Product dashboard

Siemens 6ES7431-7KF10-0AB0 is an SM 431 eight-channel RTD analog input module with 16-bit resolution. It supports parameterizable Pt and Ni resistance-temperature measurements with diagnostics and hardware-interrupt capability.

Exact model	Input channels	Resolution	Update
6ES7431-7KF10-0AB0	8 differential	16 bit	25 ms / 8 channels

PARAMETER	DOCUMENTED VALUE
Exact model	6ES7431-7KF10-0AB0
Module designation	SM 431
Module type	RTD analog input
Input channels	8 differential inputs
Supported sensors	Pt100 / Pt200 / Pt500 / Pt1000 / Ni100 / Ni1000
Resolution	16 bit
Update rate	25 ms for 8 channels
Sensor connection	3-wire or 4-wire RTD
Constant sensor current	Typically 1 mA

Use the complete order number together with the S7-400 slot, 48-pin connector and retained STEP 7 configuration.

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6ES7431-7KF10-0AB0

Measurement architecture

Siemens 6ES7431-7KF10-0AB0 acquires eight differential resistance-temperature channels for an S7-400 station while keeping sensor linearization, channel diagnostics and process-interrupt behavior within the module configuration.

RTD current path

The module supplies the documented measuring current and evaluates resistance through the retained three- or four-wire circuit.

Linearization path

The selected Pt or Ni characteristic converts channel resistance into the configured temperature value.

Diagnostic path

Internal and external fault states are indicated locally and transferred to the controller diagnostic record.

Interrupt path

Configured process limits can generate hardware interrupts for closely monitored temperature points.

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Technical data map

PARAMETER	VALUE
Exact model	6ES7431-7KF10-0AB0
Module designation	SM 431
Module type	RTD analog input
Input channels	8 differential inputs
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Resolution	16 bit
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Sensor connection	3-wire or 4-wire RTD
Constant sensor current	Typically 1 mA

PARAMETER	VALUE
Shielded cable length	Maximum 200 m
Channel-to-backplane isolation	Yes
Channel-to-channel isolation	No
Diagnostics	Internal/external fault indication; diagnostic data
Hardware interrupts	Supported
External module supply	Not required
Dimensions	25 x 290 x 210 mm
Approximate module weight	650 g

Sensor selection boundary

Use only the configured Pt or Ni characteristic and preserve the installed three- or four-wire circuit.

Current	Typically 1 mA
Cable	Shielded, max. 200 m

Isolation boundary

The channels are isolated from the backplane bus but share the documented channel potential arrangement.

Backplane	Isolated
Channels	Not isolated

Technical record: S7-400 Automation System Module Data, Edition 11/2016, A5E00850736-08, section 5.24

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Applications and precautions

Multi-point RTD acquisition

Collects eight Pt or Ni resistance-temperature inputs in one S7-400 slot.

Temperature monitoring

Supports channel-specific measurement configuration and diagnostic evaluation.

Process-limit supervision

Uses configured hardware interrupts for applications that require close monitoring.

Legacy S7-400 maintenance

Restores the recorded SM 431 position while preserving terminal and parameter assignments.

Eight-point service check

1. Confirm the complete 6ES7431-7KF10-0AB0 order number and the recorded S7-400 slot.
2. Place the controller and connected temperature circuits in the approved maintenance state.
3. Record every RTD type, three- or four-wire connection and channel assignment before removal.
4. Verify shield routing and keep each field cable within the documented 200 m limit.
5. Restore the 48-pin connector without changing channel polarity or common connections.
6. Load the retained STEP 7 parameter set and compare measuring method and sensor range by channel.
7. Review INTF/EXTF indications and read the module diagnostic record after energization.
8. Functionally compare all eight temperature values and configured interrupt limits before

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6ES7431-7KF10-0AB0

Engineering FAQ and related products

How many RTD channels does Siemens 6ES7431-7KF10-0AB0 provide?

It provides eight differential analog inputs for resistance-temperature measurement.

Which sensor families can Siemens 6ES7431-7KF10-0AB0 measure?

The documented ranges include Pt100, Pt200, Pt500, Pt1000, Ni100 and Ni1000 resistance thermometers.

Which wiring methods apply to Siemens 6ES7431-7KF10-0AB0 RTD inputs?

The module supports documented three-wire and four-wire resistance-temperature connections.

What resolution and update rate does Siemens 6ES7431-7KF10-0AB0 use?

The module converts at 16-bit resolution and updates all eight channels in 25 ms.

Related SIMATIC S7-400 pages

Siemens 6ES7414-1XG02-0AB0	View product page
Siemens 6ES7416-2FN05-0AB0	View product page
Siemens 6ES7414-5HM06-0AB0	View product page
Siemens 6ES7414-4HM14-0AB0	View product page
Siemens 6ES7414-3FM07-0AB0	View product page
Siemens 6ES7414-3EM07-0AB0	View product page
Siemens 6ES7407-0RA02-0AA0	View product page
Siemens 6ES7400-2JA10-0AA1	View product page

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