

# ioLogik R1200 Series

## RS-485 remote I/O



### Features and Benefits

- Dual RS-485 remote I/O with built-in repeater
- Supports the installation of multidrop communications parameters
- Install communications parameters and upgrade firmware via USB
- Upgrade firmware through an RS-485 connection
- Wide operating temperature models available for -40 to 85°C (-40 to 185°F) environments

### Certifications



## Introduction

The ioLogik R1200 Series RS-485 serial remote I/O devices are perfect for establishing a cost-effective, dependable, and easy-to-maintain remote process control I/O system. Remote serial I/O products offer process engineers the benefit of simple wiring, as they only require two wires to communicate with the controller and other RS-485 devices while adopting the EIA/TIA RS-485 communication protocol to transmit and receive data at high speed over long distances. In addition to communication configuration by software or USB and dual RS-485 port design, Moxa's remote I/O devices eliminate the nightmare of extensive labor associated with the setup and maintenance of data acquisition and automation systems. Moxa also offers different I/O combinations, which provide greater flexibility and are compatible with many different applications.

### Easy-to-Use Software Interface for Easy Maintenance

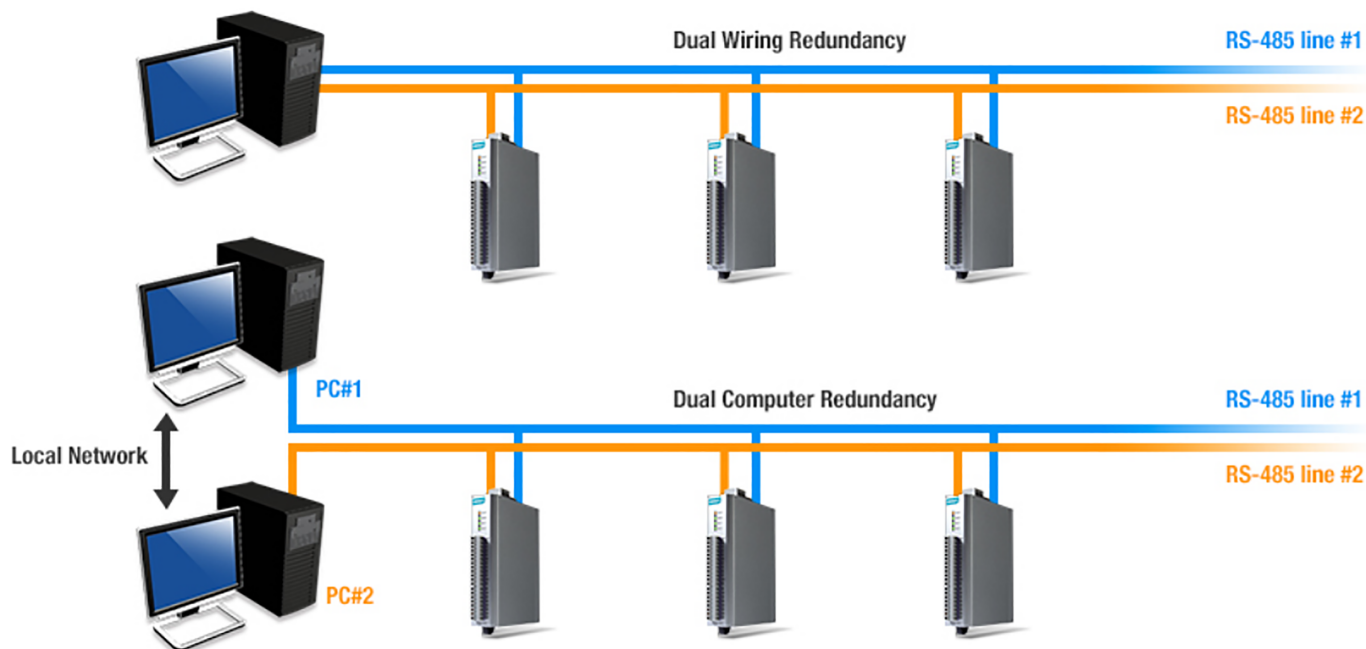
With Moxa's easy-to-use ioSearch software, you can quickly access all of an ioLogik R1200 device's status information and settings with a user-friendly graphical user interface. Furthermore, ioSearch also provides an easy method for updating firmware for all ioLogik R1200 devices over an RS-485 network, so you can even update your firmware remotely. The free and easy-to-use ioSearch software reduces the maintenance time and labor required to set up your communication interface. When more than one ioLogik R1200 are on the same RS-485 network, you no longer need to turn hundreds of dials during setup. Instead, simply configure and duplicate each ioLogik R1200's baudrate and mode through the graphical user interface. This convenient software feature reduces maintenance engineers' effort, and greatly simplifies upgrading your device's configuration compared with more traditional methods.

