

SIMATIC S7-1200 Basic Controllers

Central processing units

Standard CPUs

CPU 1211C

Overview

3



- Controller for intro to S7
- Expandable by:
 - 1 signal board (SB), battery board (BB) or communication board (CB)
 - Max. 3 communications modules (CM)

Ordering data

Article No.

Article No.

CPU 1211C

Compact CPU, AC/DC/relay;

Integrated program/data memory 50 KB, load memory 1 MB;
Wide-range power supply 85 ... 264 V AC;
Boolean execution times 0.1 μs per operation;
6 digital inputs,
4 digital outputs (relays),
2 analog inputs;
Expandable by up to 3 communications modules and 1 signal board/communication board;
Digital inputs can be used as HSC at 100 kHz

6ES7211-1BE40-0XB0

Compact CPU, DC/DC/DC;

Integrated program/data memory 50 KB, load memory 1 MB;
Supply voltage 24 V DC;
Boolean execution times 0.1 μs per operation;
6 digital inputs,
4 digital outputs,
2 analog inputs;
Expandable by up to 3 communications 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

6ES7211-1AE40-0XB0

Compact CPU, DC/DC/relay;

Integrated program/data memory 50 KB, load memory 1 MB;
Supply voltage 24 V DC;
Boolean execution times 0.1 μs per operation;
6 digital inputs,
4 digital outputs (relays),
2 analog inputs;
Expandable by up to 3 communications modules and 1 signal board/communication board;
Digital inputs can be used as HSC at 100 kHz

6ES7211-1HE40-0XB0

SB 1221 signal board

4 inputs, 5 V DC, 200 kHz
4 inputs, 24 V DC, 200 kHz

6ES7221-3AD30-0XB0

6ES7221-3BD30-0XB0

SB 1222 signal board

4 outputs, 5 V DC, 0.1 A, 200 kHz
4 outputs, 24 V DC, 0.1 A, 200 kHz

6ES7222-1AD30-0XB0

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

SB 1231 thermocouple signal board

1 input +/- 80 mV, resolution
15 bits + sign,
thermocouples type J, K

6ES7231-5QA30-0XB0

SB 1231 RTD signal board

1 input for resistance temperature sensors Pt 100, Pt 200, Pt 500, Pt 1000, resolution 15 bits + sign

6ES7231-5PA30-0XB0

SB 1232 signal board

1 analog output, ±10 V with 12 bits
or 0 to 20 mA with 11 bits

6ES7232-4HA30-0XB0

CB 1241 RS485 Communication Board

For point-to-point connection,
with 1 RS485 interface

6ES7241-1CH30-1XB0

| Ordering data | Article No. | Article No. |
|--|--|--|
| BB1297 battery board 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 | |
| Digital input simulator Simulator Module SIM 1274 (optional) 8 input switches, for CPU 1211C / CPU 1212C | 6ES7274-1XF30-0XA0 | |
| Analog input simulator Simulator Module SIM 1274 (optional) 2 potentiometers | 6ES7274-1XA30-0XA0 | |
| SIMATIC Memory Card (optional) 4 MB | 6ES7954-8LC03-0AA0 | |
| 12 MB | 6ES7954-8LE03-0AA0 | |
| 24 MB | 6ES7954-8LF03-0AA0 | |
| 256 MB | 6ES7954-8LL03-0AA0 | |
| 2 GB | 6ES7954-8LP03-0AA0 | |
| 32 GB | 6ES7954-8LT03-0AA0 | |
| Terminal block (spare part) For CPU 1211C AC/DC/relay • For DI, 14-pin, tin-coated, coded; 4 units - Screw-type system - Push-in system • For DO, 8-pin, tin-coated, coded; 4 units - Screw-type system - Push-in system • For AI, 3-pin, gold-plated; 4 units - Screw-type system - Push-in system For CPU 1211C DC/DC/DC • For DI, 14-pin, tin-coated; 4 units - Screw-type system - Push-in system • For DO, 8-pin, tin-coated; 4 units - Screw-type system - Push-in system • For AI, 3-pin, gold-plated; 4 units - Screw-type system - Push-in system For CPU 1211C DC/DC/relay • For DI, 14-pin, tin-coated; 4 units - Screw-type system - Push-in system • For DO, 8-pin, tin-coated, coded; 4 units - Screw-type system - Push-in system • For AI, 3-pin, gold-plated; 4 units - Screw-type system - Push-in system | 6ES7292-1AP40-0XA0 6ES7292-2AP40-0XA0 6ES7292-1AH40-0XA0 6ES7292-2AH40-0XA0 6ES7292-1BC30-0XA0 6ES7292-2BC30-0XA0 6ES7292-1AP30-0XA0 6ES7292-2AP30-0XA0 6ES7292-1AH30-0XA0 6ES7292-2AH30-0XA0 6ES7292-1BC30-0XA0 6ES7292-2BC30-0XA0 6ES7292-1AP30-0XA0 6ES7292-2AP30-0XA0 6ES7292-1AH40-0XA0 6ES7292-2AH40-0XA0 6ES7292-1BC30-0XA0 6ES7292-2BC30-0XA0 | RJ45 cable grip 4 units per pack Single port Front flap set (spare part) For CPU 1211C/1212C STEP 7 Professional / Basic V17 Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) • Windows 10 Professional Version 1909, 2004, 20H2 • Windows 10 Enterprise Version 1909, 2004, 20H2 • Windows 10 IoT Enterprise 2016 LTSB • Windows 10 IoT Enterprise 2019 LTSC Windows Server (64-bit) • Windows Server 2016 Standard (full installation) • Windows Server 2019 Standard (full installation) Type of delivery: 9 languages: de, en, zh included, fr, sp, it, ru, jp, kr as download STEP 7 Professional V17, floating license STEP 7 Professional V17, floating license, software download including license key ¹⁾ Email address required for delivery STEP 7 Basic V17, floating license STEP 7 Basic V17, floating license, software download including license key ¹⁾ Email address required for delivery |
| | | 6ES7290-3AA30-0XA0 |
| | | 6ES7291-1AA30-0XA0 |
| | | 6ES7822-1AA07-0YA5 |
| | | 6ES7822-1AE07-0YA5 |
| | | 6ES7822-0AA07-0YA5 |
| | | 6ES7822-0AE07-0YA5 |

¹⁾ For up-to-date information and download availability, see: <http://www.siemens.com/tia-online-software-delivery>

