


Data sheet

CPU 317SN/EC (317-4EC12)


Technical data

| | |
|------------------|------------------|
| Order no. | 317-4EC12 |
| Type | CPU 317SN/EC |


General information

| | |
|-----------|---|
| Note | - |
| Features | SPEED7 technology, SPEED-Bus 2 MB work memory Memory extension (max. 8 MB) PROFIBUS-DP master / PtP (switchable) EtherCAT-Master integrated |
| SPEED-Bus |  |


Technical data power supply

| | |
|---|---|
| Power supply (rated value) | DC 24 V |
| Power supply (permitted range) | DC 20.4...28.8 V |
| Reverse polarity protection |  |
| Current consumption (no-load operation) | 270 mA |
| Current consumption (rated value) | 1.5 A |
| Inrush current | 6 A |
| I ² t | 0.28 A ² s |
| Max. current drain at backplane bus | 3 A |
| Power loss | 10 W |

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| Max. current drain at backplane bus | 3 A |
| Max. current drain load supply | - |
| Power loss | 10 W |

Load and working memory

| | |
|--|---|
| Load memory, integrated | 8 MB |
| Load memory, maximum | 8 MB |
| Work memory, integrated | 2 MB |
| Work memory, maximal | 8 MB |
| Memory divided in 50% program / 50% data |  |
| Memory card slot | MMC-Card with max. 1 GB |

Hardware configuration

| | |
|-------------|---|
| Racks, max. | 4 |
|-------------|---|

| | |
|------------------------------------|---|
| Modules per rack, max. | 8 in multiple-, 32 in a single-rack configuration |
| Number of integrated DP master | 1 |
| Number of DP master via CP | 4 |
| Operable function modules | 8 |
| Operable communication modules PtP | 16 |
| Operable communication modules LAN | 8 |

Command processing times

| | |
|---------------------------------|--------------|
| Bit instructions, min. | 0.01 μ s |
| Word instruction, min. | 0.01 μ s |
| Double integer arithmetic, min. | 0.01 μ s |
| Floating-point arithmetic, min. | 0.06 μ s |

Timers/Counters and their retentive characteristics

| | |
|---------------------------------|-------------------------|
| Number of S7 counters | 2048 |
| S7 counter remanence | adjustable 0 up to 2048 |
| S7 counter remanence adjustable | C0 .. C7 |
| Number of S7 times | 2048 |
| S7 times remanence | adjustable 0 up to 2048 |
| S7 times remanence adjustable | not retentive |

Data range and retentive characteristic

| | |
|--|--------------------------|
| Number of flags | 16384 Byte |
| Bit memories retentive characteristic adjustable | adjustable 0 up to 16384 |
| Bit memories retentive characteristic preset | MB0 .. MB15 |
| Number of data blocks | 8190 |
| Max. data blocks size | 64 KB |
| Number range DBs | 1 ... 8190 |
| Max. local data size per execution level | 3072 Byte |
| Max. local data size per block | 3072 Byte |

Blocks

| | |
|---|------------|
| Number of OBs | 24 |
| Maximum OB size | 64 KB |
| Total number DBs, FBs, FCs | - |
| Number of FBs | 8191 |
| Maximum FB size | 64 KB |
| Number range FBs | 0 ... 8190 |
| Number of FCs | 8191 |
| Maximum FC size | 64 KB |
| Number range FCs | 0 ... 8190 |
| Maximum nesting depth per priority class | 16 |
| Maximum nesting depth additional within an error OB | 4 |

Time

| | |
|------------------------------------|---|
| Real-time clock buffered |  |
| Clock buffered period (min.) | 6 w |
| Type of buffering | Vanadium Rechargeable Lithium Battery |
| Load time for 50% buffering period | 20 h |

| | |
|-------------------------------------|--------------|
| Load time for 100% buffering period | 48 h |
| Accuracy (max. deviation per day) | 10 s |
| Number of operating hours counter | 8 |
| Clock synchronization | ✓ |
| Synchronization via MPI | Master/Slave |
| Synchronization via Ethernet (NTP) | Slave |

