



Figure similar

SIMATIC S7-1200 G2: SB 1231 analog input, 4 AI; inputs: 4 x AI 14 bit ADC (+/-10 V, +/-5 V, +/-2.5 V or 0-20 mA/4-20 mA)

General information	
Product type designation	SB 1231, AI 4x 14 bit
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Input current	
Current consumption, typ.	30 mA
from backplane bus 5 V DC, typ.	28 mA
Power loss	
Power loss, typ.	1.4 W
Analog inputs	
Number of analog inputs	4; Current or voltage differential inputs
permissible input voltage for voltage input (destruction limit), max.	35 V
permissible input current for current input (destruction limit), max.	40 mA
Cycle time (all channels) max.	0.625 ms; at 400 Hz rejection
Input ranges	
• Voltage • Current • Thermocouple • Resistance thermometer • Resistance	Yes; $\pm 10\text{V}$, $\pm 5\text{V}$, $\pm 2.5\text{V}$ Yes; 4 to 20 mA, 0 to 20 mA No No No
Input ranges (rated values), voltages	
• -10 V to +10 V — Input resistance (-10 V to +10 V) • -2.5 V to +2.5 V — Input resistance (-2.5 V to +2.5 V) • -5 V to +5 V — Input resistance (-5 V to +5 V)	Yes $\geq 1\text{ M}\Omega$ Yes $\geq 1\text{ M}\Omega$ Yes $\geq 1\text{ M}\Omega$
Input ranges (rated values), currents	
• 0 to 20 mA — Input resistance (0 to 20 mA) • 4 mA to 20 mA — Input resistance (4 mA to 20 mA)	Yes $< 290\ \Omega$, $> 270\ \Omega$ Yes $< 290\ \Omega$, $> 270\ \Omega$
Cable length	
• shielded, max.	100 m; shielded, twisted pair
Analog value generation for the inputs	

Measurement principle	successive approximation
Integration and conversion time/resolution per channel	
- Resolution with overrange (bit including sign), max. - Integration time, parameterizable - Interference voltage suppression for interference frequency f_1 in Hz	13 bit; + sign Yes 40 dB, DC to 60 Hz
Smoothing of measured values	
- parameterizable - Step: None - Step: low - Step: Medium - Step: High	Yes Yes Yes Yes Yes
Errors/accuracies	
Temperature error (relative to input range), (+/-)	25 °C ± 0.1 % / -20 °C to 60 °C ± 0.2 % of the full-scale deflection
Basic error limit (operational limit at 25 °C)	
- Voltage, relative to input range, (+/-) - Current, relative to input range, (+/-)	0.1 % 0.1 %
Interference voltage suppression for $f = n \times (f_1 \pm 1 \text{ %})$, f_1 = interference frequency	
Common mode voltage, max.	12 V
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Alarms	
Diagnostic alarm	Yes
Diagnoses	
- Monitoring the supply voltage - Wire-break	Yes Yes
Diagnostics indication LED	
- DIAG LED - for status of the inputs	Yes Yes
Standards, approvals, certificates	
CE mark	Yes
CSA approval	No
UL approval	Yes
cULus	Yes
FM approval	No
RCM (formerly C-TICK)	Yes
KC approval	No
Marine approval	No
Ambient conditions	
Free fall	
Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
- min. - max. - horizontal installation, min. - horizontal installation, max. - vertical installation, min. - vertical installation, max.	-20 °C 40 °C; at max. voltages and max. specifications -20 °C 60 °C; at rated voltages, 50 % of max. specification and alternate IO active -20 °C 50 °C; at rated voltages, 50 % of max. specification and alternate IO active
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 at 25 °C without condensation, max.	95 %

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: strength of the shock 15 g (peak value), duration 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	No
Mechanics/material	
Enclosure material (front)	
• Plastic	Yes
Dimensions	
Width	15 mm
Height	62 mm
Depth	63 mm
Weights	
Weight, approx.	30 g

last modified: 1/22/2025 