### Innovative Hardware Design Reduces Deployment Effort and Enhances Maintenance Efficiency

With the industry's first RS-485 serial remote I/O with USB design, Moxa provides an innovative solution for upgrading and configuring RS-485 remote I/O communication devices and firmware. All you need to do is upload the configurations to a USB drive, plug it into the field device, and all the configurations and firmware updates will upload to the field device automatically.

### Cost-Saving Hardware Design for Backup and Redundancy

Moxa's ioLogik R1200 Series provides dual RS-485 ports so that when one of your RS-485 ports is damaged, you can quickly switch to the other RS-485 port for quick testing or repair. RS-485 remote I/O devices are already considered a low-cost technology, but with dual RS-485 ports, Moxa helps you save a little bit more. With the ioLogik R1200, you can take advantage of our dual RS-485 ports to set up wiring, provide computer redundancy, or back up your network using two computer topologies. For wiring redundancy, when your computer detects that one of the RS-485 connections is not responding, it can quickly switch over to the other RS-485 line to guarantee continuous communication between field sensors and the central computer. Furthermore, users have the freedom to define the settings. For computer redundancy, the ioLogik R1200 provides system operators with a secure backup when one system goes down.



## Specifications

### Input/Output Interface

|                                         |                                                                                |
|-----------------------------------------|--------------------------------------------------------------------------------|
| Buttons                                 | Reset button                                                                   |
| Analog Input Channels                   | ioLogik R1240 Series: 8                                                        |
| Analog Output Channels                  | ioLogik R1241 Series: 4                                                        |
| Configurable DIO Channels (by software) | ioLogik R1212 Series: 8                                                        |
| Digital Input Channels                  | ioLogik R1210 Series: 16<br>ioLogik R1212 Series: 8<br>ioLogik R1214 Series: 6 |
| Isolation                               | 3k VDC or 2k Vrms                                                              |
| Relay Channels                          | ioLogik R1214 Series: 6                                                        |

### Digital Inputs

|                                 |                                                                            |
|---------------------------------|----------------------------------------------------------------------------|
| Connector                       | Screw-fastened Euroblock terminal                                          |
| Counter Frequency               | 2.5 kHz                                                                    |
| Digital Filtering Time Interval | Software configurable                                                      |
| Dry Contact                     | On: short to GND<br>Off: open                                              |
| I/O Mode                        | DI or event counter                                                        |
| Points per COM                  | ioLogik R1210/R1212 Series: 8 channels<br>ioLogik R1214 Series: 6 channels |
| Sensor Type                     | Dry contact<br>Wet contact (NPN or PNP)                                    |
| Wet Contact (DI to COM)         | On: 10 to 30 VDC<br>Off: 0 to 3 VDC                                        |

## Digital Outputs

|                           |                                   |
|---------------------------|-----------------------------------|
| Connector                 | Screw-fastened Euroblock terminal |
| Current Rating            | 200 mA per channel                |
| I/O Mode                  | DO or pulse output                |
| I/O Type                  | Sink                              |
| Pulse Output Frequency    | 5 kHz                             |
| Over-Current Protection   | 0.65 A per channel @ 25°C         |
| Over-Temperature Shutdown | 175°C (typical), 150°C (min.)     |
| Over-Voltage Protection   | 45 VDC (typical)                  |