SIMATIC S7-1200 Basic Controllers

Central processing units
Standard CPUs

CPU 1211C

Technical specifications

| Article number | 6ES7211-1HE40-0XB0 CPU 1211C, DC/DC/Relay, 6DI/4DO/2AI | 6ES7211-1BE40-0XB0 CPU 1211C, AC/DC/Relay, 6DI/4DO/2AI | 6ES7211-1AE40-0XB0 CPU 1211C, DC/DC/DC, 6DI/4DO/2AI |
|---|---|---|---|
| General information | | | |
| Product type designation | CPU 1211C DC/DC/relay | CPU 1211C AC/DC/relay | CPU 1211C DC/DC/DC |
| Engineering with | | | |
| • Programming package | STEP 7 V17 or higher | STEP 7 V17 or higher | STEP 7 V17 or higher |
| Supply voltage | | | |
| Rated value (DC) | Yes | | Yes |
| • 24 V DC | | | |
| Rated value (AC) | | Yes | |
| • 120 V AC | | Yes | |
| • 230 V AC | | | |
| Encoder supply | | | |
| 24 V encoder supply | | | |
| • 24 V | L+ minus 4 V DC min. | 20.4 to 28.8V | L+ minus 4 V DC min. |
| Memory | | | |
| Work memory | | | |
| • integrated | 50 kbyte | 50 kbyte | 50 kbyte |
| Load memory | | | |
| • integrated | 1 Mbyte with SIMATIC memory card | 1 Mbyte with SIMATIC memory card | 1 Mbyte with SIMATIC memory card |
| • Plug-in (SIMATIC Memory Card), max. | | | |
| Backup | | | |
| • without battery | Yes | Yes | Yes |
| CPU processing times | | | |
| 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 |
| Data areas and their retentivity | | | |
| Flag | | | |
| • Size, 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 |
| Address area | | | |
| Process image | | | |
| • Inputs, adjustable | 1 kbyte | 1 kbyte | 1 kbyte |
| • Outputs, adjustable | 1 kbyte | 1 kbyte | 1 kbyte |
| Time of day | | | |
| Clock | | | |
| • Hardware clock (real-time) | Yes | Yes | Yes |
| Digital inputs | | | |
| Number of digital inputs | 6; Integrated | 6; Integrated | 6; Integrated |
| • of which inputs usable for technological functions | 6; HSC (High Speed Counting) | 6; HSC (High Speed Counting) | 6; HSC (High Speed Counting) |
| Digital outputs | | | |
| Number of digital outputs | 4; Relays | 4; Relays | 4 |
| • of which high-speed outputs | | | 4; 100 kHz Pulse Train Output |
| Analog inputs | | | |
| Number of analog inputs | 2 | 2 | 2 |
| Input ranges | | | |
| • Voltage | Yes | Yes | Yes |
| Analog outputs | | | |
| Number of analog outputs | 0 | 0 | 0 |
| 1. Interface | | | |
| Interface type | PROFINET | PROFINET | PROFINET |
| Protocols | | | |
| • PROFINET IO Controller | Yes | Yes | Yes |
| • PROFINET IO Device | Yes | Yes | Yes |
| • SIMATIC communication | Yes | Yes | Yes |
| • Open IE communication | Yes; Optionally also encrypted | Yes; Optionally also encrypted | Yes; Optionally also encrypted |
| • Web server | Yes | Yes | Yes |
| • Media redundancy | No | No | No |

Technical specifications

| Article number | 6ES7211-1HE40-0XB0 | 6ES7211-1BE40-0XB0 | 6ES7211-1AE40-0XB0 |
|--|--|--|--|
| | CPU 1211C, DC/DC/Relay, 6DI/4DO/2AI | CPU 1211C, AC/DC/Relay, 6DI/4DO/2AI | CPU 1211C, DC/DC/DC, 6DI/4DO/2AI |
| Protocols | | | |
| Open IE communication | | | |
| • TCP/IP | Yes | Yes | Yes |
| • ISO-on-TCP (RFC1006) | Yes | Yes | Yes |
| • UDP | Yes | Yes | Yes |
| Web server | | | |
| • supported | Yes | Yes | Yes |
| OPC UA | | | |
| • OPC UA Server | Yes; data access (read, write, subscribe), method call, runtime license required | Yes; data access (read, write, subscribe), method call, runtime license required | Yes; Data access (read, write, subscribe), runtime license required |
| communication functions / header | | | |
| S7 communication | | | |
| • supported | Yes | Yes | Yes |
| Number of connections | | | |
| • overall | PG Connections: 4 reserved / 4 max; HMI Connections: 12 reserved / 18 max; S7 Connections: 8 reserved / 14 max; Open User Connections: 8 reserved / 14 max; Web Connections: 2 reserved / 30 max; OPC UA Connections: 0 reserved / 10 max; Total Connections: 34 reserved / 64 max | PG Connections: 4 reserved / 4 max; HMI Connections: 12 reserved / 18 max; S7 Connections: 8 reserved / 14 max; Open User Connections: 8 reserved / 14 max; Web Connections: 2 reserved / 30 max; OPC UA Connections: 0 reserved / 10 max; Total Connections: 34 reserved / 64 max | PG Connections: 4 reserved / 4 max; HMI Connections: 12 reserved / 18 max; S7 Connections: 8 reserved / 14 max; Open User Connections: 8 reserved / 14 max; Web Connections: 2 reserved / 30 max; OPC UA Connections: 0 reserved / 10 max; Total Connections: 34 reserved / 64 max |
| Integrated Functions | | | |
| Counter | | | |
| • Number of counters | 6 | 6 | 6 |
| • Counting frequency, 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 | Up to 4 with SB 1222 | 4; With integrated outputs |
| PID controller | Yes | Yes | Yes |
| Number of alarm inputs | 4 | 4 | 4 |
| Number of pulse outputs | | | 4 |
| Limit frequency (pulse) | | | 100 kHz |
| Ambient conditions | | | |
| Ambient temperature during operation | | | |
| • min. | -20 °C | -20 °C | -20 °C |
| • max. | 60 °C | 60 °C | 60 °C |
| Pollutant concentrations | | | |
| • SO ₂ at RH < 60% without condensation | SO ₂ : < 0.5 ppm; H ₂ S: < 0.1 ppm; RH < 60% condensation-free | SO ₂ : < 0.5 ppm; H ₂ S: < 0.1 ppm; RH < 60% condensation-free | SO ₂ : < 0.5 ppm; H ₂ S: < 0.1 ppm; RH < 60% condensation-free |
| configuration / header | | | |
| configuration / programming / header | | | |
| Programming language | | | |
| - LAD | Yes | Yes | Yes |
| - FBD | Yes | Yes | Yes |
| - SCL | Yes | Yes | Yes |
| Dimensions | | | |
| Width | 90 mm | 90 mm | 90 mm |
| Height | 100 mm | 100 mm | 100 mm |
| Depth | 75 mm | 75 mm | 75 mm |
| Weights | | | |
| Weight, approx. | 380 g | 420 g | 370 g |

SIMATIC S7-1200 Basic Controllers

Central processing units
Standard CPUs

CPU 1212C

Overview

3



- 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 communications modules (CM)

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 communications 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;
Supply voltage 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 communications 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;
Supply voltage 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 communications 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
4 inputs, 24 V DC, 200 kHz

6ES7221-3AD30-0XB0

6ES7221-3BD30-0XB0

SB 1222 signal board

4 outputs, 5 V DC, 0.1 A, 200 kHz
4 outputs, 24 V DC, 0.1 A, 200 kHz

6ES7222-1AD30-0XB0

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

SB 1231 thermocouple signal board

1 input +/- 80 mV,
resolution 15 bits + sign,
thermocouples type J, K

6ES7231-5QA30-0XB0

SB 1231 RTD signal board

1 input for resistance temperature
sensors Pt 100, Pt 200, Pt 500,
Pt 1000, resolution 15 bits + sign

