



SIMATIC S7-1200, Analog input, SB 1231 TC, 1 AI thermocouples Type J or K

General information	
Product type designation	SB 1231, AI 1x16 bit TC
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; 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	
<ul style="list-style-type: none"> • Voltage • Current • Thermocouple • Resistance thermometer • Resistance 	Yes No Yes; J, K, T, E, R & S, B, N, C, TXK/XK(L); voltage range: ±80 mV No No
Input ranges (rated values), voltages	
<ul style="list-style-type: none"> • -80 mV to +80 mV — Input resistance (-80 mV to +80 mV) 	Yes ≥1 MOhm
Input ranges (rated values), thermocouples	
<ul style="list-style-type: none"> • Type J — Input resistance (type J) • Type K — Input resistance (Type K) 	Yes 1 200 °C Yes 1 372 °C
Thermocouple (TC)	
Temperature compensation	
— parameterizable	No
Analog outputs	
Number of analog outputs	0
Cable length	
<ul style="list-style-type: none"> • shielded, max. 	100 m; shielded, twisted pair
Analog value generation for the inputs	
Measurement principle	integrating
Integration and conversion time/resolution per channel	

<ul style="list-style-type: none"> Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f_1 in Hz 	15 bit; + sign No 85 dB at 10 / 50 / 60 / 400 Hz
Smoothing of measured values	
<ul style="list-style-type: none"> 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 range), (+/-)	0.5 %
Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$, $f_1 =$ interference frequency	
<ul style="list-style-type: none"> Common mode interference, min. 	120 dB
Interrupts/diagnostics/status information	
Alarms	Yes
Diagnostics function	Yes; Can be read out
Alarms	
<ul style="list-style-type: none"> Diagnostic alarm 	Yes
Diagnoses	
<ul style="list-style-type: none"> Wire-break 	Yes
Diagnostics indication LED	
<ul style="list-style-type: none"> for status of the inputs for maintenance 	Yes 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	
<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"> min. max. horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. 	-20 °C 60 °C -20 °C 60 °C -20 °C 50 °C
Ambient temperature during storage/transportation	
<ul style="list-style-type: none"> min. max. 	-40 °C 70 °C
Air pressure acc. to IEC 60068-2-13	
<ul style="list-style-type: none"> Operation, min. Operation, max. Storage/transport, min. Storage/transport, max. 	795 hPa 1 080 hPa 660 hPa 1 080 hPa
Relative humidity	
<ul style="list-style-type: none"> Operation at 25 °C without condensation, max. 	95 %
Pollutant concentrations	
<ul style="list-style-type: none"> SO₂ at RH < 60% without condensation 	SO ₂ : < 0.5 ppm; H ₂ S: < 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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