

Data sheet CPU 315SB/DPM (315-2AG12)

Technical data

| Order no. | 315-2AG12 |
|--|---|
| Туре | CPU 315SB/DPM |
| | |
| General information | |
| Note | - |
| Features | SPEED7 technology 1 MB work memory Memory extension (max. 2 MB) PROFIBUS-DP master / PtP (switchable) |
| SPEED-Bus | - |
| Technical data power supply | |
| Power supply (rated value) | DC 24 V |
| Power supply (permitted range) | DC 20.428.8 V |
| Reverse polarity protection | ✓ |
| Current consumption (no-load operation) | 200 mA |
| Current consumption (rated value) | 1 A |
| Inrush current | 5 A |
| 2t | 0.5 A²s |
| Max. current drain at backplane bus | 2.5 A |
| Power loss | 6 W |
| Load and working memory | |
| Load memory, integrated | 2 MB |
| Load memory, maximum | 2 MB |
| Work memory, integrated | 1 MB |
| Work memory, maximal | 2 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 | 8 |
| Operable communication modules LAN | 8 |
| 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

| ### S7 counter remanence adjustable 0 up to \$12 ### S7 counter remanence adjustable 0 up to \$12 ### S7 counter remanence adjustable 0 up to \$12 ### S7 times remanence adjustable 0 up to \$12 ### S7 times remanence adjustable 0 up to \$12 ### S7 times remanence adjustable 0 up to \$12 ### S7 times remanence adjustable 0 up to \$12 ### S7 times remanence adjustable 0 up to \$12 ### S7 times remanence adjustable 0 up to \$12 ### S7 times remanence adjustable 0 up to \$192 ### S8 ## S8 # | | |
|---|---|---------------------------------------|
| S7 counter remanence adjustable C0 C7 Number of S7 times 512 S7 times remanence adjustable 0 up to 512 S7 times remanence adjustable not retertifive Data range and retentifive characteristic Number of flags Bit memories retentifive characteristic adjustable adjustable 0 up to 8192 Bit memories retentifive characteristic preset MB0 MB15 Number of data blocks 4095 Max. data blocks size 64 KB Number of data blocks 4095 Max. local data size per execution level 510 Byte Max. local data size per block 510 Byte Blocks 8 Number of OB 24 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 range FDs 0 2047 Number range FDs 0 2047 Number get pide portificates 8 Maximum nesting depth additional within an error OB 4 <td< td=""><td>Number of S7 counters</td><td>512</td></td<> | Number of S7 counters | 512 |
| Number of S7 times 512 S7 times remanence adjustable out pto 512 S8 times remanence adjustable out pto 8192 B8 timemories retentive characteristic adjustable out pto 8192 B8 timemories retentive characteristic preset MB0 . MB15 Number of datab blocks size 4095 Max. data blocks size 64 kB Number range D8 14095 Max. local data size per execution level 510 Byte Max. local data size per block 510 Byte Blocks Number of OBs 24 Maximum OB size 64 kB Total number DBs, FBs, FCs - 0. Number of FBs 2048 Maximum FB size 02047 Number ange FBs 02047 Number ange FBs 02047 Number ange FBs 02047 Number ange FCs 02047 Maximum FC size 64 kB Maximum resting depth per priority class 88 Maximum resting depth per priorit | S7 counter remanence | adjustable 0 up to 512 |
| S7 times remanence adjustable 0 up to 512 S7 times remanence adjustable not retertive Data range and retertive characteristic Properties of the properties | S7 counter remanence adjustable | C0 C7 |
| Data range and retentive characteristic Number of flags 8192 Byte Bit memories retentive characteristic adjustable adjustable 0 up to 8192 Bit memories retentive characteristic adjustable adjustable 0 up to 8192 Bit memories retentive characteristic preset MBO MB15 Number of data blocks 4095 Max. data blocks size 64 KB Number range DBS 1 4095 Max. local data size per execution level 510 Byte Max. local data size per block 510 Byte Maximum OB size 64 KB Number of OBS 24 Maximum OB size 64 KB Number of FBS 2048 Maximum PS size 64 KB Number range FBS 0 2047 Number of FBS 0 2047 Number of FCS 2048 Maximum FC size 64 KB Number range FBS 0 2047 Number range FBS 0 2047 Number range FCS 0 2047 Maximum FC size 88 Maximum nesting depth per priority class 88 Maximum nesting depth additional within an error OB 4 Time Feal-time clock buffered | Number of S7 times | 512 |
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| 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 510 Byte Max. local data size per block 510 Byte Blocks Blocks Blocks Number of OBs Maximum OB size 64 KB Total number DBs, FBs, FCs - Number of FBs 2048 Maximum FB size 64 KB Number of FCs 2048 Maximum FB size 64 KB Number of FCs 2048 Maximum FC size 64 KB Number ange FCs 0 2047 Maximum nesting depth per priority class 8 Maximum nesting depth additional within an error OB 4 Time Place Lime clock buffered Clock buffered period (min.) 6 w | S7 times remanence adjustable | not retentive |
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| 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 510 Byte Max. local data size per block 510 Byte Blocks Blocks Blocks Blocks Blocks Blocks Blocks Blocks Blocks Block Blocks | Number of flags | 8192 Byte |
| Number of data blocks Max. data blocks size 64 KB Number range DBs 1 4095 Max. local data size per execution level 510 Byte Max. local data size per block 510 Byte Blocks Number of OBs 44 Maximum OB size 64 KB Number of FBs 2048 Maximum FB size 64 KB Number ange FBs 0 2047 Number of FCs Number of FCs Auximum FC size 64 KB Number range FCs 0 2047 Number range FCs Number range FCs 0 2047 Maximum nesting depth per priority class Maximum nesting depth additional within an error OB 4 Time Real-time clock buffered Clock buffered Clock buffered period (min.) 7 ype of buffering period Load time for 50% buffering period Accuracy (max. deviation per day) Number of operating hours counter 8 Clock synchronization Address area 8 192 Byte Butter 1988 1 4095 4 4095 4 | Bit memories retentive characteristic adjustable | adjustable 0 up to 8192 |
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| Number range DBs Max. local data size per execution level Max. local data size per block 510 Byte Blocks Number of OBs 44 Maximum OB size 64 KB Total number DBs, FBs, FCs - Number of FBs Number of FBs Number of FBs 0 2047 Number of FCs Number of FCs 0 2047 Number of FCs Maximum FC size 64 KB Number range FBs 0 2047 Number range FCs Maximum nesting depth per priority class 8 Maximum nesting depth additional within an error OB 4 Time Real-time clock buffered Clock buffered Clock buffered period (min.) 7 ype of buffering period 48 h Accuracy (max. deviation per day) Number of perating hours counter 8 Clock synchronization Synchronization via MPI Synchronization via Ethernet (NTP) Input I/O address area 8 192 Byte Suda Suda Suda Suda Suda Suda Suda Suda | Number of data blocks | 4095 |
