Siemens 6ES7231-4HF32-0XB0

01 Analog Input Module / system role

Product function and operating context

Siemens 6ES7231-4HF32-0XB0 brings several independent process measurements into an S7-1200 controller without requiring a separate module for every signal.

Eight differential inputs accept ±10 V, ±5 V and ±2.5 V voltage ranges, or 0–20 mA and 4–20 mA current ranges. The selected measurement range must match both the transmitter and the hardware configuration. Voltage/current selection is made in groups of two inputs.

Functional path

Process transmitter	Paired analog terminals	SM 1231 conversion	S7-1200 engineering value

Acquisition	Eight differential inputs
Ranges	Voltage or current process signals
Conversion	12 bits plus sign

The terminal arrangement groups channels 0–1 on X10, 2–3 on X11, 4–5 on X12 and 6–7 on X13. The module supply uses L+ and M, with functional earth provided at the designated connection. Similar-looking input pairs still belong to different process channels.

6ES7231-4HF32-0XB0

02 Technical operating envelope

Analog inputs	8 differential channels
ADC resolution	12 bits plus sign
Voltage ranges	±10 V; ±5 V; ±2.5 V
Current ranges	0–20 mA; 4–20 mA
Module supply	24 V DC nominal

Current input resistance	270–290 Ω
Voltage destruction limit	35 V
Current destruction limit	40 mA
Input terminal groups	X10: 0–1; X11: 2–3; X12: 4–5; X13: 6–7
Range configuration	Voltage/current selectable in groups of 2

The SM 1231 AI 8 × 13-bit column applies to 6ES7231-4HF32-0XB0. Range, filtering and wiring conditions determine the usable channel response.

Operating interpretation

The ± range selection and signed representation must agree with the engineering-unit conversion in the PLC. A valid raw value is not proof of correct process scaling.

Configuration boundary

Preserve the full 4HF32 order number, connector/channel mapping, range settings and filter configuration; do not substitute data from a newer G2 module.

Why must the configured range of 6ES7231-4HF32-0XB0 match a 4–20 mA transmitter?

The current range defines the measurement scaling and diagnostic interpretation. A voltage or 0–20 mA configuration changes the meaning of the same input condition.

6ES7231-4HF32-0XB0

03 System integration and applications

Mixed process measurement

Acquire supported voltage and current signals in an S7-1200 analog input station.

Bipolar signal acquisition

Measure signed ±2.5 V, ±5 V or ±10 V signals with the matching channel configuration.

Current-transmitter loops

Read 0–20 mA or 4–20 mA transmitters after checking loop burden and power.

Multi-channel verification

Use the four connector groups to organize an eight-point measurement and calibration plan.

System and supply context

Siemens 6ES7231-4HF32-0XB0 operates within the following defined system context. Match 6ES7231-4HF32-0XB0 and the eight-channel terminal arrangement.

Application boundary

The applications below describe its technical role. Select associated hardware and configuration for the actual installation.

How are eight inputs distributed across the connectors of 6ES7231-4HF32-0XB0?

X10 carries channels 0 and 1, X11 carries 2 and 3, X12 carries 4 and 5, and X13 carries 6 and 7.

6ES7231-4HF32-0XB0

04 Engineering selection decisions

Can 6ES7231-4HF32-0XB0 measure a bipolar ±2.5 V transducer?

Yes. ±2.5 V is one of its selectable voltage ranges, alongside ±5 V and ±10 V.

Does the 13-bit specification of 6ES7231-4HF32-0XB0 include a sign bit?

Yes. It is 12 bits plus sign, which should be considered when interpreting signed analog values.

Can the eight inputs of 6ES7231-4HF32-0XB0 be configured independently for voltage and current?

Voltage/current selection is made in groups of two. Plan each pair together rather than assuming eight independently selectable input modes.

Why should 6ES7231-4HF32-0XB0 be tested at more than one calibration point?

Low, mid and high inputs reveal scaling, polarity or range errors that a single reading can conceal. Check the resulting engineering values in the controller as well as the electrical input.

Verify current-channel endpoints	For a current channel, test the configured low and high values and an intermediate value. Keep the signal within the supported range and observe application diagnostics.
Retain the analog configuration	Save the channel map, hardware ranges, filter settings, scaling and calibration results. Release each loop only after the input value and diagnostic handling match the intended process.

6ES7231-4HF32-0XB0

05 Configuration boundary and references

Lifecycle and support

The current manufacturing and factory-support phase of 6ES7231-4HF32-0XB0 is unconfirmed. Apter Power availability is assessed separately from manufacturer lifecycle status.

Replacement assessment

Preserve the full 4HF32 order number, connector/channel mapping, range settings and filter configuration; do not substitute data from a newer G2 module.

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 S7-1200 Programmable Controller System Manual, V4.6, A5E02486680-AP.

Related product navigation

- Siemens 6ES7235-0KD22-0XA0
- Siemens 6ES7231-4HA30-0XB0

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

Product enquiries