1746SC-INI4VI

01 / Identify the installed measurement path

AB 1746SC-INI4VI is a four-channel isolated analog input module for an SLC 500 installation. Spectrum Controls produces this SLC-compatible module; each channel is selectable for voltage or current measurement.

System position

The module occupies a compatible SLC 500 I/O position; sensors, loop supplies, terminal wiring and controller logic complete each measurement chain.

Before removing the existing module

Match the host slot

Confirm the 1746 chassis location and module ID code 3520 in the SLC I/O configuration before energizing.

Protect field wiring

Isolate field supplies and compare polarity, shield termination and each terminal assignment with the installed drawing.

Provide loop excitation

A 4-20 mA transmitter needs its specified external supply; the input module does not power the loop.

Work boundary

These electrical and configuration values apply to the Spectrum Controls 1746sc-INI4vi variant represented by the offered AB 1746SC-INI4VI marking. Verify the installed chassis and program revision before replacing a module.

Field-loop inventory

Record the four sensor tags, signal modes and external loop supplies separately. This prevents a live transmitter from being reconnected to a channel configured for a voltage input.

Chassis capacity

Check the 5 V SLC supply budget using the INI4vi demand and the load of every other installed module before returning the chassis to service.

1746SC-INI4VI

02 / Capture settings and field connections

The Spectrum Controls user manual assigns module ID code 3520 to the 1746sc-INI4vi and uses output image words O:e.0 through O:e.3 for channel configuration. The selected filter, engineering scale and fault-handling choices must match the application program and sensor wiring.

Conversion resolution	16 bits
Module ID code	3520
Configuration words	O:e.0 through O:e.3, one per channel
Input data type	Voltage or current per channel
Channel isolation	125 VAC continuous
Field-to-backplane isolation	125 VAC continuous
Voltage input impedance	Greater than 220 kΩ
Current input impedance	Less than 250 Ω

Configuration record

Record the original slot, every channel assignment, configured range, filter and engineering scale before the change. Keep that record with the controller project.

Filter decision

Available filter selections are 50, 60, 250 and 500 Hz. Choose each channel setting from the required signal response and the site noise environment, then retain the original setting for comparison.

Image-word map

Module ID 3520 allocates the input and output image words; output words O:e.0 to O:e.3 configure channels 0 to 3. Keep the slot number e consistent with the downloaded project.

1746SC-INI4VI

03 / Replace and reconnect

Match the host slot

Confirm the 1746 chassis location and module ID code 3520 in the SLC I/O configuration before energizing.

Protect field wiring

Isolate field supplies and compare polarity, shield termination and each terminal assignment with the installed drawing.

Provide loop excitation

A 4-20 mA transmitter needs its specified external supply; the input module does not power the loop.

Preserve channel setup

Save each range, filter, scale limit and fault response from the controller project before removing the old module.

Check power budget

Include the voltage/current variant's typical 550 mA demand on the 5 V backplane when checking the chassis supply.

Prove each input

After replacement, apply a known signal to all four channels and compare raw values, engineering units and diagnostic bits with the pre-work record.

Signal-chain decision

The four differential channels can accept the documented current ranges 0-20 mA and 4-20 mA or voltage ranges 0-5 V, 1-5 V, 0-10 V and ±10 V. Channel-to-channel isolation limits common-path interference between independent field circuits, while field wiring is separately isolated from the SLC backplane.

The datasheet specifies 16-bit resolution and typical 5 V backplane draw of 550 mA for the voltage/current variant. For 4-20 mA loops, the module measures current but does not provide transmitter excitation, so the field loop must have its specified external supply arrangement.

Termination check

Trace each pair from the field instrument to the corresponding channel terminals. Check that shield routing and the independent field supply follow the installed loop drawing.

Range check

Compare the physical signal with the configured current or voltage range before connecting it. A plausible-looking reading under a wrong scale is not a valid acceptance result.

1746SC-INI4VI

04 / Commission each circuit

How is each input of 1746SC-INI4VI changed between current and voltage operation?

Set the individual channel configuration word for the required signal type and range, then compare terminal wiring and the field instrument with that selection. A common setting across all four channels is not required.

Why can a 4-20 mA transmitter connected to 1746SC-INI4VI read zero?

The module measures loop current but does not provide excitation. Check the external transmitter supply, loop continuity, polarity, configured range and channel status before suspecting the converter.

What SLC module ID should be entered for 1746SC-INI4VI?

The Spectrum Controls manual assigns ID code 3520 to the 1746sc-INI4vi. Confirm the actual slot and the controller program’s I/O configuration before writing or downloading the project.

Which output image words configure the channels of 1746SC-INI4VI?

Output words O:e.0 through O:e.3 configure channels 0 through 3 respectively, where e is the installed slot number. Preserve the existing channel-to-loop map when changing hardware.

What does channel isolation mean for 1746SC-INI4VI field wiring?

The datasheet specifies 125 VAC continuous channel-to-channel and field-to-backplane isolation. These ratings do not remove the need to follow the complete circuit and grounding design.

Acceptance evidence

Retain the controlled test values, module status and final channel-to-loop map with the site service record.

Challenge sequence

For a unipolar 0-10 V channel, apply known low, midpoint and high values within the configured range. For a 4-20 mA channel, use 4, 12 and 20 mA points; judge the displayed engineering value against the project scale.

Diagnostic review

Review channel configuration and status bits alongside measured values. Resolve an over-range or wiring condition before clearing the maintenance record.

1746SC-INI4VI

05 / Fault isolation and handover

How should a noisy reading on 1746SC-INI4VI be investigated?

Compare the selected digital filter with the signal bandwidth, inspect shielded twisted-pair routing and grounding, then test a known source at the affected channel to separate field noise from a module issue.

Can 1746SC-INI4VI replace a current-only 1746sc-INI4i without reviewing the program?

Do not assume drop-in equivalence. The INI4vi permits voltage or current selection and has its own module ID, power requirement and configuration. Compare the complete marking, slot definition and channel setup.

What functional test should close a 1746SC-INI4VI replacement?

Inject representative low, middle and high signal values into each configured channel, check raw and scaled readings and confirm alarm or fault behavior in the SLC application.

Technical basis: Spectrum Controls 1746sc-INI4i/INI4vi Datasheet, PN 0100362-01 Rev. E, and User Manual, Pub. 0300127-06 Rev. A0; Rockwell Automation SLC 500 installation documentation.

> **Handover package**
>
> Archive the final slot configuration, four channel ranges and filters, loop drawing changes, calibration source and recorded as-left readings under the site change record.

Related Apter Power product pages

Allen-Bradley 1746SC-CTR4

Allen-Bradley 1746-NIO4V

Allen-Bradley 1747-L552

Technical enquiry

sales13@apterpower.com | +86 18030235313