Siemens 6ES7321-1BH10-0AA0

Engineering Installation, Diagnostic and Acceptance Guide

Siemens 6ES7321-1BH10-0AA0 is a SIMATIC S7-300 SM 321 digital input module. Its exact order identity must be matched with the installed supply or automation configuration before replacement.

01 Work package

Complete model	6ES7321-1BH10-0AA0
Product type	SIMATIC S7-300 SM 321 digital input module
Manufacturer	Siemens
Supply condition	New, original product
Technical source	Siemens Industry Mall technical data and SIMATIC S7-300 Module Data Manual for 6ES7321-1BH10-0AA0

Field decisions

1 Establish identity

Capture the full marking, installed companion components and baseline before disconnection.

2 Inspect interfaces

Verify mounting, cable, connector, armor, approval and environmental boundaries.

3 Fit the exact chain

Preserve the documented probe-cable-Proximitor or sensor-monitor relationship.

4 Prove response

Use the approved stopped-machine and operating acceptance procedure.

5 Record as left

Save markings, configuration, test values and operating observations.

02 Interface and configuration map

Product family	SIMATIC S7-300 SM 321
Module function	Isolated digital input module
Input count	16 digital inputs
Nominal input voltage	24 V DC
Connector interface	One 20-pole front connector
Input supply range	20.4 to 28.8 V DC
Signal 0 range	-30 to +5 V DC

Signal 1 range	13 to 30 V DC
Typical input current	7 mA at signal 1
Input grouping	Channels organized in isolated groups per module design
Two-wire sensor support	Supported within the documented sensor-current limits
Cable length, shielded	Up to 1000 m under stated conditions
Cable length, unshielded	Up to 600 m under stated conditions
Diagnostics	Observe CPU and program diagnostics; no substitute for field-circuit testing
Replacement status	Managed as a spare-part product; confirm current Siemens availability
Configuration boundary	Hardware configuration and process-image assignment remain project-specific

03 Installation workflow

Save the channel schedule

Record every terminal, tag, common and program address before moving the front connector.

Isolate field power

Use the approved lockout procedure and prove absence of voltage before handling the connector.

Inspect connector keying

Confirm the 20-pole connector and coding match the intended slot and module.

Verify commons and polarity

Check group commons and field-device polarity against the project drawing.

Prove channels individually

Operate each field device and compare terminal voltage, module indication and PLC variable.

Review spare-part status

Confirm current manufacturer support and approved replacement path for the installed CPU revision.

Application checks

Discrete sensor acquisition

Read 24 V DC proximity switches, limit switches and approved two-wire sensors within the documented current limits.

Machine interlock inputs

Bring field contacts into an S7-300 program where hardware and software assignments have been validated.

Status and alarm collection

Collect on/off equipment states with documented commons, channel naming and cable routes.

Module replacement

Retain slot, front connector, hardware configuration and channel mapping during maintenance.

04 Diagnostic decision table

How should the 20-pole front connector of 6ES7321-1BH10-0AA0 be transferred without losing channel identity?	Label and photograph the connector, terminal schedule and wire markers, isolate field power, then move the keyed connector while preserving every common and channel assignment.

How can a shared-common fault be isolated on 6ES7321-1BH10-0AA0?	Measure group reference and each input at the connector, compare inactive-channel voltage, and separate field wiring by group before replacing the module.
What test proves a two-wire sensor works correctly with 6ES7321-1BH10-0AA0?	Confirm off-state leakage and on-state current against the documented input limits, then prove the module indication and PLC variable in both states under actual supply voltage.
How should long field cables be assessed for 6ES7321-1BH10-0AA0?	Apply the shielded or unshielded cable limit together with voltage drop, interference environment and routing. Prove terminal voltage and inactive-channel noise at the installed length.

Release review

Installation relationship	Use the exact order number and manufacturer wiring or installation data for the delivered revision.
System boundary	Verify companion equipment, field wiring and configuration before energizing.
Technical reference	Siemens Industry Mall technical data and SIMATIC S7-300 Module Data Manual for 6ES7321-1BH10-0AA0.

Engineering questions

How should the 20-pole front connector of 6ES7321-1BH10-0AA0 be transferred without losing channel identity?	Label and photograph the connector, terminal schedule and wire markers, isolate field power, then move the keyed connector while preserving every common and channel assignment.
How can a shared-common fault be isolated on 6ES7321-1BH10-0AA0?	Measure group reference and each input at the connector, compare inactive-channel voltage, and separate field wiring by group before replacing the module.
What test proves a two-wire sensor works correctly with 6ES7321-1BH10-0AA0?	Confirm off-state leakage and on-state current against the documented input limits, then prove the module indication and PLC variable in both states under actual supply voltage.
How should long field cables be assessed for 6ES7321-1BH10-0AA0?	Apply the shielded or unshielded cable limit together with voltage drop, interference environment and routing. Prove terminal voltage and inactive-channel noise at the installed length.
How should the complete marking of 6ES7321-1BH10-0AA0 be recorded before removal?	Photograph the full order identity, installed position, companion components and cable route. Save the stopped-machine baseline so the replacement can be returned to the same documented configuration.
Which compatibility check is most important before installing 6ES7321-1BH10-0AA0?	Confirm that every companion component belongs to the documented SIMATIC S7-300 digital input system. Connector fit alone does not establish electrical calibration or mechanical compatibility.
How should cable and connector integrity be tested for 6ES7321-1BH10-0AA0?	Isolate the channel, inspect contacts for moisture, contamination and damage, verify continuity and insulation with an approved method, and support the cable so the connector carries no tensile load.
What commissioning evidence should be retained for 6ES7321-1BH10-0AA0?	Retain full markings, mechanical datum, companion identities, wiring or chain-length checks, as-left measurements and the operating response accepted by the maintenance authority.

Acceptance and support

Retain the full marking, installed-chain identities, test readings and approved machine configuration. Confirm the exact offered item and included scope in the written quotation.

Discuss the exact marking and installed application with Apter Power.
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Verified related product references

Related product	6ES7321-1BH10-0AA0
Related product	6ES5470-4UC12
Related product	6DD1601-0AE0
Related product	6EP1336-2BA10

Commissioning record template

Installed asset	Machine, bearing, channel or cabinet reference
Companion identities	Probe, cable, sensor, interface or monitor markings
Mechanical datum	Mounting reference, reach, alignment or sealing condition
Electrical datum	Chain length, connector, shield, supply or input assignment
Before-work baseline	Gap, bias, vibration, continuity or channel observation
As-left result	Final measured value and functional proof
Approval basis	Applicable drawing, control requirement or site procedure
Handover	Technician, date, revision and maintenance-record location

Handover note

A replacement is complete only after the installed identity, physical interfaces, measured response and configuration record agree. Escalate any mismatch before the channel returns to protection or monitoring service.

Release checklist

Identity accepted	Complete marking agrees with the order, photographs and installed asset record.
Interfaces accepted	Mechanical fit, connector, wiring and companion components match the approved design.
Environment accepted	Temperature, contamination, vibration and route protection remain inside documented limits.
Configuration accepted	Hardware assignment, chain length or supply settings agree with the installed configuration.