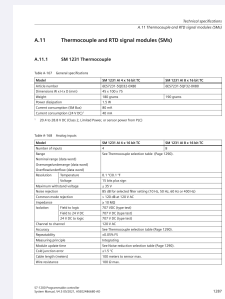


AMIKON TECHNICAL INTELLIGENCE

Product Data Sheet

Siemens 6ES7231-5QD32-0XB0

SM 1231 AI 4 x 16 bit TC



TC INPUTS	TEMP. RESOLUTION	VOLTAGE MODE	SM BUS
4	0.1 degree	+/-80 mV	80 mA

Siemens 6ES7231-5QD32-0XB0 is the SIMATIC S7-1200 SM 1231 AI 4 x 16 bit TC signal module. Its four channels can acquire supported thermocouple signals or low-level voltage inputs. Thermocouple values are reported in tenths of a degree, while voltage mode uses a different full-scale data representation.

01 VERIFIED PRODUCT PARAMETERS

Measurement channels	4 thermocouple or voltage inputs
Temperature resolution	0.1 degree C or 0.1 degree F
Voltage resolution	15 bits plus sign
Voltage measurement range	-80 to +80 mV
Temperature data representation	Measured degrees multiplied by 10
Voltage nominal data range	-27648 to +27648
Input impedance	At least 10 megaohms
Maximum withstand voltage	Plus or minus 35 V
Repeatability	Plus or minus 0.05% of full scale
Noise rejection	85 dB at the selected rejection frequency

Technical values were verified against Siemens S7-1200 System Manual V4.5, A5E02486680-AO, 05/2021 and the Siemens Industry Mall record for the exact article number.

02 ADDITIONAL TECHNICAL DATA

Cold-junction error	Plus or minus 1.5 degrees C; manual conditions apply
Maximum sensor cable length	100 m
Maximum wire resistance	100 ohms
SM bus current consumption	80 mA
24 V current consumption	40 mA; supply range 20.4 to 28.8 V DC

03 SYSTEM ROLE AND APPLICATIONS

Correct temperature acquisition depends on the selected sensor type, cold-junction compensation and the module thermal environment. Configure the noise-rejection setting and diagnostics for the actual process. This four-channel article must not be confused with the eight-channel SM 1231 TC variant.

- Read different thermocouple sensor types: Acquire up to four temperature points with the sensor type selected separately for each channel. Apply the matching thermocouple range, compensation method and temperature-unit conversion before using the readings in the process program.
- Measure a low-level voltage signal: Configure voltage mode for a compatible signal within the documented millivolt range. Use its signed full-scale representation rather than temperature scaling, and verify the source, polarity and selected interference-rejection setting.
- Use a controlled external termination: For a controlled reference-junction arrangement, apply the documented 0 or 50 degree external isothermal terminal block. Match the compensation configuration to that installation and check thermal stability before assessing measurement error.

04 OFFICIAL INSTALLATION FACTS

- Isolate power and identify the four-channel thermocouple article before replacing the module.
- Connect the specified 24 V DC supply and functional earth according to the exact-model diagram.
- Use the required gold connectors and preserve thermocouple polarity and the documented input pin locations.
- Configure the sensor type, compensation method and noise-rejection setting for each channel.

05 OFFICIAL DOCUMENTATION

Siemens S7-1200 System Manual V4.5, A5E02486680-AO, 05/2021

AMIKON PRODUCT SUPPORT

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