## Relays

|                               |                                                                                                                                                              |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Breakdown Voltage             | 500 VAC                                                                                                                                                      |
| Connector                     | Screw-fastened Euroblock terminal                                                                                                                            |
| Contact Current Rating        | Resistive load: 5 A @ 30 VDC, 250 VAC, 110 VAC                                                                                                               |
| Contact Resistance            | 100 milli-ohms (max.)                                                                                                                                        |
| Electrical Endurance          | 100,000 operations @ 5 A resistive load                                                                                                                      |
| Initial Insulation Resistance | 1,000 mega-ohms (min.) @ 500 VDC                                                                                                                             |
| Mechanical Endurance          | 5,000,000 operations                                                                                                                                         |
| Pulse Output Frequency        | 0.3 Hz at rated load                                                                                                                                         |
| Type                          | Form A (N.O.) power relay                                                                                                                                    |
| Note                          | Ambient humidity must be non-condensing and remain between 5 and 95%. The relays may malfunction when operating in high condensation environments below 0°C. |

## Analog Inputs

|                                     |                                                                                                                                                                 |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accuracy                            | ioLogik R1240:<br>±0.1% FSR @ 25°C<br>±0.3% FSR @ -10 to 60°C<br><br>ioLogik R1240-T:<br>±0.1% FSR @ 25°C<br>±0.3% FSR @ -10 to 60°C<br>±0.5% FSR @ -40 to 75°C |
| Built-in Resistor for Current Input | 120 ohms                                                                                                                                                        |
| Connector                           | Screw-fastened Euroblock terminal                                                                                                                               |
| I/O Mode                            | Voltage/Current                                                                                                                                                 |
| I/O Type                            | Differential                                                                                                                                                    |
| Input Impedance                     | 10 mega-ohms (min.)                                                                                                                                             |
| Input Range                         | 0 to 10 VDC<br>0 to 20 mA<br>4 to 20 mA<br>4 to 20 mA (with burn-out detection)                                                                                 |

|                      |                                                                                                          |
|----------------------|----------------------------------------------------------------------------------------------------------|
| Converter Resolution | 16 bits                                                                                                  |
| Sampling Rate        | All channels: 12 samples/sec<br>Per channel: 1.5 samples/sec<br>Only one channel enabled: 12 samples/sec |

#### Analog Outputs

|                      |                                                                                                                                      |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Accuracy             | ioLogik R1241:<br>±0.1% FSR @ 25°C<br>±0.3% FSR @ -10 to 60°C<br><br>ioLogik R1241-T:<br>±0.1% FSR @ 25°C<br>±0.3% FSR @ -40 to 75°C |
| Connector            | Screw-fastened Euroblock terminal                                                                                                    |
| Output Range         | 0 to 10 VDC<br>0 to 20 mA<br>4 to 20 mA                                                                                              |
| Converter Resolution | 12-bit                                                                                                                               |
| Voltage Output       | 10 mA (max.)                                                                                                                         |
| Load (Current Mode)  | Internal power: 400 ohms (max.)<br>24 V external power: 1000 ohms (max.)                                                             |

#### LED Interface

|                |                  |
|----------------|------------------|
| LED Indicators | PWR, RDY, P1, P2 |
|----------------|------------------|

#### Serial Interface

|                                   |                                                                 |
|-----------------------------------|-----------------------------------------------------------------|
| Baudrate                          | 1200, 2400, 4800, 9600, 19200, 38400, 57600, 112800, 921600 bps |
| Connector                         | Terminal block                                                  |
| No. of Ports                      | 2                                                               |
| Parity                            | None<br>Even<br>Odd                                             |
| Pull High/Low Resistor for RS-485 | 1 kilo-ohm, 150 kilo-ohms                                       |
| Serial Standards                  | RS-485                                                          |
| Stop Bits                         | 1, 2                                                            |
| Surge                             | 1 kV                                                            |
| ESD                               | 15 kV                                                           |
| Data Bits                         | 8                                                               |

#### Serial Signals

|           |                   |
|-----------|-------------------|
| RS-485-2w | Data+, Data-, GND |
|-----------|-------------------|

#### Serial Software Features

|                      |                  |
|----------------------|------------------|
| Industrial Protocols | Modbus RTU Slave |
|----------------------|------------------|

