ioLogik R1200 Series User's Manual

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www.moxa.com/product

ioLogik R1200 Series User's Manual

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Overview

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Introduction

The ioLogik R1200 is an industrial grade, wide-temperature serial remote I/O device equipped with dual RS-485 ports that allow users to select between two RS-485 serial ports or switch to a built-in repeater. Applications such as factory automation, security and surveillance systems, and tunnel monitoring can use the RS-485 serial line to set up multi-drop device configurations through serial cables. Furthermore, a technician with no serial background can upload device configurations and firmware via USB at the field site without bringing a PC to the field site. The ioLogik R1200 lets you easily build an industrial grade, long distance communication system with standard PC hardware, and extends the communication distance by 4,000 ft. (1,200 m).

Product Features

- Upload and install device configurations and firmware via USB
- Multi-drop support for device configuration and firmware upgrade via RS-485
- Remote firmware updates via RS-485
- Dual RS-485 ports with built-in repeater
- Wide temperature (-40 to 85°C), 1 kV surge protection, and 3 kV I/O isolation between I/O channels, networks and power circuits
- Multi-functional I/O support for DI, event counter, DO, and pulse output
- Modbus/RTU support for control by SCADA software, including Wonderware InTouch and GE Intellution iFix32
- Monitoring and configuration via ioSearch Windows utility
- Hardware detection over RS-485 via ioSearch

Package Checklist

The ioLogik R1200 is shipped with the following items:

- 1 ioLogik R1200 remote I/O product
- Document and Software CD
- Quick Installation Guide (printed)

NOTE Contact your sales representative if any of the above items are missing or damaged.

Product Model Information

Ordering Information

ioLogik R1210	RS-485 remote I/O, 16 DIs, -10 to 75°C operating temperature.
ioLogik R1210-T	RS-485 remote I/O, 16 DIs, -40 to 85°C operating temperature.
ioLogik R1212	RS-485 remote I/O, 8 DIs, 8 DIOs, -10 to 75°C operating temperature.
ioLogik R1212-T	RS-485 remote I/O, 8 DIs, 8 DIOs, -40 to 85°C operating temperature.
ioLogik R1214	RS-485 remote I/O, 6 DIs, 6 Relays, -10 to 75°C operating temperature.
ioLogik R1214-T	RS-485 remote I/O, 6 DIs, 6 Relays, -40 to 85°C operating temperature.
ioLogik R1240	RS-485 remote I/O, 8 AIs, -10 to 75°C operating temperature.
ioLogik R1240-T	RS-485 remote I/O, 8 AIs, -40 to 85°C operating temperature.
ioLogik R1241	RS-485 remote I/O, 4 AOs, -10 to 75°C operating temperature.
ioLogik R1241-T	RS-485 remote I/O, 4 AOs, -40 to 85°C operating temperature.

Specifications

Common Specifications

Serial Communication

Interface: RS-485-2w: Data+, Data-, GND (5-contact terminal block)

Serial Line Protection: 15 kV ESD for all signals, Level 2 surge, EN 61000-4-5 (1 kV), Level 4 EFT, EN 61000-4-4 (4 kV)

Serial Communication Parameters

Parity: None, Even, Odd (default = None)

Data Bits: 8 (default = 8)

Stop Bits: 1, 2 (default = 1)

Baudrate: 1200 to 921.6 kbps (default = 9600)

Pull High/Low Resistor for RS-485: 1 kΩ, 150 kΩ

Protocols: Modbus RTU

Physical Characteristics

Wiring: I/O cable max. 16 AWG

Dimensions: 27.8 x 124 x 84 mm (1.09 x 4.88 x 3.31 in)

Environmental Limits

Operating Temperature:

Standard Models: -10 to 70°C (14 to 158°F)

Wide Temp. Models: -40 to 85°C (-40 to 185°F)

Storage Temperature: -40 to 85°C (-40 to 185°F)

Ambient Relative Humidity: 5 to 95% (non-condensing)

Standards and Certifications

Safety: UL 508

EMI:

EN 55022, EN 61000-3-2, EN 61000-3-3, FCC Part 15 Subpart B Class A

EMS:

EN 55024, IEC 61000-4, IEC 61000-6

Shock: IEC 60068-2-27

Freefall: IEC 60068-2-32

Vibration: IEC 60068-2-6

Warranty

Warranty Period: 5 years (excluding the ioLogik R1240)

Details: See www.moxa.com/warranty

ioLogik R1210

Inputs and Outputs

Digital Inputs: 16 channels

Isolation: 3K VDC or 2K Vrms

Digital Input

Sensor Type: Wet Contact (NPN or PNP), Dry Contact

I/O Mode: DI or Event Counter

Dry Contact:

• On: short to GND

• Off: open

Wet Contact (DI to GND):

• On: 0 to 3 VDC

• Off: 10 to 30 VDC

Common Type: 8 points per COM

Counter Frequency: 250 Hz, power off storage
Digital Filtering Time Interval: Software selectable

Power Requirements

Power Consumption: 154 ma @ 24 VDC

ioLogik R1212

Inputs and Outputs

Digital Inputs: 8 channels
Configurable DIOs: 8 channels
Isolation: 3K VDC or 2K Vrms

Digital Input

Sensor Type: Wet Contact (NPN or PNP), Dry Contact
I/O Mode: DI or Event Counter
Dry Contact:
• On: short to GND
• Off: open
Wet Contact (DI to GND):
• On: 0 to 3 VDC
• Off: 10 to 30 VDC
Common Type: 8 points per COM
Counter Frequency: 2.5 kHz, power off storage
Digital Filtering Time Interval: Software selectable

Digital Output

Type: Sink
I/O Mode: DO or Pulse Output
Pulse Output Frequency: 5 kHz
Over-voltage Protection: 45 VDC
Over-current Protection: 2.6 A (4 channels @ 650 mA)
Over-temperature Shutdown: 175°C (typical), 150°C (min.)
Current Rating: 200 mA per channel

Power Requirements

Power Consumption: 187 ma @ 24 VDC

ioLogik R1214

Inputs and Outputs

Digital Inputs: 6 channels
Relay Outputs: 6 channels
Isolation: 3K VDC or 2K Vrms

Digital Input

Sensor Type: Wet Contact (NPN or PNP), Dry Contact
I/O Mode: DI or Event Counter
Dry Contact:
• On: short to GND
• Off: open
Wet Contact (DI to GND):
• On: 0 to 3 VDC
• Off: 10 to 30 VDC
Common Type: 6 points per COM
Counter Frequency: 2.5 kHz, power off storage
Digital Filtering Time Interval: Software selectable

Relay Output

Type: Form A (N.O.) power relay
Contact Current Rating:
• Resistive Load: 5 A @ 30 VDC, 250 VAC, 110 VAC
Breakdown Voltage: 500 VAC
Relay On/Off Time: 1500 ms (Max.)
Initial Insulation Resistance: 1000 M ohms (min.) @ 500 VDC
Mechanical Endurance: 5,000,000 operations
Electrical Endurance: 100,000 operations @ 5 A resistive load
Contact Resistance: 100 m ohms (max.)
Pulse Output: 0.3 Hz at rated load
Note: Ambient humidity must be non-condensing and remain between 5 and 95%. The relays of the ioLogik R1214 may malfunction when operating in high condensation environments below 0°C.

Power Requirements

Power Consumption: 207 ma @ 24 VDC

ioLogik R1240

Inputs and Outputs

Analog Inputs: 8 channels
Isolation: 3K VDC or 2K Vrms

Analog Input

Type: Differential input
Resolution: 16 bits
I/O Mode: Voltage / Current
Input Range: 0 to 10 VDC, 0 to 20 mA, 4 to 20 mA (burn-out mode)
Accuracy:
±0.1% FSR @ 25°C
±0.3% FSR @ -10 and 60°C
±0.5% FSR @ -40 and 75°C
Sampling Rate (all channels):
12 Hz
Input Impedance: 10M ohms (min.)
Built-in Resistor for Current Input: 120 ohms

Power Requirements

Power Consumption: 216 ma @ 24 VDC

ioLogik R1241

Inputs and Outputs

Analog Outputs: 4 channels
Isolation: 3K VDC or 2K Vrms

Analog Output

Resolution: 12 bits
Output Range: 0 to 10 VDC, 4 to 20 mA
Voltage Output: 10 mA (max.)
Accuracy:
±0.1% FSR @ 25°C
±0.3% FSR @ -40 and 75°C
Load Resistor:
• Internal power: 400 ohms
• External 24V power: 1000 ohms

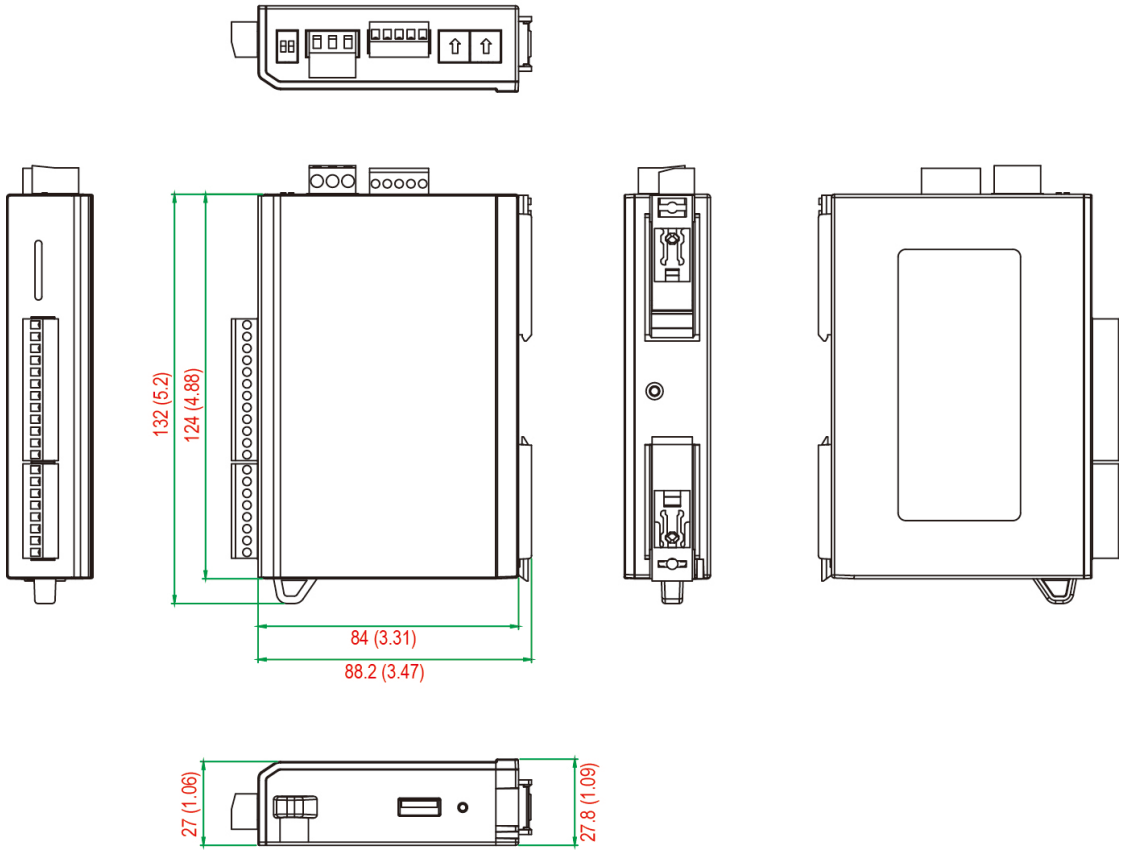
Power Requirements

Power Consumption: 343 ma @ 24 VDC

Physical Dimensions

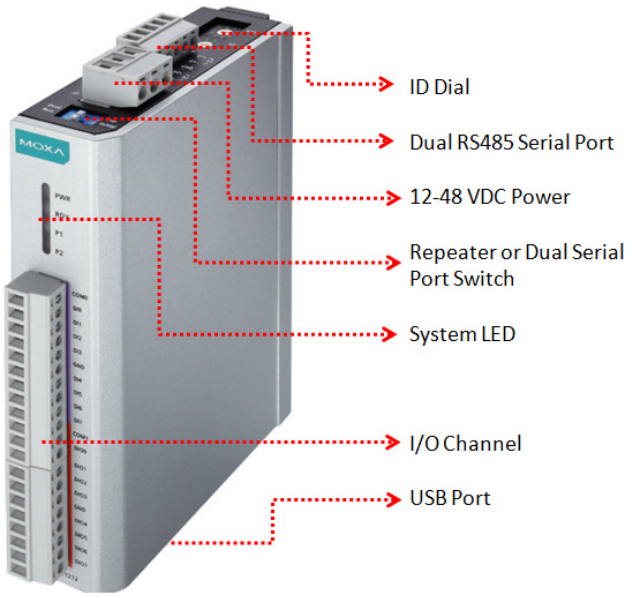
The dimensions of the ioLogik R1200 product are 27.8 x 124 x 84 mm. The connector for the two RS-485 ports is a 5-pin 3.81 terminal block (2 RS-485 ports with 1 ground pin). The power connector is on the top and the reset button is on the bottom of the product. There are also two dials for Board ID setup, and a 2-pin DIP switch for "Initial/Run" mode and "Dual RS-485/Repeater" mode setup.

Unit: mm (inch)



Hardware Reference

Panel Guide



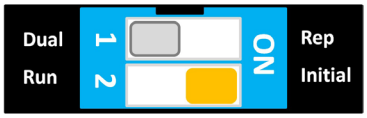
NOTE The RESET button restarts the server and resets all settings to factory defaults. Use a pointed object such as a straightened paper clip to hold down the reset button for 5 seconds. The factory defaults will load once the READY LED turns green again. You may then release the RESET button.

LED Indicators

LED	State	Description
Power (PWR)	Amber	System power is ON
	OFF	System power is OFF
Read (RDY)	Green	System is ready
	Flashing	Flashes every 1 sec when the Locate function is triggered
	Flashing	Flashes every 0.5 sec when the firmware is being upgraded
	Flashing	Flashing USB upgrade is triggered
	OFF	System is not ready.
Port 1 (P1)	Green	Serial connection enabled
	Flashing	Transmitting or receiving data
Port 2 (P2)	Green	Serial connection enabled
	Flashing	Transmitting or receiving data

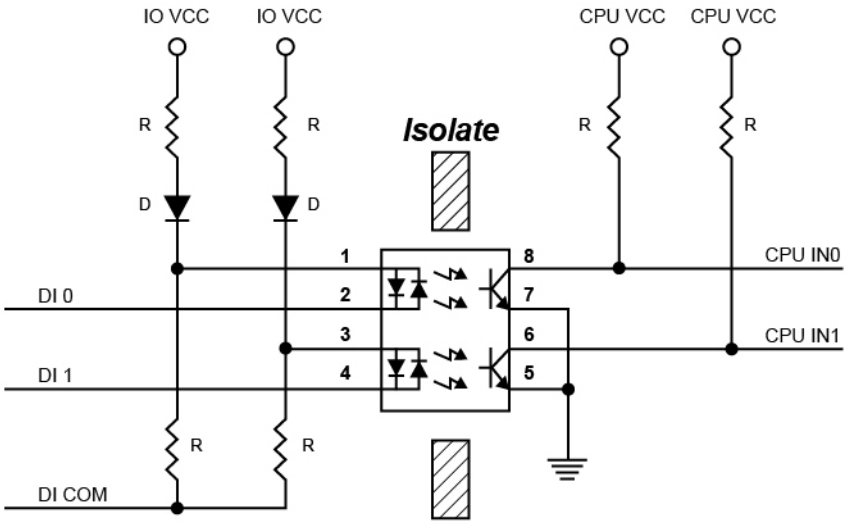
Switch Settings

The R1200 series provides Dual/Rep and Run/Initial switch settings for setting the communication mode.