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| Blocks Number of OBS 44 Maximum OB size 64 KB Total number DBs, FBs, FCs - Number of FBs 2048 Maximum FB size 64 KB Number ange FBs 0 2047 Number of FCs 2048 Maximum FC 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 ✓ Clock buffered ✓ Vanadium Rechargeable Lithium Battery Load time for 50% buffering period 20 h Accuracy (max. deviation per day) Number of operating hours counter 8 Clock synchronization ✓ Address area (I/O) Input I/O address area 8 192 Byte 1928 Byte 1948 | Number range DBs | 1 4095 |
| Number of OBs Maximum OB size 64 KB Total number DBs, FBs, FCs - Number of FBs 2048 Maximum FB size 64 KB Number of FCs 2048 Maximum FB size 64 KB Number of FCs 2048 Maximum FC size 64 KB Number of FCs 2048 Maximum FC size 64 KB Number range FCs 0 2047 Maximum nesting depth per priority class 8 Maximum nesting depth per priority class 8 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 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) Input I/O address area 8192 Byte Output I/O address area 8192 Byte | Max. local data size per execution level | 510 Byte |
| Number of OBs 24 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 ✓ Clock buffered period (min.) 6 w Type of buffering Vanadium Rechargeable Lithium Battery Load time for 50% buffering period 48 h Accuracy (max. deviation per day) 10 s Number of operating hours counter 8 Clock synchronization via MPI Master/Slave Synchronization via Ethernet (NTP) no Address areas (VO) Input I/O address area 8192 Byte Output I/O address area 8192 Byte | Max. local data size per block | 510 Byte |
| Maximum OB size fotal number DBs, FBs, FCs lumber 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 Maximum nesting depth additional within an error OB Time Real-time clock buffered Clock buffered period (min.) 10 ype of buffering period Load time for 100% buffering period 48 h Accuracy (max. deviation per day) Number of operating hours counter Synchronization via MPI Synchronization via Ethernet (NTP) no Address areas (I/O) Input I/O address area 8192 Byte 2048 2048 2048 48 h Accuracy (max. deviation per day) Naster/Slave Synchronization via Ethernet (NTP) Input I/O address area 8192 Byte | Blocks | |
| 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 2048 Maximum nesting depth per priority class 8 Maximum nesting depth additional within an error OB 4 Time Real-time clock buffered 20 | Number of OBs | 24 |
| Maximum FB size Maximum FB size Maximum FB size 0 2047 Number of FCs 2048 Maximum FC size Maximum FC size Maximum nesting depth per priority class Maximum nesting depth additional within an error OB 4 Time Real-time clock buffered Clock buffered period (min.) 6 w Type of buffering Load time for 50% buffering period Load time for 100% buffering period Accuracy (max. deviation per day) Number of operating hours counter Synchronization Synchronization via MPI Synchronization via Ethernet (NTP) Input I/O address area Ouglet AB Duale AB Du | Maximum OB size | 64 KB |
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| 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 | Number of FBs | 2048 |
| Number of FCs Maximum FC size 64 KB Number range FCs 0 2047 Maximum nesting depth per priority class Maximum nesting depth additional within an error OB 4 Time Real-time clock buffered Clock buffered period (min.) 7ype of buffering period Load time for 50% buffering period Load time for 100% buffering period Accuracy (max. deviation per day) Number of operating hours counter Synchronization Synchronization via MPI Synchronization via Ethernet (NTP) Address areas (I/O) Input I/O address area 8192 Byte 80 2047 80 | Maximum FB size | 64 KB |
| 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 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) no Address areas (I/O) 8192 Byte Output I/O address area 8192 Byte | Number range FBs | 0 2047 |
| 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 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) no Address areas (I/O) Input I/O address area 8192 Byte Output I/O address area 8192 Byte | Number of FCs | 2048 |
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| Maximum nesting depth additional within an error OB Time Real-time clock buffered Clock buffered of wandium Rechargeable Lithium Battery Load time for 50% buffering period of time for 100% buffering period | Number range FCs | 0 2047 |
| 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) no Address areas (I/O) Input I/O address area 8192 Byte Output I/O address area 8192 Byte | Maximum nesting depth per priority class | 8 |
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| Type of buffering Vanadium Rechargeable Lithium Battery Load time for 50% buffering period Load time for 100% buffering period Accuracy (max. deviation per day) Number of operating hours counter Clock synchronization Synchronization via MPI Master/Slave Synchronization via Ethernet (NTP) Address areas (I/O) Input I/O address area 8192 Byte Output I/O address area 8192 Byte | | ✓ |
| 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) no Address areas (I/O) Input I/O address area 8192 Byte Output I/O address area 8192 Byte | Clock buffered period (min.) | 6 W |
| 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) no Address areas (I/O) Input I/O address area 8192 Byte Output I/O address area 8192 Byte | Type of buffering | Vanadium Rechargeable Lithium Battery |
| Accuracy (max. deviation per day) Number of operating hours counter 8 Clock synchronization 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 | Load time for 50% buffering period | 20 h |
| Number of operating hours counter 8 Clock synchronization Synchronization via MPI Master/Slave Synchronization via Ethernet (NTP) Address areas (I/O) Input I/O address area 8192 Byte Output I/O address area 8192 Byte | Load time for 100% buffering period | 48 h |
| Clock synchronization 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 | Accuracy (max. deviation per day) | 10 s |
| 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 | Number of operating hours counter | 8 |
| Synchronization via Ethernet (NTP) Address areas (I/O) Input I/O address area 8192 Byte Output I/O address area 8192 Byte | Clock synchronization | ✓ |
| Address areas (I/O) Input I/O address area 8192 Byte Output I/O address area 8192 Byte | Synchronization via MPI | Master/Slave |
| Input I/O address area 8192 Byte Output I/O address area 8192 Byte | Synchronization via Ethernet (NTP) | no |
| Output I/O address area 8192 Byte | Address areas (I/O) | |
| | Input I/O address area | 8192 Byte |
| Process image adjustable | Output I/O address area | 8192 Byte |
| Trocess image adjustable | Process image adjustable | ✓ |
| Input process image preset 256 Byte | Input process image preset | 256 Byte |



