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## Data sheet 6AG2515-2RM00-4AB0



Figure similar

***spare part*** SIPLUS S7-1500 CPU 1515R-2 PN TX rail based on 6ES7515-2RM00-0AB0 with conformal coating, -40…+70 °C, OT4 with ST1/2 (+85 °C for 10 minutes), heat sink, no PU usable, central processing unit without display with work memory 500 KB for program and 3 MB for data, 1st interface: PROFINET with 2-port switch, 2nd interface: PROFINET RT, SIMATIC Memory Card required

| | |
|---|---|
| **General information** | |
| Product type designation | CPU 1515R-2 PN |
| based on | 6ES7515-2RM00-0AB0 |
| Engineering with | |
| ● STEP 7 TIA Portal configurable/integrated from version | see entry ID: 109746275 |
| **Control elements** | |
| Mode selector switch | 1 |
| **Supply voltage** | |
| Rated value (DC) | 24 V |
| permissible range, lower limit (DC) | 19.2 V |
| permissible range, upper limit (DC) | 28.8 V |
| Reverse polarity protection | Yes |
| Mains buffering | |
| ● Mains/voltage failure stored energy time | 5 ms |
| **Input current** | |
| Current consumption (rated value) | 0.8 A |
| Inrush current, max. | 2.4 A |
| $I^2t$ | 0.02 $A^2 \cdot s$ |
| **Power loss** | |
| Power loss, typ. | 6.3 W |
| **Storage** | |
| Number of slots for SIMATIC memory card | 1 |
| SIMATIC memory card required | Yes |
| Work memory | |
| ● integrated (for program) | 500 kbyte |
| ● integrated (for data) | 3 Mbyte |
| Load memory | |
| ● Plug-in (SIMATIC Memory Card), max. | 32 Gbyte |
| Backup | |
| ● maintenance-free | Yes |
| **CPU processing times** | |
| for bit operations, typ. | 60 ns |
| for word operations, typ. | 72 ns |
| for fixed point arithmetic, typ. | 96 ns |
| for floating point arithmetic, typ. | 384 ns |
| **CPU-blocks** | |
| Number of elements (total) | 6 000; Blocks (OB, FB, FC, DB) and UDTs |
| DB | |


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| | |
|---|---|
| ● Number range | Number range: 1 to 59 999 |
| ● Size, max. | 3 Mbyte; For non-optimized block accesses, the max. size of the DB is 64 KB |
| FB | |
| ● Number range | 0 ... 65 535 |
| ● Size, max. | 500 kbyte |
| FC | |
| ● Number range | 0 ... 65 535 |
| ● Size, max. | 500 kbyte |
| OB | |
| ● Size, max. | 500 kbyte |
| ● Number of free cycle OBs | 100 |
| ● Number of time alarm OBs | 20 |
| ● Number of delay alarm OBs | 20 |
| ● Number of cyclic interrupt OBs | 20 |
| ● Number of process alarm OBs | 50 |
| ● Number of startup OBs | 100 |
| ● Number of asynchronous error OBs | 4 |
| ● Number of synchronous error OBs | 2 |
| ● Number of diagnostic alarm OBs | 1 |
| Nesting depth | |
| ● per priority class | 24 |
| **Counters, timers and their retentivity** | |
| S7 counter | |
| ● Number | 2 048 |
| Retentivity | |
| — can be set | Yes |
| IEC counter | |
| ● Number | Any (only limited by the main memory) |
| Retentivity | |
| — can be set | Yes |
| S7 timer | |
| ● Number | 2 048 |
| Retentivity | |
| — adjustable | Yes |
| IEC timer | |
| ● Number | Any (only limited by the main memory) |
| Retentivity | |
| — adjustable | Yes |
| **Data areas and their retentivity** | |
| Retentive data area (incl. timers, counters, flags), max. | 512 kbyte |
| Flag | |
| ● Size, max. | 16 kbyte |
| ● Number of clock memories | 8; 8 clock memory bit, grouped into one clock memory byte |
| Data blocks | |
| ● Retentivity adjustable | Yes |
| ● Retentivity preset | No |
| Local data | |
| ● per priority class, max. | 64 kbyte; max. 16 KB per block |
| **Address area** | |
| Number of IO modules | 4 096; max. number of modules / submodules |
| I/O address area | |
| ● Inputs | 32 kbyte; All inputs are in the process image |
| ● Outputs | 32 kbyte; All outputs are in the process image |
| per integrated IO subsystem | |
| — Inputs (volume) | 8 kbyte |
| — Outputs (volume) | 8 kbyte |
| Subprocess images | |
| ● Number of subprocess images, max. | 32 |
| **Hardware configuration** | |


