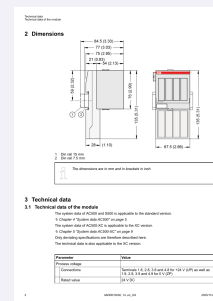


AMIKON TECHNICAL INTELLIGENCE

Product Data Sheet

ABB AI531

Eight-channel analog input module



INPUT CHANNELS	RESOLUTION	PROCESS SUPPLY	ISOLATION
8	16 bits incl. sign	24 V DC	Per module

ABB AI531 acquires eight individually configured input signals in an AC500 S500 I/O station. It supports voltage, current, resistance temperature detectors and thermocouples, with 16-bit conversion including the sign bit.

01 VERIFIED PRODUCT PARAMETERS

Analog input channels	8; independently configurable
Conversion resolution	16 bits including sign
Process supply voltage	24 V DC; -15% to +20% tolerance
Supply ripple limit	5% maximum
Normal process-supply current	130 mA from UP
Voltage measuring ranges	+/-50 mV, +/-500 mV, +/-1 V, +/-5 V, +/-10 V; 0-5 V, 0-10 V
Current measuring ranges	-20 to +20 mA; 0-20 mA; 4-20 mA
Supported RTD types	Pt100, Pt1000, Ni1000 and Cu50
Thermocouple types	J, K, N, S and T
Conversion time per channel	1 ms without suppression; 100 ms with 50/60 Hz suppression

Technical values were verified against ABB 3ADR010030 rev.14, 2025-11-28; AI531 connections.

02

ADDITIONAL TECHNICAL DATA

Channel input impedance	Voltage: >100 kohm; current: approx. 330 ohm
Galvanic isolation boundary	Internal supply and other modules; module-wise isolation
Analog cable length	Max. 100 m with conductor cross-section >0.14 mm ²
Operating ambient temperature	Horizontal: 0 to +60 deg C; vertical: 0 to +40 deg C
Unused-channel handling	Voltage inputs: configure unused; current inputs may remain open

03

SYSTEM ROLE AND APPLICATIONS

The standard AI531 is ordered as 1SAP250600R0001. Select each channel range and interference filter for the connected sensor, and distinguish module-wise isolation from isolation between individual channels. ABB lists this version as Active in its November 2025 datasheet.

- Resistance temperature measurement: connect supported RTDs using the documented two-, three- or four-wire circuit and matching channel configuration.
- Thermocouple acquisition: measure supported J, K, N, S or T sensors with the corresponding input selection and documented wiring.
- Transmitter loop acquisition: read active or passive current sources with the documented current-input circuit and suitable loop supply.

04

OFFICIAL INSTALLATION FACTS

- Isolate power and identify AI531, order 1SAP250600R0001; use the documented TU515 or TU516 terminal unit.
- Lock the module onto its terminal unit; preserve airflow and the permitted horizontal or vertical mounting temperature.
- Use a SELV/PELV 24 V DC supply. Connect UP at 1.8/2.8/3.8/4.8 and ZP at 1.9/2.9/3.9/4.9.
- Match the sensor circuit to the ABB terminal drawing; isolate analog sensors from ground as documented.

05

OFFICIAL DOCUMENTATION

[ABB 3ADR010030 rev.14, 2025-11-28; AI531 connections](#)

AMIKON PRODUCT SUPPORT

Amikon Limited | INFO@AMIKON.CN