Address areas (I/O)

| | |
|------------------------------|-----------|
| Input I/O address area | 8192 Byte |
| Output I/O address area | 8192 Byte |
| Process image adjustable | ✓ |
| Input process image preset | 256 Byte |
| Output process image preset | 256 Byte |
| Input process image maximal | 8192 Byte |
| Output process image maximal | 8192 Byte |
| Digital inputs | 65536 |
| Digital outputs | 65536 |
| Digital inputs central | 1024 |
| Digital outputs central | 1024 |
| Integrated digital inputs | - |
| Integrated digital outputs | - |
| Analog inputs | 4096 |
| Analog outputs | 4096 |
| Analog inputs, central | 256 |
| Analog outputs, central | 256 |
| Integrated analog inputs | - |
| Integrated analog outputs | - |

Communication functions

| | |
|---|----------|
| PG/OP channel | ✓ |
| Global data communication | ✓ |
| Number of GD circuits, max. | 8 |
| Size of GD packets, max. | 22 Byte |
| S7 basic communication | ✓ |
| S7 basic communication, user data per job | 76 Byte |
| S7 communication | ✓ |
| S7 communication as server | ✓ |
| S7 communication as client | - |
| S7 communication, user data per job | 160 Byte |
| Number of connections, max. | 32 |

Functionality Sub-D interfaces

| | |
|-----------------------|----------------------|
| Type | X2 |
| Type of interface | RS485 |
| Connector | Sub-D, 9-pin, female |
| Electrically isolated | ✓ |
| MPI | ✓ |

| | |
|--------------------------|---|
| MP2I (MPI/RS232) | - |
| DP master | - |
| DP slave | - |
| Point-to-point interface | - |

| | |
|--------------------------|----------------------|
| Type | X3 |
| Type of interface | RS485 |
| Connector | Sub-D, 9-pin, female |
| Electrically isolated | ✓ |
| MPI | - |
| MP2I (MPI/RS232) | - |
| DP master | yes |
| DP slave | yes |
| Point-to-point interface | ✓ |

Functionality MPI

| | |
|-----------------------------|-------------|
| Number of connections, max. | 32 |
| PG/OP channel | ✓ |
| Routing | ✓ |
| Global data communication | ✓ |
| S7 basic communication | ✓ |
| S7 communication | ✓ |
| S7 communication as server | ✓ |
| S7 communication as client | - |
| Transmission speed, min. | 19.2 kbit/s |
| Transmission speed, max. | 12 Mbit/s |

Functionality PROFIBUS master

| | |
|---|------------|
| PG/OP channel | ✓ |
| Routing | ✓ |
| S7 basic communication | ✓ |
| S7 communication | ✓ |
| S7 communication as server | ✓ |
| S7 communication as client | - |
| Activation/deactivation of DP slaves | ✓ |
| Direct data exchange (slave-to-slave communication) | - |
| DPV1 | ✓ |
| Transmission speed, min. | 9.6 kbit/s |
| Transmission speed, max. | 12 Mbit/s |
| Number of DP slaves, max. | 124 |
| Address range inputs, max. | 8 KB |
| Address range outputs, max. | 8 KB |
| User data inputs per slave, max. | 244 Byte |
| User data outputs per slave, max. | 244 Byte |

Functionality PROFIBUS slave

| | |
|---|------------|
| PG/OP channel | ✓ |
| Routing | ✓ |
| S7 communication | ✓ |
| S7 communication as server | ✓ |
| S7 communication as client | - |
| Direct data exchange (slave-to-slave communication) | - |
| DPV1 | ✓ |
| Transmission speed, min. | 9.6 kbit/s |
| Transmission speed, max. | 12 Mbit/s |
| Automatic detection of transmission speed | - |
| Transfer memory inputs, max. | 244 Byte |
| Transfer memory outputs, max. | 244 Byte |
| Address areas, max. | 32 |
| User data per address area, max. | 32 Byte |