6ES7231-5PA30-0XB0

SB 1232 signal board

1 analog output, ±10 V with 12 bits
or 0 to 20 mA with 11 bits

6ES7232-4HA30-0XB0

CB 1241 RS485 Communication Board

For point-to-point connection,
with 1 RS485 interface

6ES7241-1CH30-1XB0

BB1297 battery board

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

| Ordering data | Article No. | Article No. |
|---|--|---|
| Digital input simulator Simulator Module SIM 1274 (optional) 8 input switches, for CPU 1211C / CPU 1212C | 6ES7274-1XF30-0XA0 | |
| Analog input simulator Simulator Module SIM 1274 (optional) 2 potentiometers | 6ES7274-1XA30-0XA0 | |
| SIMATIC Memory Card (optional) 4 MB 12 MB 24 MB 256 MB 2 GB 32 GB | 6ES7954-8LC03-0AA0 6ES7954-8LE03-0AA0 6ES7954-8LF03-0AA0 6ES7954-8LL03-0AA0 6ES7954-8LP03-0AA0 6ES7954-8LT03-0AA0 | |
| Extension cable for two-tier configuration For connecting digital/analog signal modules; length 2 m | 6ES7290-6AA30-0XA0 | |
| Starter Kit CPU 1212C AC/DC/relay Complete offer SIMATIC S7-1200, starter box, comprising: CPU 1212C AC/DC/relay, simulator, STEP 7 BASIC, manual CD, SIMATIC OPC UA S7-1200 Basic Runtime license, info material, in Systainer | 6ES7212-1BE34-4YB0 | |
| SIMATIC S7-1200 + KP300 Basic Starter Kit Consisting of: CPU 1212C AC/DC/relay, HMI KP300 Basic mono PN, input simulator, STEP 7 Basic, manual CD, SIMATIC OPC UA S7-1200 Basic Runtime license, Systainer | 6AV6651-7HA02-3AA4 | |
| SIMATIC S7-1200 + KTP400 Basic Starter Kit Consisting of: CPU 1212C AC/DC/relay, HMI KTP400 Basic, input simulator, STEP 7 Basic, manual CD, SIMATIC OPC UA S7-1200 Basic Runtime license, Systainer | 6AV6651-7KA02-3AA4 | |
| SIMATIC S7-1200 + KTP700 Basic Starter Kit Consisting of: CPU 1212C AC/DC/relay, HMI KTP700 Basic, input simulator, STEP 7 Basic, manual CD, SIMATIC OPC UA S7-1200 Basic Runtime license, Systainer | 6AV6651-7DA02-3AA4 | |
| Terminal block (spare part) For CPU 1212C AC/DC/relay <ul style="list-style-type: none"> For DI, 14-pin, tin-coated, coded; 4 units <ul style="list-style-type: none"> Screw-type system Push-in system For DO, 8-pin, tin-coated, coded; 4 units <ul style="list-style-type: none"> Screw-type system Push-in system | 6ES7292-1AP40-0XA0 6ES7292-2AP40-0XA0 6ES7292-1AH40-0XA0 6ES7292-2AH40-0XA0 | Terminal block (spare part) (cont.) <ul style="list-style-type: none"> For AI, 3-pin, gold-plated; 4 units <ul style="list-style-type: none"> Screw-type system Push-in system For CPU 1212C DC/DC/DC <ul style="list-style-type: none"> For DI, 14-pin, tin-coated; 4 units <ul style="list-style-type: none"> Screw-type system Push-in system For DO, 8-pin, tin-coated; 4 units <ul style="list-style-type: none"> Screw-type system Push-in system For CPU 1212C DC/DC/relay <ul style="list-style-type: none"> For DI, 14-pin, tin-coated; 4 units <ul style="list-style-type: none"> Screw-type system Push-in system For DO, 8-pin, tin-coated, coded; 4 units <ul style="list-style-type: none"> Screw-type system Push-in system For AI, 3-pin, gold-plated; 4 units <ul style="list-style-type: none"> Screw-type system Push-in system |
| | | 6ES7292-1BC30-0XA0 6ES7292-2BC30-0XA0 6ES7292-1AP30-0XA0 6ES7292-2AP30-0XA0 6ES7292-1AH30-0XA0 6ES7292-2AH30-0XA0 6ES7292-1BC30-0XA0 6ES7292-2BC30-0XA0 6ES7292-1AP30-0XA0 6ES7292-2AP30-0XA0 6ES7292-1AH40-0XA0 6ES7292-2AH40-0XA0 6ES7292-1BC30-0XA0 6ES7292-2BC30-0XA0 |
| | | RJ45 cable grip 4 units per pack Single port |
| | | 6ES7290-3AA30-0XA0 |
| | | Front flap set (spare part) For CPU 1211C/1212C |
| | | 6ES7291-1AA30-0XA0 |
| | | STEP 7 Professional / Basic 17 Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) <ul style="list-style-type: none"> Windows 10 Professional Version 1909, 2004, 20H2 Windows 10 Enterprise Version 1909, 2004, 20H2 Windows 10 IoT Enterprise 2016 LTSC Windows 10 IoT Enterprise 2019 LTSC Windows Server (64-bit) <ul style="list-style-type: none"> Windows Server 2016 Standard (full installation) Windows Server 2019 Standard (full installation) Type of delivery: 9 languages: de, en, zh included, fr, sp, it, ru, jp, kr as download STEP 7 Professional V17, floating license STEP 7 Professional V17, floating license, software download including license key ¹⁾ Email address required for delivery STEP 7 Basic V17, floating license STEP 7 Basic V17, floating license, software download including license key ¹⁾ Email address required for delivery |
| | | 6ES7822-1AA07-0YA5 6ES7822-1AE07-0YA5 6ES7822-0AA07-0YA5 6ES7822-0AE07-0YA5 |

¹⁾ For up-to-date information and download availability, see:
<http://www.siemens.com/tia-online-software-delivery>

SIMATIC S7-1200 Basic Controllers

Central processing units
Standard CPUs

CPU 1212C

Technical specifications

| Article number | 6ES7212-1AE40-0XB0 CPU 1212C, DC/DC/DC, 8DI/6DO/2AI | 6ES7212-1BE40-0XB0 CPU 1212C, AC/DC/Relay, 8DI/6DO/2AI | 6ES7212-1HE40-0XB0 CPU 1212C, DC/DC/Relay, 8DI/6DO/2AI |
|--|---|--|--|
| General information | | | |
| Product type designation | CPU 1212C DC/DC/DC | CPU 1212C AC/DC/relay | CPU 1212C DC/DC/relay |
| Engineering with | | | |
| • Programming package | STEP 7 V17 or higher | STEP 7 V17 or higher | STEP 7 V17 or higher |
| Supply voltage | | | |
| Rated value (DC) | Yes | | Yes |
| • 24 V DC | | | |
| Rated value (AC) | | Yes | |
| • 120 V AC | | Yes | |
| • 230 V AC | | | |
| Encoder supply | | | |
| 24 V encoder supply | | | |
| • 24 V | L+ minus 4 V DC min. | 20.4 to 28.8V | L+ minus 4 V DC min. |
| Memory | | | |
| Work memory | | | |
| • integrated | 75 kbyte | 75 kbyte | 75 kbyte |
| Load memory | | | |
| • 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 |
| Backup | | | |
| • without battery | Yes | Yes | Yes |
| CPU processing times | | | |
| 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 |
| Data areas and their retentivity | | | |
| Flag | | | |
| • Size, 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 |
| Address area | | | |
| Process image | | | |
| • Inputs, adjustable | 1 kbyte | 1 kbyte | 1 kbyte |
| • Outputs, adjustable | 1 kbyte | 1 kbyte | 1 kbyte |
| Time of day | | | |
| Clock | | | |
| • Hardware clock (real-time) | Yes | Yes | Yes |
| Digital inputs | | | |
| Number of digital inputs | 8; Integrated | 8; Integrated | 8; Integrated |
| • of which inputs usable for technological functions | 6; HSC (High Speed Counting) | 6; HSC (High Speed Counting) | 6; HSC (High Speed Counting) |
| Digital outputs | | | |
| Number of digital outputs | 6 | 6; Relays | 6; Relays |
| • of which high-speed outputs | 4; 100 kHz Pulse Train Output | | |
| Analog inputs | | | |
| Number of analog inputs | 2 | 2 | 2 |
| Input ranges | | | |
| • Voltage | Yes | Yes | Yes |
| Analog outputs | | | |
| Number of analog outputs | 0 | 0 | 0 |
| 1. Interface | | | |
| Interface type | PROFINET | PROFINET | PROFINET |
| Protocols | | | |
| • PROFINET IO Controller | Yes | Yes | Yes |
| • PROFINET IO Device | Yes | Yes | Yes |
| • SIMATIC communication | Yes | Yes | Yes |
| • Open IE communication | Yes; Optionally also encrypted | Yes; Optionally also encrypted | Yes; Optionally also encrypted |
| • Web server | Yes | Yes | Yes |
| • Media redundancy | No | No | No |

