



SIMATIC S7-1200, Analog input, SB 1231RTD, 1 AI RTD, Pt100 and Pt1000

General information	
Product type designation	SB 1231, AI 1x16 bit RTD
Supply voltage	
Rated value (DC)	24 V
Input current	
Current consumption, typ.	5 mA
from backplane bus 5 V DC, typ.	20 mA
Power loss	
Power loss, typ.	0.5 W
Analog inputs	
Number of analog inputs	1; Resistance thermometer
permissible input voltage for current 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> <li>• Resistance</li> </ul>	<ul style="list-style-type: none"> <li>Yes</li> <li>No</li> <li>No</li> <li>Yes; Platinum (Pt)</li> <li>Yes; 150 Ω, 300 Ω, 600 Ω</li> </ul>
Input ranges (rated values), voltages	
<ul style="list-style-type: none"> <li>• -80 mV to +80 mV                             <ul style="list-style-type: none"> <li>— Input resistance (-80 mV to +80 mV)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>&gt;= 10 MOhm</li> </ul>
Input ranges (rated values), resistance thermometer	
<ul style="list-style-type: none"> <li>• Pt 100                             <ul style="list-style-type: none"> <li>— Input resistance (Pt 100)</li> </ul> </li> <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>	<ul style="list-style-type: none"> <li>Yes</li> <li>100 Ω</li> <li>Yes</li> <li>1 000 Ω</li> <li>Yes</li> <li>200 Ω</li> <li>Yes</li> <li>500 Ω</li> </ul>
Input ranges (rated values), resistors	
<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>	<ul style="list-style-type: none"> <li>Yes</li> <li>Yes</li> <li>Yes</li> </ul>
Thermocouple (TC)	
Temperature compensation <ul style="list-style-type: none"> <li>— parameterizable</li> </ul>	No


Analog outputs	
Number of analog outputs	0
Cable length	
• shielded, max.	100 m; shielded, twisted pair
Analog value generation for the inputs	
Measurement principle	integrating
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	15 bit; + sign
• Integration time, parameterizable	No
• Interference voltage suppression for interference frequency $f_1$ in Hz	85 dB at 10 / 50 / 60 / 400 Hz
Errors/accuracies	
Temperature error (relative to input range), (+/-)	25 °C $\pm$ 0.1%, to 55 °C $\pm$ 0.2% total measurement range
Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)	0.05 %
Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$ , $f_1$ = interference frequency	
• Common mode interference, min.	120 dB
Interrupts/diagnostics/status information	
Alarms	Yes
Diagnostics function	Yes; Can be read out
Alarms	
• Diagnostic alarm	Yes
Diagnoses	
• Wire break	Yes
Diagnostics indication LED	
• for status of the inputs	Yes
• for maintenance	Yes
Standards, approvals, certificates	
CE mark	Yes
CSA approval	Yes
UL approval	Yes
cULus	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes
Marine approval	Yes
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-20 °C
• max.	60 °C
• horizontal installation, min.	-20 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	-20 °C
• vertical installation, max.	50 °C
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Air pressure acc. to IEC 60068-2-13	
• Operation, min.	795 hPa
• Operation, max.	1 080 hPa
• Storage/transport, min.	660 hPa
• Storage/transport, max.	1 080 hPa
Relative humidity	
• Operation at 25 °C without condensation, max.	95 %
Pollutant concentrations	
• SO <sub>2</sub> at RH < 60% without condensation	SO <sub>2</sub> : < 0.5 ppm; H <sub>2</sub> S: < 0.1 ppm; RH < 60 % condensation-free
Connection method	

required front connector	Yes
<b>Mechanics/material</b>	
Enclosure material (front)	
• Plastic	Yes
<b>Dimensions</b>	
Width	38 mm
Height	62 mm
Depth	21 mm
<b>Weights</b>	
Weight, approx.	35 g


	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	10	EC001420
ETIM	9	EC001420
ETIM	8	EC001420
ETIM	7	EC001420
IDEA	4	3562
UNSPSC	15	32-15-17-05

**Approvals / Certificates**

**General Product Approval**




EG-Konf.



[Miscellaneous](#)

[Manufacturer Declaration](#)



UL

[Metrological Approval](#)

General Product Approval	EMV	For use in hazardous locations
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RCM



[China RoHS](#)

[Manufacturer Declaration](#)




RCM




ATEX

For use in hazardous locations	Maritime application
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IECEX


[FM](#)



UL

[Miscellaneous](#)

[CCC-Ex](#)



ABS

**Maritime application**



BUREAU VERITAS



DNV



RINA



RMRS

[CCS \(China Classification Society\)](#)

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7/2/2025 

