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## Data sheet 6AG2134-6GD01-1BA1




SIPLUS ET 200SP AI 4xI 2-/4-wire T1 rail based on 6ES7134-6GD01-0BA1 with conformal coating, -40…+60 °C, OT1 with ST1/2 (+70 °C für 10 minutes), analog input module, suitable for BU type A0, A1, color code CC03, module diagnostics, 16-bit, +/-0.3%

| | |
|---|---|
| **General information** | |
| Product type designation | AI 4xI 2-/4-wire ST |
| Firmware version | |
| ● FW update possible | Yes |
| based on | 6ES7134-6GD01-0BA1 |
| usable BaseUnits | BU type A0, A1 |
| Color code for module-specific color-coded label | CC03 |
| Product function | |
| ● I&M data | Yes; I&M0 to I&M3 |
| ● Isochronous mode | No |
| ● Measuring range scalable | No |
| Engineering with | |
| ● STEP 7 TIA Portal configurable/integrated from version | see entry ID: 109746275 |
| Operating mode | |
| ● Oversampling | No |
| ● MSI | No |
| **CiR - Configuration in RUN** | |
| Reparameterization possible in RUN | Yes |
| Calibration possible in RUN | No |
| **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 |
| **Input current** | |
| Current consumption, max. | 37 mA; without sensor supply |
| **Encoder supply** | |
| 24 V encoder supply | |
| ● 24 V | Yes |
| ● Short-circuit protection | Yes |
| ● Output current, max. | 20 mA; max. 50 mA per channel for a duration < 10 s |
| **Power loss** | |
| Power loss, typ. | 0.85 W; Without encoder supply voltage |
| **Address area** | |
| Address space per module | |
| ● Address space per module, max. | 8 byte; + 1 byte for QI information |
| **Hardware configuration** | |
| Automatic encoding | |
| ● Mechanical coding element | Yes |


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| Selection of BaseUnit for connection variants | |
| ● 2-wire connection | BU type A0, A1 |
| ● 4-wire connection | BU type A0, A1 |
| **Analog inputs** | |
| Number of analog inputs | 4; Differential inputs |
| permissible input current for current input (destruction limit), max. | 50 mA |
| Cycle time (all channels), min. | Sum of the basic conversion times and additional processing times (depending on the parameterization of the active channels) |
| Input ranges (rated values), currents | |
| ● 0 to 20 mA | Yes; 16 bit incl. sign |
| — Input resistance (0 to 20 mA) | 100 Ω; + approx. 0.7 V diode forward voltage in 2-wire operation |
| ● -20 mA to +20 mA | Yes |
| — Input resistance (-20 mA to +20 mA) | 100 Ω |
| ● 4 mA to 20 mA | Yes; 15 bit |
| — Input resistance (4 mA to 20 mA) | 100 Ω; + approx. 0.7 V diode forward voltage in 2-wire operation |
| Cable length | |
| ● shielded, max. | 1 000 m |
| **Analog value generation for the inputs** | |
| Measurement principle | integrating (Sigma-Delta) |
| Integration and conversion time/resolution per channel | |
| ● Resolution with overrange (bit including sign), max. | 16 bit |
| ● Integration time, parameterizable | Yes |
| ● Interference voltage suppression for interference frequency f1 in Hz | 16.6 / 50 / 60 Hz |
| ● Conversion time (per channel) | 180 / 60 / 50 ms |
| Smoothing of measured values | |
| ● Number of smoothing levels | 4; None; 4/8/16 times |
| ● Parameterizable | Yes |
| **Encoder** | |
| Connection of signal encoders | |
| ● for voltage measurement | No |
| ● for current measurement as 2-wire transducer | Yes |
| — Burden of 2-wire transmitter, max. | 650 Ω |
| ● for current measurement as 4-wire transducer | Yes |
| **Errors/accuracies** | |
| Linearity error (relative to input range), (+/-) | 0.01 % |
| Temperature error (relative to input range), (+/-) | 0.005 %/K |
| Crosstalk between the inputs, min. | 50 dB; Applies to up to ±5 V overvoltage in other channels |
| Repeat accuracy in steady state at 25 °C (relative to input range), (+/-) | 0.05 % |
| Operational error limit in overall temperature range | |
| ● Current, relative to input range, (+/-) | 0.7 % |
| Basic error limit (operational limit at 25 °C) | |
| ● Current, relative to input range, (+/-) | 0.3 % |
| Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency | |
| ● Series mode interference (peak value of interference < rated value of input range), min. | 70 dB |
| ● Common mode voltage, max. | 10 V |
| ● Common mode interference, min. | 90 dB |
| **Interrupts/diagnostics/status information** | |
| Diagnostics function | Yes |
| Alarms | |
| ● Diagnostic alarm | Yes |
| ● Limit value alarm | No |
| Diagnoses | |
| ● Monitoring the supply voltage | Yes |
| ● Wire break | Yes; at 4 to 20 mA |
| ● short-circuit | Yes; 2-wire mode: Short-circuit of the encoder supply to ground or of an input to the encoder supply |


