Siemens 6ES7134-4JB51-0AB0

01 Resistance Thermometer Analog Input Module

Siemens 6ES7134-4JB51-0AB0 combines sensor excitation, resistance conversion and characteristic linearization in the distributed I/O channel. Wiring topology, interference suppression and smoothing determine how the measured temperature or resistance reaches the controller.

1. **RTD / resistor**
2. **Excitation + sense wiring**
3. **Conversion + smoothing**
4. **Controller value / diagnostics**

Physical and functional arrangement

Separate current and voltage-sense paths give the four-wire connection its measurement advantage. Three-wire operation compensates the relevant lead resistance, while two-wire operation uses fewer terminals but leaves lead resistance in the measurement path. Select the topology to suit the required accuracy.

Signal path and configuration

The conversion timing is linked to mains-frequency rejection and the number of active channels. Digital smoothing further changes response time. A stable display can therefore be slower than the underlying process; assess the complete acquisition and controller update path.

Application boundary

Channel terminals change their role between the two-channel and four-channel arrangements. Preserve the terminal-module and parameter configuration together, then test the physical sensor and its interpreted value. Electrical isolation from load power does not provide isolation between the individual measurement channels.

Ratings apply to the stated hardware execution and operating conditions. Installed firmware, companion modules and configured functions must match the application.

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02 Technical data and engineering limits

Inputs, 3/4-wire	2
Inputs, 2-wire	4
RTD types	Pt100 and Ni100
Resistance ranges	150, 300 and 600 ohm; PTC
RTD resolution	15 bit plus sign
Rated load supply	24 V DC
Sensor excitation	1.65 mA; PTC maximum 1.65 mA
Shielded cable length	200 m maximum
Conversion time	67 ms at 60 Hz; 80 ms at 50 Hz rejection
Load-supply current	30 mA maximum
Power loss	0.6 W typical
Input voltage destruction limit	9 V maximum

Additional interface data

3/4-wire address space	4 bytes
2-wire address space	8 bytes
Native parameter length	7 bytes
4-wire wire-break diagnostic overhead	4 ms per channel
Smoothing factors	1, 4, 32 or 64 times cycle time
Channel isolation	From backplane and L+; not between channels
Operational error limit	±0.6% of input range
Basic error at 25 °C	±0.4% of input range

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03 Application map and integration boundaries

01 Temperature acquisition

Linearize compatible Pt100 or Ni100 sensors in ET 200S.

02 Resistance monitoring

Convert a supported resistor range with the chosen connection topology.

03 Multi-channel two-wire sensing

Use four inputs where the application accepts lead-resistance effects.

04 Higher-accuracy sensor connection

Use three- or four-wire sensing where lead compensation is required.

Terminal reuse

Changing between two-channel and four-channel modes changes the role of some terminals. Validate the actual terminal assignment.

Response budgeting

Conversion, wire-break diagnosis, active-channel count and smoothing all contribute to effective response time.

Sensor boundary

Keep load power away from measurement inputs and account for the absence of isolation between measurement channels.

Configuration scope: Retain the RTD execution, terminal module, topology, ranges, smoothing and diagnostics; validate the final measured response.

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04 Technical questions that affect operation

How does selecting two-wire operation on 6ES7134-4JB51-0AB0 change measurement accuracy?

Lead resistance remains in the measured path. The additional channel capacity must be weighed against that error, especially with long sensor runs.

Why can stronger smoothing on 6ES7134-4JB51-0AB0 delay an alarm response?

Smoothing increases the effective time constant in multiples of the module cycle time. Evaluate the sensor, conversion, filter and controller delays together.

What changes when wire-break diagnostics are enabled for a four-wire channel on 6ES7134-4JB51-0AB0?

The conversion timing includes an additional diagnostic interval. Include it when estimating the response of all active channels.

Can terminals retain the same function after changing the channel mode of 6ES7134-4JB51-0AB0?

Some terminals are reused as current-excitation lines or additional measurement channels. Review wiring and parameter assignment together before changing mode.

Why does the 24 V load supply not belong on a sensor input of 6ES7134-4JB51-0AB0?

The measurement input has a much lower permitted voltage. Keep power distribution and resistance-sensor terminals separate.

Does isolation from L+ mean that channels on 6ES7134-4JB51-0AB0 are isolated from one another?

No. There is no channel-to-channel isolation. Review common-mode and grounding conditions for the connected sensors.

How should a slowly drifting RTD value from 6ES7134-4JB51-0AB0 be investigated?

Compare sensor and lead condition, terminal contact, wiring topology and actual process temperature before changing calibration or smoothing.

What is required after changing mains-frequency rejection on 6ES7134-4JB51-0AB0?

Reassess conversion and cycle time, then verify the response to a controlled input change and the configured process limits.

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05 Selection, service planning and related equipment

Match the installed arrangement

Match the complete Siemens 6ES7134-4JB51-0AB0 marking and installed configuration. Confirm the complete module order number, terminal module and sensor wiring topology.

Support and migration

The current production and manufacturer-support stage for this exact execution is unconfirmed. Retain the RTD execution, terminal module, topology, ranges, smoothing and diagnostics; validate the final measured response.

Equipment boundary

Confirm the analog electronic module and terminal base only if itemized. Companion hardware and accessories are included only when itemized; the function of the complete installed arrangement depends on the correct combination.

Engineering review before intervention

Preserve the sensor configuration	Record sensor type, range, wire count, active channels, rejection frequency and smoothing. Identify current-excitation and measurement conductors at the terminal base before disconnecting any sensor.
Connect the correct topology	Restore two-, three- or four-wire connections using the terminal roles for the selected mode. Keep the load supply off sensor terminals and inspect shields and contact resistance.

Related equipment navigation

Siemens 6ES7214-1BD23-0XB0

Siemens 6ES7317-2EK14-0AB0

Siemens 6ES7321-1BH02-0AA0

Related references support separate application assessment and do not imply replacement compatibility. Technical basis: Siemens 2/4AI RTD ST Manual, A5E01076865-02.