# SIEMENS

**Data sheet** | **6ES7214-1AG40-0XB0**

SIMATIC S7-1200, CPU 1214C, compact CPU, DC/DC/DC, onboard I/O: 14 DI 24 V DC; 10 DO 24 V DC; 2 AI 0-10 V DC, Power supply: DC 20.4-28.8V DC, Program/data memory 100 KB

Figure similar

| General information | |
|---|---|
| Product type designation | CPU 1214C DC/DC/DC |
| Firmware version | V4.5 |
| **Engineering with** | |
| ● Programming package | STEP 7 V17 or higher |
| **Supply voltage** | |
| Rated value (DC) | |
| ● 24 V DC | Yes |
| permissible range, lower limit (DC) | 20.4 V |
| permissible range, upper limit (DC) | 28.8 V |
| Reverse polarity protection | Yes |
| **Load voltage L+** | |
| ● 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) | 500 mA; CPU only |
| Current consumption, max. | 1 500 mA; CPU with all expansion modules |
| Inrush current, max. | 12 A; at 28.8 V |
| I²t | 0.5 A²·s |
| **Output current** | |
| for backplane bus (5 V DC), max. | 1 600 mA; Max. 5 V DC for SM and CM |
| **Encoder supply** | |
| 24 V encoder supply | |
| ● 24 V | L+ minus 4 V DC min. |
| **Power loss** | |
| Power loss, typ. | 12 W |
| **Memory** | |
| Work memory | |
| ● integrated | 100 kbyte |
| ● expandable | No |
| Load memory | |
| ● integrated | 4 Mbyte |
| ● Plug-in (SIMATIC Memory Card), max. | with SIMATIC memory card |
| Backup | |
| ● present | Yes |
| ● maintenance-free | Yes |
| ● without battery | Yes |
| **CPU processing times** | |

2/3/2023

| | |
|---|---|
| for bit operations, typ. | 0.08 µs; / instruction |
| for word operations, typ. | 1.7 µs; / instruction |
| for floating point arithmetic, typ. | 2.3 µs; / instruction |

## CPU-blocks

| | |
|---|---|
| Number of blocks (total) | DBs, FCs, FBs, counters and timers. The maximum number of addressable blocks ranges from 1 to 65535. There is no restriction, the entire working memory can be used |
| OB | |
| ● Number, max. | Limited only by RAM for code |

## Data areas and their retentivity

| | |
|---|---|
| Retentive data area (incl. timers, counters, flags), max. | 14 kbyte |
| Flag | |
| ● Size, max. | 8 kbyte; 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 |

## Address area

| | |
|---|---|
| Process image | |
| ● Inputs, adjustable | 1 kbyte |
| ● Outputs, adjustable | 1 kbyte |

## Hardware configuration

| | |
|---|---|
| Number of modules per system, max. | 3 comm. modules, 1 signal board, 8 signal modules |

## Time of day

| | |
|---|---|
| Clock | |
| ● Hardware clock (real-time) | Yes |
| ● Backup time | 480 h; Typical |
| ● Deviation per day, max. | ±60 s/month at 25 °C |

## Digital inputs

| | |
|---|---|
| Number of digital inputs | 14; Integrated |
| ● of which inputs usable for technological functions | 6; HSC (High Speed Counting) |
| Source/sink input | Yes |
| Number of simultaneously controllable inputs | |
| all mounting positions | |
| — up to 40 °C, max. | 14 |
| Input voltage | |
| ● Rated value (DC) | 24 V |
| ● for signal "0" | 5 V DC at 1 mA |
| ● for signal "1" | 15 V DC at 2.5 mA |
| Input delay (for rated value of input voltage) | |
| for standard inputs | |
| — parameterizable | 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four |
| — at "0" to "1", min. | 0.2 ms |
| — at "0" to "1", max. | 12.8 ms |
| for interrupt inputs | |
| — parameterizable | Yes |
| for technological functions | |
| — parameterizable | Single phase: 3 @ 100 kHz & 3 @ 30 kHz, differential: 3 @ 80 kHz & 3 @ 30 kHz |
| Cable length | |
| ● shielded, max. | 500 m; 50 m for technological functions |
| ● unshielded, max. | 300 m; for technological functions: No |

## Digital outputs

| | |
|---|---|
| Number of digital outputs | 10 |
| ● of which high-speed outputs | 4; 100 kHz Pulse Train Output |
| Limitation of inductive shutdown voltage to | L+ (-48 V) |
| Switching capacity of the outputs | |
| ● with resistive load, max. | 0.5 A |
| ● on lamp load, max. | 5 W |
| Output voltage | |
| ● for signal "0", max. | 0.1 V; with 10 kOhm load |
| ● for signal "1", min. | 20 V |
| Output current | |

