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Data sheet 6AG1231-5QD32-4XB0

SIPLUS S7-1200 SM 1231 TC with conformal coating based on 6ES7231-5QD32-0XB0 . Analog input, 4 AI thermocouples



General information	
Product type designation	SM 1231, AI 4x16 bit TC
Supply voltage	
Rated value (DC)	24 V
Input current	
Current consumption, typ.	40 mA
from backplane bus 5 V DC, typ.	80 mA
Power loss	
Power loss, typ.	1.5 W
Analog inputs	
Number of analog inputs	4; Thermocouples
permissible input voltage for voltage input (destruction limit), max.	±35 V
Technical unit for temperature measurement adjustable	Degrees Celsius/degrees Fahrenheit
Input ranges	
• Voltage	No
• Current	No

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• 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), thermocouples	
• Type B	Yes
• Type C	Yes
• 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)	
Temperature compensation	
— parameterizable	No

Analog value generation for the inputs	
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
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 range), (+/-)	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	Yes
Diagnostics function	Yes; Can be read out
Alarms	
• Diagnostic alarm	Yes

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Diagnostic messages	
• Monitoring the supply voltage	Yes
• Wire-break	Yes
Diagnostics indication LED	
• for status of the inputs	Yes
• for maintenance	Yes

Degree and class of protection

IP degree of protection	IP20

Ambient conditions

Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C
• max.	60 °C; = Tmax
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
— Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems	
— to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
— to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
— to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea	
— to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
— to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *

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— to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology	
— Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)
— Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark	
— Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A
Connection method	
required front connector	Yes
Mechanics/material	
Enclosure material (front)	
• Plastic	Yes
Dimensions	
Width	45 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	180 g

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