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| Number of IO Controllers | |
| ● Integrated | 1 |
| **Time of day** | |
| Clock | |
| ● Backup time | 6 wk; At 40 °C ambient temperature, typically |
| ● Deviation per day, max. | 10 s; Typ.: 2 s |
| Operating hours counter | |
| ● Number | 16 |
| Clock synchronization | |
| ● supported | Yes |
| ● in AS, master | No |
| ● in AS, device | No |
| ● on Ethernet via NTP | Yes |
| **Interfaces** | |
| Number of PROFINET interfaces | 1 |
| **1. Interface** | |
| Interface types | |
| ● RJ 45 (Ethernet) | Yes; X1 |
| ● Number of ports | 2 |
| ● integrated switch | Yes |
| Protocols | |
| ● IP protocol | Yes; IPv4 |
| ● PROFINET IO Controller | Yes |
| ● PROFINET IO device | No |
| ● SIMATIC communication | Yes; Only Server |
| ● Open IE communication | Yes |
| ● Web server | No |
| ● Media redundancy | Yes |
| PROFINET IO Controller | |
| Services | |
| — PG/OP communication | Yes |
| — Isochronous mode | No |
| — IRT | No |
| — PROFIenergy | Yes |
| — Number of connectable IO Devices, max. | 64 |
| — Updating times | The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data |
| Update time for RT | |
| — for send cycle of 1 ms | 1 ms to 512 ms |
| **2. Interface** | |
| Interface types | |
| ● RJ 45 (Ethernet) | Yes; X2 |
| ● Number of ports | 1 |
| ● integrated switch | No |
| Protocols | |
| ● IP protocol | Yes; IPv4 |
| ● PROFINET IO Controller | No |
| ● PROFINET IO device | No |
| ● SIMATIC communication | Yes; Only Server |
| ● Open IE communication | Yes |
| ● Web server | No |
| ● Media redundancy | No |
| **Interface types** | |
| RJ 45 (Ethernet) | |
| ● 100 Mbps | Yes |
| ● Autonegotiation | Yes |
| ● Autocrossing | Yes |
| ● Industrial Ethernet status LED | Yes |


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|---|---|
| **Protocols** | |
| PROFIsafe | No |
| Number of connections | |
| ● Number of connections, max. | 108 |
| ● Number of connections reserved for ES/HMI/web | 10 |
| Redundancy mode | |
| Media redundancy | |
| — MRP | Yes; Manager Auto is permanently set in TIA. Max. 50 nodes are possible, 16 are recommended |
| — MRPD | No |
| — Switchover time on line break, typ. | 200 ms; PROFINET MRP |
| — Number of stations in the ring, max. | 50; Only 16 are recommended, however |
| SIMATIC communication | |
| ● S7 routing | No |
| ● S7 communication, as server | Yes |
| ● S7 communication, as client | No |
| Open IE communication | |
| ● TCP/IP | Yes |
| — Data length, max. | 64 kbyte |
| — several passive connections per port, supported | Yes |
| ● ISO-on-TCP (RFC1006) | Yes |
| — Data length, max. | 64 kbyte |
| ● UDP | Yes |
| — Data length, max. | 2 kbyte; 1 472 bytes for UDP broadcast |
| — UDP multicast | Yes; Max. 5 multicast circuits |
| ● DHCP | No |
| ● SNMP | Yes |
| ● DCP | Yes |
| ● LLDP | Yes |
| Web server | |
| ● HTTP | No |
| ● HTTPS | No |
| OPC UA | |
| ● OPC UA Client | No |
| ● OPC UA Server | No |
| Further protocols | |
| ● MODBUS | Yes; MODBUS TCP |
| **S7 message functions** | |
| Program alarms | No |
| **Test commissioning functions** | |
| Joint commission (Team Engineering) | No |
| Status block | Yes; up to 8 simultaneously |
| Single step | No |
| Status/control | |
| ● Status/control variable | Yes |
| ● Variables | Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters |
| ● Number of variables, max. | |
| — of which status variables, max. | 200; per job |
| — of which control variables, max. | 200; per job |
| Forcing | |
| ● Forcing, variables | Peripheral inputs/outputs |
| ● Number of variables, max. | 200 |
| Diagnostic buffer | |
| ● present | Yes |
| ● Number of entries, max. | 3 200 |
| — of which powerfail-proof | 500 |
| Traces | |
| ● Number of configurable Traces | 4 |
| ● Memory size per trace, max. | 512 kbyte |