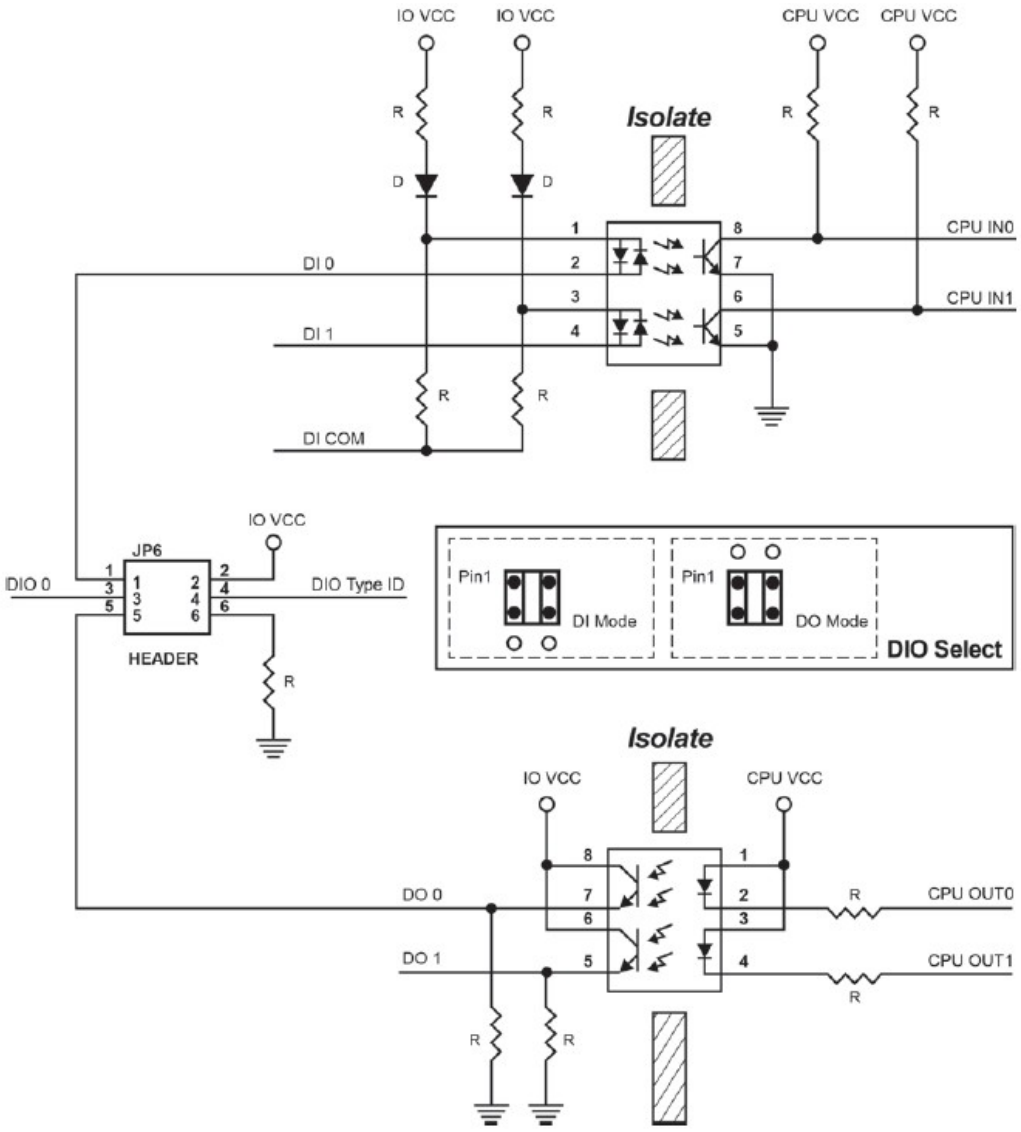


Dual (Default)	Dual RS-485 mode
Rep	Repeater mode
Run	User defined communication parameters
Initial (Default)	Initial RS-485 communication parameters

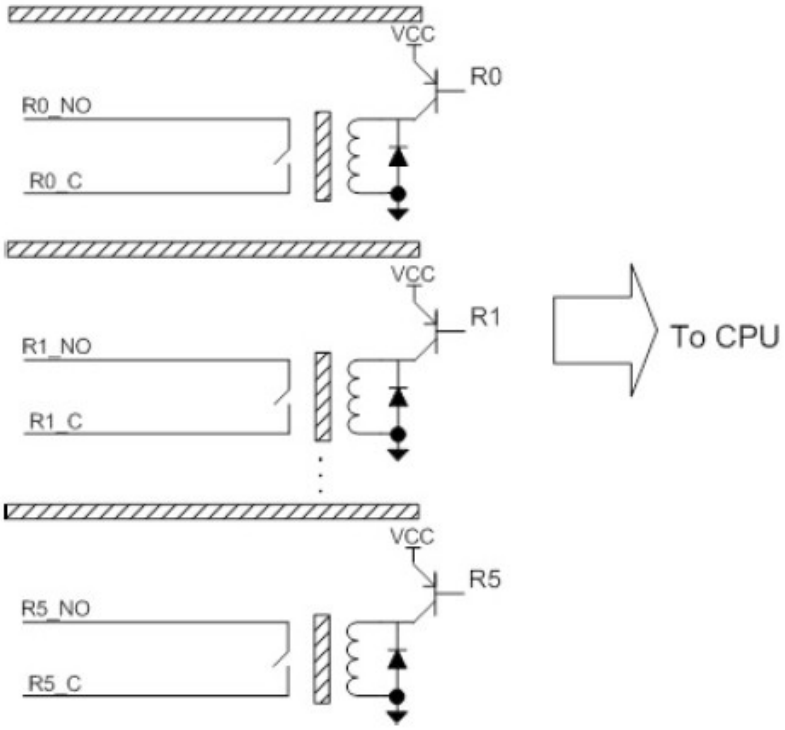
DI Circuit Diagram



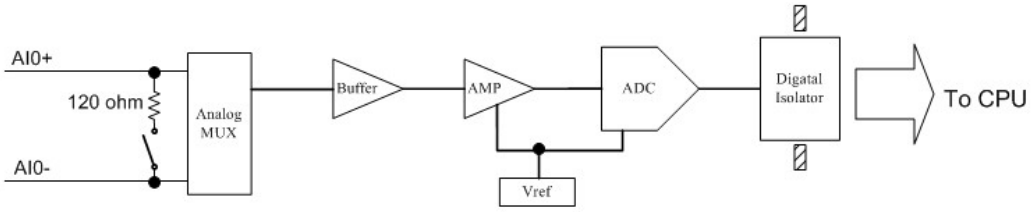
DIO Circuit Diagram



Relay Circuit Diagram



AI Circuit Diagram



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Initial Setup

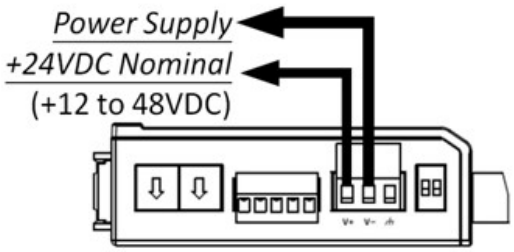
The following topics are covered in this chapter:

- **Hardware Installation**
  - Connecting the Power
  - Grounding the ioLogik R1200
  - Mounting the ioLogik R1200
  - Connecting to Digital Sensors and Devices
  - RS-485 Networks
  - Modbus/RTU Devices
  - Dual RS-485 or Repeater Settings
  - Jumper Settings (DIO and AI)
  - Pull High/Low DIP Switch Settings for the RS-485 Port
- **Software Installation**
  - ioSearch Installation
  - Initial Setup by USB
  - Restore Factory Default Settings

Hardware Installation

Connecting the Power

Connect the 12 to 48 VDC power line to the ioLogik R1200's terminal block on the top panel. If power is properly supplied, the Power LED will glow a solid amber color.



ATTENTION

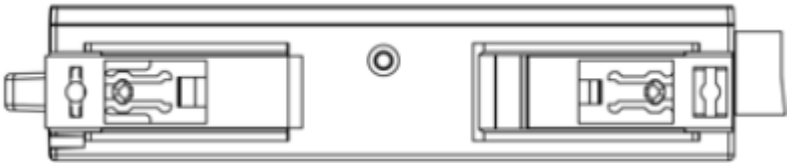
Determine the maximum possible current for each power wire and common wire. Observe all electrical codes dictating the maximum current allowable for each wire size. If the current exceeds the maximum rating, the wiring could overheat, causing serious damage to your equipment. For safety reasons, we recommend an average cable size of 22 AWG. However, depending on the current load, you may want to adjust your cable size (the maximum wire size for power connectors is 2 mm).

Grounding the ioLogik R1200

The ioLogik R1200 is equipped with a grounding point on the terminal block located on the top panel. Connect the ground pin if an earth ground is available.

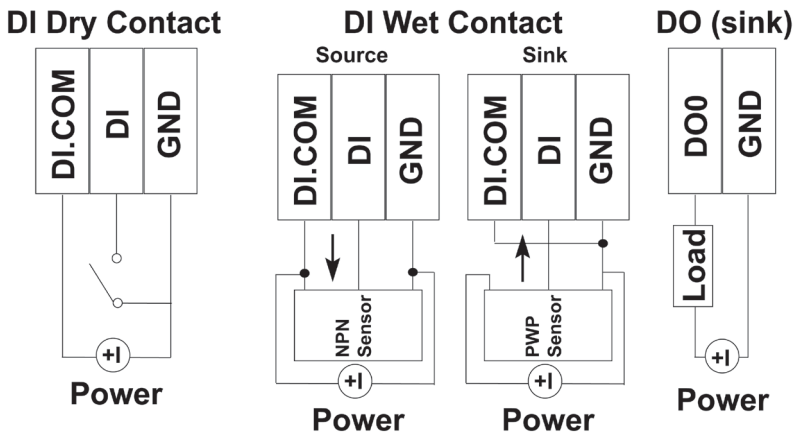
Mounting the ioLogik R1200

The ioLogik R1200 can be used with both DIN rail and wall mounting applications.



Connecting to Digital Sensors and Devices

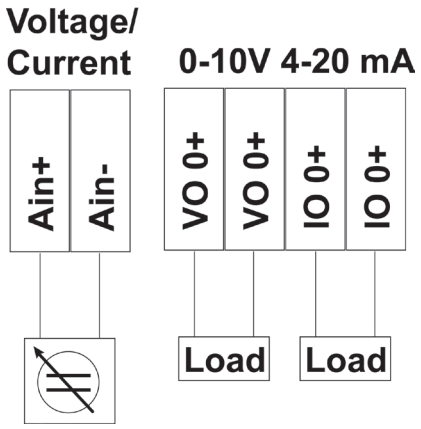
Digital Input/Output (Sink Type)



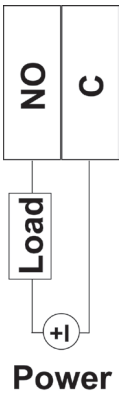
A **Dry Contact** is a contact that does not provide voltage, e.g., the push-to-talk switch of a microphone, which just closes a circuit without providing voltage.

A **Wet Contact** is a contact that will provide voltage when closed, e.g., a switch on the wall that activates a 110 VAC outlet to turn a lamp on in a room.

Analog Input/Output



Relay Output (Form A)



RS-485 Networks

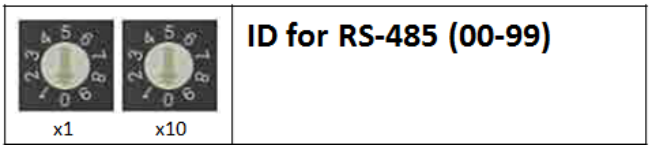
RS-485 permits a balanced transmission line to be shared in a party line or multi-drop configuration. As many as 32 driver/receiver pairs can share a multi-drop connection on a single two-wire bus. The length of the network is limited to 4,000 ft between the first node and the last node. You can use RS-485 in two-wire or four-wire multi-drop network applications.

In an RS-485 four- wire network, one node must be a master node and all others slave nodes. The master does not require tri-state output.

NOTE The transmission line is terminated on both ends of the line but not at drop points in the middle of the line. Termination is only required with high data rates or long wire runs.

Setting the Device ID for RS-485 Serial Communication

The RS-485 port is used to communicate with other RS-485 devices or to link to another ioLogik RS-485 I/O server. The RS-485 port can run Modbus/RTU or I/O command sets. The device ID for each ioLogik R1200 device can be set to any number from 01 to 99 by turning the two rotary dials on the back of the device. The x1 dial (shown on the left in the figure below) represents the ones place and the x10 dial (shown on the right in the figure below) represents the tens place. Settings such as the baud rate, parity check, data bits, and stop bit are configured by software.



Serial Communication Parameters (Initial State)

Communication Parameters (Initial mode)	
Parity	None, Even, Odd (default = None)
Data Bits	8
Stop Bits	1, 2 (default = 1)
Baudrate	1200 to 921.6 kbps (default = 9600)

Serial Communication Initial Setup

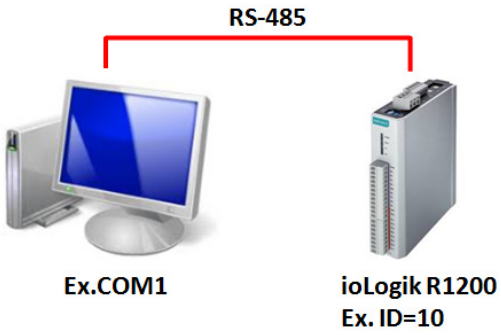
During your initial setup, set the switch to "Initial" mode to configure your device, after configuration is done flip the switch back to "Run" mode.

NOTE The initial communication setting is: baudrate = 9600, n, 8, 1.

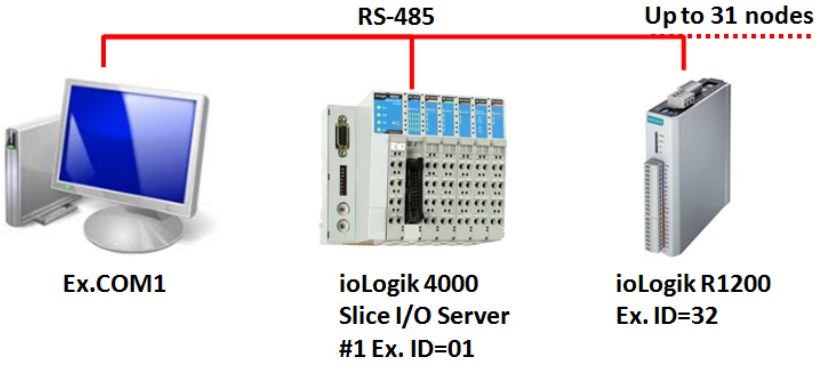
Modbus/RTU Devices

The RS-485 port runs Modbus/RTU and can connect to any Modbus device. You may use different methods to connect different combinations of ioLogik R12000 servers and other Modbus devices. Some examples are shown below:

Connecting One Modbus/RTU Device



Connecting Multiple Modbus/RTU Devices



Dual RS-485 or Repeater Settings

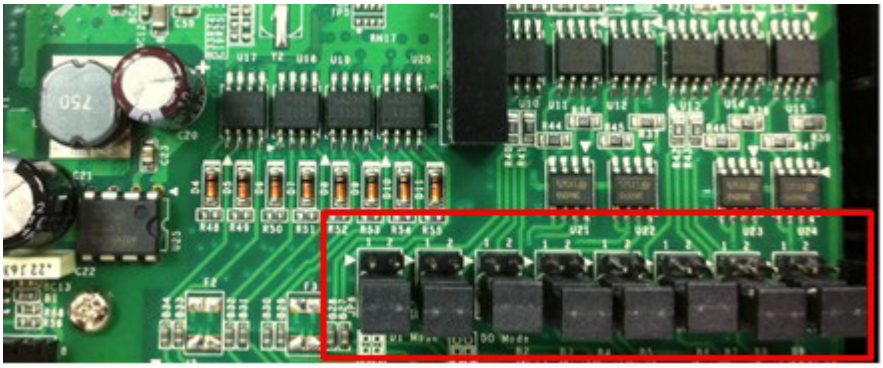
Dual RS-485: Switching the dial to "Dual" will divide the RS-485 port into two separate RS-485 ports for users to run dual RS-485 lines.

Repeater: Switching the dial to "Rep" will set the ioLogik R1200 to act as a repeater.

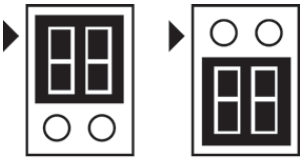
NOTE In Repeater mode, when signals pass through one machine, the latency will increase by 1 bit with a maximum of 10 ms at 1200 bps baudrate.

Jumper Settings (DIO and AI)

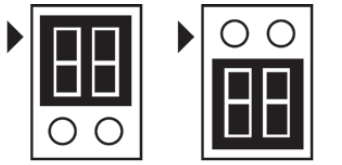
The models with DIO or AI channels require configuring the jumpers inside the cover. Remove the screw located on the back panel and open the cover to configure the jumpers.



DIO mode configuration is shown to the right (default: DO Mode).



Analog mode configuration is shown to the right (default: Voltage Mode).



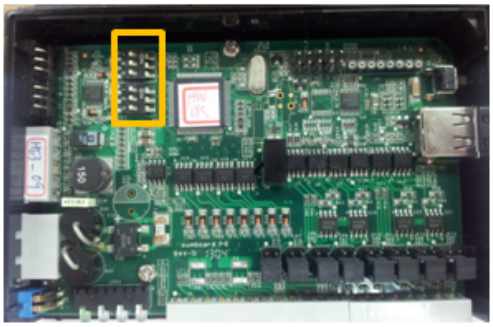
ATTENTION

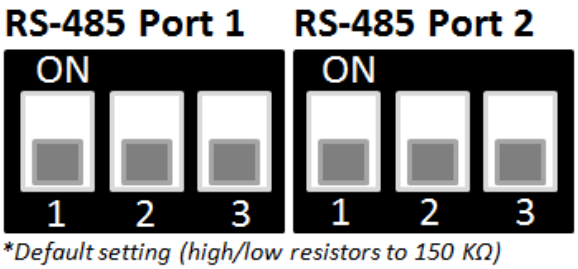
Remove the screw on the back panel and open the cover to configure the jumpers.

Pull High/Low DIP Switch Settings for the RS-485 Port

In some critical environments, you may need to add termination resistors to prevent the reflection of serial signals. When using termination resistors, it is important to set the pull high/low resistors correctly so that the electrical signal is not corrupted. Since there is no resistor value that works for every environment, DIP switches are used to set the pull high/low resistor valve for each RS-485 port.

DIP switches inside the cover of the ioLogik R1200 are used to set the pull high/low resistor values for each serial port.

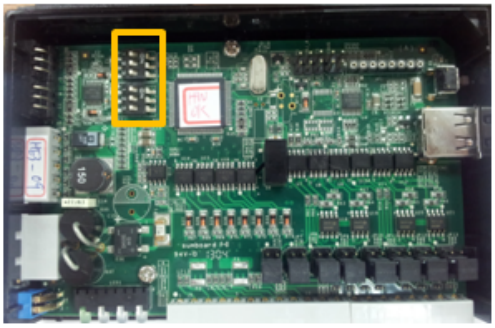


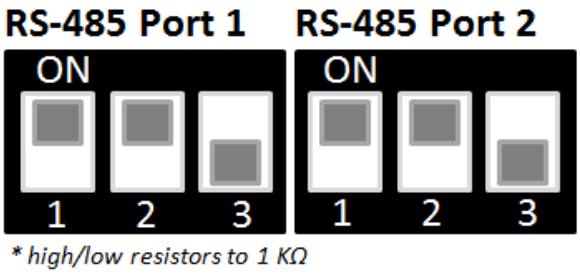


**Default setting (high/low resistors to 150 KΩ)*

To set the pull high/low resistors to 150 kΩ, make sure both of the assigned DIP switches are in the OFF position (default setting).

To set the pull high/low resistors to 1 kΩ, make sure both of the assigned DIP switches are in the ON position.