Point-to-point communication

| | |
|--------------------------|----------------------|
| PtP communication | ✓ |
| Interface isolated | ✓ |
| RS232 interface | - |
| RS422 interface | - |
| RS485 interface | ✓ |
| Connector | Sub-D, 9-pin, female |
| Transmission speed, min. | 1200 bit/s |
| Transmission speed, max. | 115.5 kbit/s |
| Cable length, max. | 500 m |

Point-to-point protocol

| | |
|------------------------|---|
| ASCII protocol | ✓ |
| STX/ETX protocol | ✓ |
| 3964(R) protocol | ✓ |
| RK512 protocol | - |
| USS master protocol | ✓ |
| Modbus master protocol | ✓ |
| Modbus slave protocol | - |
| Special protocols | - |

Functionality RJ45 interfaces

| | |
|-----------------------------|----------------------|
| Type | X5 |
| Type of interface | Ethernet 10/100 MBit |
| Connector | RJ45 |
| Electrically isolated | ✓ |
| PG/OP channel | ✓ |
| Number of connections, max. | 4 |
| Productive connections | - |

| | |
|-----------------------------|----------------------|
| Type | X8 |
| Type of interface | Ethernet 10/100 MBit |
| Connector | RJ45 |
| Electrically isolated | ✓ |
| PG/OP channel | ✓ |
| Number of connections, max. | 8 |
| Productive connections | ✓ |

Ethernet communication CP

| | |
|--|---|
| Number of productive connections, max. | 24 |
| Number of productive connections by Siemens NetPro, max. | 16 |
| S7 connections | BSEND, BRCV, GET, PUT, Connection of active and passive data handling |
| User data per S7 connection, max. | 32 KB |
| TCP-connections | FETCH PASSIV, WRITE PASSIV, Connection of passive data handling |
| User data per TCP connection, max. | 64 KB |
| ISO-connections | - |
| User data per ISO connection, max. | - |
| ISO on TCP connections (RFC 1006) | FETCH PASSIV, WRITE PASSIV, Connection of passive data handling |
| User data per ISO on TCP connection, max. | 32 KB |
| UDP-connections | - |
| User data per UDP connection, max. | - |
| UDP-multicast-connections | - |
| UDP-broadcast-connections | - |

Ethernet open communication

| | |
|---|-----------|
| Number of connections, max. | 24 |
| User data per ISO on TCP connection, max. | 8 KB |
| User data per native TCP connection, max. | 8 KB |
| User data per ad hoc TCP connection, max. | 1460 Byte |
| User data per UDP connection, max. | 1472 Byte |

EtherCAT Master

| | |
|-----------------------------|------------------|
| Number of EtherCAT-slaves | 512 |
| Update time | 500 µs .. 512 ms |
| Address range inputs, max. | 4 KB |
| Address range outputs, max. | 4 KB |
| EoE support | ✓ |
| FoE support | ✓ |
| Distributed Clock support | ✓ |
| Hotconnect Slaves | ✓ |

Management & diagnosis

| | |
|---------------------|-------------|
| Protocols | ICMP LLC |
| Web based diagnosis | - |

NCM diagnosis



Housing

| | |
|----------|-----------------|
| Material | PPE |
| Mounting | Rail System 300 |

Mechanical data

| | |
|--------------------|-------------------------|
| Dimensions (WxHxD) | 80 mm x 125 mm x 120 mm |
| Weight | 440 g |

Environmental conditions

| | |
|-----------------------|-----------------|
| Operating temperature | 0 °C to 60 °C |
| Storage temperature | -25 °C to 70 °C |

Certifications

| | |
|---------------------|----------------|
| UL508 certification | in preparation |
|---------------------|----------------|