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| ● Group error | Yes |
| ● Overflow/Underflow | Yes |
| Diagnostics indication LED | |
| ● Monitoring of the supply voltage (PWR-LED) | Yes; green LED |
| ● Channel status display | Yes; green LED |
| ● for channel diagnostics | No |
| ● for module diagnostics | Yes; green/red LED |
| **Potential separation** | |
| Potential separation channels | |
| ● between the channels | Yes; channel group-specific between 2-wire current input group and 4-wire voltage input group |
| ● between the channels and backplane bus | Yes |
| ● between the channels and the power supply of the electronics | Yes; only for 4-wire transducer |
| **Permissible potential difference** | |
| between the inputs (UCM) | 10 V DC |
| **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 50121-5 | Yes; EMC for fixed installations and railway power supply equipment |
| ● 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 OT1, 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); start-up @ -30 °C |
| ● horizontal installation, max. | 60 °C; = Tmax; +70 °C for 10 min (OT1, ST1/ST2 acc. to EN 50155) |
| ● vertical installation, min. | -40 °C; = Tmin; startup @ -30 °C |
| ● vertical installation, max. | 50 °C; = Tmax |
| 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, * |
| — Against mechanical environmental conditions acc. to EN 60721-3-3 | Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0) |
| 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 |


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| — 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); * |
| — to mechanically active substances according to EN 60721-3-5 | Yes; Class 5S3 incl. sand, dust; * |
| — Against mechanical environmental conditions acc. to EN 60721-3-5 | Yes; Class 5M2 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0) |
| — against mechanical environmental conditions in agriculture acc. to ISO 15003 | Yes; level 1 (Location LE) using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0) |
| 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 |
| **Dimensions** | |
| Width | 15 mm |
| Height | 73 mm |
| Depth | 58 mm |
| **Weights** | |
| Weight, approx. | 31 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 | 27-24-26-01 |
| eClass | 14 | 27-24-26-01 |
| eClass | 12 | 27-24-26-01 |
| eClass | 9.1 | 27-24-26-01 |
| eClass | 9 | 27-24-26-01 |
| eClass | 8 | 27-24-26-01 |
| eClass | 7.1 | 27-24-26-01 |
| eClass | 6 | 27-24-26-01 |
| ETIM | 10 | EC001596 |
| ETIM | 9 | EC001596 |
| ETIM | 8 | EC001596 |
| ETIM | 7 | EC001596 |
| IDEA | 4 | 3562 |
| UNSPSC | 15 | 32-15-17-05 |

**Approvals / Certificates**

**General Product Approval**

Manufacturer Declaration

China RoHS


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| General Product Approval | | | EMV |
| --- | --- | --- | --- |
| CE EG-Konf. | UKCA | China RoHS | RCM |

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