** high/low resistors to 1 KΩ*

Pull High/Low DIP switch settings for the RS-485 Port

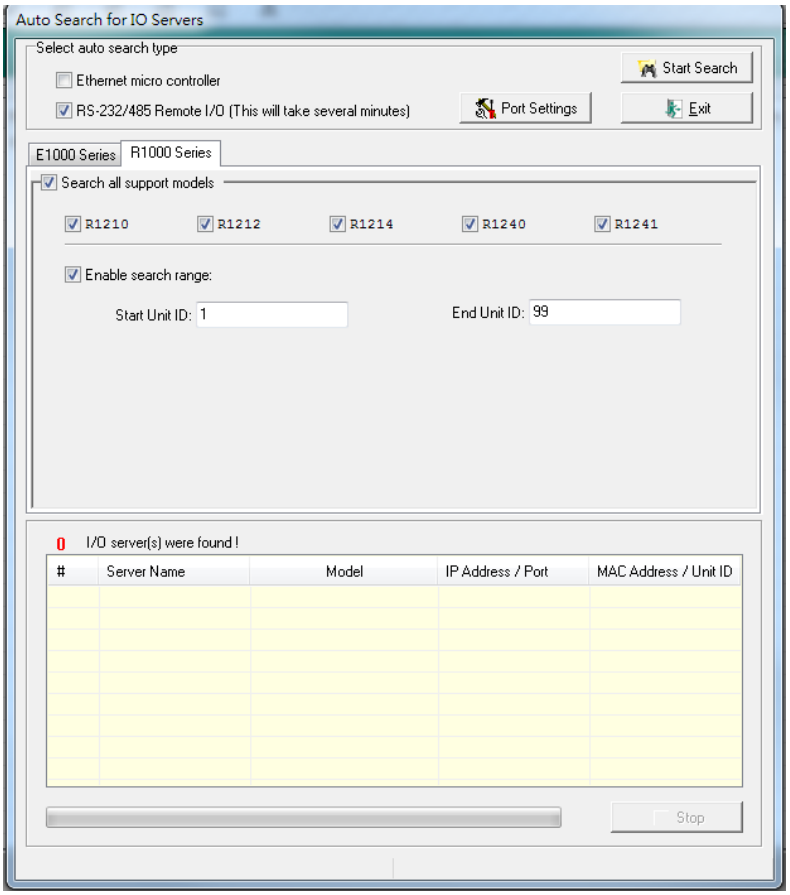
Switch	1	2	3
	Pull High/Low	Pull High/Low	Terminator
ON	1 kΩ	1 kΩ	120 Ω
OFF (default)	150 kΩ	150 kΩ	----

Software Installation

ioSearch Installation

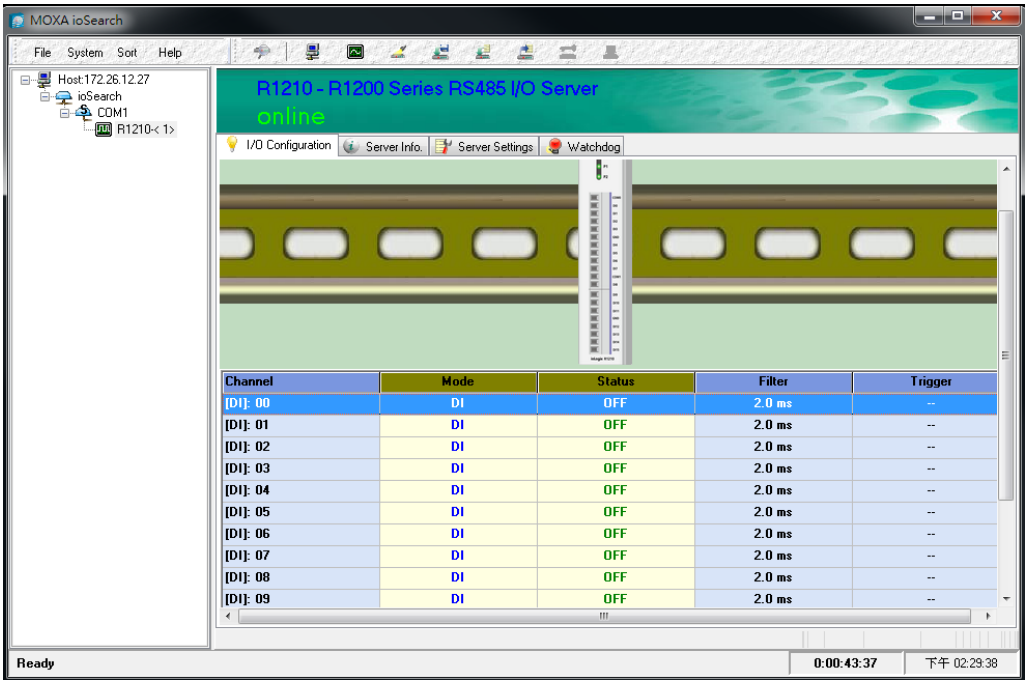
ioSearch™ is a search utility that helps the user locate ioLogik R1200 devices on the local RS-485 network. Find the ioSearch utility in the Document and Software CD under **Software → ioSearch**, or download the latest version from Moxa's website.

1. **Install the Documents and Software CD**: Insert the Documents and Software CD into the host computer. In the root directory of the CD, locate and run SETUP.EXE. The installation program will guide you through the installation process and install the ioSearch utility. You can also install the MXIO DLL library separately.
2. **Open ioSearch:** After installation is complete, run ioSearch from **Start → Program Files → MOXA → IO Server → Utility → ioSearch**
3. **Search for the server:** On the menu bar, select **System → Auto Search Remote I/O Server**. In the dialog window, select "RS-232/485 I/O server" and click "Start Search."



- If multiple ioLogik R1200 units are installed on the same network, remember to assign a unique device ID to each unit to avoid conflicts.
- If ioSearch is unable to find the ioLogik R1200 device, there may also be a problem with your COM port settings. Click "Port Settings" to view or modify the settings.

4. **Monitor I/O status:** Once the unit is found by ioSearch, you can view the status of all connected I/O devices on the ioSearch main screen.



Initial Setup by USB

When setting up your ioLogik R1200 for the first time, you need to import the initial configuration and firmware files onto a USB drive. But before you connect the USB drive to the ioLogik R1200's USB port to install and upgrade configurations and firmware, you first need to place the configuration files under a designated folder.

Import Configuration File

To import configuration files via USB, follow these steps:

1. Create a new "config" folder on the USB drive
2. Use the ioSearch utility to export the configuration file from the device and place the file into the"config" folder created in step 1 (above):
   X : \config\R12YY.txt
   (X represents the USB drive, and R12YY represents the model type)

Upgrade Firmware

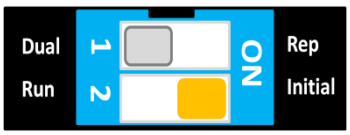
To upgrade the firmware by USB, follow these steps:

1. Create a new "fwr" folder on the USB drive.
2. Place the firmware file under the folder created in step1:
   X : \fwr\R12YY.1kp
   (X represents the USB drive, and R12YY represent the model type)

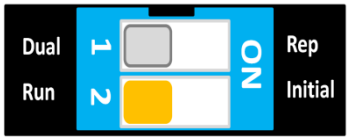
Configure the Device

After you set up the USB drive, follow the steps below to configure your ioLogik R1200 device.

1. Power off the ioLogik R1200.
2. Set the DIP switch to "Initial" mode.



3. Plug the USB drive into the ioLogik R1200 device.
4. Power on the ioLogik R1200 and the USB drive will automatically install the system files.
   (Process: Rdy LED Red blinking 3s, then Green blinking,
   Result: RdyLED Green: pass, Rdy Red: Failed)
5. Power off the ioLogik R1200 device.
6. Unplug the USB drive.
7. Set the DIP switch to "Run" mode.



Restore Factory Default Settings

There are two ways to restore the ioLogik R1200 device to the factory default settings.

1. Hold the reset button for 5 seconds.
2. Right-click on the ioLogik unit you want to restore in the ioSearch utility and change "Reset" to "Default."

3

Using ioSearch

The following topics are covered in this chapter:

Introduction to ioSearch

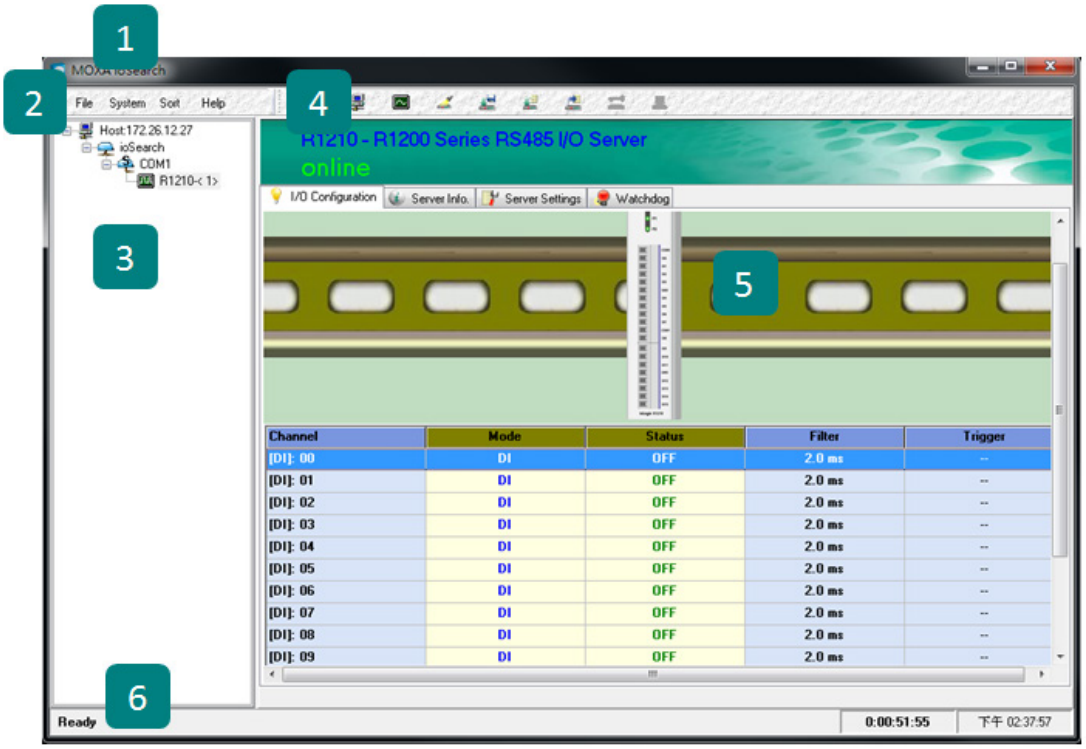
The ioSearch utility is used for locating or searching for an Logik R1200 unit on the physical network. The following functions are supported by the ioSearch utility.

- Search for and locate ioLogik R1200 units
- Configure communication address
- Upgrade firmware for multiple ioLogik R1200 units
- Export configuration files from multiple ioLogik R1200 units
- Import a configuration file to multiple ioLogik R1200 units
- Reset to default

ioSearch Main Screen

The main screen of the ioSearch utility defaults to the I/O Configuration tab, which displays an image of the ioLogik R1200 and the status of each I/O channel. The other tabs on the main screen take you to server and network settings, and additional functions are available when you log on as an administrator. Note that configuration options are not available until you log on as an administrator.

Main Screen Overview



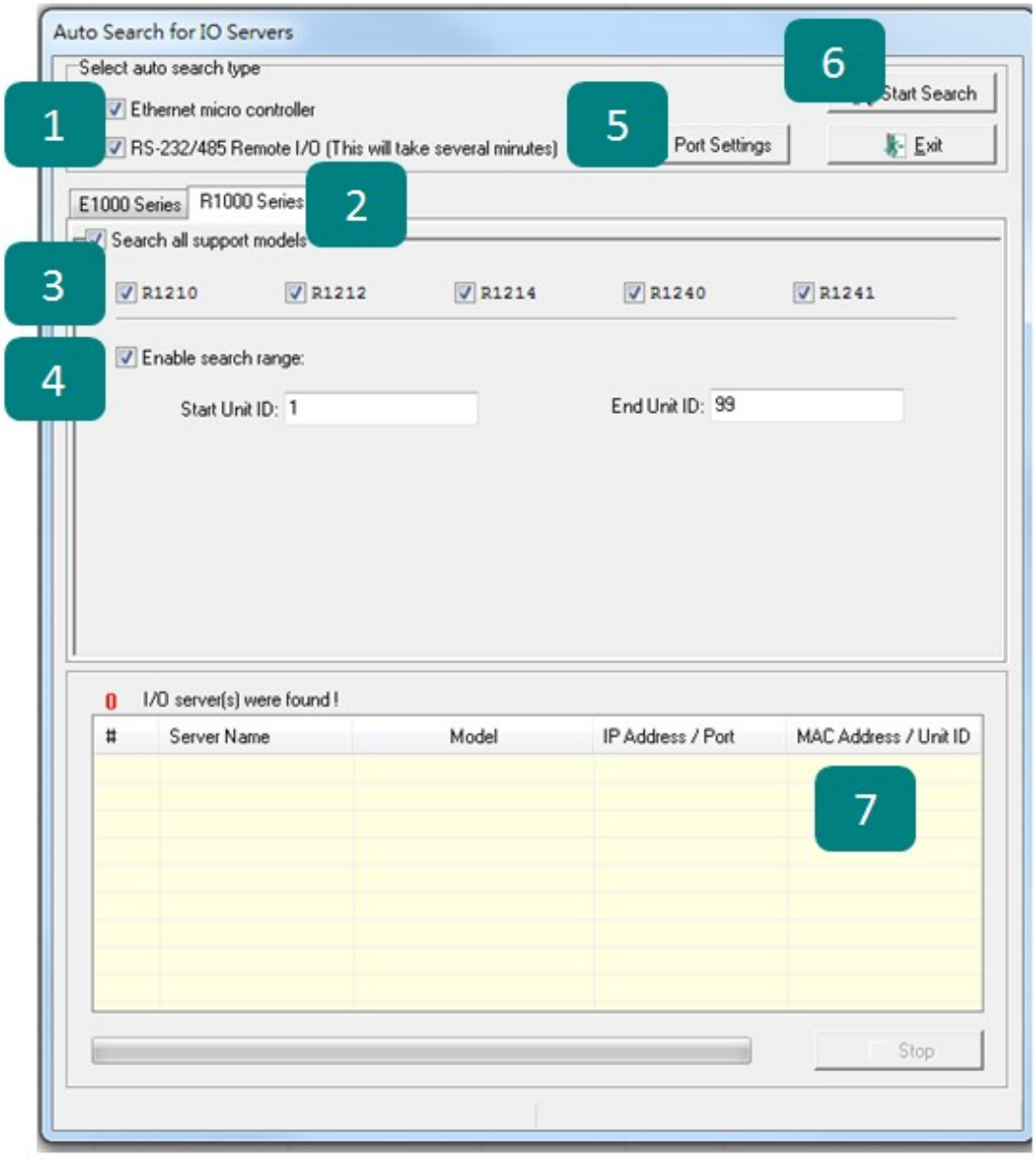
ioSearch Main Screen	
1	Title
2	Menu bar
3	Navigation panel
4	Quick link
5	Main window
6	Status Bar

ioSearch Setup

System

Several functions are available from the **System** menu.

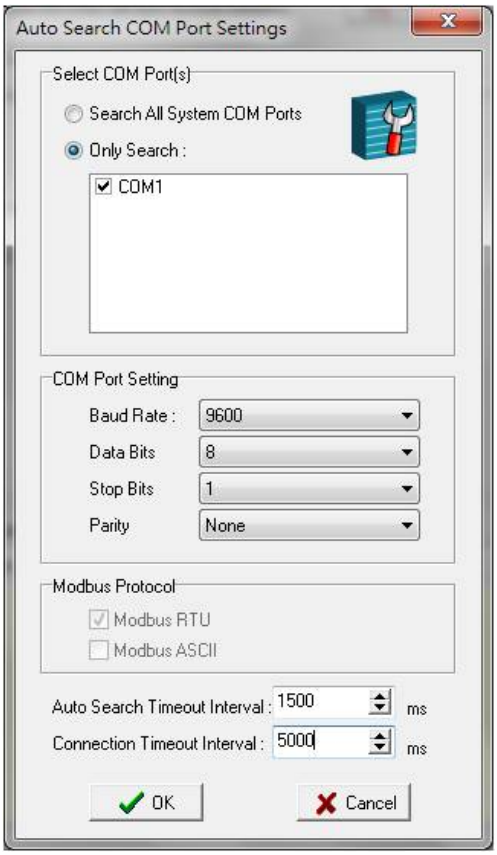
Auto Search Remote Ethernet I/O Servers will search for ioLogik servers on the network. When connecting for the first time or recovering from a network disconnection, you can use this command to find I/O servers that are on the network.



