SIEMENS

Data sheet 6ES7231-5QD32-0XB0



SIMATIC S7-1200, ANALOG INPUT, SM 1231 TC, 4 AI THERMOCOUPLE

Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
Input current	
Current consumption, typ.	40 mA
from backplane bus 5 V DC, typ.	80 mA
Power losses	
Power loss, typ.	1.5 W
Analog inputs	
Number of analog inputs	4; 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, T, E, R, S, 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)	>= 1 MOhm
Input ranges (rated values), thermoelements	
• Type B	Yes
• Type C	Yes

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• 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)	
• 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 f1 in Hz	85 dB at 50 / 60 / 400 Hz
Analog value generation (in isochronous mode)	
Smoothing of measured values	
• Parameterizable	Yes
Errors/accuracies	
Temperature error (relative to input range), (+/-)	25 °C ±0.1%, to 55 °C ±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 x (f1 +/- 1 %), f1 = 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
• Monitoring the supply voltage	Yes
• Wire break	Yes
Diagnostics indication LED	

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• 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
Highest safety class achievable in safety mode	
• SIL acc. to IEC 61508	none
Ambient conditions	
Free fall	
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package
Ambient temperature in operation	
• Permissible temperature range	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing
• Min.	-20 °C
• max.	60 °C
Ambient temperature during storage/transportation	
• 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
Relative humidity	
• Permissible range (without condensation) at 25 °C	95 %
Pollutant concentrations	
— SO2 at RH < 60% without condensation	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
Connection method	
required front connector	Yes
Mechanics/material	
Type of housing (front)	
• plastic	Yes
Dimensions	
Width	45 mm

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Height	100 mm
Depth	75 mm

Weights	
Weight, approx.	180 g

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