

6ES7231-5ND32-0XB0

Analog Input SM 1231, 4AI 16bit

Technical data

SIMATIC S7-1200, Analog input, SM 1231, 4 AI, +/-10 V, +/-5 V, +/-2.5 V, +/-1.25 or 0-20 mA/4-20 mA, 15 bit+sign bit

General information	
Product type designation	SM 1231, AI 4x16 bit
Supply voltage	
Rated value (DC)	24 V
Input current	
Current consumption, typ.	65 mA
from backplane bus 5 V DC, typ.	80 mA
Power loss	
Power loss, typ.	1.8 W
Analog inputs	
Number of analog inputs	4; Current or voltage differential inputs
permissible input voltage for voltage input (destruction limit), max.	±35 V
permissible input current for current input (destruction limit), max.	40 mA
Cycle time (all channels) max.	100 µs
Input ranges	
- Voltage - Current - Thermocouple - Resistance thermometer - Resistance	Yes; ±10V, ±5V, ±2.5V or ±1.25V Yes; 4 to 20 mA, 0 to 20 mA No No No
Input ranges (rated values), voltages	
-1.25 V to +1.25 V -10 V to +10 V -2.5 V to +2.5 V -5 V to +5 V	Yes Yes — Input resistance (-10 V to +10 V) ≥1 MOhm Yes — Input resistance (-2.5 V to +2.5 V) ≥1 MOhm Yes — Input resistance (-5 V to +5 V) ≥1 MOhm
Input ranges (rated values), currents	
0 to 20 mA 4 mA to 20 mA	Yes Yes
Analog value generation for the inputs	
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	15 bit; + sign Yes 40 dB, DC to 60 V for interference frequency 50 / 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 ±0.1% / ±0.3% total measurement range
Basic error limit (operational limit at 25 °C)	
- Voltage, relative to input range, (+/-) - Current, relative to input range, (+/-)	0.1 % 0.1 %
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency	
Common mode voltage, max.	12 V
Interrupts/diagnostics/status information	
Alarms	Yes
Diagnostics function	Yes
Alarms	
Diagnostic alarm	Yes

Diagnoses	
• Monitoring the supply voltage	Yes
• Wire-break	Yes
Diagnostics indication LED	
• for status of the inputs	Yes
• for maintenance	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.	-20 °C
• max.	60 °C
• horizontal installation, min.	-20 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	-20 °C
• vertical installation, max.	50 °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	
• 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	45 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	180 g
last modified:	3/14/2020