Steps to Search for an ioLogik R1200 device:

1. Select the "RS-232/485 Remote I/O" checkbox.
2. Select the "R1000 Series" tab.
3. Select the ioLogik R1200 model(s) for which you are searching.
4. Click and Select "Enable search range" and enter the unit ID number, which ranges from 1 to 99.
5. Click the **Port Settings** button to configure, set, or verify the serial port settings. Select specific COM ports under "Only Search", or select "Search All System Com Ports" to configure COM port settings, the Modbus

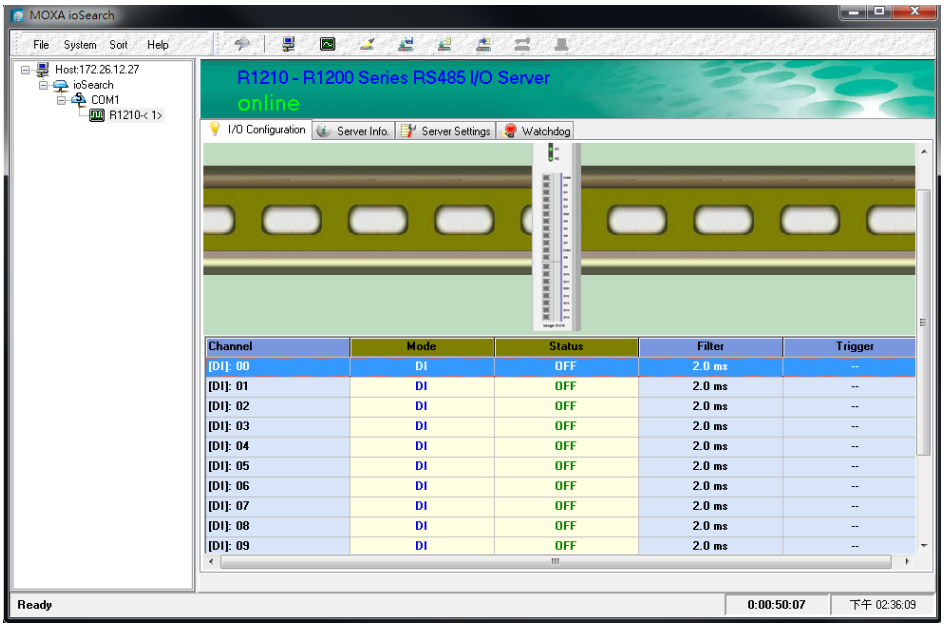
protocol, and timeout interval.



Auto Search Timeout Interval: The timeout interval sets the preferred waiting time for an ioLogik R1200 device to respond to a search. After exceeding the preset time limit, ioSearch will proceed to the next device on the network.

Connection Timeout Interval: The timeout interval sets the preferred waiting time for an ioLogik R1200 device to respond before it disconnects. After exceeding the preset time limit, ioSearch will disconnect the ioLogik R1200 device.

6. When you click **Start Search**, ioSearch will begin searching up to 99 ports for your ioLogik unit. The timeout interval is for RS-485 communication and defaults to 2,000 ms. As soon as your screen looks like the figure below, click **Stop**. Otherwise, ioSeach will continue to search all 99 ports.



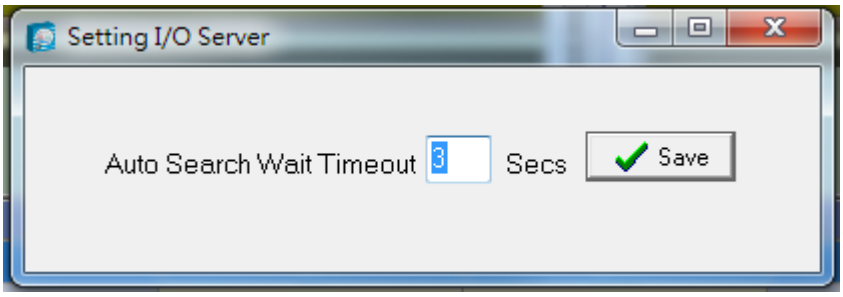
Once the ioLogik R1200 device has been discovered by the ioSearch utility, you will be able to monitor the

I/O status from the first tab of the ioSearch utility. You will also be able to configure each DI and DO channel from this tab after first logging in under the **Management** tab.

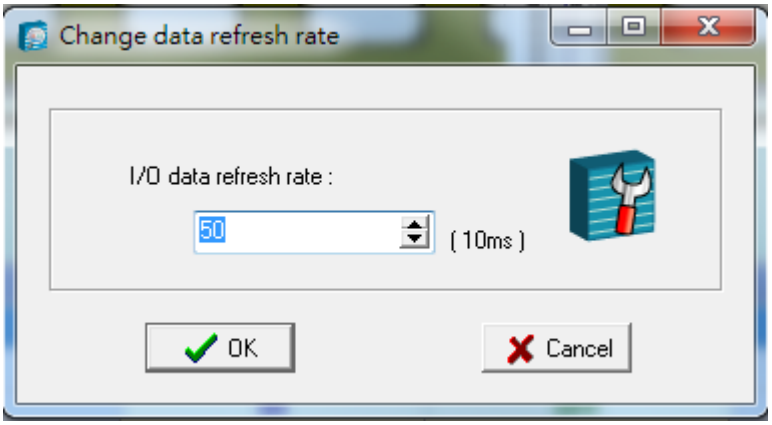
ATTENTION

If ioSearch is unable to find your ioLogik R1200 device, confirm that the device ID matches the correct ioLogik device. See the previous section for setting or viewing the device ID.

Auto Search Timeout allows users to set the timeout value for TCP socket communication, but only for Ethernet remote I/O devices.

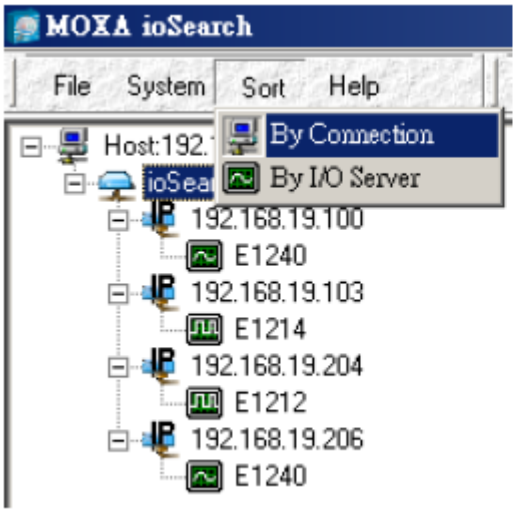


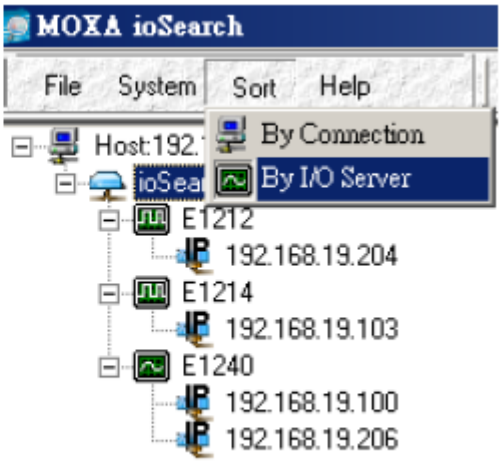
I/O Status Refresh Rate is used to adjust how often the I/O server is polled for device status. The current rate is displayed on the status bar at the bottom of the window. Note that higher sync rates result in higher loads on the network.



Sort

The **Sort** menu allows the server list in the navigation panel to be sorted by ioLogik connection and server model.





Help

In the **Help** menu, you can view vendor and version information.

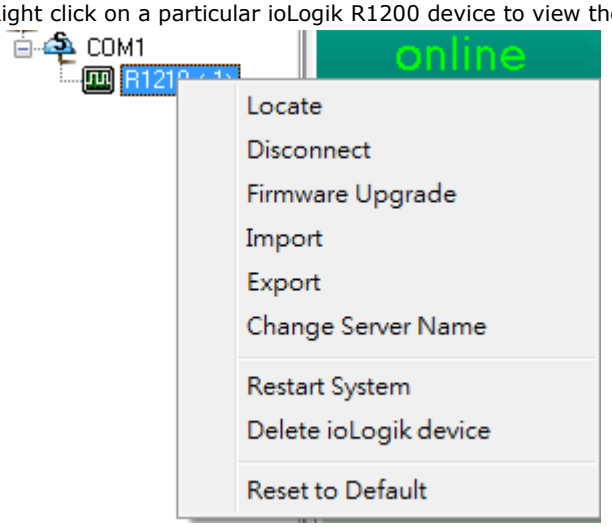
Quick Links

Quick links are provided to search for I/O servers on the RS-485 network and sort the server list.

1. Automatically searches the local network
2. Sorts by ioLogik R1200 device ID ("By Connection")
3. Sorts by ioLogik R1200 model number ("By I/O Server")

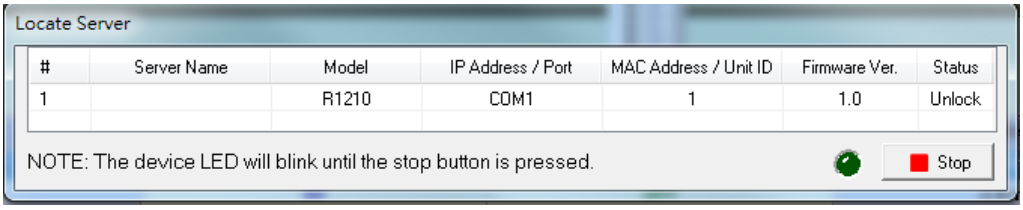
Main Functions

Right click on a particular ioLogik R1200 device to view the ioSearch function menu.



Locate

The locate function helps users find a specific ioLogik on the network. When this function is triggered, the ready LED on the selected unit will start to blink, indicating its location.



Connect/Disconnect

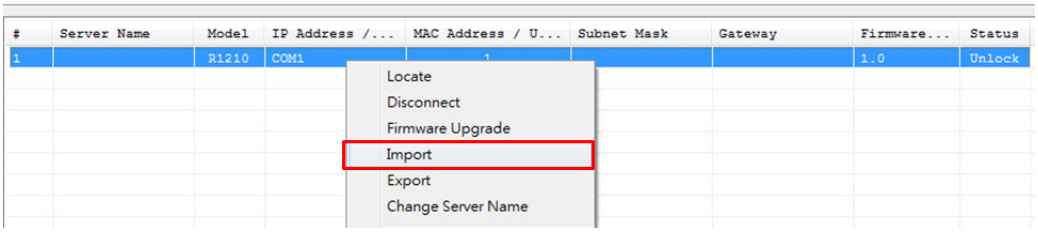
The Connect/Disconnect function connects or disconnects the ioLogik device from the ioSearch network.

Firmware Upgrade

The ioLogik R1200 supports a remote firmware upgrade function. Enter the path of the firmware file or click on the icon to browse for the file. The wizard will lead you through the process until the server restarts.

Import

Select this command to reload a configuration that was exported to a text file. You will need to restart the ioLogik in order for the new configuration to take effect. This command may be used to restore a configuration after loading the factory defaults, or to duplicate a configuration to multiple ioLogik units.



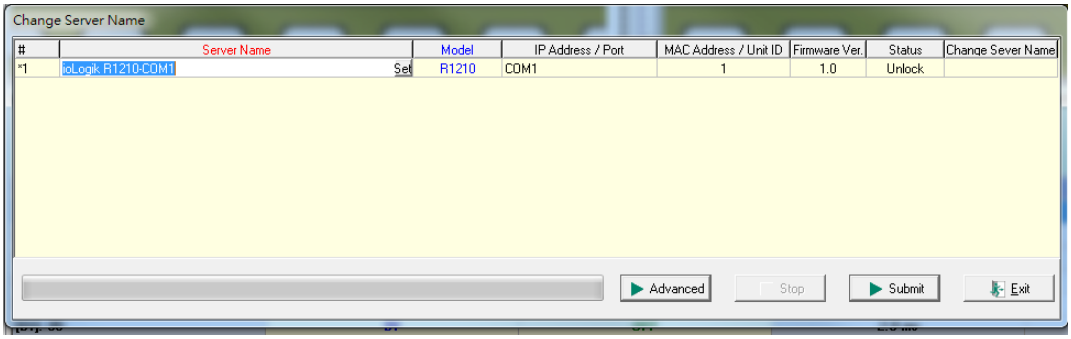
Export

Select this command to export the configuration of the ioLogik to a text file. You will need to log in as an administrator to use this function. It is strongly recommended you use this method to back up your configuration after you have finished configuring the ioLogik for your application.

Change Server Name

The Change Server name function can be used to directly modify the Server Name, especially for first time installation.

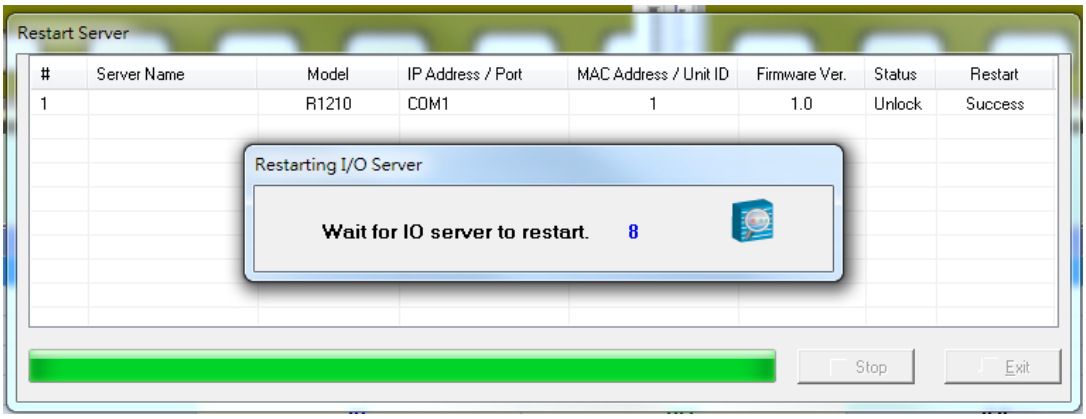
Changing the Server Name for multiple ioLogik R1200 devices is allowed. Select the ioLogik R1200 and then right click to process this function. After entering the desired server name, click Submit to apply changes.



Restart System

Select this command to restart the selected ioLogik R1200 device.

Restart multiple ioLogik R1200 units by right-clicking on an ioLogik R1200 and selecting this function.



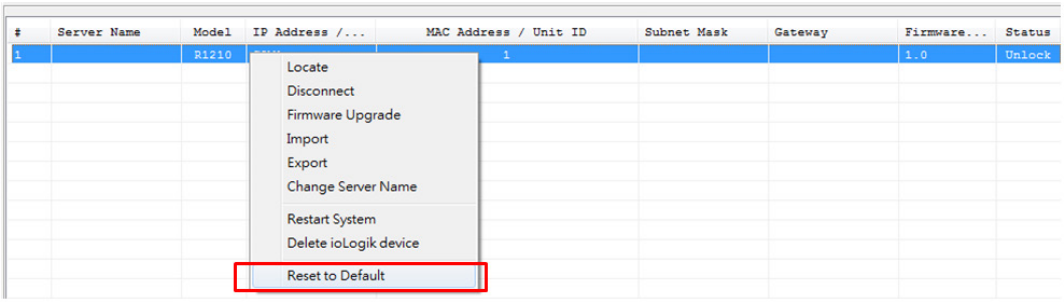
Delete ioLogik Device

Select this function to remove an ioLogik R1200 unit from the tree manually.

Reset to Default

Select this function to reset all settings, including console passwords, to factory default values.

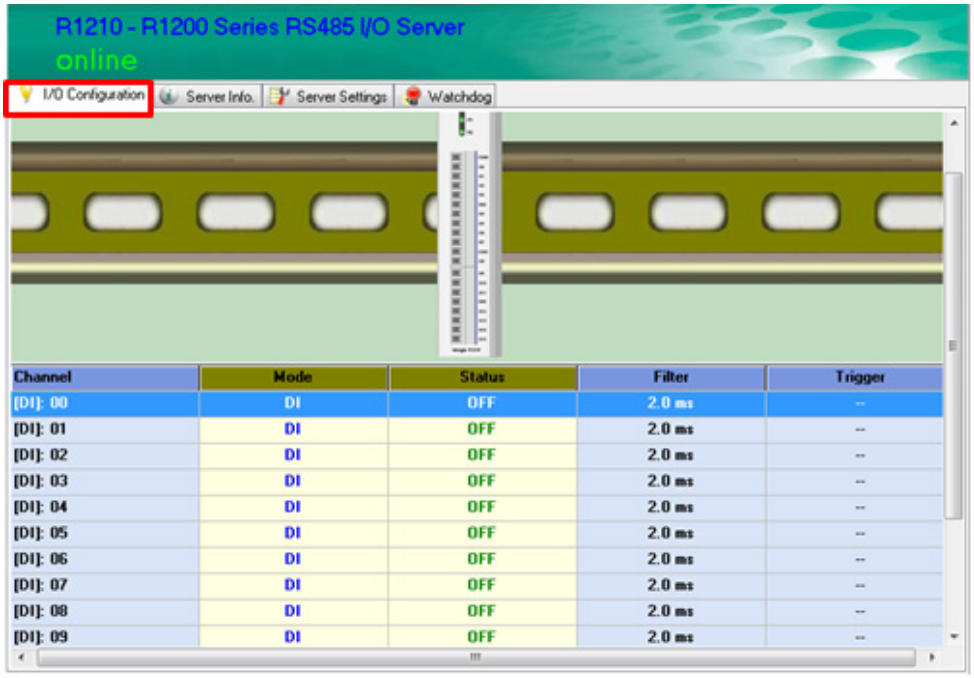
Reset multiple ioLogik R1200 units to default configurations by right-clicking the ioLogik R1200 and selecting this function.



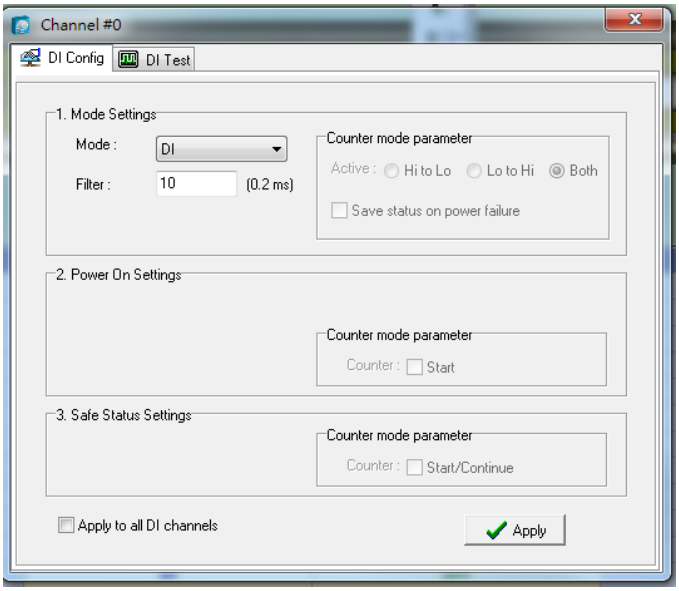
Main Screen

I/O Configuration Tab (General)

The **I/O Configuration** tab shows the status of every I/O channel. This is the default tab when you first open ioSearch.