Technical specifications

| Article number | 6ES7212-1AE40-0XB0 CPU 1212C, DC/DC/DC, 8DI/6DO/2AI | 6ES7212-1BE40-0XB0 CPU 1212C, AC/DC/Relay, 8DI/6DO/2AI | 6ES7212-1HE40-0XB0 CPU 1212C, DC/DC/Relay, 8DI/6DO/2AI |
|---|---|---|---|
| Protocols | | | |
| Open IE communication | | | |
| • TCP/IP | Yes | Yes | Yes |
| • ISO-on-TCP (RFC1006) | Yes | Yes | Yes |
| • UDP | Yes | Yes | Yes |
| Web server | | | |
| • supported | Yes | Yes | Yes |
| OPC UA | | | |
| • OPC UA Server | Yes; data access (read, write, subscribe), method call, runtime license required | Yes; data access (read, write, subscribe), method call, runtime license required | Yes; data access (read, write, subscribe), method call, runtime license required |
| communication functions / header | | | |
| S7 communication | | | |
| • supported | Yes | Yes | Yes |
| Number of connections | | | |
| • overall | PG Connections: 4 reserved / 4 max; HMI Connections: 12 reserved / 18 max; S7 Connections: 8 reserved / 14 max; Open User Connections: 8 reserved / 14 max; Web Connections: 2 reserved / 30 max; OPC UA Connections: 0 reserved / 10 max; Total Connections: 34 reserved / 64 max | PG Connections: 4 reserved / 4 max; HMI Connections: 12 reserved / 18 max; S7 Connections: 8 reserved / 14 max; Open User Connections: 8 reserved / 14 max; Web Connections: 2 reserved / 30 max; OPC UA Connections: 0 reserved / 10 max; Total Connections: 34 reserved / 64 max | PG Connections: 4 reserved / 4 max; HMI Connections: 12 reserved / 18 max; S7 Connections: 8 reserved / 14 max; Open User Connections: 8 reserved / 14 max; Web Connections: 2 reserved / 30 max; OPC UA Connections: 0 reserved / 10 max; Total Connections: 34 reserved / 64 max |
| Integrated Functions | | | |
| Counter | | | |
| • Number of counters | 6 | 6 | 6 |
| • Counting frequency, 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 | 4; With integrated outputs | Up to 4 with SB 1222 | Up to 4 with SB 1222 |
| PID controller | Yes | Yes | Yes |
| Number of alarm inputs | 4 | 4 | 4 |
| Number of pulse outputs | 4 | | |
| Limit frequency (pulse) | 100 kHz | | |
| Ambient conditions | | | |
| Ambient temperature during operation | | | |
| • 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 |
| Pollutant concentrations | | | |
| • SO ₂ at RH < 60% without condensation | SO ₂ : < 0.5 ppm; H ₂ S: < 0.1 ppm; RH < 60% condensation-free | SO ₂ : < 0.5 ppm; H ₂ S: < 0.1 ppm; RH < 60% condensation-free | SO ₂ : < 0.5 ppm; H ₂ S: < 0.1 ppm; RH < 60% condensation-free |
| configuration / header | | | |
| configuration / programming / header | | | |
| Programming language | | | |
| - LAD | Yes | Yes | Yes |
| - FBD | Yes | Yes | Yes |
| - SCL | Yes | Yes | Yes |
| Dimensions | | | |
| Width | 90 mm | 90 mm | 90 mm |
| Height | 100 mm | 100 mm | 100 mm |
| Depth | 75 mm | 75 mm | 75 mm |
| Weights | | | |
| Weight, approx. | 370 g | 425 g | 385 g |

SIMATIC S7-1200 Basic Controllers

Central processing units
Standard CPUs

CPU 1214C

Overview

3



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

Ordering data

Article No.

Article No.

CPU 1214C

Compact CPU, AC/DC/relay;

Integrated program/data memory 100 KB, load memory 2 MB;
Wide-range power supply 85 ... 264 V AC;
Boolean execution times 0.1 µs per operation;
14 digital inputs, 10 digital outputs (relays), 2 analog inputs;
Expandable by up to 3 communications modules, 8 signal modules and 1 signal board/communication board;
Digital inputs can be used as HSC at 100 kHz

6ES7214-1BG40-0XB0

Compact CPU, DC/DC/DC;

Integrated program/data memory 100 KB, load memory 2 MB;
Supply voltage 24 V DC;
Boolean execution times 0.1 µs per operation;
14 digital inputs, 10 digital outputs, 2 analog inputs;
Expandable by up to 3 communications modules, 8 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

6ES7214-1AG40-0XB0

Compact CPU, DC/DC/relay;

Integrated program/data memory 100 KB, load memory 2 MB;
Supply voltage 24 V DC;
Boolean execution times 0.1 µs per operation;
14 digital inputs, 10 digital outputs (relays), 2 analog inputs;
Expandable by up to 3 communications modules, 8 signal modules, and 1 signal board/communication board;
Digital inputs can be used as HSC at 100 kHz

6ES7214-1HG40-0XB0

SB 1221 signal board

4 inputs, 5 V DC, 200 kHz

4 inputs, 24 V DC, 200 kHz

6ES7221-3AD30-0XB0

6ES7221-3BD30-0XB0

SB 1222 signal board

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

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

6ES7222-1AD30-0XB0

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

6ES7223-3BD30-0XB0

2 inputs, 24 V DC, 200 kHz

2 outputs 24 V DC, 0.1 A, 200 kHz

SB 1231 signal board

6ES7231-4HA30-0XB0

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

SB 1231 thermocouple signal board

6ES7231-5QA30-0XB0

1 input +/- 80 mV, resolution 15 bits + sign, thermocouples type J, K

SB 1231 RTD signal board

6ES7231-5PA30-0XB0

1 input for resistance temperature sensors Pt 100, Pt 200, Pt 500, Pt 1000, resolution 15 bits + sign

