MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

ALLEN-BRADLEY

1762-IR4

4-CHANNEL RTD AND RESISTANCE INPUT MODULE

Used with the applicable MicroLogix 1200 configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Allen-Bradley technical documentation for 1762-IR4

Installation Instructions

Original Instructions

Allen-Bradley
by ROCKWELL AUTOMATION

MicroLogix 1200 RTD/Resistance Input Module

Catalog Number 1762-IR4

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Summary of Changes

This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes.

Topic	Page
Updated template	throughout
Reorganized attentions and warnings	3...4
Updated General Specifications	10
Updated Environmental Specifications	11
Updated Certifications	12

Product Overview

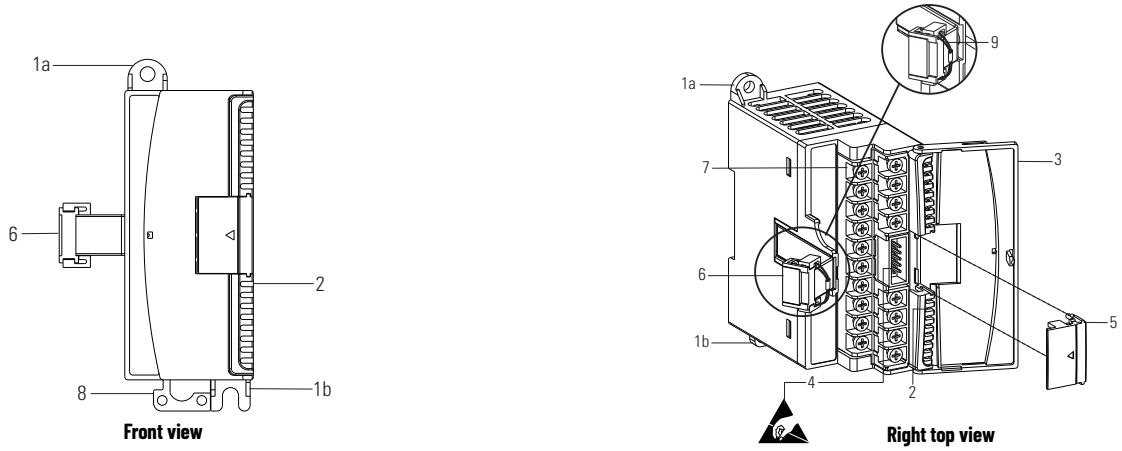
The 1762-IR4 MicroLogix™ 1200 expansion I/O module is suitable for use in an industrial environment when installed in accordance with these instructions. Specifically, this equipment is intended for use in clean, dry environments (Pollution degree 2[a]) and to circuits not exceeding Over Voltage Category II[b] (IEC 60664-1)[c].

The MicroLogix 1200 RTD/Resistance input module receives and stores digitally converted analog data from RTDs or other resistance inputs, such as potentiometers. The module supports connections from any combination of up to four RTDs or other resistance inputs. See Module Specifications on page 10 for supported RTD and resistance types, their associated temperature ranges, and the analog input signal ranges that each channel supports. Each of the four input channels is individually configurable for a specific input device and provides open circuit or short-circuit and overrange or underrange indication.

(a) Pollution Degree 2 is an environment where, normally, only non-conductive pollution occurs except that occasionally a temporary conductivity that is caused by condensation is expected.
(b) Over Voltage Category II is the load level section of the electrical distribution system. At this level, transient voltages are controlled and do not exceed the impulse voltage capability of the product's insulation.
(c) Pollution Degree 2 and Over Voltage Category II are International Electrotechnical Commission (IEC) designations.

WARNING:
- In Class I Division 2 applications, the bus connector must be fully seated and the bus connector cover must be snapped in place.
- In Class I Division 2 applications, all modules must be mounted in direct contact with each other as shown on page 5. If DIN rail mounting is used, an end stop must be installed ahead of the controller and after the last 1762 I/O module.
- When used in a Class I Division 2, hazardous location, this equipment must be mounted in a suitable enclosure with a proper wiring method that complies with the governing electrical codes.

Figure 1 - 1762-IR4 Module Overview



Module Description

	Description		Description
1 a	Upper panel mounting tab	5	Bus connector cover
1 b	Lower panel mounting tab	6	Flat ribbon cable with bus connector (female pins)
2	I/O diagnostic status indicators	7	Terminal block
3	Module door with terminal identification label	8	DIN rail latch
4	Bus connector with male pins	9	Pull loop

This equipment is sensitive to electrostatic discharge (ESD).
Follow ESD prevention guidelines when handling this equipment.