| Output process image preset | 256 Byte | A YASKAWA COMPANY |
|---|----------------------|-------------------|
| Input process image maximal | 2048 Byte | |
| Output process image maximal | 2048 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. | 54 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 | | |
| Туре | 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 | - | |
| | | |
| Туре | Х3 | |
| Type of interface | RS485 | |
| Connector | Sub-D, 9-pin, female | |
| Electrically isolated | ✓ | |
| MPI | - | |
| MP²I (MPI/RS232) | - | |
| | | |



| DP master | yes A YASKAWA COMPANY |
|---|-----------------------|
| DP slave | yes |
| Point-to-point interface | ✓ |
| Functionality MPI | |
| | 32 |
| Number of connections, max. 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 | y |
| 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 A YASKAWA C | OMPANY |
|----------------------------------|-------------------------|--------|
| 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. | 150 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 | | |
| Туре | X4 | |
| Type of interface | Ethernet 10/100 MBit | |
| Connector | RJ45 | |
| Electrically isolated | ✓ | |
| PG/OP channel | ✓ | |
| Number of connections, max. | 4 | |
| Productive connections | - | |
| Housing | | |
| Material | PPE | |
| Mounting | Rail System 300 | |
| Mechanical data | | |
| Dimensions (WxHxD) | 40 mm x 125 mm x 120 mm | |
| Weight | 290 g | |
| Environmental conditions | | |
| Operating temperature | 0 °C to 60 °C | |
| Storage temperature | -25 °C to 70 °C | |



UL508 certification yes

