



SIMATIC S7-1200 G2, SB 1231 TC, AI 4x TC type J or K

General information	
Product type designation	SB 1231, AI 4x 16-bit TC
Input current	
from backplane bus 5 V DC, typ.	20 mA
Power loss	
Power loss, typ.	0.1 W
Analog inputs	
Number of analog inputs	4; Thermocouples
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, T, E, R & S, B, N, C, TXK/XK(L); 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)	≥ 10 MOhm
Input ranges (rated values), thermocouples	
• Type B	Yes
• Type C	Yes
• Type E	Yes
• Type J	Yes
• Type K	Yes
• Type N	Yes
• Type R	Yes
• Type S	Yes
• Type T	Yes
• Type TXK/TXK(L) to GOST	Yes
Thermocouple (TC)	
Temperature compensation	
— parameterizable	Yes
Cable length	
• shielded, max.	100 m; to the sensor
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 - Interference voltage suppression for interference frequency f1 in Hz	Yes 85 dB at 10 / 50 / 60 / 400 Hz
Smoothing of measured values	
- parameterizable - Step: None - Step: low - Step: Medium - Step: High	Yes Yes Yes Yes Yes
Errors/accuracies	
cold connection point	±1,5 °C
Temperature error (relative to input range), (+/-)	25 °C ±0.05 % / -20 °C to 60 °C ±0.1 % of the full-scale range
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.05 %
Interference voltage suppression for $f = n \times (f1 \pm 1 \%)$, f1 = 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	
- DIAG LED - for status of the inputs	Yes Yes
Isolation	
Isolation tested with	707 V DC (type test)
tested with	
Between channels	120 V AC
Degree and class of protection	
IP degree of protection	IP20
Standards, approvals, certificates	
CE mark	Yes
CSA approval	No
UL approval	Yes
cULus	Yes
FM approval	No
RCM (formerly C-TICK)	Yes
KC approval	Yes
Marine approval	No
Ambient conditions	
Free fall	
Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
- horizontal installation, min. - horizontal installation, max. - vertical installation, min. - vertical installation, max.	-20 °C 60 °C; at max. voltages and max. specification -20 °C 50 °C; at max. voltages and max. specification
Ambient temperature during storage/transportation	
- min. - max.	-40 °C 70 °C
Air pressure acc. to IEC 60068-2-13	
- Operation, min. - Operation, max. - Storage/transport, min. - Storage/transport, max.	540 hPa 1 140 hPa 540 hPa 1 140 hPa
Altitude during operation relating to sea level	
- Installation altitude, min. - Installation altitude, max.	-1 000 m 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Relative humidity	

● Operation, max.	95 %; no condensation		
Vibrations			
● Vibration resistance during operation acc. to IEC 60068-2-6	3.5 mm from 5 - 8.4 Hz, 1g from 8.4 - 150 Hz		
● Operation, tested according to IEC 60068-2-6	Yes		
Shock testing			
● tested according to IEC 60068-2-27	Yes; IEC 68, Part 2-27; half-sine, 15 g, 11 ms		
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)			
● Plastic	Yes		
Dimensions			
Width	15 mm		
Height	62 mm		
Depth	63 mm		
Weights			
Weight, approx.	29 g		
Classifications			
		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	9	EC001420
	ETIM	8	EC001420
ETIM	7	EC001420	
Approvals / Certificates			
General Product Approval			

[Manufacturer Declaration](#)

[Miscellaneous](#)

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