

## Data sheet

### CPU 317SE (317-2AJ23)

#### Technical data

|                                                |                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Order no.                                      | 317-2AJ23                                                                                                                                                                                                                                                                                                                                                            |
| Type                                           | CPU 317SE                                                                                                                                                                                                                                                                                                                                                            |
| <b>General information</b>                     |                                                                                                                                                                                                                                                                                                                                                                      |
| Note                                           | -                                                                                                                                                                                                                                                                                                                                                                    |
| Features                                       | Powered by SPEED7<br>Work memory [KB]: 4.096...8.192<br>SPEED-Bus<br>Interface [RJ45]: Ethernet PG/OP communication<br>Interface [2x RS485]: MPI, PROFIBUS master/slave, PtP:<br>ASCII, STX/ETX, 3964(R), USS master, Modbus master/slave<br>SD/MMC card slot with locking, up to 32 modules stackable,<br>programmable with WinPLC7, SIMATIC Manager and TIA Portal |
| SPEED-Bus                                      | yes                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Technical data power supply</b>             |                                                                                                                                                                                                                                                                                                                                                                      |
| Power supply (rated value)                     | DC 24 V                                                                                                                                                                                                                                                                                                                                                              |
| Power supply (permitted range)                 | DC 20.4...28.8 V                                                                                                                                                                                                                                                                                                                                                     |
| Reverse polarity protection                    | yes                                                                                                                                                                                                                                                                                                                                                                  |
| Current consumption (no-load operation)        | 200 mA                                                                                                                                                                                                                                                                                                                                                               |
| Current consumption (rated value)              | 1.5 A                                                                                                                                                                                                                                                                                                                                                                |
| Inrush current                                 | 5 A                                                                                                                                                                                                                                                                                                                                                                  |
| I <sub>2t</sub>                                | 0.5 A²s                                                                                                                                                                                                                                                                                                                                                              |
| Max. current drain at backplane bus            | 4 A                                                                                                                                                                                                                                                                                                                                                                  |
| Max. current drain load supply                 | -                                                                                                                                                                                                                                                                                                                                                                    |
| Power loss                                     | 6.5 W                                                                                                                                                                                                                                                                                                                                                                |
| <b>Load and working memory</b>                 |                                                                                                                                                                                                                                                                                                                                                                      |
| Load memory, integrated                        | 8 MB                                                                                                                                                                                                                                                                                                                                                                 |
| Load memory, maximum                           | 8 MB                                                                                                                                                                                                                                                                                                                                                                 |
| Work memory, integrated                        | 4 MB                                                                                                                                                                                                                                                                                                                                                                 |
| Work memory, maximal                           | 8 MB                                                                                                                                                                                                                                                                                                                                                                 |
| Memory divided in 50% program / 50% data       | yes                                                                                                                                                                                                                                                                                                                                                                  |
| Memory card slot                               | SD/MMC-Card with max. 2 GB                                                                                                                                                                                                                                                                                                                                           |
| <b>Hardware configuration</b>                  |                                                                                                                                                                                                                                                                                                                                                                      |
| 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                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Status information, alarms, diagnostics</b> |                                                                                                                                                                                                                                                                                                                                                                      |
| Status display                                 | yes                                                                                                                                                                                                                                                                                                                                                                  |
| Interrupts                                     | no                                                                                                                                                                                                                                                                                                                                                                   |
| Process alarm                                  | no                                                                                                                                                                                                                                                                                                                                                                   |
| Diagnostic interrupt                           | no                                                                                                                                                                                                                                                                                                                                                                   |
| Diagnostic functions                           | no                                                                                                                                                                                                                                                                                                                                                                   |

|                                  |            |
|----------------------------------|------------|
| Diagnostics information read-out | possible   |
| Supply voltage display           | green LED  |
| Group error display              | red SF LED |
| Channel error display            | none       |

## Command processing times

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

## 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 16.384 |
| 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         | 1024 Byte                 |
| Max. local data size per block                   | 1024 Byte                 |

## Blocks

|                                                     |            |
|-----------------------------------------------------|------------|
| Number of OBs                                       | 23         |
| 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            | yes                                   |
| 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               | yes                                   |
| Synchronization via MPI             | Master/Slave                          |

Synchronization via Ethernet (NTP)

no

## Address areas (I/O)

|                              |           |
|------------------------------|-----------|
| Input I/O address area       | 8192 Byte |
| Output I/O address area      | 8192 Byte |
| Process image adjustable     | yes       |
| 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                             | yes      |
| Global data communication                 | yes      |
| Number of GD circuits, max.               | 8        |
| Size of GD packets, max.                  | 54 Byte  |
| S7 basic communication                    | yes      |
| S7 basic communication, user data per job | 76 Byte  |
| S7 communication                          | yes      |
| S7 communication as server                | yes      |
| 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    | yes                      |
| MPI                      | yes                      |
| MP2I (MPI/RS232)         | -                        |
| DP master                | -                        |
| DP slave                 | -                        |
| Point-to-point interface | -                        |
| 5V DC Power supply       | max. 90mA, isolated      |
| 24V DC Power supply      | max. 100mA, non-isolated |

|                   |       |
|-------------------|-------|
| Type              | X3    |
| Type of interface | RS485 |

|                          |                          |
|--------------------------|--------------------------|
| Connector                | Sub-D, 9-pin, female     |
| Electrically isolated    | yes                      |
| MPI                      | -                        |
| MP2I (MPI/RS232)         | -                        |
| DP master                | yes                      |
| DP slave                 | yes                      |
| Point-to-point interface | yes                      |
| 5V DC Power supply       | max. 90mA, isolated      |
| 24V DC Power supply      | max. 100mA, non-isolated |

## Functionality MPI

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

## Functionality PROFIBUS master

|                                                     |            |
|-----------------------------------------------------|------------|
| Number of connections, max.                         | 32         |
| PG/OP channel                                       | yes        |
| Routing                                             | yes        |
| S7 basic communication                              | yes        |
| S7 communication                                    | yes        |
| S7 communication as server                          | yes        |
| S7 communication as client                          | -          |
| Activation/deactivation of DP slaves                | yes        |
| Direct data exchange (slave-to-slave communication) | -          |
| DPV1                                                | yes        |
| 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

|                                                     |            |
|-----------------------------------------------------|------------|
| Number of connections, max.                         | 32         |
| PG/OP channel                                       | yes        |
| Routing                                             | yes        |
| S7 communication                                    | yes        |
| S7 communication as server                          | yes        |
| S7 communication as client                          | -          |
| Direct data exchange (slave-to-slave communication) | -          |
| DPV1                                                | yes        |
| 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   |

## Functionality RJ45 interfaces

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

## Point-to-point communication

|                          |                      |
|--------------------------|----------------------|
| PtP communication        | yes                  |
| Interface isolated       | yes                  |
| RS232 interface          | -                    |
| RS422 interface          | -                    |
| RS485 interface          | yes                  |
| Connector                | Sub-D, 9-pin, female |
| Transmission speed, min. | 150 bit/s            |
| Transmission speed, max. | 115.5 kbit/s         |
| Cable length, max.       | 500 m                |

## Point-to-point protocol

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

## Housing

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

## Mechanical data

|                              |                         |
|------------------------------|-------------------------|
| Dimensions (WxHxD)           | 80 mm x 125 mm x 120 mm |
| Net weight                   | 420 g                   |
| Weight including accessories | -                       |
| Gross weight                 | -                       |

## Environmental conditions

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

## Certifications

|                  |     |
|------------------|-----|
| UL certification | yes |
| KC certification | yes |