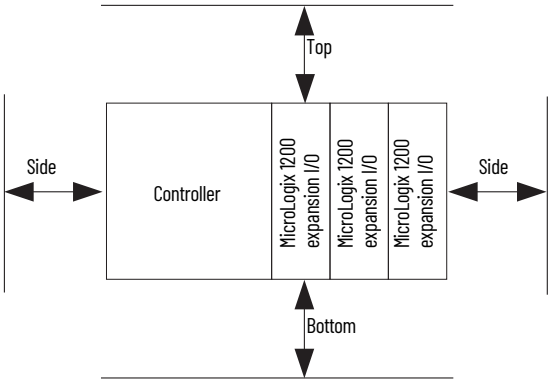
Mount the Module

For more information on proper grounding guidelines, see the Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

Module Spacing

Maintain spacing from objects such as enclosure walls, wireways, and adjacent equipment. Allow 50.8 mm (2 in.) of space on all sides for adequate ventilation, as shown in Figure 2.

Figure 2 - Mounting Dimensions and DIN Rail Mounting

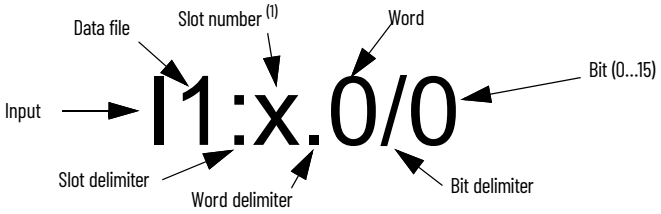


IMPORTANT MicroLogix 1200 expansion I/O can be mounted horizontally only.

Addressing

The addressing scheme for MicroLogix 1200 expansion I/O is shown in Figure 11.

Figure 11 - Addressing Scheme



(1) I/O on the controller (embedded I/O) is slot 0. I/O added to the controller (expansion I/O) begins with slot 1.

Module Specifications

General Specifications

Attribute	Value
Dimensions HxWxD	**Without mounting tabs:** 90 x 40 x 87 mm (3.54 x 1.57 x 3.42 in.) **With mounting tabs:** 90 x 40 x 110 mm (3.54 x 1.57 x 4.33 in.)
Shipping weight, approx.	260 g (7.17 oz)
Voltage range, operating	5V...265V AC 5V...125V DC
Bus current draw, max	40 mA @ 5V DC 50 mA @ 24V DC
Enclosure type rating	None (open-style)
Wire size	See nested table below
Terminal screw torque	0.90 N•m (8 lb•in)(1)
Status indicators	1 green health indicator 4 red error indicators

Wire Type	Wire Size		Wire Type
	Min	Max	
Solid	0.33 mm^2 (22 AWG)	2.08 mm^2 (14 AWG)	Copper wire rated @ 90 °C (194 °F)
Stranded		1.31 mm^2 (16 AWG)	

(1) Tighten RTB hold down screws by hand. Do not tighten the screws with a power tool.

Input Specifications

Attribute	Value
Number of inputs	4
Number of commons	1
Voltage category	24V DC
Operating voltage range	20.4...26.4V DC
Input types	100 Ω Platinum 385 200 Ω Platinum 385 500 Ω Platinum 385 1000 Ω Platinum 385 100 Ω Platinum 3916 200 Ω Platinum 3916 500 Ω Platinum 3916 1000 Ω Platinum 3916 10 Ω Copper 426 120 Ω Nickel 672 120 Ω Nickel 618 604 Ω Nickel-iron 518 0...150 Ω 0...500 Ω 0...1,000 Ω 0...3,000 Ω
Converter type	Sigma-Delta
Channel to channel isolation	±10V DC
Resolution	Input filter and configuration dependent. See the 1762-IR4 RTD/Resistance Input Module User Manual, publication 1762-UM003, for more information.
Common mode rejection, min	110 dB @ 50 Hz with the 10 Hz or 50 Hz filter selected 110 dB @ 60 Hz with the 10 Hz or 60 Hz filter selected
Normal mode rejection ratio, min	70 dB @ 50 Hz with the 10 Hz or 50 Hz filter selected 70 dB @ 60 Hz with the 10 Hz or 60 Hz filter selected
Non-linearity (in percent full-scale)	±0.05%
Input group to system isolation	30V AC/30V DC rated working voltage (N.E.C. Class 2 required) (IEC Class 2 reinforced insulation) type test: 500V AC or 707V DC for 1 minute