SB 1232 signal board

6ES7232-4HA30-0XB0

1 analog output, ±10 V with 12 bits or 0 to 20 mA with 11 bits

CB 1241 RS485 Communication Board

6ES7241-1CH30-1XB0

For point-to-point connection, with 1 RS485 interface

BB1297 battery board

6ES7297-0AX30-0XA0

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

SIMATIC S7-1200 Basic Controllers

Central processing units
Standard CPUs

CPU 1214C

Technical specifications

| Article number | 6ES7214-1BG40-0XB0 CPU 1214C, AC/DC/Relay, 14DI/10DO/2AI | 6ES7214-1AG40-0XB0 CPU 1214C, DC/DC/DC, 14DI/10DO/2AI | 6ES7214-1HG40-0XB0 CPU 1214C, DC/DC/Relay, 14DI/10DO/2AI |
|---|---|--|---|
| General information | | | |
| Product type designation | CPU 1214C AC/DC/relay | CPU 1214C DC/DC/DC | CPU 1214C DC/DC/relay |
| Engineering with | | | |
| • Programming package | STEP 7 V17 or higher | STEP 7 V17 or higher | STEP 7 V17 or higher |
| Supply voltage | | | |
| Rated value (DC) | | Yes | Yes |
| • 24 V DC | | | |
| Rated value (AC) | Yes | | |
| • 120 V AC | | | |
| • 230 V AC | Yes | | |
| Encoder supply | | | |
| 24 V encoder supply | | | |
| • 24 V | 20.4 to 28.8V | L+ minus 4 V DC min. | L+ minus 4 V DC min. |
| Memory | | | |
| Work memory | | | |
| • integrated | 100 kbyte | 100 kbyte | 100 kbyte |
| Load memory | | | |
| • integrated | 4 Mbyte with SIMATIC memory card | 4 Mbyte with SIMATIC memory card | 4 Mbyte with SIMATIC memory card |
| • Plug-in (SIMATIC Memory Card), max. | | | |
| Backup | | | |
| • without battery | Yes | Yes | Yes |
| CPU processing times | | | |
| 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 |
| Data areas and their retentivity | | | |
| Flag | | | |
| • Size, max. | 8 kbyte; Size of bit memory address area | 8 kbyte; Size of bit memory address area | 8 kbyte; Size of bit memory address area |
| Address area | | | |
| Process image | | | |
| • Inputs, adjustable | 1 kbyte | 1 kbyte | 1 kbyte |
| • Outputs, adjustable | 1 kbyte | 1 kbyte | 1 kbyte |
| Time of day | | | |
| Clock | | | |
| • Hardware clock (real-time) | Yes | Yes | Yes |
| Digital inputs | | | |
| Number of digital inputs | 14; Integrated | 14; Integrated | 14; Integrated |
| • of which inputs usable for technological functions | 6; HSC (High Speed Counting) | 6; HSC (High Speed Counting) | 6; HSC (High Speed Counting) |
| Digital outputs | | | |
| Number of digital outputs | 10; Relays | 10 | 10; Relays |
| • of which high-speed outputs | | 4; 100 kHz Pulse Train Output | |
| Analog inputs | | | |
| Number of analog inputs | 2 | 2 | 2 |
| Input ranges | | | |
| • Voltage | Yes | Yes | Yes |
| Analog outputs | | | |
| Number of analog outputs | 0 | 0 | 0 |
| 1. Interface | | | |
| Interface type | PROFINET | PROFINET | PROFINET |
| Protocols | | | |
| • PROFINET IO Controller | Yes | Yes | Yes |
| • PROFINET IO Device | Yes | Yes | Yes |
| • SIMATIC communication | Yes | Yes | Yes |
| • Open IE communication | Yes; Optionally also encrypted | Yes; Optionally also encrypted | Yes; Optionally also encrypted |
| • Web server | Yes | Yes | Yes |
| • Media redundancy | No | No | No |

Technical specifications

| Article number | 6ES7214-1BG40-0XB0 CPU 1214C, AC/DC/Relay, 14DI/10DO/2AI | 6ES7214-1AG40-0XB0 CPU 1214C, DC/DC/DC, 14DI/10DO/2AI | 6ES7214-1HG40-0XB0 CPU 1214C, DC/DC/Relay, 14DI/10DO/2AI |
|---|---|---|---|
| Protocols | | | |
| Open IE communication | | | |
| • TCP/IP | Yes | Yes | Yes |
| • ISO-on-TCP (RFC1006) | Yes | Yes | Yes |
| • UDP | Yes | Yes | Yes |
| Web server | | | |
| • supported | Yes | Yes | Yes |
| OPC UA | | | |
| • OPC UA Server | Yes; data access (read, write, subscribe), method call, runtime license required | Yes; data access (read, write, subscribe), method call, runtime license required | Yes; data access (read, write, subscribe), method call, runtime license required |
| communication functions / header | | | |
| S7 communication | | | |
| • supported | Yes | Yes | Yes |
| Number of connections | | | |
| • overall | PG Connections: 4 reserved / 4 max; HMI Connections: 12 reserved / 18 max; S7 Connections: 8 reserved / 14 max; Open User Connections: 8 reserved / 14 max; Web Connections: 2 reserved / 30 max; OPC UA Connections: 0 reserved / 10 max; Total Connections: 34 reserved / 64 max | PG Connections: 4 reserved / 4 max; HMI Connections: 12 reserved / 18 max; S7 Connections: 8 reserved / 14 max; Open User Connections: 8 reserved / 14 max; Web Connections: 2 reserved / 30 max; OPC UA Connections: 0 reserved / 10 max; Total Connections: 34 reserved / 64 max | PG Connections: 4 reserved / 4 max; HMI Connections: 12 reserved / 18 max; S7 Connections: 8 reserved / 14 max; Open User Connections: 8 reserved / 14 max; Web Connections: 2 reserved / 30 max; OPC UA Connections: 0 reserved / 10 max; Total Connections: 34 reserved / 64 max |
| Integrated Functions | | | |
| Counter | | | |
| • Number of counters | 6 | 6 | 6 |
| • Counting frequency, 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 | |
| Limit frequency (pulse) | | 100 kHz | |
| Ambient conditions | | | |
| Ambient temperature during operation | | | |
| • min. | -20 °C | -20 °C | -20 °C |
| • max. | 60 °C; Number of simultaneously activated inputs or outputs 7 or 5 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 14 or 10 at 55 °C horizontal or 45 °C vertical | 60 °C; Number of simultaneously activated inputs or outputs 7 or 5 (no adjacent points) a t 60 °C horizontal or 50 °C vertical, 14 or 10 at 55 °C horizontal or 45 °C vertical | 60 °C; Number of simultaneously activated inputs or outputs 7 or 5 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 14 or 10 at 55 °C horizontal or 45 °C vertical |
| Pollutant concentrations | | | |
| • SO ₂ at RH < 60% without condensation | SO ₂ : < 0.5 ppm; H ₂ S: < 0.1 ppm; RH < 60% condensation-free | SO ₂ : < 0.5 ppm; H ₂ S: < 0.1 ppm; RH < 60% condensation-free | SO ₂ : < 0.5 ppm; H ₂ S: < 0.1 ppm; RH < 60% condensation-free |
| configuration / header | | | |
| configuration / programming / header | | | |
| Programming language | | | |
| - LAD | Yes | Yes | Yes |
| - FBD | Yes | Yes | Yes |
| - SCL | Yes | Yes | Yes |
| Dimensions | | | |
| Width | 110 mm | 110 mm | 110 mm |
| Height | 100 mm | 100 mm | 100 mm |
| Depth | 75 mm | 75 mm | 75 mm |
| Weights | | | |
| Weight, approx. | 455 g | 415 g | 435 g |

SIMATIC S7-1200 Basic Controllers

Central processing units
Standard CPUs

CPU 1215C

Overview

3



- Powerful controller with enhanced networking option
- Expandable by:
 - 1 signal board (SB), battery board (BB) or communication board (CB)
 - 8 signal modules (SM)
 - Max. 3 communications modules (CM)

Ordering data

Article No.

Article No.

