



SIMATIC S7-1200, Analog input, SB 1231, 1 AI, +/-10 V DC (12 bit resol.) or 0-20 mA

General information	
Product type designation	SB 1231, AI 1x12 bit
Supply voltage	
Rated value (DC)	24 V
Input current	
from backplane bus 5 V DC, typ.	55 mA
Power loss	
Power loss, typ.	0.4 W
Analog inputs	
Number of analog inputs	1; Current or voltage differential inputs
permissible input voltage for current input (destruction limit), max.	±35 V
permissible input voltage for voltage input (destruction limit), max.	35 V
permissible input current for voltage input (destruction limit), max.	40 mA
permissible input current for current input (destruction limit), max.	40 mA
Cycle time (all channels) max.	156.25 µs; 400 Hz suppression
Input ranges	
- Voltage - Current - Thermocouple - Resistance thermometer - Resistance	Yes; ±10V, ±5V, ±2.5V Yes; 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 ≥9 MOhm Yes ≥9 MOhm Yes ≥9 MOhm
Input ranges (rated values), currents	
0 to 20 mA — Input resistance (0 to 20 mA)	Yes ≥ 250 Ohm
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. - Integration time, parameterizable - Interference voltage suppression for interference frequency f1 in Hz	11 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 ±0.3%, to 55 °C ±0.6% total measurement range
Interrupts/diagnostics/status information	
Alarms	Yes
Diagnostics function	Yes
Alarms	
Diagnostic alarm	Yes
Diagnoses	
Wire-break	No
Diagnostics indication LED	
- 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	
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 60 °C -20 °C 60 °C -20 °C 50 °C
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.	795 hPa 1 080 hPa 660 hPa 1 080 hPa
Relative humidity	
Operation at 25 °C without condensation, max.	95 %
Pollutant concentrations	
SO2 at RH < 60% without condensation	SO2: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
connection method / header	
required front connector	Yes
Mechanics/material	
Enclosure material (front)	

- Plastic

Yes

Dimensions

Width	38 mm
Height	62 mm
Depth	21 mm

Weights

Weight, approx.	35 g
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last modified:

2/9/2021 