

SIMATIC S7-1200, ANALOG SB 1231 T, 1 X AI THERMOCOUPLE, TYPE J OR K



Supply voltage

Rated value (DC)

- 24 V DC

Yes

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; Thermocouples

permissible input voltage for current input
(destruction limit), max.

± 35 V

permissible input voltage for voltage input
(destruction limit), max.

+ -35 V

Technical unit for temperature measurement
adjustable

Degrees Celsius/degrees Fahrenheit

Input ranges

- Voltage

Yes

• Current	No
• Thermocouple	Yes; J, K; voltage range ± 80 mV
• Resistance thermometer	No
• Resistance	No
Input ranges (rated values), voltages	
• -80 mV to +80 mV	Yes
• Input resistance (-80 mV to +80 mV)	≥ 1 MOhm
Input ranges (rated values), thermocouples	
• Type J	Yes
• Input resistance (type J)	1200 °C
• Type K	Yes
• Input resistance (Type K)	1372 °C
Thermocouple (TC)	
Temperature compensation	
— parameterizable	No
Analog outputs	
Number of analog outputs	0
Analog value generation	
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
Smoothing of measured values	
• parameterizable	Yes
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 area), (+/-)	0.5 %
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
Diagnostic functions	Yes; Can be read out
Alarms	
• Diagnostic alarm	Yes
Diagnostic messages	
• Wire-break	Yes
Diagnostics indication LED	

<ul style="list-style-type: none"> • for status of the inputs 	Yes
<ul style="list-style-type: none"> • for maintenance 	Yes
Degree and class of protection	
Degree of protection acc. to EN 60529	
<ul style="list-style-type: none"> • IP20 	Yes
Standards, approvals, certificates	
CE mark	Yes
CSA approval	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
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"> • permissible temperature range 	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing
<ul style="list-style-type: none"> • min. 	-20 °C
<ul style="list-style-type: none"> • max. 	60 °C
Ambient temperature during storage/transportation	
<ul style="list-style-type: none"> • min. 	-40 °C
<ul style="list-style-type: none"> • max. 	70 °C
Air pressure acc. to IEC 60068-2-13	
<ul style="list-style-type: none"> • Operation, min. 	795 hPa
<ul style="list-style-type: none"> • Operation, max. 	1 080 hPa
<ul style="list-style-type: none"> • Storage/transport, min. 	660 hPa
<ul style="list-style-type: none"> • Storage/transport, max. 	1 080 hPa
Relative humidity	
<ul style="list-style-type: none"> • permissible range (without condensation) at 25 °C 	95 %
Extended ambient conditions	
Pollutant concentrations	
— SO2 at RH < 60% without condensation	SO2: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
Connection method	
required front connector	Yes
Mechanics/material	
Enclosure material (front)	
<ul style="list-style-type: none"> • Plastic 	Yes
Dimensions	
Width	38 mm
Height	62 mm

Depth	21 mm
Weights	
Weight, approx.	35 g
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