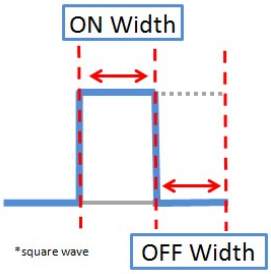
Configuring Digital Input Channels



The ioLogik R1200's digital channel can be separately set to "DI" or "Event Counter Mode." In "DI" mode, the specifications are as follows:

Type	Logic 0 (OFF)	Logic 1 (ON)
Dry contact	Close to GND	Open
Wet contact	0 to3 V	10 to 30 V

In "Event Counter" mode, the ioLogik R1200's DI channel accepts data from limit or proximity switches, and counts events according to the ON/OFF status. You may select from two modes, "Lo to Hi" or "Hi to Lo." When "Lo to Hi" is selected, the counter value increases while the switch is pushed. When "Hi to Lo" is selected, the counter value increases when the switch is pushed and released. The sampling rate of the counter is 50 Hz. This function is designed for low speed switching, not for motor control.

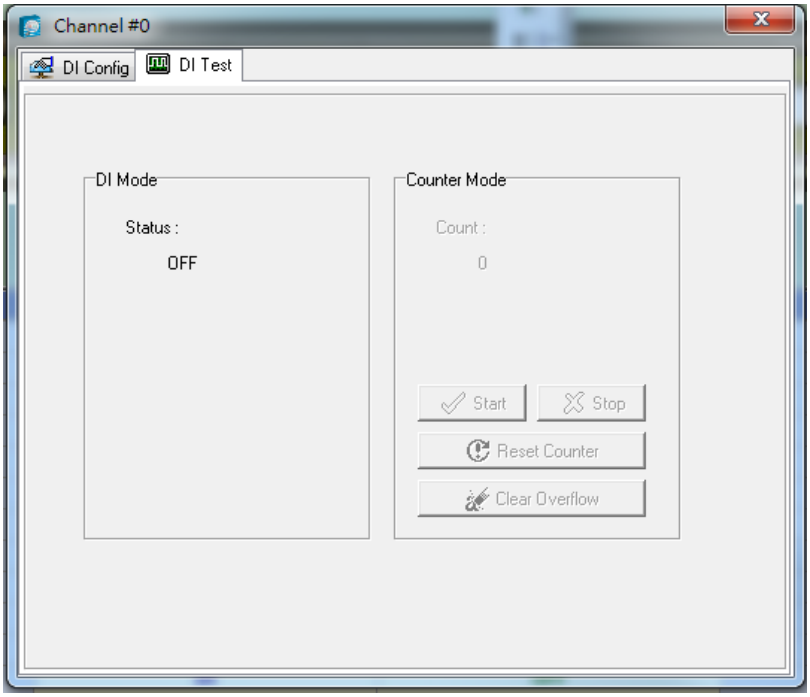


To eliminate the problem of switch bouncing, the ioLogik R1200 provides software filtering that is configurable in multiples of 10 ms. For example, a setting of 2 would mean a 20 ms filter (2 × 10 ms). The maximum value allowed by the software filter is 65535. Setting the filter to "0" causes the system to filter all signals.

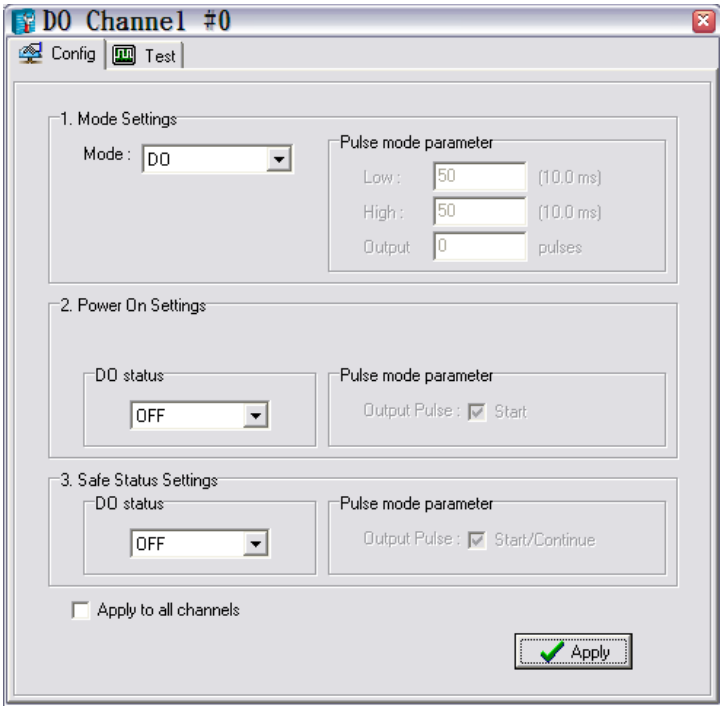
Power On Settings: You may configure DI channels in Event Counter mode whether or not counting begins when powering up.

Safe Status Settings: For DI channels in Event Counter mode, you can configure whether or not counting starts or continues when Safe Status has been activated. When the network connection is lost as specified in the Host Connection Watchdog, the ioLogik R1200 will start or stop the counter according to the channel's Safe Status settings. Note that the Host Connection Watchdog is disabled by default, and must be enabled for Safe Status settings to take effect.

Test I/O: You can test DI channels in the **Test** tab to see how the status or counter value responds when the attached input device is manipulated.

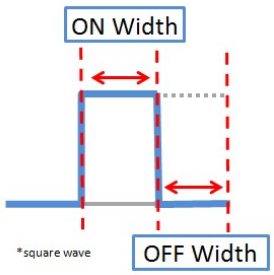


Configuring Digital Output Channels

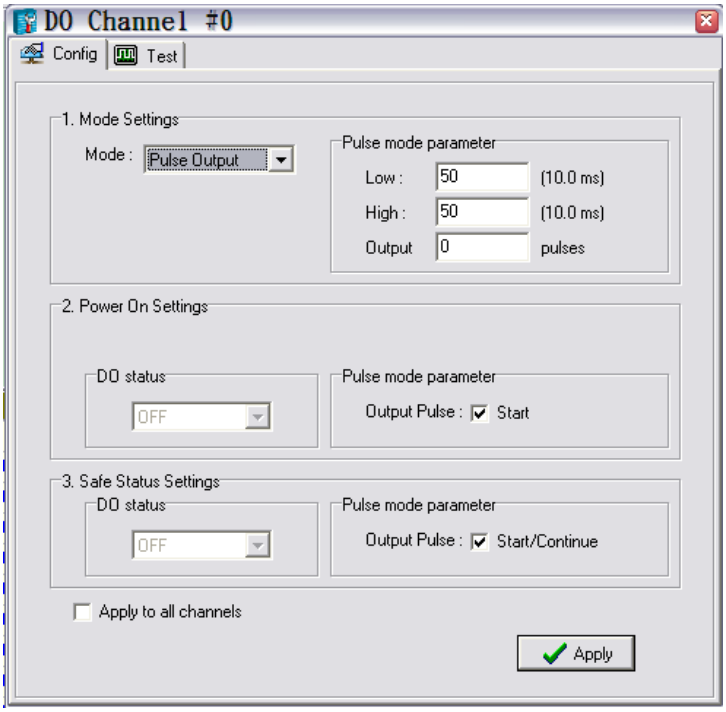


Each ioLogik R1200 digital output channel can be set to "DO" or "Pulse Output" mode. In DO mode, the specifications are as follows.

Type	Logic 0 (OFF)	Logic 1 (ON)
DO mode	Open	Short



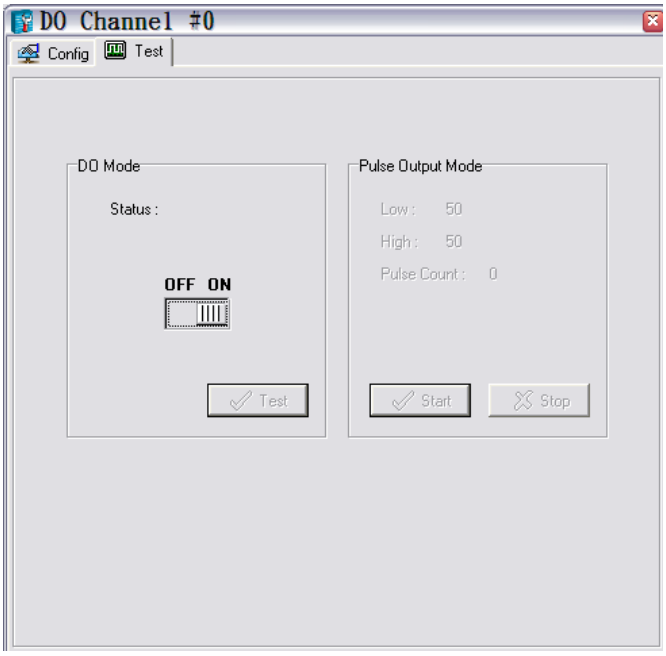
In "Pulse Output" mode, the selected digital output channel will generate a square wave as specified in the pulse mode parameters. The Low and High parameters are in multiples of 10 ms, with a maximum setting of 65535. To set the low level width for 500 ms, you would enter 50 (because 50 × 10 ms = 500 ms). A setting of **100** for both Low and High would generate a square wave with a 2-second cycle. The **Output** parameter specifies the number of pulses to send. When set to **0**, the system will send pulses continuously.



Power On Settings: Use this field to set the initial status for the DO channel when the ioLogik is powered on.

Safe Status Settings: Use this field to specify how the DO channel responds to a break in network communication. When the network connection is lost as specified in the Host Connection Watchdog, the ioLogik R1200 will reset all channels according to their Safe Status settings. Note that the Host Connection Watchdog is disabled by default, and must be enabled for Safe Status settings to have effect.

Test I/O: You can test the DO channel in the **Test** tab.

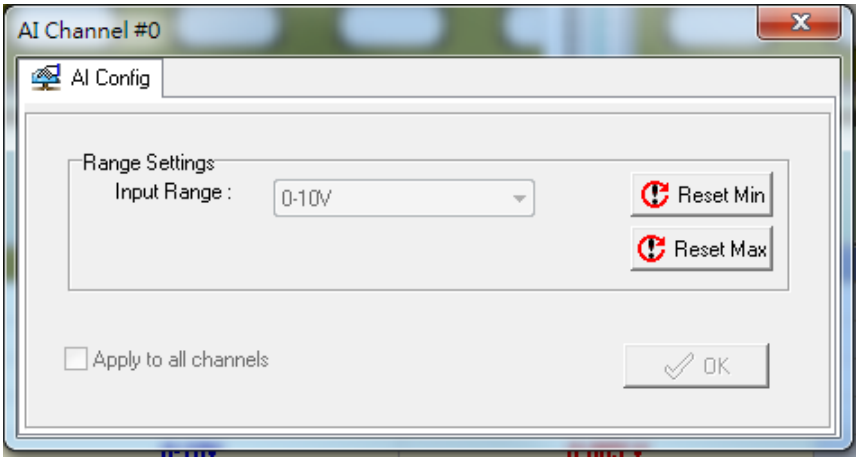


Configuring Analog Input Channels

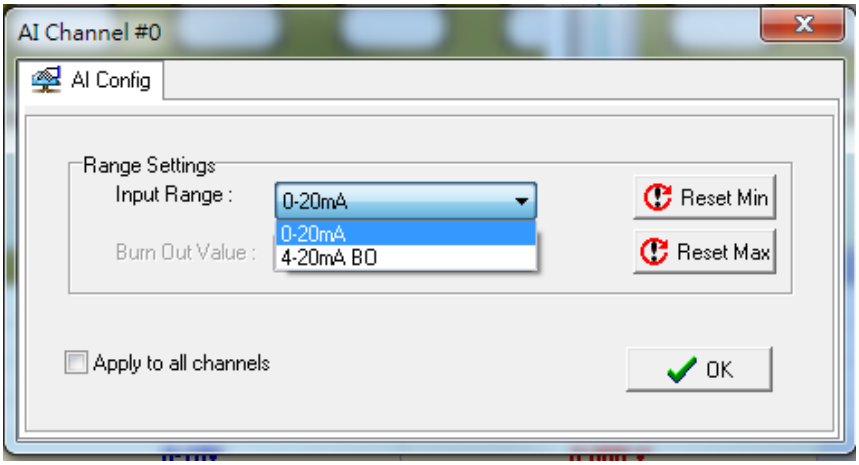
The current status of each AI (analog input) channel can be viewed on the I/O Setting:

Click on a specific channel to enable or disable the AI channel by selecting the "**Enable AI Channel**" field. There are two modes for the AI channels:

1. **AI Input: Voltage Mode (V)** (See Chapter 2, **Jumper Settings (DIO and AI)**, for more information)



2. **AI Input: Current Mode (mA)** (See Chapter 2, **Jumper Settings (DIO and AI)**, for more information)

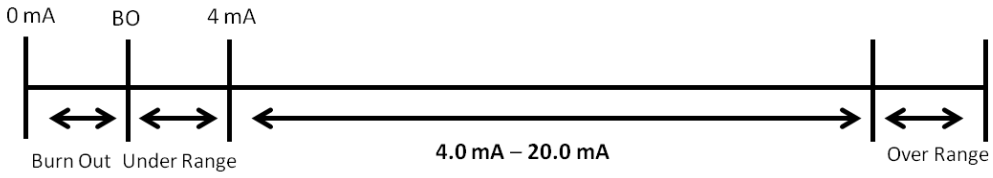


AI Input Range

Set the AI input ranges for each mode, as follows:

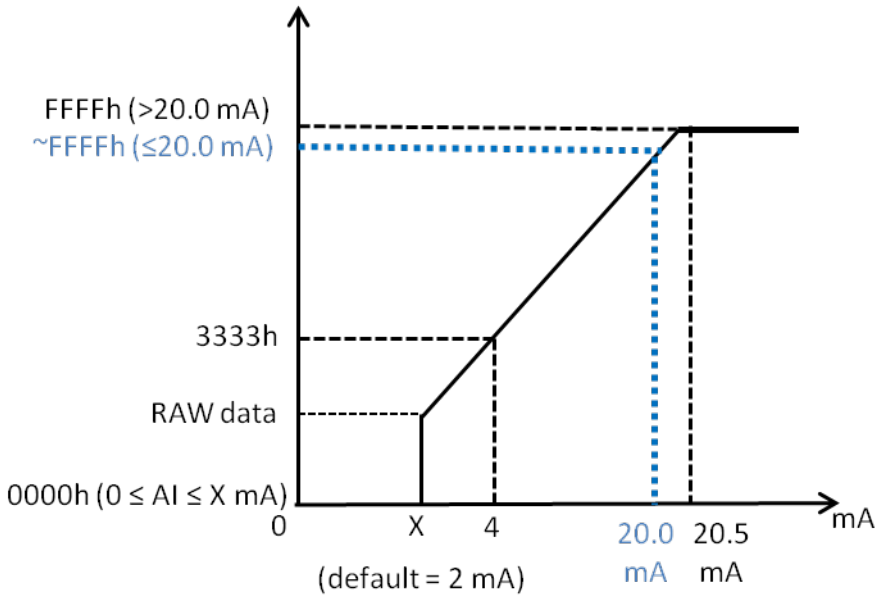
1. **AI Input: Voltage Mode (V)** (See **Jumper Settings (DIO and AI)** in Chapter 2 for more information)
   There is only one default analog "voltage" input range: [0-10V]
2. **AI Input: Current Mode (mA)** (See **Jumper Settings (DIO and AI)** in Chapter 2 for more information)
   There are two modes in the analog "current" input range: [0-20 mA], [4-20 mA (burnout)]

Burnout mode indicates if the current analog input has burned out. For example, the 4–20 mA burnout mode is defined in the following diagram:



Users can define burnout values (BO, default 2 mA) for selected ranges. When input values are in the burnout range, raw data will register as 0000h to indicate analog input burnout. The definition of raw data is as follows:

Burnout Value (BO)	0.0 < BO < 4.0	User defined (default 2 mA)
Burnout State	0 ≤ AI < BO mA	S/W output 0000h
Under Range	BO ≤ AI < 4 mA	S/W output raw data
Normal Range	4 ≤AI ≤ 20.00 mA	S/W output raw data until FFFEh
Over Range	XX > 20.00 mA	S/W output FFFFh



ATTENTION

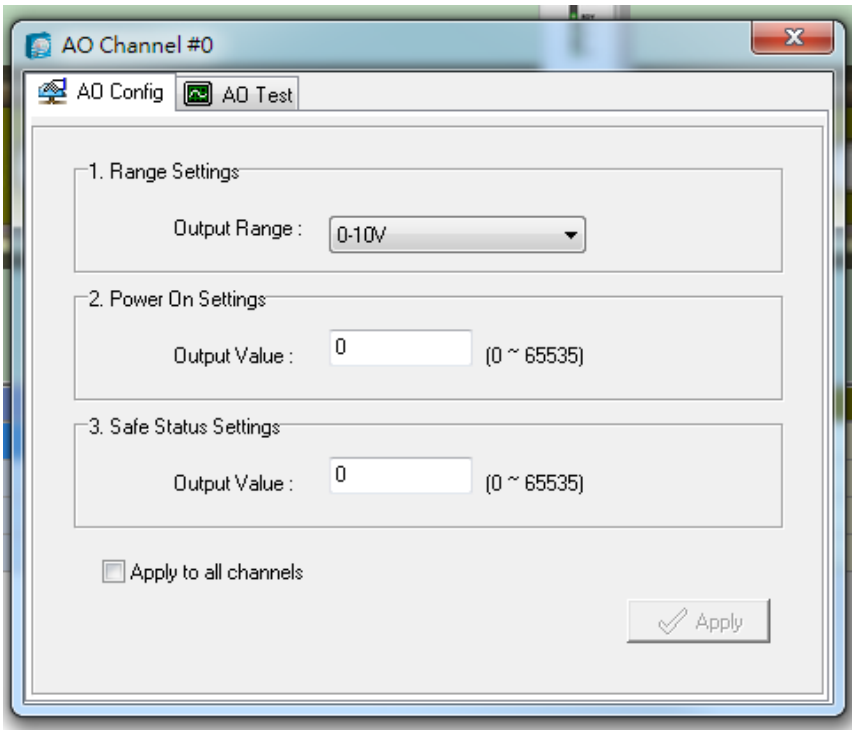
When configuring the jumpers to select voltage or current measurement for the AI channels, open the cover by first removing the screw on the back panel. Details on jumper settings can be found in the **Jumper Settings (DIO and AI)** section.

