




Figure similar

SIPLUS S7-1200 SM 1231 4AI 13 bit based on 6ES7231-4HD32-0XB0 with conformal coating, -20...+60 °C, analog input, 4 AI, +/-10 V, +/-5 V, +/-2.5 V, or 0-20 mA 12-bit+ sign bit (13 bit ADC)

| General information  |  |
|--|--|
| Product type designation   | SM 1231, AI 4x13 bit   |
| 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 inputs  |  |
| Number of analog inputs  | 4; 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   |  |
| <ul style="list-style-type: none"> <li>• Voltage</li> <li>• Current</li> <li>• Thermocouple</li> <li>• Resistance thermometer</li> <li>• Resistance</li> </ul>   | Yes; ±10V, ±5V, ±2.5V<br>Yes; 4 to 20 mA, 0 to 20 mA<br>No<br>No<br>No           |
| Input ranges (rated values), voltages  |  |
| <ul style="list-style-type: none"> <li>• -10 V to +10 V<br/>— Input resistance (-10 V to +10 V)</li> <li>• -2.5 V to +2.5 V<br/>— Input resistance (-2.5 V to +2.5 V)</li> <li>• -5 V to +5 V<br/>— Input resistance (-5 V to +5 V)</li> </ul> | Yes<br>≥9 MOhm<br>Yes<br>≥9 MOhm<br>Yes<br>≥9 MOhm                               |
| Input ranges (rated values), currents  |  |
| <ul style="list-style-type: none"> <li>• 0 to 20 mA<br/>— Input resistance (0 to 20 mA)</li> <li>• 4 mA to 20 mA</li> </ul>  | Yes<br>280 Ω<br>Yes  |
| Analog value generation for the inputs   |  |
| Integration and conversion time/resolution per channel   |  |
| <ul style="list-style-type: none"> <li>• Resolution with overrange (bit including sign), max.</li> <li>• Integration time, parameterizable</li> <li>• Interference voltage suppression for interference frequency f1 in Hz</li> </ul>          | 12 bit; + sign<br>Yes<br>40 dB, DC to 60 V for interference frequency 50 / 60 Hz |

|   |   |
|---|---|
| <b>Smoothing of measured values</b>   |   |
| • parameterizable   | Yes   |
| • Step: None  | Yes   |
| • Step: low   | Yes   |
| • Step: Medium  | Yes   |
| • Step: High  | Yes   |
| <b>Errors/accuracies</b>  |   |
| Temperature error (relative to input range), (+/-)  | 25 °C ±0.1%, to 55 °C ±0.2% total measurement range   |
| <b>Basic error limit (operational limit at 25 °C)</b>   |   |
| • Voltage, relative to input range, (+/-)   | 0.1 %   |
| • Current, relative to input range, (+/-)   | 0.1 %   |
| <b>Interference voltage suppression for <math>f = n \times (f_1 \pm 1 \%)</math>, <math>f_1 =</math> interference frequency</b> |   |
| • Common mode voltage, max.   | 12 V  |
| <b>Interrupts/diagnostics/status information</b>  |   |
| Alarms  | Yes   |
| Diagnostics function  | Yes   |
| <b>Alarms</b>   |   |
| • Diagnostic alarm  | Yes   |
| <b>Diagnoses</b>  |   |
| • Monitoring the supply voltage   | Yes   |
| • Wire-break  | Yes   |
| <b>Diagnostics indication LED</b>   |   |
| • for status of the inputs  | Yes   |
| • for maintenance   | Yes   |
| <b>Degree and class of protection</b>   |   |
| IP degree of protection   | IP20  |
| <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.  | -20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C  |
| • max.  | 60 °C; = Tmax   |
| <b>Ambient temperature during storage/transportation</b>  |   |
| • min.  | -40 °C  |
| • max.  | 70 °C   |
| <b>Altitude during operation relating to sea level</b>  |   |
| • Installation altitude above sea level, max.   | 5 000 m   |
| • Ambient air temperature-barometric pressure-altitude  | 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) |
| <b>Relative humidity</b>  |   |
| • With condensation, tested in accordance with IEC 60068-2-38, max.   | 100 %; RH incl. condensation/frost (no commissioning under condensation conditions)   |
| <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 ships/at sea</b>  |   |
| — 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; *  |
| <b>Usage in industrial process technology</b>   |   |

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|---|---|
| — 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>  |   |
| <ul style="list-style-type: none"> <li>• Coatings for printed circuit board assemblies acc. to EN 61086</li> <li>• Protection against fouling acc. to EN 60664-3</li> <li>• Military testing according to MIL-I-46058C, Amendment 7</li> <li>• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A</li> </ul> | <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>     |
| <b>connection method / header</b>   |   |
| required front connector  | Yes   |
| <b>Mechanics/material</b>   |   |
| Enclosure material (front) <ul style="list-style-type: none"> <li>• Plastic</li> </ul>  | Yes   |
| <b>Dimensions</b>   |   |
| Width   | 45 mm   |
| Height  | 100 mm  |
| Depth   | 75 mm   |
| <b>Weights</b>  |   |
| Weight, approx.   | 180 g   |
| <b>last modified:</b>   | 12/18/2020   |