



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	Yes; ±10V, ±5V, ±2.5V
• Current	Yes; 0 to 20 mA
• Thermocouple	No
• Resistance thermometer	No
• Resistance	No

Input ranges (rated values), voltages

• -10 V to +10 V	Yes
— Input resistance (-10 V to +10 V)	≥9 MOhm
• -2.5 V to +2.5 V	Yes
— Input resistance (-2.5 V to +2.5 V)	≥9 MOhm
• -5 V to +5 V	Yes
— Input resistance (-5 V to +5 V)	≥9 MOhm

Input ranges (rated values), currents

• 0 to 20 mA	Yes
— Input resistance (0 to 20 mA)	≥ 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	
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
-----------------	------

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	10	EC001420
	ETIM	9	EC001420
	ETIM	8	EC001420
	ETIM	7	EC001420
	IDEA	4	3562
	UNSPSC	15	32-15-17-05

Approvals / Certificates

General Product Approval



[Confirmation](#)



[Miscellaneous](#)



EMV	Test Certificates	Maritime application	other
-----	-------------------	----------------------	-------



[Special Test Certificate](#)



[Confirmation](#)



[Miscellaneous](#)

other	Railway	Dangerous goods	Environment
-------	---------	-----------------	-------------

[Miscellaneous](#)

[Special Test Certificate](#)

[Transport Information](#)

[Environmental Confirmations](#)

[Environmental Confirmations](#)

last modified:

7/2/2025