Configuring Analog Output Channels

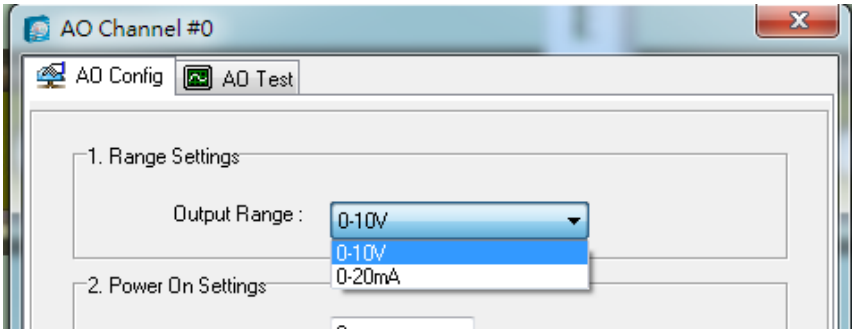
The current status of each AO (analog output) channel can be viewed on the I/O Setting:

Channel	Range	Value
[AO]: 00	0-10V	0.000 V
[AO]: 01	0-10V	0.000 V
[AO]: 02	0-10V	0.000 V
[AO]: 03	0-10V	0.000 V

Click on a specific channel to access the AO channel settings.



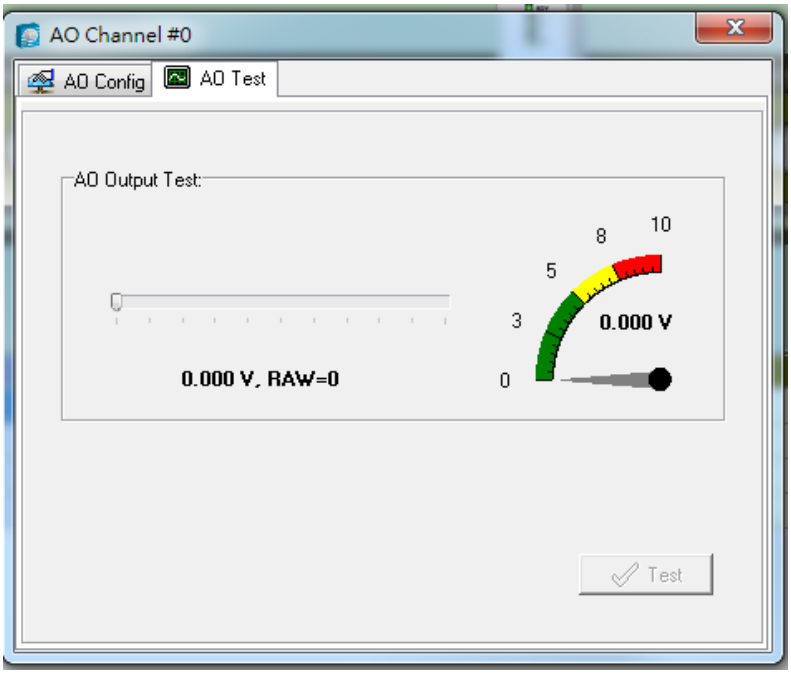
There are two modes for the AI channels, **Voltage Mode** (V) and **Current Mode** (mA). See **Jumper Settings (DIO and AI)** in Chapter 2 for more information.



Power On Settings: For AO channels in Event Counter mode, you may configure whether or not counting begins at power up.

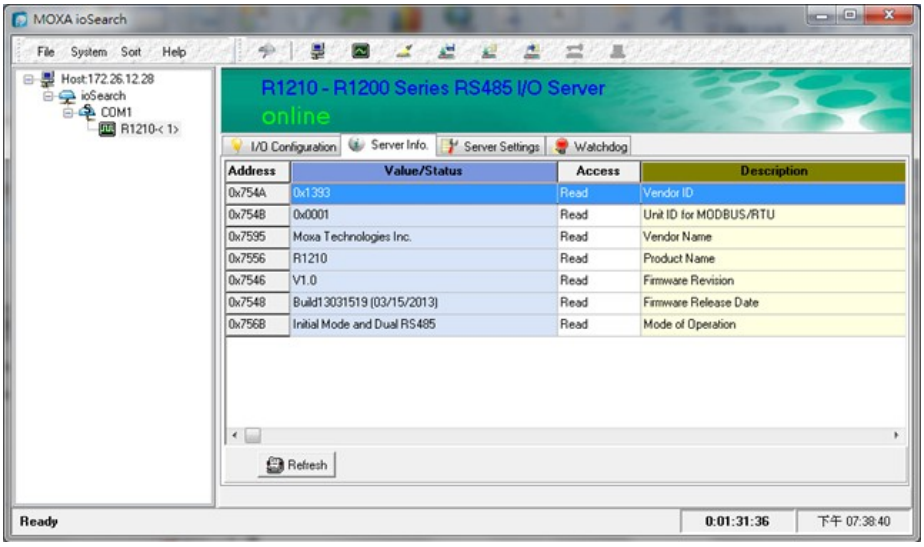
Safe Status Settings: For AO channels in Event Counter mode, you can configure whether or not counting starts or continues when Safe Status has been activated. When the network connection is lost as specified in the Host Connection Watchdog, the ioLogik R1200 will start or stop the counter according to the channel's Safe Status settings. Note that the Host Connection Watchdog is disabled by default, and must be enabled for Safe Status settings to have effect.

Test I/O: You can test DO channels in the **Test** tab. You may see how the status or counter value responds when the attached input device is manipulated.



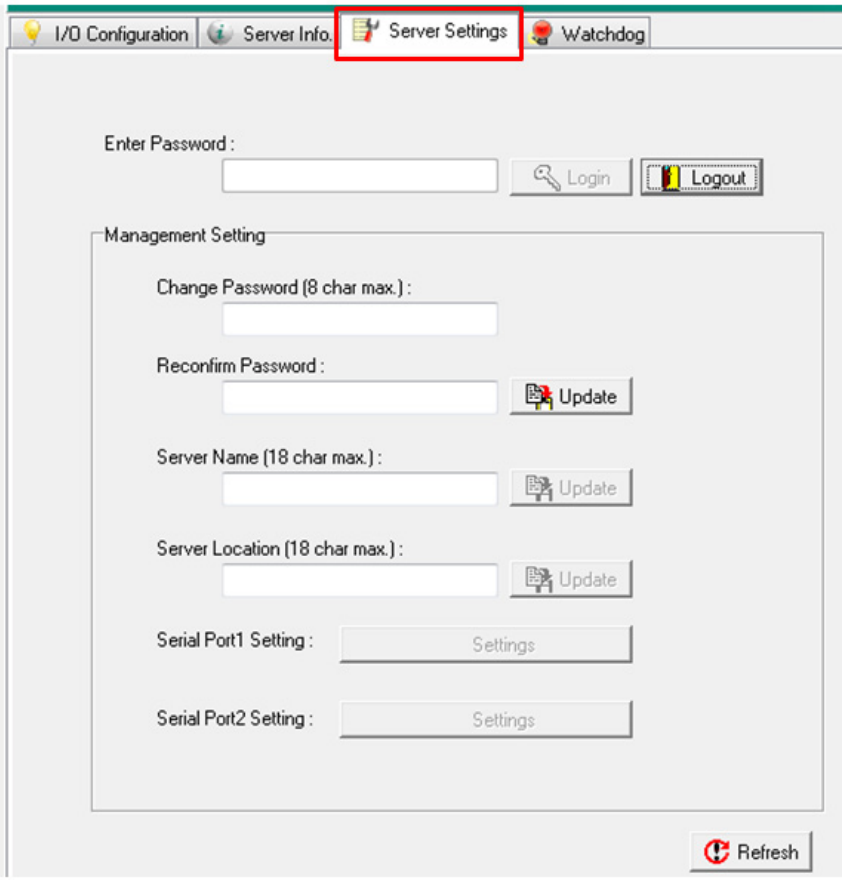
Server Info Tab

The **Server Information** tab provides the Modbus addresses for all system configurations. This helps you verify the access authority of each address. The screen also displays a clear explanation of each item.

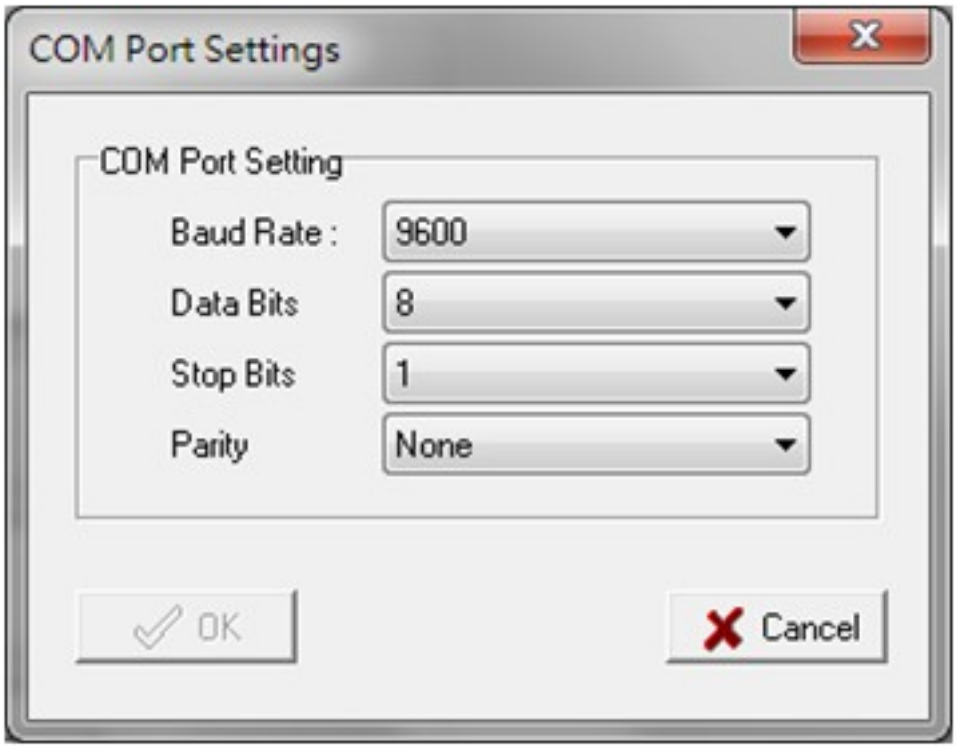


Server Settings Tab (General)

The **Server Settings** tab is where you log in as an administrator. This is required in order to gain access to the ioLogik R1200 configuration options. If no administrator password has been set up, simply click on **Login** and leave the **Password for entry** field blank. Additional information on ioSearch administrator functions is provided later in this chapter.



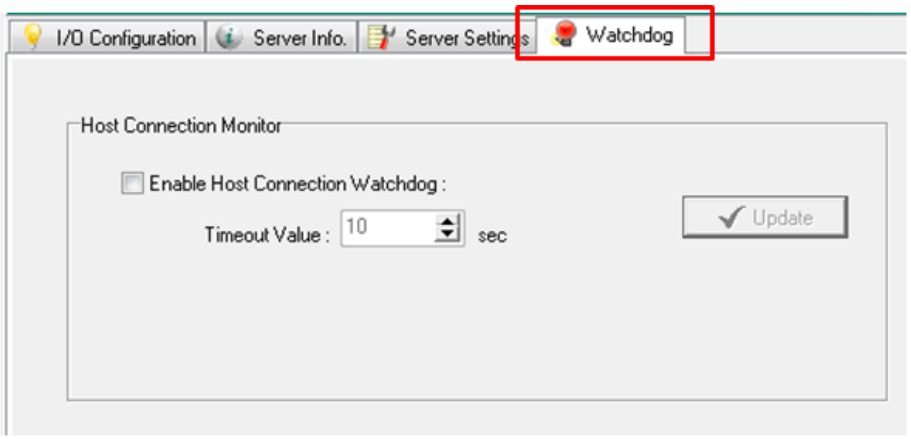
Click "Serial Port1 Setting" or "Serial Port2 Setting" to define and set the serial communication ports.



Watchdog

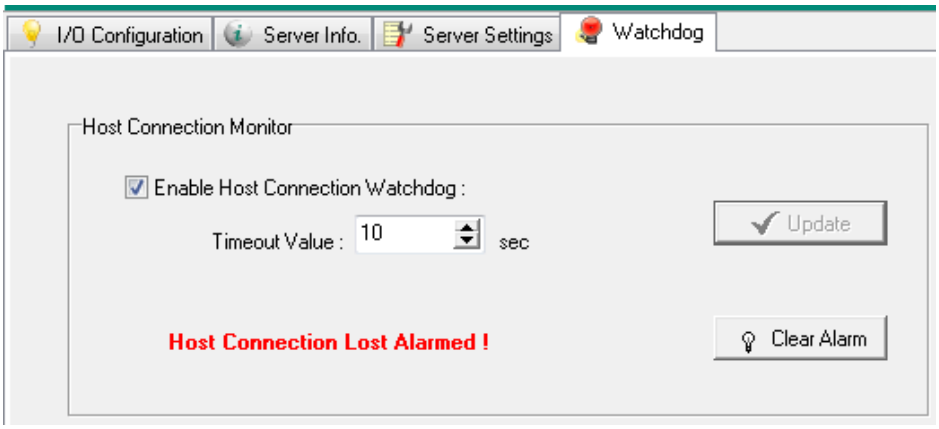
The **Watchdog** tab is where you configure the Host Connection Watchdog, which is used with the Safe Status settings to define each channel's response to a lost connection. When the ioLogik R1200 loses its connection as specified in the timeout, the Host Connection Watchdog will switch the ioLogik R1200 to Safe Status and all

channels will reset to their Safe Status settings. By default, the Watchdog is disabled. To enable the Watchdog, make sure **Enable Host Connection Watchdog** is checked, set the Timeout value, then click the **Update** button.



After the Watchdog is enabled, the ioLogik R2110 will enter safe status if the RS-485 connection is lost. Once the connection has been restored, you will need to return to the Watchdog tab in order to exit Safe Status.

There will be a message saying "Host Connection Lost" to indicate that the server is in safe status. Click **Clear Alarm** to exit safe status and return to normal operation.



A

Modbus Mapping

The following topics are covered in this appendix:

- **Common Modbus Mapping**
- **R1210 Modbus Mapping**
  - Coil 0x0XXXX
  - Input Coil 0x1XXXX
  - Input Register 0x3XXXX
  - Holding Register 0x4XXXX
- **R1212 Modbus Mapping**
  - Coil 0x0XXXX
  - Input Coil 0x1XXXX
  - Input Register 0x3XXXX
  - Holding Register 0x4XXXX
- **R1214 Modbus Mapping**
  - Coil 0x0XXXX
  - Input Coil 0x1XXXX
  - Input Register 0x3XXXX
  - Holding Register 0x4XXXX
- **R1240 Modbus Mapping**
  - Coil 0x0XXXX
  - Input Register 0x3XXXX
  - Holding Register 0x4XXXX
- **R1241 Modbus Mapping**
  - Holding Register 0x4XXXX

Common Modbus Mapping

input register 0x3XXXX			
30001	0x7530	1 word	model ID
30022	0x7545	2 words	firmware version
30024	0x7547	2 words	release date
30026	0x7549	1 word	vendor ID
30027	0x754A	1 word	unit ID
30028	0x754B	6 words	serial number
30038	0x7555	10 words	product name
30059	0x756A	1 word	work mode 0: initial - repeater, 1: initial - dual 485, 2: run - repeater 3: run - dual 485

holding register 0x4XXXX			
30002	0x7532	10 words	Server name
30012	0x753B	10 words	Server location
30048	0x755F	5 words	password
30053	0x7564	1 word	modbus watchdog 0: disable, 1: enable
30054	0x7565	1 word	watchdog timeout (second)
30055	0x7566	1 word	watchdof flag 0: normal, 1: watchdog timeout
30056	0x7567	1 word	locate 0: normal, 1: locate
30057	0x7568	1 word	restart write "404" to restart
30058	0x7569	1 word	reset to default write "404" to reset to default
30061	0x756C	1 word	port 0 baudrate 1: 1200, 2:2400, 3:4800, 4:9600, 5:19200, 6:38400, 7:57600, 8:115200, 9:921600,
30062	0x756D	1 word	port 1 baudrate 1: 1200, 2:2400, 3:4800, 4:9600, 5:19200, 6:38400, 7:57600, 8:115200, 9:921600,
30065	0x7570	1 word	port 0 stop bit

			0: 1 stop bit, 1: 2 stop bit
30066	0x7571	1 word	port 1 stop bit 0: 1 stop bit, 1: 2 stop bit
30067	0x7572	1 word	port 0 parity 0: none, 1: even, 2: odd,
30068	0x7573	1 word	port 1 parity 0: none, 1: even, 2: odd,
30101	0x7594	20 words	vendor name