Input Specifications (Continued)

Attribute	Value	
Typical Accuracy [Auto-calibration enabled] at 25 °C (77 °F) ambient with module operating temperature at 25 °C (77 °F)[1]	±0.5 °C (°F) for Pt 385 ±0.4 °C (°F) for Pt 3916 ±0.2 °C (°F) for Ni ±0.3 °C (°F) for NiFe ±0.6 °C (°F) for Cu	±0.15 Ω for 150 Ω range ±0.5 Ω for 500 Ω range ±1.0 Ω for 1000 Ω range ±1.5 Ω for 3000 Ω range
Typical Accuracy [Auto-calibration enabled] at 0…55 °C (32…131 °F)	±0.9 °C (°F) for Pt 385 ±0.8 °C (°F) for Pt 3916 ±0.4 °C (°F) for Ni ±0.5 °C (°F) for NiFe ±1.1 °C (°F) for Cu	±0.25 Ω for 150 Ω range ±0.8 Ω for 500 Ω range ±1.5 Ω for 1000 Ω range ±2.5 Ω for 3000 Ω range
Accuracy drift @ 0…55 °C (32…131 °F)	±0.026 °C/ °C (0.026 °F/ °F) for Pt 385 ±0.023 °C/ °C (0.026 °F/ °F) for Pt 3916 ±0.012 °C/ °C (0.026 °F/ °F) for Ni ±0.015 °C/ °C (0.026 °F/ °F) for NiFe ±0.032 °C/ °C (0.026 °F/ °F) for Cu	±0.007 Ω/ °C (0.012 Ω/ °F) for 150 Ω range ±0.023 Ω/ °C (0.041 Ω/ °F) for 500 Ω range ±0.043 Ω/ °C (0.077 Ω/ °F) for 1000 Ω range ±0.072 Ω/ °C (0.130 Ω/ °F) for 3000 Ω range
Repeatability[2]	±0.1 °C (±0.18 °F) for Ni and NiFe ±0.2 °C (±0.36 °F) for other RTD inputs ±0.04 Ω for 150 Ω resistances ±0.2 Ω for other resistances	
Excitation current source	0.5 mA and 1.0 mA selectable per channel	
Open circuit detection time[3]	6…1,212 ms	
Input impedance	>10 MΩ	
Vendor ID code	1	
Product type code	10	
Product code	65	

(1) Accuracy is dependent on the Analog/Digital converter filter rate selection, excitation current selection, data format, and input noise.

(2) Repeatability is the ability of the input module to register the same reading in successive measurements for the same input signal.

(3) Open circuit detection time is equal to channel update time for EXC and RTN leads only, Open circuit detection on Sense input is performed during cyclic lead calibration (every 5 minutes) and only on those channels where cyclic lead calibration is enabled.

Environmental Specifications

Attribute	Value
Temperature, operating	IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock): 0 °C ≤ Ta ≤ +55 °C (+32 °F ≤ Ta ≤ +131 °F)
Temperature, ambient, max	55 °C (131 °F)
Temperature, surrounding air, max	55 °C (131 °F)
Temperature, nonoperating	IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock): -40 °C…+85 °C (-40 °F…+185 °F)
Relative humidity	IEC 60068-2-30 (Test Db, Unpackaged Damp Heat): 5…95% noncondensing
Vibration	IEC 60068-2-6 (Test Fc, Operating): 5 g @ 10…500 Hz
Shock, operating, panel mounted	IEC 60068-2-27 (Test Ea, Unpackaged Shock): 30 g
Shock, nonoperating	IEC 60068-2-27 (Test Ea, Unpackaged Shock): 50 g
Emissions	IEC 61000-6-4
ESD immunity	IEC 61000-4-2: 4 kV contact discharges 8 kV air discharges 4 kV indirect discharges
Radiated RF immunity	IEC 61000-4-3: 10V/m with 1 kHz sine wave 80% AM from 80…1000 MHz
Surge transient immunity	IEC 61000-4-5: ±1 kV line-line(DM) and ±2 kV line-earth(CM) on signal ports
Conducted RF immunity	IEC 61000-4-6: 10V rms with 1 kHz sine wave 80% AM from 150 kHz…80 MHz