

Allen-Bradley 1746 1747 Series Service Manual

1746-NI4

1. Description

The Allen-Bradley 1746-NI4 is a SLC 500 Analog I/O Module. This Analog I/O Module has Four (4) non-isolated differential, voltage or current selectable input channels. This module occupies single slot of the SLC 500 chassis and compatible with fixed or modular style hardware. Technical specifications for 1746-NI4

2. Specifications

Specification	Value
Manufacturer	Rockwell Automation
Brand	Allen-Bradley
Part	Number/Catalog No. 1746-NI4
Series	SLC 500
Module	Type Analog I/O Module
Backplane	Current (5 Volts) 25 milliamps
Backplane	Current (24 Volts DC) 85 milliamps
Input	signal Category -20 to +20 mA (or) -10 to +10V dc
Bandwidth	10 Hertz
Current	Input Coding -16,384 to +16,384
Update	Time 512 microseconds
Voltage	Input Coding -32,768 to +32,767
Resolution	16 bits
Chassis	location Any I/O module slot except slot 0
Step	Response 60 milliseconds
Backplane	Current (5 Volts) 35 mA;(24 Volts DC) 85 mA
Applications	Combination 120 Volts AC I/O
Conversion	type Delta-Sigma Modulation
Cable	Lengths 0.5, 1, 2.5, or 5.0 meters.
Converter	Resolution 16 bit
UPC	10662073735905
Repeatability	±1 LSB
Non-linearity	0.01 %
UNSPSC	32151705 Description
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Repeatability ± 1 LSB

Non-linearity 0.01%

UNSPSC 32151705 Description

The Allen Bradley 1746-NI4 is an SLC 500 Four (4) Channel Analog Input Module. It has user-selectable analog channels for voltage or current to support multiple monitoring and control applications; it has a 16-bit resolution and contains a removable terminal block that provides connections analog input channel. This channel can be connected as a differential input. There is a DIP that switches on the circuit board to select the input or current voltage. The Backplane current at 5 Volts of this module is 25 mA; at 24 Volts, the current is 85 mA. Caution should be given to avoid connecting this voltage source without the transmitter current, etc. to the channel configured for current input. Incorrect module operation or module damage may occur.

The 1746-NI4 has Standard Cable Lengths of 0.5, 1, 2.5, and 5.0 meters. The AIFM Connector of this module is 15-pin D-shell. The Allen Bradley 1746-NI4 has Current Loop Input Specifications: the input range is ± 20 mA (nominal) and ± 30 mA (maximum). The Input impedance is 250 Ohms with a resolution of 1.22070 & μ A per LSB and an approximate Gain error drift of ± 67 ppm/degrees Celsius. The overall accuracy at 25 degrees Celsius is $\pm 0.365\%$ of full scale, $\pm 0.642\%$ at 60 degrees Celsius. The overall accuracy drift is ± 79 ppm/degree Celsius of full scale. The 1746-NI4's input voltage range is ± 10 Volts DC -1 LSB. Its impedance is 1 mega Ohms. The accuracy drift is ± 63 ppm/ degrees Celsius of full scale. The Resolution is 305.176 & μ V per LSB, with a Gain error drift at ± 57 ppm/degree Celsius. The Overall accuracy at 25 degrees Celsius is $\pm 0.284\%$ of full scale, and $\pm 0.504\%$ at 60 degrees Celsius.

The 1746-NI4 is an analog input module from the SLC 500 series of Allen-Bradley. It features Four (4) differential non-isolated input channels, individually selectable for voltage or current input. Selectable input signals ranges include -20 to +20 mA (or) -10 to +10V dc.

The module operates by converting the analog input signal via the Delta-Sigma Modulation with range of -16,384 to +16,384 for Current input and -32,768 to +32,767 for Voltage input. The converted data may be processed with the use of Scaling algorithm to display the measured process variable. Both method produces the same scaled output.

This module is compatible of being used with a fixed or modular hardware style SLC 500 controller. The Fixed hardware version of SLC 500 comes with embedded I/O channels with limited expansion capabilities. The modular hardware SLC 500 PLC features a fully modular and customizable system.

This module has built-in LED indicator for indicating the status of each channel and the overall status of the module's operation. This provides quick module diagnostic which may also be accessed via the controller's diagnostic interrupt. This system of reporting allows faster troubleshooting period and increases the availability of the module.