

Data sheet
CPU 115DP (115-6BL23)
Technical data

| | |
|------------------|------------------|
| Order no. | 115-6BL23 |
| Type | CPU 115DP |

General information

| | |
|----------|---|
| Note | - |
| Features | 16 (20) inputs 16 (12) outputs from which are 2 PWM 50 kHz outputs 24 kB work memory, 32 kB load memory PROFIBUS-DP slave interface |

Technical data power supply

| | |
|---|-----------------------|
| 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) | 160 mA |
| Current consumption (rated value) | 1 A |
| Inrush current | 58 A |
| I^2t | 0.38 A ² s |
| Max. current drain at backplane bus | 0.8 A |
| Max. current drain load supply | - |
| Power loss | 9 W |
| Reverse polarity protection | yes |

Technical data digital inputs

| | |
|---|---------------------|
| Number of inputs | 16 (20) |
| Cable length, shielded | 1000 m |
| Cable length, unshielded | 600 m |
| Rated load voltage | DC 24 V |
| Reverse polarity protection of rated load voltage | yes |
| Current consumption from load voltage L+ (without load) | - |
| Rated value | DC 24 V |
| Input voltage for signal "0" | DC 0...5 V |
| Input voltage for signal "1" | DC 15...28.8 V |
| Input current for signal "1" | 7 mA |
| Connection of Two-Wire-BEROs possible | yes |
| Max. permissible BERO quiescent current | 1.5 mA |
| Input delay of "0" to "1" | 3 ms |
| Input delay of "1" to "0" | 3 ms |
| Input characteristic curve | IEC 61131-2, type 1 |
| Initial data size | 3 Byte |

Technical data digital outputs

| | |
|--------------------------|---------|
| Number of outputs | 16 (12) |
| Cable length, shielded | 1000 m |
| Cable length, unshielded | 600 m |

| | |
|---|-----------------|
| Rated load voltage | DC 24 V |
| Reverse polarity protection of rated load voltage | - |
| Current consumption from load voltage L+ (without load) | 50 mA |
| Total current per group, horizontal configuration, 40°C | 4 A |
| Total current per group, horizontal configuration, 60°C | 4 A |
| Total current per group, vertical configuration | 4 A |
| Output voltage signal "1" at min. current | L+ (-125 mV) |
| Output voltage signal "1" at max. current | L+ (-0.8 V) |
| Output current at signal "1", rated value | 0.5 A |
| Output delay of "0" to "1" | max. 100 µs |
| Output delay of "1" to "0" | max. 350 µs |
| Minimum load current | - |
| Lamp load | 5 W |
| Switching frequency with resistive load | max. 1000 Hz |
| Switching frequency with inductive load | max. 0.5 Hz |
| Switching frequency on lamp load | max. 10 Hz |
| Internal limitation of inductive shut-off voltage | L+ (-52 V) |
| Short-circuit protection of output | yes, electronic |
| Trigger level | 1 A |
| Output data size | 3 Byte |

Technical data counters

| | |
|--------------------------|--------|
| Number of counters | 4 |
| Counter width | 32 Bit |
| Maximum input frequency | 30 kHz |
| Maximum count frequency | 30 kHz |
| Mode incremental encoder | yes |
| Mode pulse / direction | yes |
| Mode pulse | yes |
| Mode frequency counter | - |
| Mode period measurement | - |
| Gate input available | yes |
| Latch input available | - |
| Reset input available | - |
| Counter output available | - |

Status information, alarms, diagnostics

| | |
|----------------------------------|------------|
| Status display | yes |
| Interrupts | yes |
| Process alarm | yes |
| Diagnostic interrupt | yes |
| Diagnostic functions | no |
| Diagnostics information read-out | possible |
| Supply voltage display | green LED |
| Group error display | red SF LED |
| Channel error display | none |

Isolation

| | |
|------------------------------------|-----|
| Between channels of groups to | 8 |
| Between channels and backplane bus | yes |

Insulation tested with DC 500 V

PWM data

| | |
|---------------------|--|
| PWM channels | 2 |
| PWM time basis | PWM 0.1ms/1ms / HF-PWM 2.5...50kHz |
| Period length | - |
| Minimum pulse width | PWM 1...60000 * Time base / HF-PWM 4...60000µs |
| Type of output | Highside |

Load and working memory

| | |
|--|---------------------------|
| Load memory, integrated | 32 KB |
| Load memory, maximum | 32 KB |
| Work memory, integrated | 24 KB |
| Work memory, maximal | 24 KB |
| Memory divided in 50% program / 50% data | - |
| Memory card slot | MMC-Card with max. 512 MB |

