 14 screws, tin-coated; 4 units • For DQ, with 8 screws, tin-coated, coded; 4 units • For AI, with 3 screws, gold-plated; 4 units	6ES7292-1AP30-0XA0 6ES7292-1AH30-0XA0 6ES7292-1BC30-0XA0 6ES7292-1AP30-0XA0 6ES7292-1AH40-0XA0 6ES7292-1BC30-0XA0	
<b>RJ45 cable grip</b> 4 units per pack Single port	6ES7290-3AA30-0XA0	
<b>Front flap set (spare part)</b> For CPU 1211C/1212C	6ES7291-1AA30-0XA0	
<b>STEP 7 Professional / Basic V15.1</b> Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Home Premium SP1 (64-bit) Windows 7 Professional SP1 (64-bit) Windows 7 Enterprise SP1 (64-bit) Windows 7 Ultimate SP1 (64-bit) Windows 10 Home Version 1709, 1803 Windows 10 Professional Version 1709, 1803 Windows 10 Enterprise Version 1709, 1803 Windows 10 Enterprise 2016 LTSC Windows 10 IoT Enterprise 2015 LTSC Windows 10 IoT Enterprise 2016 LTSC Windows Server 2012 R2 StdE (full installation) Windows Server 2016 Standard (full installation) Type of delivery: en, de, fr, it, es, zh	6ES7822-1AA05-0YA5 6ES7822-1AE05-0YA5 6ES7822-0AA05-0YA5 6ES7822-0AE05-0YA5	
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