CPU 1215C

Compact CPU, AC/DC/relay;

Integrated program/
data memory 125 KB,
load memory 4 MB;
Wide-range power supply
85 ... 264 V AC;
Boolean execution times
0.085 µs per operation;
14 digital inputs,
10 digital outputs (relays),
2 analog inputs,
2 analog outputs;
Expandable by up to
3 communications modules,
8 signal modules and 1 signal
board/communication board;
Digital inputs can be used as HSC
at 100 kHz

6ES7215-1BG40-0XB0

Compact CPU, DC/DC/DC;

Integrated program/
data memory 125 KB,
load memory 4 MB;
Supply voltage 24 V DC;
Boolean execution times
0.085 µs per operation;
14 digital inputs,
10 digital outputs,
2 analog inputs,
2 analog outputs;
Expandable by up to
3 communications modules,
8 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

6ES7215-1AG40-0XB0

Compact CPU, DC/DC/relay;

Integrated program/
data memory 125 KB,
load memory 4 MB;
Supply voltage 24 V DC;
Boolean execution times
0.085 µs per operation;
14 digital inputs,
10 digital outputs (relays),
2 analog inputs,
2 analog outputs;
Expandable by up to
3 communications modules,
8 signal modules, and 1 signal
board/communication board;
Digital inputs can be used as HSC
at 100 kHz

6ES7215-1HG40-0XB0

SB 1221 signal board

4 inputs, 5 V DC, 200 kHz
4 inputs, 24 V DC, 200 kHz

6ES7221-3AD30-0XB0

6ES7221-3BD30-0XB0

SB 1222 signal board

4 outputs, 5 V DC, 0.1 A, 200 kHz
4 outputs, 24 V DC, 0.1 A, 200 kHz

6ES7222-1AD30-0XB0

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

SB 1231 thermocouple signal board

1 input +/- 80 mV,
resolution 15 bits + sign,
thermocouples type J, K

6ES7231-5QA30-0XB0

SB 1231 RTD signal board

1 input for resistance temperature
sensors Pt 100, Pt 200, Pt 500,
Pt 1000, resolution 15 bits + sign

6ES7231-5PA30-0XB0

SB 1232 signal board

1 analog output, ±10 V with
12 bits or 0 to 20 mA with 11 bits

6ES7232-4HA30-0XB0

CB 1241 RS485 Communication Board

For point-to-point connection,
with 1 RS485 interface

6ES7241-1CH30-1XB0

| Ordering data | Article No. | Ordering data | Article No. |
|--|--|--|--|
| BB 1297 battery board For long-term backup of real-time clock; can be plugged into the signal board slot; battery (CR1025) is not included | 6ES7297-0AX30-0XA0 | Front flap set (spare part) For CPU 1215C | 6ES7291-1AC30-0XA0 |
| Digital input simulator Simulator Module SIM 1274 (optional) 14 input switches, for CPU 1214C/1215C | 6ES7274-1XH30-0XA0 | RJ45 cable grip 4 units per pack Dual port | 6ES7290-3AB30-0XA0 |
| Analog input simulator Simulator Module SIM 1274 (optional) 2 potentiometers | 6ES7274-1XA30-0XA0 | STEP 7 Professional / Basic V17 Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) • Windows 10 Professional Version 1909, 2004, 20H2 • Windows 10 Enterprise Version 1909, 2004, 20H2 • Windows 10 IoT Enterprise 2016 LTSC • Windows 10 IoT Enterprise 2019 LTSC Windows Server (64-bit) • Windows Server 2016 Standard (full installation) • Windows Server 2019 Standard (full installation) Type of delivery: 9 languages: de, en, zh included, fr, sp, it, ru, jp, kr as download STEP 7 Professional V17, floating license STEP 7 Professional V17, floating license, software download including license key ¹⁾ Email address required for delivery STEP 7 Basic V17, floating license STEP 7 Basic V17, floating license, software download including license key ¹⁾ Email address required for delivery | 6ES7822-1AA07-0YA5 6ES7822-1AE07-0YA5 6ES7822-0AA07-0YA5 6ES7822-0AE07-0YA5 |
| SIMATIC Memory Card (optional) 4 MB 12 MB 24 MB 256 MB 2 GB 32 GB | 6ES7954-8LC03-0AA0 6ES7954-8LE03-0AA0 6ES7954-8LF03-0AA0 6ES7954-8LL03-0AA0 6ES7954-8LP03-0AA0 6ES7954-8LT03-0AA0 | | |
| Extension cable for two-tier configuration For connecting digital/analog signal modules; length 2 m | 6ES7290-6AA30-0XA0 | | |
| Terminal block (spare part) For CPU 1215C AC/DC/relay • For DI, 20-pin, tin-coated, coded; 4 units - Screw-type system - Push-in system • For DO, 12-pin, tin-coated, coded; 4 units - Screw-type system - Push-in system • For analog signals, 6-pin, gold-plated; 4 units - Screw-type system - Push-in system For CPU 1215C DC/DC/DC • For DI, 20-pin, tin-coated; 4 units - Screw-type system - Push-in system • For DO, 12-pin, tin-coated, coded; 4 units - Screw-type system - Push-in system • For analog signals, 6-pin, gold-plated; 4 units - Screw-type system - Push-in system For CPU 1215C DC/DC/relay • For DI, 20-pin, tin-coated; 4 units - Screw-type system - Push-in system • For DO, 12-pin, tin-coated, coded; 4 units - Screw-type system - Push-in system • For analog signals, 6-pin, gold-plated; 4 units - Screw-type system - Push-in system | 6ES7292-1AV40-0XA0 6ES7292-2AV40-0XA0 6ES7292-1AM40-0XA0 6ES7292-2AM40-0XA0 6ES7292-1BF30-0XB0 6ES7292-2BF30-0XB0 6ES7292-1AV30-0XA0 6ES7292-2AV30-0XA0 6ES7292-1AM30-0XA0 6ES7292-2AM30-0XA0 6ES7292-1BF30-0XB0 6ES7292-2BF30-0XB0 6ES7292-1AV30-0XA0 6ES7292-2AV30-0XA0 6ES7292-1AM40-0XA0 6ES7292-2AM40-0XA0 6ES7292-1BF30-0XB0 6ES7292-2BF30-0XB0 | | |

¹⁾ For up-to-date information and download availability, see: <http://www.siemens.com/tia-online-software-delivery>

SIMATIC S7-1200 Basic Controllers

Central processing units
Standard CPUs

CPU 1215C

Technical specifications

| Article number | 6ES7215-1AG40-0XB0 CPU 1215C, DC/DC/DC, 14DI/10DO/2AI/2AO | 6ES7215-1BG40-0XB0 CPU 1215C, AC/DC/RLY, 14DI/10DO/2AI/2AO | 6ES7215-1HG40-0XB0 CPU 1215C, DC/DC/RLY, 14DI/10DO/2AI/2AO |
|--|--|---|---|
| General information | | | |
| Product type designation | CPU 1215C DC/DC/DC | CPU 1215C AC/DC/relay | CPU 1215C DC/DC/relay |
| Engineering with | | | |
| • Programming package | STEP 7 V17 or higher | STEP 7 V17 or higher | STEP 7 V17 or higher |
| Supply voltage | | | |
| Rated value (DC) | Yes | | Yes |
| • 24 V DC | | | |
| Rated value (AC) | | Yes | |
| • 120 V AC | | Yes | |
| • 230 V AC | | | |
| Encoder supply | | | |
| 24 V encoder supply | | | |
| • 24 V | L+ minus 4 V DC min. | 20.4 to 28.8V | L+ minus 4 V DC min. |
| Memory | | | |
| Work memory | | | |
| • integrated | 125 kbyte | 125 kbyte | 125 kbyte |
| Load memory | | | |
| • integrated | 4 Mbyte | 4 Mbyte | 4 Mbyte |
| • Plug-in (SIMATIC Memory Card), max. | with SIMATIC memory card | with SIMATIC memory card | with SIMATIC memory card |
| Backup | | | |
| • without battery | Yes | Yes | Yes |
| CPU processing times | | | |
| 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 |
| Data areas and their retentivity | | | |
| Flag | | | |
| • Size, max. | 8 kbyte; Size of bit memory address area | 8 kbyte; Size of bit memory address area | 8 kbyte; Size of bit memory address area |
| Address area | | | |
| Process image | | | |
| • Inputs, adjustable | 1 kbyte | 1 kbyte | 1 kbyte |
| • Outputs, adjustable | 1 kbyte | 1 kbyte | 1 kbyte |
| Time of day | | | |
| Clock | | | |
| • Hardware clock (real-time) | Yes | Yes | Yes |
| Digital inputs | | | |
| Number of digital inputs | 14; Integrated | 14; Integrated | 14; Integrated |
| • of which inputs usable for technological functions | 6; HSC (High Speed Counting) | 6; HSC (High Speed Counting) | 6; HSC (High Speed Counting) |
| Digital outputs | | | |
| Number of digital outputs | 10 | 10; Relays | 10; Relays |
| • of which high-speed outputs | 4; 100 kHz Pulse Train Output | | |
| Analog inputs | | | |
| Number of analog inputs | 2 | 2 | 2 |
| Input ranges | | | |
| • Voltage | Yes | Yes | Yes |
| Analog outputs | | | |
| Number of analog outputs | 2 | 2 | 2 |
| Output ranges, current | | | |
| • 0 to 20 mA | Yes | Yes | Yes |
| 1. Interface | | | |
| Interface type | PROFINET | PROFINET | PROFINET |
| Protocols | | | |
| • PROFINET IO Controller | Yes | Yes | Yes |
| • PROFINET IO Device | Yes | Yes | Yes |
| • SIMATIC communication | Yes | Yes | Yes |
| • Open IE communication | Yes; Optionally also encrypted | Yes; Optionally also encrypted | Yes; Optionally also encrypted |
| • Web server | Yes | Yes | Yes |
| • Media redundancy | Yes | Yes | Yes |