Hardware configuration

| | |
|------------------------------------|---|
| Racks, max. | 1 |
| Modules per rack, max. | 4 |
| Number of integrated DP master | - |
| Number of DP master via CP | 4 |
| Operable function modules | 4 |
| Operable communication modules PtP | 4 |
| Operable communication modules LAN | - |

Command processing times

| | |
|---------------------------------|---------|
| Bit instructions, min. | 0.25 µs |
| Word instruction, min. | 1.2 µs |
| Double integer arithmetic, min. | 2.6 µs |
| Floating-point arithmetic, min. | 50 µs |

Timers/Counters and their retentive characteristics

| | |
|---------------------------------|------------------------|
| Number of S7 counters | 256 |
| S7 counter remanence | adjustable 0 up to 64 |
| S7 counter remanence adjustable | C0 .. C7 |
| Number of S7 times | 256 |
| S7 times remanence | adjustable 0 up to 128 |
| S7 times remanence adjustable | not retentive |

Data range and retentive characteristic

| | |
|--|------------------------|
| Number of flags | 8192 Bit |
| Bit memories retentive characteristic adjustable | adjustable 0 up to 256 |
| Bit memories retentive characteristic preset | MB0 .. MB15 |
| Number of data blocks | 2047 |
| Max. data blocks size | 16 KB |
| Number range DBs | 1 ... 2047 |
| Max. local data size per execution level | 1024 Byte |
| Max. local data size per block | 1024 Byte |

Blocks

| | |
|---|------------|
| Number of OBs | 14 |
| Maximum OB size | 16 KB |
| Total number DBs, FBs, FCs | - |
| Number of FBs | 1024 |
| Maximum FB size | 16 KB |
| Number range FBs | 0 ... 1023 |
| Number of FCs | 1024 |
| Maximum FC size | 16 KB |
| Number range FCs | 0 ... 1023 |
| Maximum nesting depth per priority class | 8 |
| Maximum nesting depth additional within an error OB | 1 |

Time

| | |
|-------------------------------------|---------------------------------------|
| Real-time clock buffered | yes |
| Clock buffered period (min.) | 30 d |
| 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 | - |
| Synchronization via Ethernet (NTP) | - |

Address areas (I/O)

| | |
|------------------------------|-----------|
| Input I/O address area | 1024 Byte |
| Output I/O address area | 1024 Byte |
| Process image adjustable | - |
| Input process image preset | 128 Byte |
| Output process image preset | 128 Byte |
| Input process image maximal | 128 Byte |
| Output process image maximal | 128 Byte |
| Digital inputs | 8192 |
| Digital outputs | 8192 |
| Digital inputs central | 148 |
| Digital outputs central | 144 |
| Integrated digital inputs | 16 (20 |
| Integrated digital outputs | 16 (12 |
| Analog inputs | 512 |
| Analog outputs | 512 |
| Analog inputs, central | 32 |
| Analog outputs, central | 16 |
| Integrated analog inputs | - |
| Integrated analog outputs | - |

Communication functions

| | |
|---------------------------|-----|
| PG/OP channel | yes |
| Global data communication | yes |

| | |
|---|----------|
| Number of GD circuits, max. | 4 |
| Size of GD packets, max. | 22 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. | 16 |

Functionality Sub-D interfaces

| | |
|-------------------------------|--------------------------|
| Type | MP ² I |
| Type of interface | RS485 |
| Connector | Sub-D, 9-pin, female |
| Electrically isolated | - |
| MPI | yes |
| MP ² I (MPI/RS232) | yes |
| DP master | - |
| DP slave | - |
| Point-to-point interface | - |
| 5V DC Power supply | max. 90mA, non-isolated |
| 24V DC Power supply | max. 100mA, non-isolated |

| | |
|-------------------------------|--------------------------|
| Type | DP |
| Type of interface | RS485 |
| Connector | Sub-D, 9-pin, female |
| Electrically isolated | yes |
| MPI | - |
| MP ² I (MPI/RS232) | - |
| DP master | - |
| DP slave | yes |
| Point-to-point interface | - |
| 5V DC Power supply | max. 90mA, isolated |
| 24V DC Power supply | max. 100mA, non-isolated |

Functionality MPI

| | |
|-----------------------------|--------------|
| Number of connections, max. | 16 |
| PG/OP channel | yes |
| Routing | - |
| 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. | 187.5 kbit/s |

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. | 64 Byte |
| Transfer memory outputs, max. | 64 Byte |
| Address areas, max. | 1 |
| User data per address area, max. | 64 Byte |

Housing

| | |
|----------|--------------------|
| Material | PPE / PA 6.6 |
| Mounting | Profile rail 35 mm |

Mechanical data

| | |
|------------------------------|--------------------------|
| Dimensions (WxHxD) | 152.4 mm x 76 mm x 48 mm |
| Net weight | 330 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 | - |