

Data sheet

VIPA CPU 315PN ECO (315-4PN43)

Technical data

| | |
|--|--|
| Order no. | 315-4PN43 |
| Type | VIPA CPU 315PN ECO |
| General information | |
| Note | - |
| Features | Powered by SPEED7 Work memory [KB]: 512...1.024 Integrated PROFINET controller Interface [RJ45]: Ethernet / PROFINET-IO Interface [RJ45]: Ethernet PG/OP communication Interface [RS485]: MPI Interface [RS485]: PtP: ASCII, STX/ETX, 3964(R), USS master, Modbus master/slave SD/MMC card slot with locking, up to 32 modules stackable, programmable with WinPLC7, SIMATIC Manager and TIA Portal |
| 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 | yes |
| Current consumption (no-load operation) | 200 mA |
| Current consumption (rated value) | 0.7 A |
| Inrush current | 11 A |
| I ² t | 0.4 A ² s |
| Max. current drain at backplane bus | 2 A |
| Max. current drain load supply | - |
| Power loss | 5.5 W |
| Load and working memory | |
| Load memory, integrated | 1 MB |
| Load memory, maximum | 1 MB |
| Work memory, integrated | 512 KB |
| Work memory, maximal | 1 MB |
| Memory divided in 50% program / 50% data | yes |
| Memory card slot | SD/MMC-Card with max. 2 GB |
| Hardware configuration | |
| Racks, max. | 4 |
| Modules per rack, max. | 8 in multiple-, 32 in a single-rack configuration |
| Number of integrated DP master | 0 |
| Number of DP master via CP | 4 |
| Operable function modules | 8 |
| Operable communication modules PtP | 8 |
| Operable communication modules LAN | 8 |
| Status information, alarms, diagnostics | |
| Status display | yes |
| Interrupts | no |

| | |
|----------------------------------|------------|
| Process alarm | no |
| Diagnostic interrupt | no |
| Diagnostic functions | yes |
| 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 | 512 |
| S7 counter remanence | adjustable 0 up to 512 |
| S7 counter remanence adjustable | C0 .. C7 |
| Number of S7 times | 512 |
| S7 times remanence | adjustable 0 up to 512 |
| S7 times remanence adjustable | not retentive |

Data range and retentive characteristic

| | |
|--|-------------------------|
| Number of flags | 8192 Byte |
| Bit memories retentive characteristic adjustable | adjustable 0 up to 8192 |
| Bit memories retentive characteristic preset | MB0 .. MB15 |
| Number of data blocks | 4095 |
| Max. data blocks size | 64 KB |
| Number range DBs | 1 ... 4095 |
| Max. local data size per execution level | 1024 Byte |
| Max. local data size per block | 1024 Byte |

Blocks

| | |
|---|------------|
| Number of OBs | 20 |
| Maximum OB size | 64 KB |
| Total number DBs, FBs, FCs | - |
| Number of FBs | 2048 |
| Maximum FB size | 64 KB |
| Number range FBs | 0 ... 2047 |
| Number of FCs | 2048 |
| Maximum FC size | 64 KB |
| Number range FCs | 0 ... 2047 |
| Maximum nesting depth per priority class | 8 |
| 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) | Slave |

Address areas (I/O)

| | |
|------------------------------|-----------|
| Input I/O address area | 2048 Byte |
| Output I/O address area | 2048 Byte |
| Process image adjustable | yes |
| Input process image preset | 256 Byte |
| Output process image preset | 256 Byte |
| Input process image maximal | 2048 Byte |
| Output process image maximal | 2048 Byte |
| Digital inputs | 16384 |
| Digital outputs | 16384 |
| Digital inputs central | 1024 |
| Digital outputs central | 1024 |
| Integrated digital inputs | - |
| Integrated digital outputs | - |
| Analog inputs | 1024 |
| Analog outputs | 1024 |
| 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. | 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. | 32 |

Functionality Sub-D interfaces

| | |
|-------------------------------|----------------------|
| Type | X2 |
| Type of interface | RS485 |
| Connector | Sub-D, 9-pin, female |
| Electrically isolated | yes |
| MPI | yes |
| MP ² l (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 | - |
| MP ² I (MPI/RS232) | - |
| DP master | - |
| DP slave | - |
| 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. | - |
| 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. | - |
| Transmission speed, max. | - |
| Number of DP slaves, max. | - |
| Address range inputs, max. | - |
| Address range outputs, max. | - |
| User data inputs per slave, max. | - |
| User data outputs per slave, max. | - |

Functionality PROFIBUS slave

| | |
|-----------------------------|---|
| Number of connections, max. | - |
| 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. | - |
| Transmission speed, max. | - |
| Automatic detection of transmission speed | - |
| Transfer memory inputs, max. | - |
| Transfer memory outputs, max. | - |
| Address areas, max. | - |
| User data per address area, max. | - |

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 | - |
| Fieldbus | - |

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

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 | - |
|-------------------|---|

Properties PROFINET I/O controller

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|---|----------------|
| Realtime Class | - |
| Conformance Class | PROFINET IO |
| Number of PN IO devices | 128 |
| IRT support | - |
| Shared Device supported | - |
| MRP Client supported | - |
| Prioritized start-up | - |
| Number of PN IO lines | 1 |
| Address range inputs, max. | 2 KB |
| Address range outputs, max. | 2 KB |
| Transmitting clock | 1 ms |
| Update time | 1 ms .. 512 ms |
| Isochronous mode | - |
| Parallel operation as controller and I-Device | - |

Ethernet communication CP

| | |
|--|---|
| Number of configurable connections, max. | 8 |
| Number of productive connections by Siemens NetPro, max. | 8 |
| 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. | 8 |
| ISO on TCP connections (RFC 1006) | TSEND, TRCV, TCON, TDISCON |
| User data per ISO on TCP connection, max. | 8 KB |
| TCP-Connections native | TSEND, TRCV, TCON, TDISCON |
| User data per native TCP connection, max. | 8 KB |
| User data per ad hoc TCP connection, max. | 1460 Byte |
| UDP-connections | TUSEND, TURCV |
| User data per UDP connection, max. | 1472 Byte |

Management & diagnosis

| | |
|---------------------|-------------|
| Protocols | ICMP DCP |
| Web based diagnosis | - |
| NCM diagnosis | yes |

Housing

| | |
|---------------------------------|-------------------------|
| Material | PPE |
| Mounting | Rail System 300 |
| Mechanical data | |
| Dimensions (WxHxD) | 80 mm x 125 mm x 120 mm |
| Net weight | 380 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 |