Technical specifications

| Article number | 6ES7215-1AG40-0XB0 | 6ES7215-1BG40-0XB0 | 6ES7215-1HG40-0XB0 |
|---|---|---|---|
| | CPU 1215C, DC/DC/DC, 14DI/10DO/2AI/2AO | CPU 1215C, AC/DC/RLY, 14DI/10DO/2AI/2AO | CPU 1215C, DC/DC/RLY, 14DI/10DO/2AI/2AO |
| Protocols | | | |
| Open IE communication | | | |
| • TCP/IP | Yes | Yes | Yes |
| • ISO-on-TCP (RFC1006) | Yes | Yes | Yes |
| • UDP | Yes | Yes | Yes |
| Web server | | | |
| • supported | Yes | Yes | Yes |
| OPC UA | | | |
| • OPC UA Server | Yes; data access (read, write, subscribe), method call, runtime license required | Yes; data access (read, write, subscribe), method call, runtime license required | Yes; data access (read, write, subscribe), method call, runtime license required |
| communication functions / header | | | |
| S7 communication | | | |
| • supported | Yes | Yes | Yes |
| Number of connections | | | |
| • overall | PG Connections: 4 reserved / 4 max; HMI Connections: 12 reserved / 18 max; S7 Connections: 8 reserved / 14 max; Open User Connections: 8 reserved / 14 max; Web Connections: 2 reserved / 30 max; OPC UA Connections: 0 reserved / 10 max; Total Connections: 34 reserved / 64 max | PG Connections: 4 reserved / 4 max; HMI Connections: 12 reserved / 18 max; S7 Connections: 8 reserved / 14 max; Open User Connections: 8 reserved / 14 max; Web Connections: 2 reserved / 30 max; OPC UA Connections: 0 reserved / 10 max; Total Connections: 34 reserved / 64 max | PG Connections: 4 reserved / 4 max; HMI Connections: 12 reserved / 18 max; S7 Connections: 8 reserved / 14 max; Open User Connections: 8 reserved / 14 max; Web Connections: 2 reserved / 30 max; OPC UA Connections: 0 reserved / 10 max; Total Connections: 34 reserved / 64 max |
| Integrated Functions | | | |
| Counter | | | |
| • Number of counters | 6 | 6 | 6 |
| • Counting frequency, 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 | 4; With integrated outputs | Up to 4 with SB 1222 | Up to 4 with SB 1222 |
| PID controller | Yes | Yes | Yes |
| Number of alarm inputs | 4 | 4 | 4 |
| Number of pulse outputs | 4 | | |
| Limit frequency (pulse) | 100 kHz | | |
| Ambient conditions | | | |
| Ambient temperature during operation | | | |
| • min. | -20 °C | -20 °C | -20 °C |
| • max. | 60 °C; Number of simultaneously activated inputs or outputs 7 or 5 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 14 or 10 at 55 °C horizontal or 45 °C vertical | 60 °C; Number of simultaneously activated inputs or outputs 7 or 5 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 14 or 10 at 55 °C horizontal or 45 °C vertical | 60 °C; Number of simultaneously activated inputs or outputs 7 or 5 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 14 or 10 at 55 °C horizontal or 45 °C vertical |
| Pollutant concentrations | | | |
| • SO ₂ at RH < 60% without condensation | SO ₂ : < 0.5 ppm; H ₂ S: < 0.1 ppm; RH < 60% condensation-free | SO ₂ : < 0.5 ppm; H ₂ S: < 0.1 ppm; RH < 60% condensation-free | SO ₂ : < 0.5 ppm; H ₂ S: < 0.1 ppm; RH < 60% condensation-free |
| configuration / header | | | |
| configuration / programming / header | | | |
| Programming language | | | |
| - LAD | Yes | Yes | Yes |
| - FBD | Yes | Yes | Yes |
| - SCL | Yes | Yes | Yes |
| Dimensions | | | |
| Width | 130 mm | 130 mm | 130 mm |
| Height | 100 mm | 100 mm | 100 mm |
| Depth | 75 mm | 75 mm | 75 mm |
| Weights | | | |
| Weight, approx. | 500 g | 550 g | 585 g |

SIMATIC S7-1200 Basic Controllers

Central processing units
Standard CPUs

CPU 1217C

Overview

3



- Powerful controller for extremely fast signal processing
- Expandable by:
 - 1 signal board (SB), battery board (BB) or communication board (CB)
 - 8 signal modules (SM)
 - Max. 3 communications modules (CM)

Ordering data

Article No.

Article No.

CPU 1217C

Compact CPU, DC/DC/DC;

Integrated program/
data memory 150 KB,
load memory 4 MB;
Supply voltage 24 V DC;
Boolean execution times
0.085 µs per operation;
14 digital inputs (10 digital
24 V DC inputs, 4 digital
1.5 V DC differential inputs),
10 digital outputs (6 digital
24 V DC outputs, 4 digital
1.5 V DC differential outputs),
2 analog inputs,
2 analog outputs;
Expandable by up to
3 communications modules,
8 signal modules, and 1 signal
board/communication board;
Digital inputs can be used as HSC
at 1 MHz,
24 V DC digital outputs can be
used as pulse outputs (PTO) or
pulse-width modulated outputs
(PWM) at 100 kHz

6ES7217-1AG40-0XB0

SB 1221 signal board

4 inputs, 5 V DC, 200 kHz
4 inputs, 24 V DC, 200 kHz

6ES7221-3AD30-0XB0
6ES7221-3BD30-0XB0

SB 1222 signal board

4 outputs, 5 V DC, 0.1 A, 200 kHz
4 outputs, 24 V DC, 0.1 A, 200 kHz

6ES7222-1AD30-0XB0
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
2 inputs, 5 V DC, 200 kHz
2 outputs 5 V DC, 0.1 A, 200 kHz
2 inputs, 24 V DC, 200 kHz
2 outputs 24 V DC, 0.1 A, 200 kHz

6ES7223-0BD30-0XB0
6ES7223-3AD30-0XB0
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

SB 1231 thermocouple signal board

1 input +/- 80 mV,
resolution 15 bits + sign,
thermocouples type J, K

6ES7231-5QA30-0XB0

SB 1231 RTD signal board

1 input for resistance temperature
sensors Pt 100, Pt 200, Pt 500,
Pt 1000, resolution 15 bits + sign

