



Figure similar

SIPLUS S7-1200 SM 1232 T1 rail based on 6ES7232-4HD32-0XB0 with conformal coating, -25...+60 °C, OT1 with ST1/2 (+70 °C für 10 minutes), S7-1200, analog output, SM 1232, 4 AQ, +/-10 V, 14-bit resolution, or 0-20 mA, 13-bit resolution:

| General information                                                                    |                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------|
| Product type designation                                                               | SM 1232 AQ 4x 14 bit                                |
| based on                                                                               | <a href="#">6ES7232-4HD32-0XB0</a>                  |
| Supply voltage                                                                         |                                                     |
| Rated value (DC)                                                                       | 24 V                                                |
| Input current                                                                          |                                                     |
| Current consumption, typ.                                                              | 45 mA                                               |
| from backplane bus 5 V DC, typ.                                                        | 80 mA                                               |
| Power loss                                                                             |                                                     |
| Power loss, typ.                                                                       | 1.5 W                                               |
| Analog outputs                                                                         |                                                     |
| Number of analog outputs                                                               | 4; Current or voltage                               |
| Output ranges, voltage                                                                 |                                                     |
| • -10 V to +10 V                                                                       | Yes                                                 |
| Output ranges, current                                                                 |                                                     |
| • 0 to 20 mA                                                                           | Yes                                                 |
| Load impedance (in rated range of output)                                              |                                                     |
| • with voltage outputs, min.                                                           | 1 000 Ω                                             |
| • with current outputs, max.                                                           | 600 Ω                                               |
| Analog value generation for the outputs                                                |                                                     |
| Integration and conversion time/resolution per channel                                 |                                                     |
| • Resolution with overrange (bit including sign), max.                                 | 14 bit; Voltage: 14 bit; Current : 13 bit           |
| Errors/accuracies                                                                      |                                                     |
| Temperature error (relative to output range), (+/-)                                    | 25 °C ±0.3%, to 55 °C ±0.6% total measurement range |
| Basic error limit (operational limit at 25 °C)                                         |                                                     |
| • Voltage, relative to output range, (+/-)                                             | 0.3 %                                               |
| • Current, relative to output range, (+/-)                                             | 0.3 %                                               |
| Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency |                                                     |
| • Common mode voltage, max.                                                            | 12 V                                                |
| Interrupts/diagnostics/status information                                              |                                                     |
| Alarms                                                                                 | Yes                                                 |
| Diagnostics function                                                                   | Yes                                                 |
| Alarms                                                                                 |                                                     |
| • Diagnostic alarm                                                                     | Yes                                                 |
| Diagnoses                                                                              |                                                     |
| • Monitoring the supply voltage                                                        | Yes                                                 |
| • Wire-break                                                                           | Yes                                                 |
| • Short-circuit                                                                        | Yes                                                 |
| Diagnostics indication LED                                                             |                                                     |