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| **Interrupts/diagnostics/status information** | |
| Diagnostics indication LED | |
| ● RUN/STOP LED | Yes |
| ● ERROR LED | Yes |
| ● MAINT LED | Yes |
| ● Connection display LINK TX/RX | Yes |
| **Supported technology objects** | |
| Motion Control | No |
| Controller | |
| ● PID_Compact | No |
| ● PID_3Step | No |
| ● PID-Temp | No |
| Counting and measuring | |
| ● High-speed counter | No |
| **Isolation** | |
| Isolation tested with | 750 V DC (type test) and according to EN 50155 (routine test) |
| **Standards, approvals, certificates** | |
| Railway application | |
| ● EN 50121-3-2 | Yes; EMC for rail vehicles |
| ● EN 50121-4 | Yes; EMC for signal and telecommunications systems |
| ● EN 50124-1 | Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC |
| ● EN 50125-1 | Yes; Rail vehicles - see ambient conditions |
| ● EN 50125-2 | Yes; Stationary electrical equipment - see ambient conditions |
| ● EN 50125-3 | Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track) |
| ● EN 50155 | Yes; Rail vehicles - temperature class OT4, ST1/ST2, horizontal mounting position |
| ● EN 61373 | Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B |
| ● Fire protection acc. to EN 45545-2 | Yes; For proof of conformity, see Service & Support |
| **Ambient conditions** | |
| Ambient temperature during operation | |
| ● horizontal installation, min. | -40 °C; = Tmin (incl. condensation/frost) |
| ● horizontal installation, max. | 70 °C; = Tmax; +85 °C for 10 min (OT4, ST1/ST2 acc. to EN 50155) |
| ● vertical installation, min. | -40 °C; = Tmin |
| ● vertical installation, max. | 40 °C; = Tmax |
| Ambient temperature during storage/transportation | |
| ● min. | -40 °C |
| ● max. | 70 °C |
| Altitude during operation relating to sea level | |
| ● Installation altitude above sea level, max. | 2 000 m |
| ● Ambient air temperature-barometric pressure-altitude | Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) |
| Relative humidity | |
| ● With condensation, tested in accordance with IEC 60068-2-38, max. | 100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation |
| Resistance | |
| Coolants and lubricants | |
| — Resistant to commercially available coolants and lubricants | Yes; Incl. diesel and oil droplets in the air |
| Use in stationary industrial systems | |
| — to biologically active substances according to EN 60721-3-3 | Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request |
| — to chemically active substances according to EN 60721-3-3 | Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * |
| — to mechanically active substances according to EN 60721-3-3 | Yes; Class 3S4 incl. sand, dust, * |
| Use on land craft, rail vehicles and special-purpose vehicles | |
| — to biologically active substances according to EN 60721-3-5 | Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request |
| — to chemically active substances according to EN 60721-3-5 | Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * |


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|---|---|
| — to mechanically active substances according to EN 60721-3-5 | Yes; Class 5S3 incl. sand, dust; * |
| Usage in industrial process technology | |
| — Against chemically active substances acc. to EN 60654-4 | Yes; Class 3 (excluding trichlorethylene) |
| — Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04 | Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil) |
| Remark | |
| — Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04 | * The supplied plug covers must remain in place over the unused interfaces during operation! |
| Conformal coating | |
| ● Coatings for printed circuit board assemblies acc. to EN 61086 | Yes; Class 2 for high reliability |
| ● Protection against fouling acc. to EN 60664-3 | Yes; Type 1 protection |
| ● Electronic equipment on rolling stock acc. to EN 50155 | Yes; Class PC2 protective coating acc. to EN 50155:2017 |
| ● Military testing according to MIL-I-46058C, Amendment 7 | Yes; Discoloration of coating possible during service life |
| ● Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A | Yes; Conformal coating, Class A |
| **Configuration** | |
| Programming | |
| Programming language | |
| — LAD | Yes |
| — FBD | Yes |
| — STL | Yes |
| — SCL | Yes |
| — CFC | No |
| — GRAPH | No |
| Know-how protection | |
| ● User program protection/password protection | Yes |
| ● Copy protection | No |
| ● Block protection | Yes |
| Access protection | |
| ● Protection level: Write protection | Yes |
| ● Protection level: Read/write protection | Yes |
| ● Protection level: Complete protection | Yes |
| **Dimensions** | |
| Width | 105 mm |
| Height | 147 mm |
| Depth | 129 mm |
| **Weights** | |
| Weight, approx. | 1 100 g |
| **Other** | |
| Note: | for use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A, Online Support article 109736776 |

**Classifications**

| | Version | Classification |
|---|---|---|
| eClass | 16 | 27-24-22-07 |
| eClass | 14 | 27-24-22-07 |
| eClass | 12 | 27-24-22-07 |
| eClass | 9.1 | 27-24-22-07 |
| eClass | 9 | 27-24-22-07 |
| eClass | 8 | 27-24-22-07 |
| eClass | 7.1 | 27-24-22-07 |
| eClass | 6 | 27-24-22-07 |
| ETIM | 10 | EC000236 |
| ETIM | 9 | EC000236 |
| ETIM | 8 | EC000236 |


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|---|---|---|
| ETIM | 7 | EC000236 |
| IDEA | 4 | 3565 |
| UNSPSC | 15 | 32-15-17-05 |

## Approvals / Certificates

### General Product Approval

Manufacturer Declaration

China RoHS

### General Product Approval

### EMV

### Railway

Confirmation

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