6ES7231-5PA30-0XB0

SB 1232 signal board

1 analog output, ±10 V with
12 bits or 0 to 20 mA with 11 bits

6ES7232-4HA30-0XB0

CB 1241 RS485 Communication Board

For point-to-point connection,
with 1 RS485 interface

6ES7241-1CH30-1XB0

BB 1297 battery board

For long-term backup of real-time
clock; can be plugged into the
signal board slot;
battery (CR1025) is not included

6ES7297-0AX30-0XA0

| Ordering data | Article No. | Article No. |
|--|--|---|
| Digital input simulator Simulator Module SIM 1274 (optional) 14 input switches, for CPU 1217C | 6ES7274-1XK30-0XA0 | STEP 7 Professional / Basic V17 Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 10 (64-bit) <ul style="list-style-type: none"> Windows 10 Professional Version 1909, 2004, 20H2 Windows 10 Enterprise Version 1909, 2004, 20H2 Windows 10 IoT Enterprise 2016 LTSC Windows 10 IoT Enterprise 2019 LTSC Windows Server (64-bit) <ul style="list-style-type: none"> Windows Server 2016 Standard (full installation) Windows Server 2019 Standard (full installation) Type of delivery: 9 languages: de, en, zh included, fr, sp, it, ru, jp, kr as download STEP 7 Professional V17, floating license STEP 7 Professional V17, floating license, software download including license key ¹⁾ Email address required for delivery STEP 7 Basic V17, floating license STEP 7 Basic V17, floating license, software download including license key ¹⁾ Email address required for delivery |
| Analog input simulator Simulator Module SIM 1274 (optional) 2 potentiometers | 6ES7274-1XA30-0XA0 | |
| SIMATIC Memory Card (optional) 4 MB | 6ES7954-8LC03-0AA0 | |
| 12 MB | 6ES7954-8LE03-0AA0 | |
| 24 MB | 6ES7954-8LF03-0AA0 | |
| 256 MB | 6ES7954-8LL03-0AA0 | |
| 2 GB | 6ES7954-8LP03-0AA0 | |
| 32 GB | 6ES7954-8LT03-0AA0 | |
| Extension cable for two-tier configuration For connecting digital/ analog signal modules; length 2 m | 6ES7290-6AA30-0XA0 | |
| Terminal block (spare part) For CPU 1217C <ul style="list-style-type: none"> For DI, 10-pin, tin-coated; 4 units <ul style="list-style-type: none"> Screw-type system Push-in system For DI, 16-pin, tin-coated; 4 units <ul style="list-style-type: none"> Screw-type system Push-in system For DO, 18-pin, tin-coated; 4 units <ul style="list-style-type: none"> Screw-type system Push-in system For analog signals, 6-pin, gold-plated; 4 units <ul style="list-style-type: none"> Screw-type system Push-in system | 6ES7292-1AK30-0XA0 6ES7292-2AK30-0XA0 6ES7292-1AR30-0XA0 6ES7292-2AR30-0XA0 6ES7292-1AT30-0XA0 6ES7292-2AT30-0XA0 6ES7292-1BF30-0XB0 6ES7292-2BF30-0XB0 | |
| Front flap set (spare part) For CPU 1217C | 6ES7291-1AD30-0XA0 | |
| RJ45 cable grip 4 units per pack Dual port | 6ES7290-3AB30-0XA0 | |

¹⁾ For up-to-date information and download availability, see:
<http://www.siemens.com/tia-online-software-delivery>

SIMATIC S7-1200 Basic Controllers

Central processing units
Standard CPUs

CPU 1217C

3

Technical specifications

| | |
|--|--|
| Article number | 6ES7217-1AG40-0XB0 CPU 1217C, DC/DC/DC, 14DI/10DQ/2AI/2AQ |
| General information | |
| Product type designation | CPU 1217C DC/DC/DC |
| Engineering with | |
| • Programming package | STEP 7 V17 or higher |
| Supply voltage | |
| Rated value (DC) | |
| • 24 V DC | Yes |
| Encoder supply | |
| 24 V encoder supply | |
| • 24 V | L+ minus 4 V DC min. |
| Memory | |
| Work memory | |
| • integrated | 150 kbyte |
| Load memory | |
| • integrated | 4 Mbyte |
| • Plug-in (SIMATIC Memory Card), max. | with SIMATIC memory card |
| Backup | |
| • 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; / Operation |
| Data areas and their retentivity | |
| Flag | |
| • Size, max. | 8 kbyte; Size of bit memory address area |
| Address area | |
| Process image | |
| • Inputs, adjustable | 1 kbyte |
| • Outputs, adjustable | 1 kbyte |
| Time of day | |
| Clock | |
| • Hardware clock (real-time) | Yes |
| Digital inputs | |
| Number of digital inputs | 14; Integrated |
| • of which inputs usable for technological functions | 6; HSC (High Speed Counting) |
| Digital outputs | |
| Number of digital outputs | 10 |
| • of which high-speed outputs | 4; 100 kHz Pulse Train Output |
| Analog inputs | |
| Number of analog inputs | 2 |
| Input ranges | |
| • Voltage | Yes |
| Analog outputs | |
| Number of analog outputs | 2 |
| Output ranges, current | |
| • 0 to 20 mA | Yes |
| 1. Interface | |
| Interface type | PROFINET |
| Protocols | |
| • PROFINET IO Controller | Yes |
| • PROFINET IO Device | Yes |
| • SIMATIC communication | Yes |
| • Open IE communication | Yes; Optionally also encrypted |
| • Web server | Yes |
| • Media redundancy | Yes |

| | |
|--|--|
| Article number | 6ES7217-1AG40-0XB0 CPU 1217C, DC/DC/DC, 14DI/10DQ/2AI/2AQ |
| Protocols | |
| Open IE communication | |
| • TCP/IP | Yes |
| • ISO-on-TCP (RFC1006) | Yes |
| • UDP | Yes |
| Web server | |
| • supported | Yes |
| OPC UA | |
| • OPC UA Server | Yes; data access (read, write, subscribe), method call, runtime license required |
| communication functions / header | |
| S7 communication | |
| • supported | Yes |
| Number of connections | |
| • overall | PG Connections: 4 reserved / 4 max; HMI Connections: 12 reserved / 18 max; S7 Connections: 8 reserved / 14 max; Open User Connections: 8 reserved / 14 max; Web Connections: 2 reserved / 30 max; OPC UA Connections: 0 reserved / 10 max; Total Connections: 34 reserved / 64 max |
| Integrated Functions | |
| Counter | |
| • Number of counters | 6 |
| • Counting frequency, max. | 1 MHz |
| Frequency measurement | Yes |
| controlled positioning | Yes |
| Number of position-controlled positioning axes, max. | 8 |
| Number of positioning axes via pulse-direction interface | 4; With integrated outputs |
| PID controller | Yes |
| Number of alarm inputs | 4 |
| Number of pulse outputs | 4 |
| Limit frequency (pulse) | 1 MHz |
| Ambient conditions | |
| Ambient temperature during operation | |
| • min. | -20 °C |
| • max. | 60 °C; Number of simultaneously activated inputs or outputs 7 or 5 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 14 or 10 at 55 °C horizontal or 45 °C vertical |
| Pollutant concentrations | |
| • SO ₂ at RH < 60% without condensation | SO ₂ : < 0.5 ppm; H ₂ S: < 0.1 ppm; RH < 60% condensation-free |
| configuration / header | |
| configuration / programming / header | |
| Programming language | |
| - LAD | Yes |
| - FBD | Yes |
| - SCL | Yes |
| Dimensions | |
| Width | 150 mm |
| Height | 100 mm |
| Depth | 75 mm |
| Weights | |
| Weight, approx. | 530 g |