| | |
|---|---|
| ● for signal "1" rated value | 0.5 A |
| ● for signal "0" residual current, max. | 0.1 mA |
| **Output delay with resistive load** | |
| ● "0" to "1", max. | 1 µs |
| ● "1" to "0", max. | 5 µs |
| **Switching frequency** | |
| ● of the pulse outputs, with resistive load, max. | 100 kHz |
| **Relay outputs** | |
| ● Number of relay outputs | 0 |
| **Cable length** | |
| ● 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), max. | 10 bit |
| ● 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 | No |
| **Protocols** | |
| ● PROFINET IO Controller | Yes |
| ● PROFINET IO Device | Yes |
| ● SIMATIC communication | Yes |
| ● Open IE communication | Yes; Optionally also encrypted |
| ● Web server | Yes |
| ● Media redundancy | No |
| **PROFINET IO Controller** | |
| ● Transmission rate, max. | 100 Mbit/s |
| **Services** | |
| — PG/OP communication | Yes; encryption with TLS V1.3 pre-selected |
| — Isochronous mode | No |
| — IRT | No |
| — PROFIenergy | 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; encryption with TLS V1.3 pre-selected |
| — Isochronous mode | No |
| — IRT | No |
| — PROFIenergy | Yes |
| — Shared device | Yes |
| — Number of IO Controllers with shared device, max. | 2 |

| **Protocols** | |
|---|---|
| Supports protocol for PROFINET IO | Yes |
| PROFIsafe | No |
| PROFIBUS | Yes; CM 1243-5 (master) or CM 1242-5 (slave) required |
| OPC UA | Yes; OPC UA Server |
| AS-Interface | Yes; CM 1243-2 required |
| **Protocols (Ethernet)** | |
| ● TCP/IP | Yes |
| ● DHCP | No |
| ● SNMP | Yes |
| ● DCP | Yes |
| ● LLDP | Yes |

| Redundancy mode | |
|---|---|
| **Media redundancy** | |
| — MRP | No |
| — MRPD | No |

| SIMATIC communication | |
|---|---|
| ● S7 routing | 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 |

| OPC UA | |
|---|---|
| ● Runtime license required | Yes; "Basic" license required |
| ● OPC UA Server | Yes; data access (read, write, subscribe), method call, runtime license required |
| — Application authentication | Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256 |
| — User authentication | "anonymous" or by user name & password |
| — Number of sessions, max. | 10 |
| — Number of subscriptions per session, max. | 5 |
| — Sampling interval, min. | 100 ms |
| — Publishing interval, min. | 200 ms |
| — Number of server methods, max. | 20 |
| — Number of monitored items, recommended max. | 1 000 |
| — Number of server interfaces, max. | 2 |
| — Number of nodes for user-defined server interfaces, max. | 2 000 |

| Further protocols | |
|---|---|
| ● MODBUS | Yes |

| **communication functions / header** | |
|---|---|
| S7 communication | |
| ● supported | Yes |
| ● as server | Yes |

| | |
|---|---|
| ● as client | Yes |
| ● User data per job, max. | See online help (S7 communication, user data size) |
| **Number of connections** | |
| ● overall | 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 |

## 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 |

## Interrupts/diagnostics/status information

| | |
|---|---|
| **Diagnostics indication LED** | |
| ● RUN/STOP LED | Yes |
| ● ERROR LED | Yes |
| ● MAINT LED | Yes |

## Integrated Functions

| | |
|---|---|
| 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) | 100 kHz |

## Potential separation

| | |
|---|---|
| **Potential separation digital inputs** | |
| ● Potential separation digital inputs | No |
| ● between the channels, in groups of | 1 |
| **Potential separation digital outputs** | |
| ● Potential separation digital outputs | Yes |
| ● between the channels | No |
| ● between the channels, in groups of | 1 |

## EMC

| | |
|---|---|
| **Interference immunity against discharge of static electricity** | |
| ● 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 disturbance 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 |

| Ambient conditions | |
|---|---|
| **Free fall** | |
| ● Fall height, max. | 0.3 m; five times, in product package |
| **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 |
| ● horizontal installation, min. | -20 °C |
| ● horizontal installation, max. | 60 °C |
| ● vertical installation, min. | -20 °C |
| ● vertical installation, max. | 50 °C |
| **Ambient temperature during storage/transportation** | |
| ● min. | -40 °C |
| ● max. | 70 °C |
| **Air pressure acc. to IEC 60068-2-13** | |
| ● Operation, min. | 795 hPa |
| ● Operation, max. | 1 080 hPa |
| ● Storage/transport, min. | 660 hPa |
| ● Storage/transport, max. | 1 080 hPa |
| **Altitude during operation relating to sea level** | |
| ● Installation altitude, min. | -1 000 m |
| ● Installation altitude, max. | 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual |
| **Relative humidity** | |
| ● Operation, max. | 95 %; no condensation |
| **Vibrations** | |
| ● Vibration resistance during operation acc. to IEC 60068-2-6 | 2 g (m/s²) wall mounting, 1 g (m/s²) 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 / header | |
|---|---|
| **configuration / programming / header** | |
| Programming language | |
| — LAD | Yes |
| — FBD | Yes |
| — SCL | Yes |
| **Know-how protection** | |
| ● User program protection/password protection | Yes |
| ● Copy protection | Yes |
| ● Block protection | Yes |
| **Access protection** | |
| ● protection of confidential configuration data | Yes |
| ● Protection level: Write protection | Yes |
| ● Protection level: Read/write protection | Yes |
| ● Protection level: Complete protection | Yes |
| **programming / cycle time monitoring / header** | |
| ● adjustable | Yes |

| Dimensions | |
|---|---|
| Width | 110 mm |
| Height | 100 mm |
| Depth | 75 mm |

| Weights | |
|---|---|
| Weight, approx. | 415 g |

**last modified:**      7/19/2022 ↗

2/3/2023