R1210 Modbus Mapping

Coil 0x0XXXX

Reference	Address	Data Type	Description
1	0x0	1 bit	CH0 DI Counter start 0=OFF, 1=ON
2	0x1	1 bit	CH1 DI Counter start 0=OFF, 1=ON
3	0x2	1 bit	CH2 DI Counter start 0=OFF, 1=ON
4	0x3	1 bit	CH3 DI Counter start 0=OFF, 1=ON
5	0x4	1 bit	CH4 DI Counter start 0=OFF, 1=ON
6	0x5	1 bit	CH5 DI Counter start 0=OFF, 1=ON
7	0x6	1 bit	CH6 DI Counter start 1=OFF, 1=ON
8	0x7	1 bit	CH7 DI Counter start 1=OFF, 1=ON
9	0x8	1 bit	CH8 DI Counter start 1=OFF, 1=ON
10	0x9	1 bit	CH9 DI Counter start 1=OFF, 1=ON
11	0xA	1 bit	CH10 DI Counter start 1=OFF, 1=ON
12	0xB	1 bit	CH11 DI Counter start 1=OFF, 1=ON
13	0xC	1 bit	CH12 DI Counter start 1=OFF, 1=ON
14	0xD	1 bit	CH13 DI Counter start 1=OFF, 1=ON
15	0xE	1 bit	CH14 DI Counter start 1=OFF, 1=ON
16	0xF	1 bit	CH15 DI Counter start 1=OFF, 1=ON

33	0x20	1 bit	CH0 DI Counter reset 0=no effect, 1=reset
34	0x21	1 bit	CH1 DI Counter reset 0=no effect, 1=reset
35	0x22	1 bit	CH2 DI Counter reset 0=no effect, 1=reset
36	0x23	1 bit	CH3 DI Counter reset 0=no effect, 1=reset
37	0x24	1 bit	CH4 DI Counter reset 0=no effect, 1=reset
38	0x25	1 bit	CH5 DI Counter reset 0=no effect, 1=reset
39	0x26	1 bit	CH6 DI Counter reset 0=no effect, 1=reset
40	0x27	1 bit	CH7 DI Counter reset 0=no effect, 1=reset
41	0x28	1 bit	CH8 DI Counter reset 0=no effect, 1=reset
42	0x29	1 bit	CH9 DI Counter reset 0=no effect, 1=reset
43	0x2A	1 bit	CH10 DI Counter reset 0=no effect, 1=reset
44	0x2B	1 bit	CH11 DI Counter reset 0=no effect, 1=reset
45	0x2C	1 bit	CH12 DI Counter reset 0=no effect, 1=reset
46	0x2D	1 bit	CH13 DI Counter reset 0=no effect, 1=reset
47	0x2E	1 bit	CH14 DI Counter reset 0=no effect, 1=reset
48	0x2F	1 bit	CH15 DI Counter reset 0=no effect, 1=reset
65	0x40	1 bit	CH0 DI Counter overflow 0=no effect, 1=overflow
66	0x41	1 bit	CH1 DI Counter overflow 0=no effect, 1=overflow
67	0x42	1 bit	CH2 DI Counter overflow 0=no effect, 1=overflow
68	0x43	1 bit	CH3 DI Counter overflow 0=no effect, 1=overflow
69	0x44	1 bit	CH4 DI Counter overflow 0=no effect, 1=overflow
70	0x45	1 bit	CH5 DI Counter overflow 0=no effect, 1=overflow
71	0x46	1 bit	CH6 DI Counter overflow 0=no effect, 1=overflow
72	0x47	1 bit	CH7 DI Counter overflow 0=no effect, 1=overflow
73	0x48	1 bit	CH8 DI Counter overflow 0=no effect, 1=overflow
74	0x49	1 bit	CH9 DI Counter overflow 0=no effect, 1=overflow
75	0x4A	1 bit	CH10 DI Counter overflow 0=no effect, 1=overflow

76	0x4B	1 bit	CH11 DI Counter overflow 0=no effect, 1=overflow
77	0x4C	1 bit	CH12 DI Counter overflow 0=no effect, 1=overflow
78	0x4D	1 bit	CH13 DI Counter overflow 0=no effect, 1=overflow
79	0x4E	1 bit	CH14 DI Counter overflow 0=no effect, 1=overflow
80	0x4F	1 bit	CH15 DI Counter overflow 0=no effect, 1=overflow
97	0x60	1 bit	CH0 DI Power on counter start 0=OFF, 1=ON
98	0x61	1 bit	CH1 DI Power on counter start 0=OFF, 1=ON
99	0x62	1 bit	CH2 DI Power on counter start 0=OFF, 1=ON
100	0x63	1 bit	CH3 DI Power on counter start 0=OFF, 1=ON
101	0x64	1 bit	CH4 DI Power on counter start 0=OFF, 1=ON
102	0x65	1 bit	CH5 DI Power on counter start 0=OFF, 1=ON
103	0x66	1 bit	CH6 DI Power on counter start 0=OFF, 1=ON
104	0x67	1 bit	CH7 DI Power on counter start 0=OFF, 1=ON
105	0x68	1 bit	CH8 DI Power on counter start 0=OFF, 1=ON
106	0x69	1 bit	CH9 DI Power on counter start 0=OFF, 1=ON
107	0x6A	1 bit	CH10 DI Power on counter start 0=OFF, 1=ON
108	0x6B	1 bit	CH11 DI Power on counter start 0=OFF, 1=ON
109	0x6C	1 bit	CH12 DI Power on counter start 0=OFF, 1=ON
110	0x6D	1 bit	CH13 DI Power on counter start 0=OFF, 1=ON
111	0x6E	1 bit	CH14 DI Power on counter start 0=OFF, 1=ON
112	0x6F	1 bit	CH15 DI Power on counter start 0=OFF, 1=ON
129	0x80	1 bit	CH0 DI Safe mode counter start 0=OFF, 1=ON
130	0x81	1 bit	CH1 DI Safe mode counter start 0=OFF, 1=ON
131	0x82	1 bit	CH2 DI Safe mode counter start 0=OFF, 1=ON
132	0x83	1 bit	CH3 DI Safe mode counter start 0=OFF, 1=ON
133	0x84	1 bit	CH4 DI Safe mode counter start 0=OFF, 1=ON
134	0x85	1 bit	CH5 DI Safe mode counter start 0=OFF, 1=ON

135	0x86	1 bit	CH6 DI Safe mode counter start 0=OFF, 1=ON
136	0x87	1 bit	CH7 DI Safe mode counter start 0=OFF, 1=ON
137	0x88	1 bit	CH8 DI Safe mode counter start 0=OFF, 1=ON
138	0x89	1 bit	CH9 DI Safe mode counter start 0=OFF, 1=ON
139	0x8A	1 bit	CH10 DI Safe mode counter start 0=OFF, 1=ON
140	0x8B	1 bit	CH11 DI Safe mode counter start 0=OFF, 1=ON
141	0x8C	1 bit	CH12 DI Safe mode counter start 0=OFF, 1=ON
142	0x8D	1 bit	CH13 DI Safe mode counter start 0=OFF, 1=ON
143	0x8E	1 bit	CH14 DI Safe mode counter start 0=OFF, 1=ON
144	0x8F	1 bit	CH15 DI Safe mode counter start 0=OFF, 1=ON
161	0xA0	1 bit	CH0 DI power failing counter storage 0=OFF, 1=ON
162	0xA1	1 bit	CH1 DI power failing counter storage 0=OFF, 1=ON
163	0xA2	1 bit	CH2 DI power failing counter storage 0=OFF, 1=ON
164	0xA3	1 bit	CH3 DI power failing counter storage 0=OFF, 1=ON
165	0xA4	1 bit	CH4 DI power failing counter storage 0=OFF, 1=ON
166	0xA5	1 bit	CH5 DI power failing counter storage 0=OFF, 1=ON
167	0xA6	1 bit	CH6 DI power failing counter storage 0=OFF, 1=ON
168	0xA7	1 bit	CH7 DI power failing counter storage 0=OFF, 1=ON
169	0xA8	1 bit	CH8 DI power failing counter storage 0=OFF, 1=ON
170	0xA9	1 bit	CH9 DI power failing counter storage 0=OFF, 1=ON
171	0xAA	1 bit	CH10 DI power failing counter storage 0=OFF, 1=ON
172	0xAB	1 bit	CH11 DI power failing counter storage 0=OFF, 1=ON
173	0xAC	1 bit	CH12 DI power failing counter storage 0=OFF, 1=ON
174	0xAD	1 bit	CH13 DI power failing counter storage 0=OFF, 1=ON
175	0xAE	1 bit	CH14 DI power failing counter storage 0=OFF, 1=ON
176	0xAF	1 bit	CH15 DI power failing counter storage 0=OFF, 1=ON

Input Coil 0x1XXXX

Reference	Address	Data Type	Description
1	0x0	1 bit	CH0 DI Bit value 0=OFF, 1=ON
2	0x1	1 bit	CH1 DI Bit value 0=OFF, 1=ON
3	0x2	1 bit	CH2 DI Bit value 0=OFF, 1=ON
4	0x3	1 bit	CH3 DI Bit value 0=OFF, 1=ON
5	0x4	1 bit	CH4 DI Bit value 0=OFF, 1=ON
6	0x5	1 bit	CH5 DI Bit value 0=OFF, 1=ON
7	0x6	1 bit	CH6 DI Bit value 1=OFF, 1=ON
8	0x7	1 bit	CH7 DI Bit value 1=OFF, 1=ON
9	0x8	1 bit	CH8 DI Bit value 1=OFF, 1=ON
10	0x9	1 bit	CH9 DI Bit value 1=OFF, 1=ON
11	0xA	1 bit	CH10 DI Bit value 1=OFF, 1=ON
12	0xB	1 bit	CH11 DI Bit value 1=OFF, 1=ON
13	0xC	1 bit	CH12 DI Bit value 1=OFF, 1=ON
14	0xD	1 bit	CH13 DI Bit value 1=OFF, 1=ON
15	0xE	1 bit	CH14 DI Bit value 1=OFF, 1=ON
16	0xF	1 bit	CH15 DI Bit value 1=OFF, 1=ON

Input Register 0x3XXXX

Reference	Address	Data Type	Description
1	0x0	1 word	CH0 DI value 0=OFF, 1=ON
2	0x1	1 word	CH1 DI value 0=OFF, 1=ON
3	0x2	1 word	CH2 DI value 0=OFF, 1=ON
4	0x3	1 word	CH3 DI value 0=OFF, 1=ON
5	0x4	1 word	CH4 DI value 0=OFF, 1=ON
6	0x5	1 word	CH5 DI value 0=OFF, 1=ON
7	0x6	1 word	CH6 DI value

			1=OFF, 1=ON
8	0x7	1 word	CH7 DI value 1=OFF, 1=ON
9	0x8	1 word	CH8 DI value 1=OFF, 1=ON
10	0x9	1 word	CH9 DI value 1=OFF, 1=ON
11	0xA	1 word	CH10 DI value 1=OFF, 1=ON
12	0xB	1 word	CH11 DI value 1=OFF, 1=ON
13	0xC	1 word	CH12 DI value 1=OFF, 1=ON
14	0xD	1 word	CH13 DI value 1=OFF, 1=ON
15	0xE	1 word	CH14 DI value 1=OFF, 1=ON
16	0xF	1 word	CH15 DI value 1=OFF, 1=ON
33	0x20	2 words	CH0 DI counter value
35	0x22	2 words	CH1 DI counter value
37	0x24	2 words	CH2 DI counter value
39	0x26	2 words	CH3 DI counter value
41	0x28	2 words	CH4 DI counter value
43	0x2A	2 words	CH5 DI counter value
45	0x2C	2 words	CH6 DI counter value
47	0x2E	2 words	CH7 DI counter value
49	0x30	2 words	CH8 DI counter value
51	0x32	2 words	CH9 DI counter value
53	0x34	2 words	CH10 DI counter value
55	0x36	2 words	CH11 DI counter value
57	0x38	2 words	CH12 DI counter value
59	0x3A	2 words	CH13 DI counter value
61	0x3C	2 words	CH14 DI counter value
63	0x3E	2 words	CH15 DI counter value

Holding Register 0x4XXXX

Reference	Address	Data Type	Description
1	0x0	1 word	CH0 DI Mode 0=DI, 1=Counter
2	0x1	1 word	CH1 DI Mode 0=DI, 1=Counter
3	0x2	1 word	CH2 DI Mode 0=DI, 1=Counter
4	0x3	1 word	CH3 DI Mode 0=DI, 1=Counter
5	0x4	1 word	CH4 DI Mode 0=DI, 1=Counter
6	0x5	1 word	CH5 DI Mode 0=DI, 1=Counter
7	0x6	1 word	CH6 DI Mode 0=DI, 1=Counter

8	0x7	1 word	CH7 DI Mode 0=DI, 1=Counter
9	0x8	1 word	CH8 DI Mode 0=DI, 1=Counter
10	0x9	1 word	CH9 DI Mode 0=DI, 1=Counter
11	0xA	1 word	CH10 DI Mode 0=DI, 1=Counter
12	0xB	1 word	CH11 DI Mode 0=DI, 1=Counter
13	0xC	1 word	CH12 DI Mode 0=DI, 1=Counter
14	0xD	1 word	CH13 DI Mode 0=DI, 1=Counter
15	0xE	1 word	CH14 DI Mode 0=DI, 1=Counter
16	0xF	1 word	CH15 DI Mode 0=DI, 1=Counter
33	0x20	1 word	CH0 DI filter value
34	0x21	1 word	CH1 DI filter value
35	0x22	1 word	CH2 DI filter value
36	0x23	1 word	CH3 DI filter value
37	0x24	1 word	CH4 DI filter value
38	0x25	1 word	CH5 DI filter value
39	0x26	1 word	CH6 DI filter value
40	0x27	1 word	CH7 DI filter value
41	0x28	1 word	CH8 DI filter value
42	0x29	1 word	CH9 DI filter value
43	0x2A	1 word	CH10 DI filter value
44	0x2B	1 word	CH11 DI filter value
45	0x2C	1 word	CH12 DI filter value
46	0x2D	1 word	CH13 DI filter value
47	0x2E	1 word	CH14 DI filter value
48	0x2F	1 word	CH15 DI filter value
65	0x40	1 word	CH0 DI counter trigger type 0:L2H, 1:H2L, 2: Both
66	0x41	1 word	CH1 DI counter trigger type 0:L2H, 1:H2L, 2: Both
67	0x42	1 word	CH2 DI counter trigger type 0:L2H, 1:H2L, 2: Both
68	0x43	1 word	CH3 DI counter trigger type 0:L2H, 1:H2L, 2: Both
69	0x44	1 word	CH4 DI counter trigger type 0:L2H, 1:H2L, 2: Both
70	0x45	1 word	CH5 DI counter trigger type 0:L2H, 1:H2L, 2: Both
71	0x46	1 word	CH6 DI counter trigger type 0:L2H, 1:H2L, 2: Both
72	0x47	1 word	CH7 DI counter trigger type 0:L2H, 1:H2L, 2: Both
73	0x48	1 word	CH8 DI counter trigger type 0:L2H, 1:H2L, 2: Both
74	0x49	1 word	CH9 DI counter trigger type

			0:L2H, 1:H2L, 2: Both
75	0x4A	1 word	CH10 DI counter trigger type 0:L2H, 1:H2L, 2: Both
76	0x4B	1 word	CH11 DI counter trigger type 0:L2H, 1:H2L, 2: Both
77	0x4C	1 word	CH12 DI counter trigger type 0:L2H, 1:H2L, 2: Both
78	0x4D	1 word	CH13 DI counter trigger type 0:L2H, 1:H2L, 2: Both
79	0x4E	1 word	CH14 DI counter trigger type 0:L2H, 1:H2L, 2: Both
80	0x4F	1 word	CH15 DI counter trigger type 0:L2H, 1:H2L, 2: Both

R1212 Modbus Mapping

Coil 0x0XXXX

Reference	Address	Data Type	Description
1	0x0	1 bit	CH0 DI Counter start 0=OFF, 1=ON
2	0x1	1 bit	CH1 DI Counter start 0=OFF, 1=ON
3	0x2	1 bit	CH2 DI Counter start 0=OFF, 1=ON
4	0x3	1 bit	CH3 DI Counter start 0=OFF, 1=ON
5	0x4	1 bit	CH4 DI Counter start 0=OFF, 1=ON
6	0x5	1 bit	CH5 DI Counter start 0=OFF, 1=ON
7	0x6	1 bit	CH6 DI Counter start 1=OFF, 1=ON
8	0x7	1 bit	CH7 DI Counter start 1=OFF, 1=ON
9	0x8	1 bit	CH8 DI Counter start 1=OFF, 1=ON
10	0x9	1 bit	CH9 DI Counter start 1=OFF, 1=ON
11	0xA	1 bit	CH10 DI Counter start 1=OFF, 1=ON
12	0xB	1 bit	CH11 DI Counter start 1=OFF, 1=ON
13	0xC	1 bit	CH12 DI Counter start 1=OFF, 1=ON
14	0xD	1 bit	CH13 DI Counter start 1=OFF, 1=ON
15	0xE	1 bit	CH14 DI Counter start 1=OFF, 1=ON
16	0xF	1 bit	CH15 DI Counter start 1=OFF, 1=ON
33	0x20	1 bit	CH0 DI Counter reset 0=no effect, 1=reset
34	0x21	1 bit	CH1 DI Counter reset 0=no effect, 1=reset
35	0x22	1 bit	CH2 DI Counter reset 0=no effect, 1=reset
36	0x23	1 bit	CH3 DI Counter reset 0=no effect, 1=reset
37	0x24	1 bit	CH4 DI Counter reset 0=no effect, 1=reset
38	0x25	1 bit	CH5 DI Counter reset 0=no effect, 1=reset
39	0x26	1 bit	CH6 DI Counter reset 0=no effect, 1=reset
40	0x27	1 bit	CH7 DI Counter reset

