Siemens 6ES7431-7QH00-0AB0

01 SM 431 Analog Input Module / system role

Product function

Siemens 6ES7431-7QH00-0AB0 acquires configured analog signals for an S7-400 station, with measurement mode determining channel use, conversion timing and sensor wiring.

Selected configuration

The module supports 16 voltage/current channels and eight resistance channels with 16-bit conversion. Input ranges and sensor wiring must be selected in the hardware configuration rather than inferred from the number of connected terminals.

Functional path

Analog sensor	Configured SM 431 input	Conversion and diagnostics	S7-400 program

Configuration	16 voltage/current or 8 resistance inputs
Interface	16-bit conversion
Operating feature	Configurable integration and diagnostic functions

Integration time affects conversion duration and interference rejection. Resistance measurements require a different acquisition sequence from voltage or current signals, so their conversion timing cannot be assumed identical.

6ES7431-7QH00-0AB0

02 Technical operating envelope

Voltage/current inputs	16
Resistance inputs	8
Conversion resolution	16 bits
Example voltage ranges	±10 V, ±5 V, ±2.5 V, ±1 V
Example current ranges	0–20 mA, 4–20 mA, ±20 mA
Integration-time choices	2.5 ms, 16.7 ms, 20 ms

Corresponding voltage/current conversion times	6 ms, 20.1 ms, 23.5 ms
Additional resistance conversion times	12 ms, 40.2 ms, 47 ms
Maximum backplane current	700 mA at 5 V DC
Typical power loss	4.5 W
Front connector	48-pin
Maximum shielded signal cable	200 m; lower limits apply to specified low-level inputs

Values refer to the 6ES7431-7QH00-0AB0 column. Available channel count and conversion behavior depend on the selected measurement type and integration time.

Operating interpretation

Use the selected channel type and integration time when calculating acquisition behavior.

Configuration boundary

Restore sensor wiring, range, reference connections and diagnostic handling together.

6ES7431-7QH00-0AB0

03 System integration and applications

Multichannel process acquisition

Configured voltage and current channels feed an S7-400 process image.

Resistance measurement

Eight resistance inputs support the selected compatible sensor arrangement.

Timed analog sampling

Integration-time selection balances acquisition timing with interference rejection.

Diagnostic process monitoring

Parameterized diagnostic and limit events support application-specific fault handling.

System and supply context

Siemens 6ES7431-7QH00-0AB0 operates within the following defined system context. Match the 7QH00 execution, 48-pin connector and configured measurement modes.

Application boundary

Values refer to the 6ES7431-7QH00-0AB0 column. Available channel count and conversion behavior depend on the selected measurement type and integration time.

6ES7431-7QH00-0AB0

04 Engineering selection decisions

Why does 6ES7431-7QH00-0AB0 have fewer resistance channels than voltage channels?

Its configured measurement arrangement provides 16 voltage/current inputs but eight resistance inputs. Plan channel use according to the selected mode.

How does 20 ms integration affect 6ES7431-7QH00-0AB0 conversion time?

The basic voltage/current conversion time is 23.5 ms; the additional conversion time for resistance measurement is 47 ms. Account for the configured acquisition sequence when evaluating the full channel cycle.

Is the maximum 200 m cable length valid for every low-level input on 6ES7431-7QH00-0AB0?

No. The general shielded-cable limit is 200 m, while specified low-level measurements have shorter limits. Check the selected signal range before using the general figure.

What backplane demand should be budgeted for 6ES7431-7QH00-0AB0?

The specified maximum is 700 mA from the 5 V backplane supply. Any field transmitter supply requirement must be accounted for separately.

6ES7431-7QH00-0AB0

05 Configuration boundary and references

Lifecycle and support

The current manufacturing and factory-support phase of 6ES7431-7QH00-0AB0 is unconfirmed. Apter Power availability is assessed separately from manufacturer lifecycle status.

Replacement assessment

Restore sensor wiring, range, reference connections and diagnostic handling together.

Document roles

Use the original manufacturer excerpt for its preserved technical tables and drawings. This product brief explains selection and system context. The separate installation guide covers preparation, connection, tests and handover; use it together with the applicable manufacturer instructions.

Technical basis

Siemens SIMATIC S7-400 Catalog ST 400, May 2017.

Related product navigation

- Siemens 6ES7211-1AE40-0XB0
- Siemens 6ES7211-1BE40-0XB0

These are related references, not confirmed substitutes or an automatically approved assembly.

Product enquiries