



Figure similar

SIPLUS S7-1200 SM 1231 RTD based on 6ES7231-5PD32-0XB0 with conformal coating, -40...+70 °C, start up -25 °C, SIMATIC S7-1200, analog input, SM 1231 RTD, 4xAI RTD module

General information	
Product type designation	SM 1231, AI 4x16 bit RTD
Supply voltage	
Rated value (DC)	24 V
Input current	
Current consumption, typ.	40 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; Resistance thermometer
permissible input voltage for voltage input (destruction limit), max.	±35 V
Technical unit for temperature measurement adjustable	Degrees Celsius/degrees Fahrenheit
Input ranges	
<ul style="list-style-type: none"> <li>• Voltage</li> <li>• Current</li> <li>• Thermocouple</li> <li>• Resistance thermometer</li> </ul>	<p>No</p> <p>No</p> <p>No</p> <p>Yes; Resistance-type transmitter: Pt10, Pt50, Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni200, Ni500, Ni1000, Cu10, Cu50, Cu100, LG-Ni1000</p>
<ul style="list-style-type: none"> <li>• Resistance</li> </ul>	Yes; 150 Ω, 300 Ω, 600 Ω
Input ranges (rated values), resistance thermometer	
<ul style="list-style-type: none"> <li>• Cu 10                             <ul style="list-style-type: none"> <li>— Input resistance (Cu 10)</li> </ul> </li> <li>• Ni 100                             <ul style="list-style-type: none"> <li>— Input resistance (Ni 100)</li> </ul> </li> <li>• Ni 1000                             <ul style="list-style-type: none"> <li>— Input resistance (Ni 1000)</li> </ul> </li> <li>• LG-Ni 1000                             <ul style="list-style-type: none"> <li>— Input resistance (LG-Ni 1000)</li> </ul> </li> <li>• Ni 120                             <ul style="list-style-type: none"> <li>— Input resistance (Ni 120)</li> </ul> </li> <li>• Ni 200                             <ul style="list-style-type: none"> <li>— Input resistance (Ni 200)</li> </ul> </li> <li>• Ni 500                             <ul style="list-style-type: none"> <li>— Input resistance (Ni 500)</li> </ul> </li> <li>• Pt 100                             <ul style="list-style-type: none"> <li>— Input resistance (Pt 100)</li> </ul> </li> </ul>	<p>Yes</p> <p>10 Ω</p> <p>Yes</p> <p>100 Ω</p> <p>Yes</p> <p>1 000 Ω</p> <p>Yes</p> <p>1 000 Ω</p> <p>Yes</p> <p>120 Ω</p> <p>Yes</p> <p>200 Ω</p> <p>Yes</p> <p>500 Ω</p> <p>Yes</p> <p>100 Ω</p>

<ul style="list-style-type: none"> <li>● Pt 1000 <ul style="list-style-type: none"> <li>— Input resistance (Pt 1000)</li> </ul> </li> <li>● Pt 200 <ul style="list-style-type: none"> <li>— Input resistance (Pt 200)</li> </ul> </li> <li>● Pt 500 <ul style="list-style-type: none"> <li>— Input resistance (Pt 500)</li> </ul> </li> </ul>	Yes 1 000 Ω Yes 200 Ω Yes 500 Ω
<b>Input ranges (rated values), resistors</b>	
<ul style="list-style-type: none"> <li>● 0 to 150 ohms</li> <li>● 0 to 300 ohms</li> <li>● 0 to 600 ohms</li> </ul>	Yes Yes Yes
<b>Thermocouple (TC)</b>	
<b>Temperature compensation</b>	
— parameterizable	No
<b>Analog value generation for the inputs</b>	
Measurement principle	integrating
<b>Integration and conversion time/resolution per channel</b>	
<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>	15 bit; + sign No 85 dB at 50 / 60 / 400 Hz
<b>Errors/accuracies</b>	
Temperature error (relative to input range), (+/-)	25 °C ±0.1% / ±0.3% total measurement range
Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)	0.05 %
Interference voltage suppression for $f = n \times (f1 \pm 1 \%)$ , f1 = interference frequency	
<ul style="list-style-type: none"> <li>● Common mode interference, min.</li> </ul>	120 dB
<b>Interrupts/diagnostics/status information</b>	
Alarms	Yes
Diagnostics function	Yes; Can be read out
<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> <li>● Wire-break</li> </ul>	Yes Yes
<b>Diagnostics indication LED</b>	
<ul style="list-style-type: none"> <li>● for status of the inputs</li> <li>● for maintenance</li> </ul>	Yes Yes
<b>Degree and class of protection</b>	
IP degree of protection	IP20
<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> </ul>	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C 70 °C; = Tmax
<b>Ambient temperature during storage/transportation</b>	
<ul style="list-style-type: none"> <li>● min.</li> <li>● max.</li> </ul>	-40 °C 70 °C
<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>	5 000 m 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>	
<ul style="list-style-type: none"> <li>● Operation at 25 °C without condensation, max.</li> <li>● With condensation, tested in accordance with IEC 60068-2-38, max.</li> </ul>	95 % 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>	
— 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
• 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 / header</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.	220 g
<b>last modified:</b>	12/18/2020 