



Figure similar

SIPLUS S7-1200 SM 1234 4AI/2AQ rail based on 6ES7234-4HE32-0XB0 with conformal coating, -25...+60 °C, OT1 with ST1/2 (+70 °C für 10 minutes), SM 1234, 4 AI/2 AQ, +/-10 V, 14-bit resolution or 0 (4)-20 mA, 13-bit resolution

General information	
Product type designation	SM 1234, AI 4x13 bit/AQ 2x14 bit
Supply voltage	
Rated value (DC)	24 V
Input current	
Current consumption, typ.	60 mA
from backplane bus 5 V DC, typ.	80 mA
Power loss	
Power loss, typ.	2 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 Yes; 4 to 20 mA, 0 to 20 mA No No No
Input ranges (rated values), voltages	
<ul style="list-style-type: none"> <li>• -10 V to +10 V — Input resistance (-10 V to +10 V)</li> <li>• -2.5 V to +2.5 V — Input resistance (-2.5 V to +2.5 V)</li> <li>• -5 V to +5 V — Input resistance (-5 V to +5 V)</li> </ul>	Yes ≥9 MOhm Yes ≥9 MOhm Yes ≥9 MOhm
Input ranges (rated values), currents	
<ul style="list-style-type: none"> <li>• 0 to 20 mA — Input resistance (0 to 20 mA)</li> <li>• 4 mA to 20 mA</li> </ul>	Yes 280 Ω Yes
Analog outputs	
Number of analog outputs	2; Current or voltage
Output ranges, voltage	
<ul style="list-style-type: none"> <li>• -10 V to +10 V</li> </ul>	Yes
Output ranges, current	

<ul style="list-style-type: none"> <li>• 0 to 20 mA</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• 4 mA to 20 mA</li> </ul>	Yes
<b>Load impedance (in rated range of output)</b>	
<ul style="list-style-type: none"> <li>• with voltage outputs, min.</li> </ul>	1 000 Ω
<ul style="list-style-type: none"> <li>• with current outputs, max.</li> </ul>	600 Ω
<b>Analog value generation for the inputs</b>	
Measurement principle	Differential
<b>Integration and conversion time/resolution per channel</b>	
<ul style="list-style-type: none"> <li>• Resolution with overrange (bit including sign), max.</li> </ul>	12 bit; + sign
<ul style="list-style-type: none"> <li>• Integration time, parameterizable</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Interference voltage suppression for interference frequency f1 in Hz</li> </ul>	40 dB, DC to 60 V for interference frequency 50 / 60 Hz
<b>Smoothing of measured values</b>	
<ul style="list-style-type: none"> <li>• parameterizable</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Step: None</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Step: low</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Step: Medium</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Step: High</li> </ul>	Yes
<b>Analog value generation for the outputs</b>	
<b>Integration and conversion time/resolution per channel</b>	
<ul style="list-style-type: none"> <li>• Resolution with overrange (bit including sign), max.</li> </ul>	14 bit; Voltage: 14 bit; Current : 13 bit
<b>Errors/accuracies</b>	
Temperature error (relative to input range), (+/-)	25 °C ±0.1%, to 55 °C ±0.2% total measurement range
Temperature error (relative to output range), (+/-)	25 °C ±0.3%, to 55 °C ±0.6% total measurement range
<b>Basic error limit (operational limit at 25 °C)</b>	
<ul style="list-style-type: none"> <li>• Voltage, relative to input range, (+/-)</li> </ul>	0.1 %
<ul style="list-style-type: none"> <li>• Current, relative to input range, (+/-)</li> </ul>	0.1 %
<ul style="list-style-type: none"> <li>• Voltage, relative to output range, (+/-)</li> </ul>	0.3 %
<ul style="list-style-type: none"> <li>• Current, relative to output range, (+/-)</li> </ul>	0.3 %
<b>Interference voltage suppression for <math>f = n \times (f1 \pm 1 \%)</math>, f1 = interference frequency</b>	
<ul style="list-style-type: none"> <li>• Common mode voltage, max.</li> </ul>	12 V
<b>Interrupts/diagnostics/status information</b>	
Alarms	Yes
Diagnostics function	Yes
<b>Alarms</b>	
<ul style="list-style-type: none"> <li>• Diagnostic alarm</li> </ul>	Yes
<b>Diagnoses</b>	
<ul style="list-style-type: none"> <li>• Monitoring the supply voltage</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Wire-break</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Short-circuit</li> </ul>	Yes
<b>Diagnostics indication LED</b>	
<ul style="list-style-type: none"> <li>• for status of the inputs</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• for status of the outputs</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• for maintenance</li> </ul>	Yes
<b>Potential separation</b>	
<b>Potential separation analog outputs</b>	
<ul style="list-style-type: none"> <li>• between the channels and the power supply of the electronics</li> </ul>	No
<b>Isolation</b>	
Isolation tested with	750 V DC (type test) and according to EN 50155 (routine test)
<b>Standards, approvals, certificates</b>	
CE mark	Yes
<b>Railway application</b>	
<ul style="list-style-type: none"> <li>• EN 50121-3-2</li> </ul>	Yes; EMC for rail vehicles - 24 V supply of assembly: Cable length <3 m or with upstream filter for supply cable
<ul style="list-style-type: none"> <li>• EN 50121-4</li> </ul>	Yes; EMC for signal and telecommunications systems - 24 V supply of the assembly: with upstream filter for supply cable
<ul style="list-style-type: none"> <li>• EN 50124-1</li> </ul>	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
<ul style="list-style-type: none"> <li>• EN 50125-1</li> </ul>	Yes; Rail vehicles - see ambient conditions