#### Power Parameters

|                     |                                   |
|---------------------|-----------------------------------|
| Power Connector     | Screw-fastened Euroblock terminal |
| No. of Power Inputs | 1                                 |

|                   |                                                                                                                                                                                                           |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input Voltage     | 12 to 48 VDC                                                                                                                                                                                              |
| Power Consumption | ioLogik R1210 Series: 154 mA @ 24 VDC<br>ioLogik R1212 Series: 187 mA @ 24 VDC<br>ioLogik R1214 Series: 207 mA @ 24 VDC<br>ioLogik R1240 Series: 216 mA @ 24 VDC<br>ioLogik R1241 Series: 343 mA @ 24 VDC |

#### Physical Characteristics

|              |                                                      |
|--------------|------------------------------------------------------|
| Housing      | Plastic                                              |
| Dimensions   | 27.8 x 124 x 84 mm (1.09 x 4.88 x 3.31 in)           |
| Weight       | 200 g (0.44 lb)                                      |
| Installation | DIN-rail mounting<br>Wall mounting                   |
| Wiring       | I/O cable, 16 to 26 AWG<br>Power cable, 12 to 24 AWG |

#### Environmental Limits

|                                        |                                                                                             |
|----------------------------------------|---------------------------------------------------------------------------------------------|
| Operating Temperature                  | Standard Models: -10 to 75°C (14 to 167°F)<br>Wide Temp. Models: -40 to 85°C (-40 to 185°F) |
| Storage Temperature (package included) | -40 to 85°C (-40 to 185°F)                                                                  |
| Ambient Relative Humidity              | 5 to 95% (non-condensing)                                                                   |
| Altitude                               | 2000 m <sup>1</sup>                                                                         |

#### Standards and Certifications

|           |                                                                                                                                                                                                                |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EMC       | EN 55032/24                                                                                                                                                                                                    |
| EMI       | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                 |
| EMS       | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 2 kV<br>IEC 61000-4-6 CS: 3 V<br>IEC 61000-4-8 PFMF |
| Safety    | UL 508                                                                                                                                                                                                         |
| Shock     | IEC 60068-2-27                                                                                                                                                                                                 |
| Vibration | IEC 60068-2-6                                                                                                                                                                                                  |

#### Declaration

|               |                   |
|---------------|-------------------|
| Green Product | RoHS, CRoHS, WEEE |
|---------------|-------------------|

#### MTBF

|           |                           |
|-----------|---------------------------|
| Time      | 1,239,293 hrs             |
| Standards | Telcordia Standard SR-332 |

#### Warranty

|                 |                                                                                        |
|-----------------|----------------------------------------------------------------------------------------|
| Warranty Period | ioLogik R1214: 2 years <sup>2</sup><br>ioLogik R1210/R1212/R1240/R1241 Series: 5 years |
| Details         | See <a href="http://www.moxa.com/warranty">www.moxa.com/warranty</a>                   |