|                                                                      |                                                                                                                                                              |
|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| • for status of the outputs                                          | Yes                                                                                                                                                          |
| • for maintenance                                                    | Yes                                                                                                                                                          |
| <b>Isolation</b>                                                     |                                                                                                                                                              |
| Isolation tested with                                                | 750 V DC (type test) and according to EN 50155 (routine test)                                                                                                |
| <b>Degree and class of protection</b>                                |                                                                                                                                                              |
| IP degree of protection                                              | IP20                                                                                                                                                         |
| <b>Standards, approvals, certificates</b>                            |                                                                                                                                                              |
| CE mark                                                              | Yes                                                                                                                                                          |
| <b>Ecological footprint</b>                                          |                                                                                                                                                              |
| • environmental product declaration                                  | Yes                                                                                                                                                          |
| <b>Global warming potential</b>                                      |                                                                                                                                                              |
| — global warming potential, (total) [CO2 eq]                         | 36.4 kg                                                                                                                                                      |
| — global warming potential, (during production) [CO2 eq]             | 7.46 kg                                                                                                                                                      |
| — global warming potential, (during operation) [CO2 eq]              | 29.1 kg                                                                                                                                                      |
| — global warming potential, (after end of life cycle) [CO2 eq]       | -0.18 kg                                                                                                                                                     |
| <b>Railway application</b>                                           |                                                                                                                                                              |
| • 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 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                                                                                                          |
| <b>Ambient conditions</b>                                            |                                                                                                                                                              |
| <b>Free fall</b>                                                     |                                                                                                                                                              |
| • Fall height, max.                                                  | 0.3 m; five times, in product package                                                                                                                        |
| <b>Ambient temperature during operation</b>                          |                                                                                                                                                              |
| • min.                                                               | -25 °C; = Tmin (incl. condensation/frost)                                                                                                                    |
| • max.                                                               | 60 °C; = Tmax; +70 °C for 10 min (OT1, ST1/ST2 acc. to EN 50155)                                                                                             |
| • vertical installation, min.                                        | -25 °C; = Tmin                                                                                                                                               |
| • vertical installation, max.                                        | 50 °C; = Tmax                                                                                                                                                |
| <b>Ambient temperature during storage/transportation</b>             |                                                                                                                                                              |
| • min.                                                               | -40 °C                                                                                                                                                       |
| • max.                                                               | 70 °C                                                                                                                                                        |
| <b>Air pressure acc. to IEC 60068-2-13</b>                           |                                                                                                                                                              |
| • Storage/transport, min.                                            | 660 hPa                                                                                                                                                      |
| • Storage/transport, max.                                            | 1 080 hPa                                                                                                                                                    |
| <b>Altitude during operation relating to sea level</b>               |                                                                                                                                                              |
| • 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)                                                                                               |
| <b>Relative humidity</b>                                             |                                                                                                                                                              |
| • With condensation, tested in accordance with IEC 60068-2-38, max.  | 100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation                                                            |
| <b>Resistance</b>                                                    |                                                                                                                                                              |
| <b>Coolants and lubricants</b>                                       |                                                                                                                                                              |
| — Resistant to commercially available coolants and lubricants        | Yes; Incl. diesel and oil droplets in the air                                                                                                                |
| <b>Use in stationary industrial systems</b>                          |                                                                                                                                                              |
| — 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, *                                                                                                                           |
| <b>Use on land craft, rail vehicles and special-purpose vehicles</b> |                                                                                                                                                              |

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|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| — 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); *                                                                                            |
| — to mechanically active substances according to EN 60721-3-5                                                           | Yes; Class 5S3 incl. sand, dust; *                                                                                                                                                  |
| <b>Usage in industrial process technology</b>                                                                           |                                                                                                                                                                                     |
| — 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) |
| <b>Remark</b>                                                                                                           |                                                                                                                                                                                     |
| — 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!                                                                                        |
| <b>Conformal coating</b>                                                                                                |                                                                                                                                                                                     |
| • 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                                                                                                                                                     |
| <b>connection method</b>                                                                                                |                                                                                                                                                                                     |
| required front connector                                                                                                | Yes                                                                                                                                                                                 |
| <b>Mechanics/material</b>                                                                                               |                                                                                                                                                                                     |
| Enclosure material (front)                                                                                              |                                                                                                                                                                                     |
| • Plastic                                                                                                               | Yes                                                                                                                                                                                 |
| <b>Dimensions</b>                                                                                                       |                                                                                                                                                                                     |
| Width                                                                                                                   | 45 mm                                                                                                                                                                               |
| Height                                                                                                                  | 100 mm                                                                                                                                                                              |
| Depth                                                                                                                   | 75 mm                                                                                                                                                                               |
| <b>Weights</b>                                                                                                          |                                                                                                                                                                                     |
| Weight, approx.                                                                                                         | 180 g                                                                                                                                                                               |
| <b>Other</b>                                                                                                            |                                                                                                                                                                                     |
| Note:                                                                                                                   | for use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A, Online Support article 109736776                                          |
| <b>last modified:</b>                                                                                                   | 10/9/2024                                                                                        |