<ul style="list-style-type: none"> <li>• EN 50125-2</li> <li>• EN 50125-3</li> </ul>	<p>Yes; Stationary electrical equipment - see ambient conditions</p> <p>Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)</p>
<ul style="list-style-type: none"> <li>• EN 50155</li> </ul>	<p>Yes; Rail vehicles - temperature class OT1, ST1/ST2, horizontal mounting position</p>
<ul style="list-style-type: none"> <li>• EN 61373</li> <li>• Fire protection acc. to EN 45545-2</li> </ul>	<p>Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B</p> <p>Yes; For proof of conformity, see Service &amp; Support</p>
<b>Ambient conditions</b>	
<b>Free fall</b>	
<ul style="list-style-type: none"> <li>• Fall height, max.</li> </ul>	0.3 m; five times, in product package
<b>Ambient temperature during operation</b>	
<ul style="list-style-type: none"> <li>• min.</li> <li>• max.</li> <li>• vertical installation, min.</li> <li>• vertical installation, max.</li> </ul>	<p>-25 °C; = Tmin (incl. condensation/frost)</p> <p>60 °C; = Tmax; +70 °C for 10 min (OT1, ST1/ST2 acc. to EN 50155)</p> <p>-25 °C; = Tmin</p> <p>50 °C; = Tmax</p>
<b>Ambient temperature during storage/transportation</b>	
<ul style="list-style-type: none"> <li>• min.</li> <li>• max.</li> </ul>	<p>-40 °C</p> <p>70 °C</p>
<b>Altitude during operation relating to sea level</b>	
<ul style="list-style-type: none"> <li>• Installation altitude above sea level, max.</li> <li>• Ambient air temperature-barometric pressure-altitude</li> </ul>	<p>2 000 m</p> <p>Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)</p>
<b>Relative humidity</b>	
<ul style="list-style-type: none"> <li>• With condensation, tested in accordance with IEC 60068-2-38, max.</li> </ul>	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
<b>Resistance</b>	
<b>Coolants and lubricants</b>	
<ul style="list-style-type: none"> <li>— Resistant to commercially available coolants and lubricants</li> </ul>	Yes; Incl. diesel and oil droplets in the air
<b>Use in stationary industrial systems</b>	
<ul style="list-style-type: none"> <li>— to biologically active substances according to EN 60721-3-3</li> <li>— to chemically active substances according to EN 60721-3-3</li> <li>— to mechanically active substances according to EN 60721-3-3</li> </ul>	<p>Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request</p> <p>Yes; Class 3C4 (RH &lt; 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *</p> <p>Yes; Class 3S4 incl. sand, dust, *</p>
<b>Use on land craft, rail vehicles and special-purpose vehicles</b>	
<ul style="list-style-type: none"> <li>— to biologically active substances according to EN 60721-3-5</li> <li>— to chemically active substances according to EN 60721-3-5</li> <li>— to mechanically active substances according to EN 60721-3-5</li> </ul>	<p>Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request</p> <p>Yes; Class 5C3 (RH &lt; 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *</p> <p>Yes; Class 5S3 incl. sand, dust; *</p>
<b>Usage in industrial process technology</b>	
<ul style="list-style-type: none"> <li>— Against chemically active substances acc. to EN 60654-4</li> <li>— Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04</li> </ul>	<p>Yes; Class 3 (excluding trichlorethylene)</p> <p>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)</p>
<b>Remark</b>	
<ul style="list-style-type: none"> <li>— Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04</li> </ul>	* 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>• Electronic equipment on rolling stock acc. to EN 50155</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; Class PC2 protective coating acc. to EN 50155:2017</p> <p>Yes; Discoloration of coating possible during service life</p> <p>Yes; Conformal coating, Class A</p>

connection method / header	
required front connector	Yes
Mechanics/material	
Enclosure material (front)	
• Plastic	Yes
Dimensions	
Width	45 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	220 g
Other	
Note:	for use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A, Online Support article 109736776

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