

Allen-Bradley 1746 1747 Series Service Manual

1746-NR8

1. Description

The Allen-Bradley 1746-NR8 is a SLC 500 RTD/Resistance Analog Input Module. This RTD/Resistance Analog Input Module has Eight (8) channels which are compatible for RTD sensors such as Platinum (385), Platinum (3916), Copper (416), Nickel (618), Nickel (672), and Nickel Iron. It is also compatible for direct inputs of resistance devices. This module is compatible for Fixed style and modular style Technical specifications for 1746-NR8

2. Specifications

Specification	Value
Brand	Allen-Bradley
Manufacturer	Rockwell Automation
Series	SLC 500
Part	Number/Catalog No. 1746-NR8
Inputs	8
Module	Type RTD/Resistance Analog Input Module
Backplane	Current (5 Volts) 100 milliamps
No.	if Inputs Eight (8)
Backplane	Current (24 Volts) 55 milliamps
Compatible	RTD Sensors Platinum (385) 100, 200, 500 and 1000; Platinum (3816) 100, 200, 500 and 1000; Copper (426) 10, Nickel (618) 120, Nickel (672) 120, and Nickel Iron (518) 604.
Update	Time 6 milliseconds to 2 seconds
Compatible	Resistance input range 0 - 150 Ohms, 0 to 500 Ohms, 0 to 1000 Ohms and 0 to 300 Ohms
Backplane	Current 100 mA @ 5VDC; 55 mA @ 24VDC
Backplane	Power Consumption 1.82W maximum (0.5W at 5V dc, 1.32W at 24V dc)
Step	Response 60 milliseconds in, 2.5 milliseconds out
I/O	Chassis location Any slot except Slot 0
Operating	Temperature Range 32 to 140 degrees Fahrenheit
Resolution	.01 Deg. Celcius
UPC	10611320271727
Operating	Temperature 0 to 60 degrees Celsius
UNSPSC	3211705
Storage	Temperature -40 to 85

3. Product Information

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Manufacturer Rockwell Automation

Series SLC 500

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Inputs 8

Module Type RTD/Resistance Analog Input Module

Backplane Current (5 Volts) 100 milliamps

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Update Time 6 milliseconds to 2 seconds

Compatible Resistance input range 0 - 150 Ohms, 0 to 500 Ohms, 0 to 1000 Ohms and 0 to 300 Ohms

Backplane Current 100 mA @ 5VDC; 55 mA @ 24VDC

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Step Response 60 milliseconds in, 2.5 milliseconds out

I/O Chassis location Any slot except Slot 0

Operating Temperature Range 32 to 140 degrees Fahrenheit

Resolution .01 Deg. Celcius

UPC 10611320271727

Operating Temperature 0 to 60 degrees Celsius

UNSPSC 32151705

Storage Temperature -40 to 85 degrees Celsius

A/D Conversion method Sigma-delta modulation Description

The 1746-NR8 is a Resistance Temperature Detector (RTD) / Resistance module. This module accepts resistance signals from RTD sensors such as Platinum (385) 100, 200, 500 and 1000; Platinum (3816) 100, 200, 500 and 1000; Copper (426) 10, Nickel (618) 120, Nickel (672) 120, and Nickel Iron (518) 604 and direct resistance values of 0 - 150 Ohms, 0 to 500 Ohms, 0 to 1000 Ohms and 0 to 300 Ohms.

This module is exclusively used for SLC 500 systems. It may be specifically used with the Two (2) variants of SLC 500 such as Fixed and modular hardware style. It occupies single slot of any chassis used and does not require an external power supply instead, this module is powered by the backplane power generated by the system power supply.

This module is primarily used for Temperature applications as RTD sensors are specifically used to measure temperature readings. The resistance capability of this module is applicable for measuring displacement or movement or mechanical devices. Typically, it is used for measuring the length of travel, movement reflected by the decrease and increase in the resistance reading.

This module supports 2-Wire, 3-Wire, and 4-Wire RTD sensors. For a 2-wire RTD, recommended wires are Belden 9501 shielded cable or equivalent. For a 3-Wire or 4-Wire RTD, use Belden 9533 or Belden 83503 cable. For a 2-Wire RTD, avoid long cable runs as it reduces accuracy of measurement. It cannot be avoided, the effect of long wires may be minimized by using a lower gauge cable such as an AWG #16 wire instead of AWG #24. Basically, use a cable with lower resistance per foot. The terminals of the Removable Terminal Block (RTB) are intended for single wire connection only.

Channel status can be monitored via the LED indicator while the module operation can be monitored through the LED status indicator. This module has a low-pass digital filter and a programmable input filters. The module's analog to digital conversion is sigma-delta modulation. Its auto-calibration process occurs every time the module is powered up that is also programmable to a specific cycle of every 5 minutes. The RTD types present on the 1746-NR8 module are copper, platinum, nickel-iron, and nickel. The terminal block that is compatible with this module is an Allen-Bradley 1746-RT-35 terminal block. The backplane power consumption of the 1746-NR8 module is a maximum of 1.82 W, and the power consumption is 0.5 W at 5 Volts DC and 1.32 W at 24 Volts DC. The 1746-NR8's backplane current consumptions are 100 mA at 5 Volts DC and 55 mA at 24 Volts DC. Its maximum common mode voltage is +/- 1 Volt, while its maximum permanent overloads are +/- 5 mA for the current and +/- 5 Volts DC. The isolation voltage of the 1746-NR8 module is continuous at 5 Volts DC between the channels and 500 Volts AC for 1 minute between the inputs and the backplane, as well as between the inputs and the chassis ground. Its operating temperature range is 32 to 140 degrees Fahrenheit, its storage temperature range is -40 to 185 degrees Fahrenheit, and its non-condensing relative humidity is 5 to 95%.