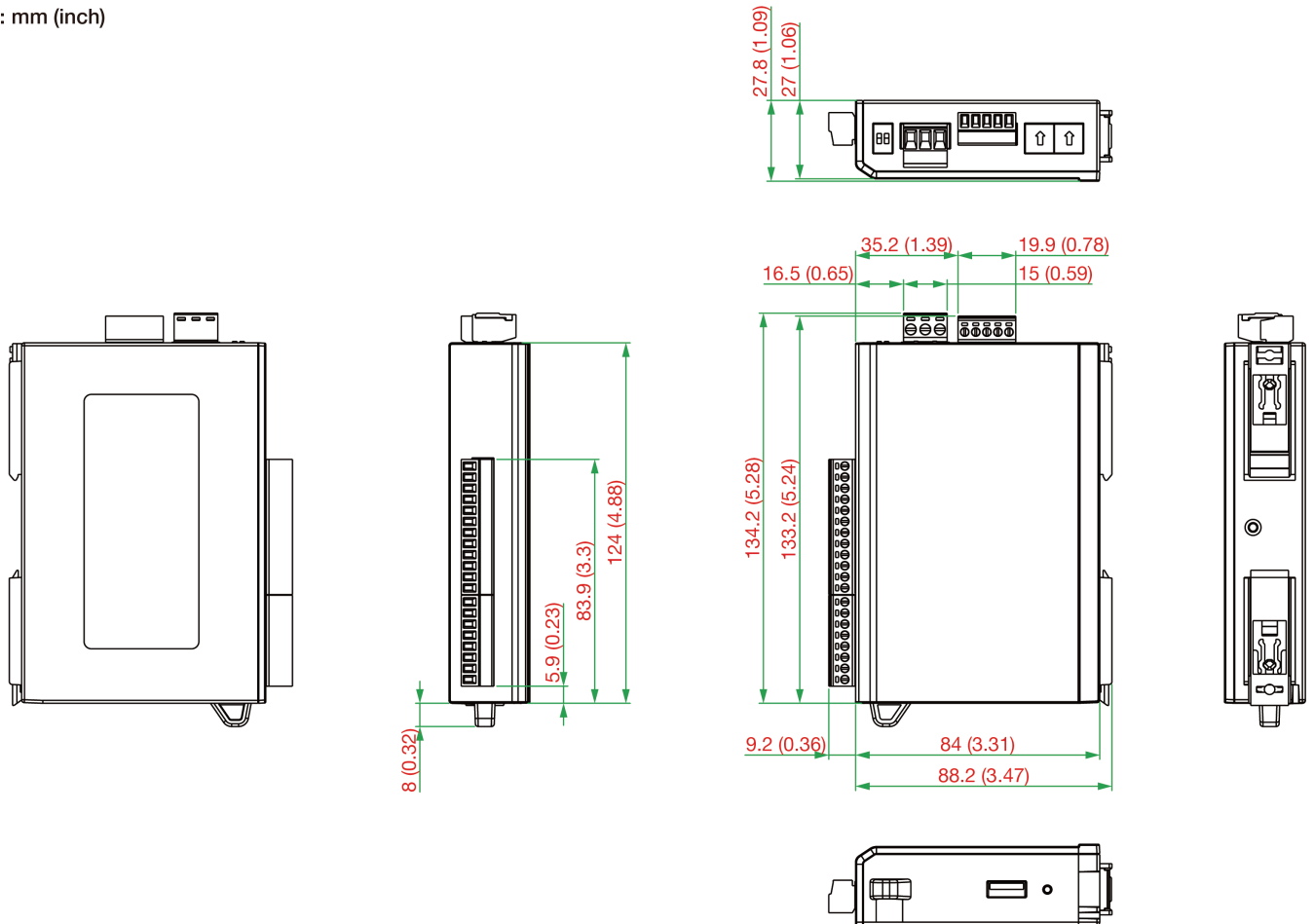
1. Please contact Moxa if you require products guaranteed to function properly at higher altitudes.
2. Because of the limited lifetime of power relays, products that use this component are covered by a 2-year warranty.

## Package Contents

|                  |                                                                                                                 |
|------------------|-----------------------------------------------------------------------------------------------------------------|
| Device           | 1 x ioLogik R1200 Series remote I/O                                                                             |
| Installation Kit | 1 x terminal block, 12-pin, 3.81 mm<br>1 x terminal block, 3-pin, 5.00 mm<br>1 x terminal block, 8-pin, 3.81 mm |
| Documentation    | 1 x quick installation guide<br>1 x warranty card                                                               |

## Dimensions

Unit: mm (inch)



## Ordering Information

| Model Name      | Input/Output Interface | Operating Temp. |
|-----------------|------------------------|-----------------|
| ioLogik R1210   | 16 x DI                | -10 to 75°C     |
| ioLogik R1210-T | 16 x DI                | -40 to 85°C     |
| ioLogik R1212   | 8 x DI, 8 x DIO        | -10 to 75°C     |
| ioLogik R1212-T | 8 x DI, 8 x DIO        | -40 to 85°C     |
| ioLogik R1214   | 6 x DI, 6 x Relay      | -10 to 75°C     |
| ioLogik R1214-T | 6 x DI, 6 x Relay      | -40 to 85°C     |
| ioLogik R1240   | 8 x AI                 | -10 to 75°C     |
| ioLogik R1240-T | 8 x AI                 | -40 to 85°C     |
| ioLogik R1241   | 4 x AO                 | -10 to 75°C     |
| ioLogik R1241-T | 4 x AO                 | -40 to 85°C     |

Accessories (sold separately)

Software

|                   |                                                                       |
|-------------------|-----------------------------------------------------------------------|
| MX-AOPC UA Server | OPC UA Server software for converting fieldbus to the OPC UA standard |
|-------------------|-----------------------------------------------------------------------|

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