



Figure similar

SIPLUS S7-1200 SM 1231 8AI based on 6ES7231-4HF32-0XB0 with conformal coating, -20...+60 °C, analog input SM 1231, 8 AI, +/-10 V, +/-5 V, +/-2.5 V, or 0-20 mA/4-20 mA, 12 bit+sign or (13 bit ADC)

| General information | |
|---|---|
| Product type designation | SM 1231, AI 8x13 bit |
| based on | 6ES7231-4HF32-0XB0 |
| Supply voltage | |
| Rated value (DC) | 24 V |
| Input current | |
| Current consumption, typ. | 45 mA |
| from backplane bus 5 V DC, typ. | 90 mA |
| Power loss | |
| Power loss, typ. | 1.5 W |
| Analog inputs | |
| Number of analog inputs | 8; Current or voltage differential inputs |
| permissible input voltage for voltage input (destruction limit), max. | 35 V |
| permissible input current for current input (destruction limit), max. | 40 mA |
| Cycle time (all channels) max. | 625 µs |
| Input ranges | |
| • Voltage | Yes; ±10V, ±5V, ±2.5V |
| • Current | Yes; 4 to 20 mA, 0 to 20 mA |
| • Thermocouple | No |
| • Resistance thermometer | No |
| • Resistance | Yes |
| Input ranges (rated values), voltages | |
| • -10 V to +10 V | Yes |
| — Input resistance (-10 V to +10 V) | ≥9 MOhm |
| • -2.5 V to +2.5 V | Yes |
| — Input resistance (-2.5 V to +2.5 V) | ≥9 MOhm |
| • -5 V to +5 V | Yes |
| — Input resistance (-5 V to +5 V) | ≥9 MOhm |
| Input ranges (rated values), currents | |
| • 0 to 20 mA | Yes |
| — Input resistance (0 to 20 mA) | 280 Ω |
| Thermocouple (TC) | |
| Temperature compensation | |
| — parameterizable | No |
| Analog value generation for the inputs | |
| Integration and conversion time/resolution per channel | |
| • Resolution with overrange (bit including sign), max. | 12 bit; + sign |

| | |
|---|---|
| <ul style="list-style-type: none"> Integration time, parameterizable Interference voltage suppression for interference frequency f_1 in Hz | <p>Yes</p> <p>40 dB, DC to 60 V for interference frequency 50 / 60 Hz</p> |
| Smoothing of measured values | |
| <ul style="list-style-type: none"> parameterizable Step: None Step: low Step: Medium Step: High | <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> |
| Errors/accuracies | |
| Temperature error (relative to input range), (+/-) | 25 °C ±0.1%, to 55 °C ±0.2% total measurement range |
| Basic error limit (operational limit at 25 °C) | |
| <ul style="list-style-type: none"> Voltage, relative to input range, (+/-) Current, relative to input range, (+/-) | <p>0.1 %</p> <p>0.1 %</p> |
| Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$, f_1 = interference frequency | |
| <ul style="list-style-type: none"> Common mode voltage, max. | 12 V |
| Interrupts/diagnostics/status information | |
| Alarms | Yes |
| Diagnostics function | Yes |
| Alarms | |
| <ul style="list-style-type: none"> Diagnostic alarm | Yes |
| Diagnoses | |
| <ul style="list-style-type: none"> Monitoring the supply voltage Wire-break | <p>Yes</p> <p>Yes</p> |
| Diagnostics indication LED | |
| <ul style="list-style-type: none"> for status of the inputs for maintenance | <p>Yes</p> <p>Yes</p> |
| Degree and class of protection | |
| IP degree of protection | IP20 |
| Standards, approvals, certificates | |
| Ecological footprint | |
| <ul style="list-style-type: none"> environmental product declaration | Yes |
| Global warming potential | |
| — global warming potential, (total) [CO2 eq] | 43.1 kg |
| — global warming potential, (during production) [CO2 eq] | 7.62 kg |
| — global warming potential, (during operation) [CO2 eq] | 36 kg |
| — global warming potential, (after end of life cycle) [CO2 eq] | -0.544 kg |
| Ambient conditions | |
| Free fall | |
| <ul style="list-style-type: none"> Fall height, max. | 0.3 m; five times, in product package |
| Ambient temperature during operation | |
| <ul style="list-style-type: none"> min. max. | <p>-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C</p> <p>60 °C; = Tmax</p> |
| Ambient temperature during storage/transportation | |
| <ul style="list-style-type: none"> min. max. | <p>-40 °C</p> <p>70 °C</p> |
| Altitude during operation relating to sea level | |
| <ul style="list-style-type: none"> Installation altitude above sea level, max. Ambient air temperature-barometric pressure-altitude | <p>5 000 m</p> <p>Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)</p> |
| Relative humidity | |
| <ul style="list-style-type: none"> Operation at 25 °C without condensation, max. With condensation, tested in accordance with IEC 60068-2-38, max. | <p>95 %</p> <p>100 %; RH incl. condensation/frost (no commissioning under condensation conditions)</p> |
| 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 ships/at sea | | | |
| — to biologically active substances according to EN 60721-3-6 | Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request | | |
| — to chemically active substances according to EN 60721-3-6 | Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * | | |
| — to mechanically active substances according to EN 60721-3-6 | Yes; Class 6S3 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 | | | |
| <ul style="list-style-type: none"> • Coatings for printed circuit board assemblies acc. to EN 61086 • Protection against fouling acc. to EN 60664-3 • Military testing according to MIL-I-46058C, Amendment 7 • Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A | <p>Yes; Class 2 for high reliability</p> <p>Yes; Type 1 protection</p> <p>Yes; Discoloration of coating possible during service life</p> <p>Yes; Conformal coating, Class A</p> | | |
| connection method | | | |
| required front connector | Yes | | |
| Mechanics/material | | | |
| Enclosure material (front) <ul style="list-style-type: none"> • Plastic | Yes | | |
| Dimensions | | | |
| Width | 45 mm | | |
| Height | 100 mm | | |
| Depth | 75 mm | | |
| Weights | | | |
| Weight, approx. | 180 g | | |
| Classifications | | | |
| | | Version | Classification |
| | eClass | 14 | 27-24-22-01 |
| | eClass | 12 | 27-24-22-01 |
| | eClass | 9.1 | 27-24-22-01 |
| | eClass | 9 | 27-24-22-01 |
| | eClass | 8 | 27-24-22-01 |
| | eClass | 7.1 | 27-24-22-01 |
| | eClass | 6 | 27-24-22-01 |
| | ETIM | 9 | EC001420 |
| | ETIM | 8 | EC001420 |
| | ETIM | 7 | EC001420 |
| | IDEA | 4 | 3562 |
| | UNSPSC | 15 | 32-15-17-05 |
| Approvals / Certificates | | | |
| General Product Approval | | | EMV |

[Miscellaneous](#)



[Manufacturer Declaration](#)



[KC](#)

| EMV | For use in hazardous locations | | | Marine / Shipping | Environment |
|--|--|---|--|--|---|
|  RCM |  IECEX |  ATEX |  CCC |  DNV |  |

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