

Overview

- For the convenient recording of temperatures with great accuracy
- 1 input with 16-bit resolution
- Common thermocouple types can be used
- Also for the measurement of analog signals with a low level (± 80 mV)
- Can easily be retrofitted to existing plant
- Can be plugged directly into the CPU

Technical specifications

Article number	6ES7231-5QA30-0XB0 SIGNAL BOARD SB 1231 TC, 1 AI
Product type designation	
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
Input current	
Current consumption, typ.	5 mA
from backplane bus 5 V DC, typ.	20 mA
Power losses	
Power loss, typ.	0.5 W
Analog inputs	
Number of analog inputs	1; Thermocouples
permissible input frequency for current input (destruction limit), max.	± 35 V
Technical unit for temperature measurement adjustable	Degrees Celsius/degrees Fahrenheit
Input ranges	
• Thermocouple	Yes; J, K; 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)	≥ 1 MOhm
Input ranges (rated values), thermoelements	
• Type J	Yes
• Input resistance (type J)	1200 °C
• Type K	Yes
• Input resistance (Type K)	1372 °C
Thermocouple (TC)	
• permissible input voltage for voltage input (destruction limit), max.	± 35 V
Temperature compensation	
- Parameterizable	No
Analog outputs	
Number of analog outputs	0
Analog value creation	
Measurement principle	integrating
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	15 bit; + sign
• Integration time, parameterizable	No
• Interference voltage suppression for interference frequency f_1 in Hz	85 dB at 10 / 50 / 60 / 400 Hz

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Analog value generation (in isochronous mode)	
Smoothing of measured values	
• 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 area), (+/-)	0.5 %
Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$, $f_1 =$ interference frequency	
• Common mode interference, min.	120 dB
Interrupts/diagnostics/status information	
Alarms	
• Alarms	Yes
• Diagnostic alarm	Yes
Diagnostic messages	
• Diagnostic functions	Yes; Can be read out
• Wire break	Yes
Diagnostics indication LED	
• for status of the inputs	Yes
• for maintenance	Yes
Degree and class of protection	
Degree of protection to EN 60529	
• IP20	Yes
Standards, approvals, certificates	
CE mark	Yes
CSA approval	Yes
FM approval	Yes
RCM (formerly C-TICK)	Yes
Ambient conditions	
Free fall	
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package
Ambient temperature in operation	
• Permissible temperature range	0 °C to 55 °C horizontal installation, 0 °C to 45 °C vertical installation
• Min.	0 °C
• max.	55 °C
Storage/transport temperature	
• Min.	-40 °C
• max.	70 °C
Air pressure acc. to IEC 60068-2-13	
• Operation, min.	795 hPa
• Operation, max.	1 080 hPa
• Storage/transport, min.	660 hPa
• Storage/transport, max.	1 080 hPa

SIMATIC S7-1200 basic controller

I/O modules

Analog modules

SB 1231 thermocouple signal boards**Technical specifications** (continued)

Article number	6ES7231-5QA30-0XB0 SIGNAL BOARD SB 1231 TC, 1 AI
Relative humidity • Permissible range (without condensation) at 25 °C	95 %
Pollutant concentrations - SO ₂ 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 Type of housing (front) • plastic	Yes
Dimensions Width Height Depth	38 mm 62 mm 21 mm
Weights Weight, approx.	35 g

Ordering data**Article No.****Thermocouple signal board
SB 1231**1 input +/- 80 mV, resolution 15 bits
+ sign, thermocouples type J, K**Accessories****Terminal block (spare part)**for signal board
with 6 screws, gold-plated; 4 pcs.**6ES7231-5QA30-0XB0****6ES7292-1BF30-0XA0**

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