			0=no effect, 1=reset
41	0x28	1 bit	CH8 DI Counter reset 0=no effect, 1=reset
42	0x29	1 bit	CH9 DI Counter reset 0=no effect, 1=reset
43	0x2A	1 bit	CH10 DI Counter reset 0=no effect, 1=reset
44	0x2B	1 bit	CH11 DI Counter reset 0=no effect, 1=reset
45	0x2C	1 bit	CH12 DI Counter reset 0=no effect, 1=reset
46	0x2D	1 bit	CH13 DI Counter reset 0=no effect, 1=reset
47	0x2E	1 bit	CH14 DI Counter reset 0=no effect, 1=reset
48	0x2F	1 bit	CH15 DI Counter reset 0=no effect, 1=reset
65	0x40	1 bit	CH0 DI Counter overflow 0=no effect, 1=overflow
66	0x41	1 bit	CH1 DI Counter overflow 0=no effect, 1=overflow
67	0x42	1 bit	CH2 DI Counter overflow 0=no effect, 1=overflow
68	0x43	1 bit	CH3 DI Counter overflow 0=no effect, 1=overflow
69	0x44	1 bit	CH4 DI Counter overflow 0=no effect, 1=overflow
70	0x45	1 bit	CH5 DI Counter overflow 0=no effect, 1=overflow
71	0x46	1 bit	CH6 DI Counter overflow 0=no effect, 1=overflow
72	0x47	1 bit	CH7 DI Counter overflow 0=no effect, 1=overflow
73	0x48	1 bit	CH8 DI Counter overflow 0=no effect, 1=overflow
74	0x49	1 bit	CH9 DI Counter overflow 0=no effect, 1=overflow
75	0x4A	1 bit	CH10 DI Counter overflow 0=no effect, 1=overflow
76	0x4B	1 bit	CH11 DI Counter overflow 0=no effect, 1=overflow
77	0x4C	1 bit	CH12 DI Counter overflow 0=no effect, 1=overflow
78	0x4D	1 bit	CH13 DI Counter overflow 0=no effect, 1=overflow
79	0x4E	1 bit	CH14 DI Counter overflow 0=no effect, 1=overflow
80	0x4F	1 bit	CH15 DI Counter overflow 0=no effect, 1=overflow
97	0x60	1 bit	CH0 DI Power on counter start 0=OFF, 1=ON
98	0x61	1 bit	CH1 DI Power on counter start 0=OFF, 1=ON
99	0x62	1 bit	CH2 DI Power on counter start

			0=OFF, 1=ON
100	0x63	1 bit	CH3 DI Power on counter start 0=OFF, 1=ON
101	0x64	1 bit	CH4 DI Power on counter start 0=OFF, 1=ON
102	0x65	1 bit	CH5 DI Power on counter start 0=OFF, 1=ON
103	0x66	1 bit	CH6 DI Power on counter start 0=OFF, 1=ON
104	0x67	1 bit	CH7 DI Power on counter start 0=OFF, 1=ON
105	0x68	1 bit	CH8 DI Power on counter start 0=OFF, 1=ON
106	0x69	1 bit	CH9 DI Power on counter start 0=OFF, 1=ON
107	0x6A	1 bit	CH10 DI Power on counter start 0=OFF, 1=ON
108	0x6B	1 bit	CH11 DI Power on counter start 0=OFF, 1=ON
109	0x6C	1 bit	CH12 DI Power on counter start 0=OFF, 1=ON
110	0x6D	1 bit	CH13 DI Power on counter start 0=OFF, 1=ON
111	0x6E	1 bit	CH14 DI Power on counter start 0=OFF, 1=ON
112	0x6F	1 bit	CH15 DI Power on counter start 0=OFF, 1=ON
129	0x80	1 bit	CH0 DI Safe mode counter start 0=OFF, 1=ON
130	0x81	1 bit	CH1 DI Safe mode counter start 0=OFF, 1=ON
131	0x82	1 bit	CH2 DI Safe mode counter start 0=OFF, 1=ON
132	0x83	1 bit	CH3 DI Safe mode counter start 0=OFF, 1=ON
133	0x84	1 bit	CH4 DI Safe mode counter start 0=OFF, 1=ON
134	0x85	1 bit	CH5 DI Safe mode counter start 0=OFF, 1=ON
135	0x86	1 bit	CH6 DI Safe mode counter start 0=OFF, 1=ON
136	0x87	1 bit	CH7 DI Safe mode counter start 0=OFF, 1=ON
137	0x88	1 bit	CH8 DI Safe mode counter start 0=OFF, 1=ON
138	0x89	1 bit	CH9 DI Safe mode counter start 0=OFF, 1=ON
139	0x8A	1 bit	CH10 DI Safe mode counter start 0=OFF, 1=ON
140	0x8B	1 bit	CH11 DI Safe mode counter start 0=OFF, 1=ON
141	0x8C	1 bit	CH12 DI Safe mode counter start 0=OFF, 1=ON
142	0x8D	1 bit	CH13 DI Safe mode counter start

			0=OFF, 1=ON
143	0x8E	1 bit	CH14 DI Safe mode counter start 0=OFF, 1=ON
144	0x8F	1 bit	CH15 DI Safe mode counter start 0=OFF, 1=ON
161	0xA0	1 bit	CH0 DI power failing counter storage 0=OFF, 1=ON
162	0xA1	1 bit	CH1 DI power failing counter storage 0=OFF, 1=ON
163	0xA2	1 bit	CH2 DI power failing counter storage 0=OFF, 1=ON
164	0xA3	1 bit	CH3 DI power failing counter storage 0=OFF, 1=ON
165	0xA4	1 bit	CH4 DI power failing counter storage 0=OFF, 1=ON
166	0xA5	1 bit	CH5 DI power failing counter storage 0=OFF, 1=ON
167	0xA6	1 bit	CH6 DI power failing counter storage 0=OFF, 1=ON
168	0xA7	1 bit	CH7 DI power failing counter storage 0=OFF, 1=ON
169	0xA8	1 bit	CH8 DI power failing counter storage 0=OFF, 1=ON
170	0xA9	1 bit	CH9 DI power failing counter storage 0=OFF, 1=ON
171	0xAA	1 bit	CH10 DI power failing counter storage 0=OFF, 1=ON
172	0xAB	1 bit	CH11 DI power failing counter storage 0=OFF, 1=ON
173	0xAC	1 bit	CH12 DI power failing counter storage 0=OFF, 1=ON
174	0xAD	1 bit	CH13 DI power failing counter storage 0=OFF, 1=ON
175	0xAE	1 bit	CH14 DI power failing counter storage 0=OFF, 1=ON
176	0xAF	1 bit	CH15 DI power failing counter storage 0=OFF, 1=ON
321	0x140	1 bit	CH0 DO Bit value 0=OFF, 1=ON
322	0x141	1 bit	CH1 DO Bit value 0=OFF, 1=ON
323	0x142	1 bit	CH2 DO Bit value 0=OFF, 1=ON
324	0x143	1 bit	CH3 DO Bit value 0=OFF, 1=ON
325	0x144	1 bit	CH4 DO Bit value 0=OFF, 1=ON
326	0x145	1 bit	CH5 DO Bit value 0=OFF, 1=ON
327	0x146	1 bit	CH6 DO Bit value 0=OFF, 1=ON
328	0x147	1 bit	CH7 DO Bit value 0=OFF, 1=ON
353	0x160	1 bit	CH0 DO Power on value

			0=OFF, 1=ON
354	0x161	1 bit	CH1 DO Power on value 0=OFF, 1=ON
355	0x162	1 bit	CH2 DO Power on value 0=OFF, 1=ON
356	0x163	1 bit	CH3 DO Power on value 0=OFF, 1=ON
357	0x164	1 bit	CH4 DO Power on value 0=OFF, 1=ON
358	0x165	1 bit	CH5 DO Power on value 0=OFF, 1=ON
359	0x166	1 bit	CH6 DO Power on value 0=OFF, 1=ON
360	0x167	1 bit	CH7 DO Power on value 0=OFF, 1=ON
385	0x180	1 bit	CH0 DO Pulse start 0=OFF, 1=ON
386	0x181	1 bit	CH1 DO Pulse start 0=OFF, 1=ON
387	0x182	1 bit	CH2 DO Pulse start 0=OFF, 1=ON
388	0x183	1 bit	CH3 DO Pulse start 0=OFF, 1=ON
389	0x184	1 bit	CH4 DO Pulse start 0=OFF, 1=ON
390	0x185	1 bit	CH5 DO Pulse start 0=OFF, 1=ON
391	0x186	1 bit	CH6 DO Pulse start 0=OFF, 1=ON
392	0x187	1 bit	CH7 DO Pulse start 0=OFF, 1=ON
417	0x1A0	1 bit	CH0 DO Power Pulse start 0=OFF, 1=ON
418	0x1A1	1 bit	CH1 DO Power Pulse start 0=OFF, 1=ON
419	0x1A2	1 bit	CH2 DO Power Pulse start 0=OFF, 1=ON
388	0x1A3	1 bit	CH3 DO Power Pulse start 0=OFF, 1=ON
389	0x1A4	1 bit	CH4 DO Power Pulse start 0=OFF, 1=ON
390	0x1A5	1 bit	CH5 DO Power Pulse start 0=OFF, 1=ON
391	0x1A6	1 bit	CH6 DO Power Pulse start 0=OFF, 1=ON
392	0x1A7	1 bit	CH7 DO Power Pulse start 0=OFF, 1=ON
449	0x1C0	1 bit	CH0 DO Safe mode Pulse start 0=OFF, 1=ON
450	0x1C1	1 bit	CH1 DO Safe mode Pulse start 0=OFF, 1=ON
451	0x1C2	1 bit	CH2 DO Safe mode Pulse start 0=OFF, 1=ON
452	0x1C3	1 bit	CH3 DO Safe mode Pulse start

			0=OFF, 1=ON
453	0x1C4	1 bit	CH4 DO Safe mode Pulse start 0=OFF, 1=ON
454	0x1C5	1 bit	CH5 DO Safe mode Pulse start 0=OFF, 1=ON
455	0x1C6	1 bit	CH6 DO Safe mode Pulse start 0=OFF, 1=ON
456	0x1C7	1 bit	CH7 DO Safe mode Pulse start 0=OFF, 1=ON
480	0x1E0	1 bit	CH0 DO reset user relay counter 1= reset
481	0x1E1	1 bit	CH1 DO reset user relay counter 1= reset
482	0x1E2	1 bit	CH2 DO reset user relay counter 1= reset
483	0x1E3	1 bit	CH3 DO reset user relay counter 1= reset
484	0x1E4	1 bit	CH4 DO reset user relay counter 1= reset
485	0x1E5	1 bit	CH5 DO reset user relay counter 1= reset
486	0x1E6	1 bit	CH6 DO reset user relay counter 1= reset
487	0x1E7	1 bit	CH7 DO reset user relay counter 1= reset

Input Coil 0x1XXXX

Reference	Address	Data Type	Description
1	0x0	1 bit	CH0 DI Bit value 0=OFF, 1=ON
2	0x1	1 bit	CH1 DI Bit value 0=OFF, 1=ON
3	0x2	1 bit	CH2 DI Bit value 0=OFF, 1=ON
4	0x3	1 bit	CH3 DI Bit value 0=OFF, 1=ON
5	0x4	1 bit	CH4 DI Bit value 0=OFF, 1=ON
6	0x5	1 bit	CH5 DI Bit value 0=OFF, 1=ON
7	0x6	1 bit	CH6 DI Bit value 1=OFF, 1=ON
8	0x7	1 bit	CH7 DI Bit value 1=OFF, 1=ON
9	0x8	1 bit	CH8 DI Bit value 1=OFF, 1=ON
10	0x9	1 bit	CH9 DI Bit value 1=OFF, 1=ON
11	0xA	1 bit	CH10 DI Bit value 1=OFF, 1=ON
12	0xB	1 bit	CH11 DI Bit value 1=OFF, 1=ON

13	0xC	1 bit	CH12 DI Bit value 1=OFF, 1=ON
14	0xD	1 bit	CH13 DI Bit value 1=OFF, 1=ON
15	0xE	1 bit	CH14 DI Bit value 1=OFF, 1=ON
16	0xF	1 bit	CH15 DI Bit value 1=OFF, 1=ON
289	0x120	1 bit	CH0 DIO Direction 0=DI, 1=DO
290	0x121	1 bit	CH1 DIO Direction 0=DI, 1=DO
291	0x122	1 bit	CH2 DIO Direction 0=DI, 1=DO
292		1 bit	CH3DIO Direction 0=DI, 1=DO
293		1 bit	CH4 DIO Direction 0=DI, 1=DO
294		1 bit	CH5 DIO Direction 0=DI, 1=DO
295		1 bit	CH6 DIO Direction 0=DI, 1=DO
296		1 bit	CH7 DIO Direction 0=DI, 1=DO

Input Register 0x3XXXX

Reference	Address	Data Type	Description
1	0x0	1 word	CH0 DI value 0=OFF, 1=ON
2	0x1	1 word	CH1 DI value 0=OFF, 1=ON
3	0x2	1 word	CH2 DI value 0=OFF, 1=ON
4	0x3	1 word	CH3 DI value 0=OFF, 1=ON
5	0x4	1 word	CH4 DI value 0=OFF, 1=ON
6	0x5	1 word	CH5 DI value 0=OFF, 1=ON
7	0x6	1 word	CH6 DI value 1=OFF, 1=ON
8	0x7	1 word	CH7 DI value 1=OFF, 1=ON
9	0x8	1 word	CH8 DI value 1=OFF, 1=ON
10	0x9	1 word	CH9 DI value 1=OFF, 1=ON
11	0xA	1 word	CH10 DI value 1=OFF, 1=ON
12	0xB	1 word	CH11 DI value 1=OFF, 1=ON
13	0xC	1 word	CH12 DI value

			1=OFF, 1=ON
14	0xD	1 word	CH13 DI value 1=OFF, 1=ON
15	0xE	1 word	CH14 DI value 1=OFF, 1=ON
16	0xF	1 word	CH15 DI value 1=OFF, 1=ON
33	0x20	2 words	CH0 DI counter value
35	0x22	2 words	CH1 DI counter value
37	0x24	2 words	CH2 DI counter value
39	0x26	2 words	CH3 DI counter value
41	0x28	2 words	CH4 DI counter value
43	0x2A	2 words	CH5 DI counter value
45	0x2C	2 words	CH6 DI counter value
47	0x2E	2 words	CH7 DI counter value
49	0x30	2 words	CH8 DI counter value
51	0x32	2 words	CH9 DI counter value
53	0x34	2 words	CH10 DI counter value
55	0x36	2 words	CH11 DI counter value
57	0x38	2 words	CH12 DI counter value
59	0x3A	2 words	CH13 DI counter value
61	0x3C	2 words	CH14 DI counter value
63	0x3E	2 words	CH15 DI counter value
289	0x120	1 word	CH0 DIO Direction 0=DI, 1=DO
290	0x121	1 word	CH1 DIO Direction 0=DI, 1=DO
291	0x122	1 word	CH2 DIO Direction 0=DI, 1=DO
292		1 word	CH3 DIO Direction 0=DI, 1=DO
293		1 word	CH4 DIO Direction 0=DI, 1=DO
294		1 word	CH5 DIO Direction 0=DI, 1=DO
295		1 word	CH6 DIO Direction 0=DI, 1=DO
296		1 word	CH8 DIO Direction 0=DI, 1=DO

Holding Register 0x4XXXX

Reference	Address	Data Type	Description
1	0x0	1 word	CH0 DI Mode 0=DI, 1=Counter
2	0x1	1 word	CH1 DI Mode 0=DI, 1=Counter
3	0x2	1 word	CH2 DI Mode 0=DI, 1=Counter
4	0x3	1 word	CH3 DI Mode 0=DI, 1=Counter
5	0x4	1 word	CH4 DI Mode 0=DI, 1=Counter

6	0x5	1 word	CH5 DI Mode 0=DI, 1=Counter
7	0x6	1 word	CH6 DI Mode 0=DI, 1=Counter
8	0x7	1 word	CH7 DI Mode 0=DI, 1=Counter
9	0x8	1 word	CH8 DI Mode 0=DI, 1=Counter
10	0x9	1 word	CH9 DI Mode 0=DI, 1=Counter
11	0xA	1 word	CH10 DI Mode 0=DI, 1=Counter
12	0xB	1 word	CH11 DI Mode 0=DI, 1=Counter
13	0xC	1 word	CH12 DI Mode 0=DI, 1=Counter
14	0xD	1 word	CH13 DI Mode 0=DI, 1=Counter
15	0xE	1 word	CH14 DI Mode 0=DI, 1=Counter
16	0xF	1 word	CH15 DI Mode 0=DI, 1=Counter
33	0x20	1 word	CH0 DI filter value
34	0x21	1 word	CH1 DI filter value
35	0x22	1 word	CH2 DI filter value
36	0x23	1 word	CH3 DI filter value
37	0x24	1 word	CH4 DI filter value
38	0x25	1 word	CH5 DI filter value
39	0x26	1 word	CH6 DI filter value
40	0x27	1 word	CH7 DI filter value
41	0x28	1 word	CH8 DI filter value
42	0x29	1 word	CH9 DI filter value
43	0x2A	1 word	CH10 DI filter value
44	0x2B	1 word	CH11 DI filter value
45	0x2C	1 word	CH12 DI filter value
46	0x2D	1 word	CH13 DI filter value
47	0x2E	1 word	CH14 DI filter value
48	0x2F	1 word	CH15 DI filter value
65	0x40	1 word	CH0 DI counter trigger type 0:L2H, 1:H2L, 2: Both
66	0x41	1 word	CH1 DI counter trigger type 0:L2H, 1:H2L, 2: Both
67	0x42	1 word	CH2 DI counter trigger type 0:L2H, 1:H2L, 2: Both
68	0x43	1 word	CH3 DI counter trigger type 0:L2H, 1:H2L, 2: Both
69	0x44	1 word	CH4 DI counter trigger type 0:L2H, 1:H2L, 2: Both
70	0x45	1 word	CH5 DI counter trigger type 0:L2H, 1:H2L, 2: Both
71	0x46	1 word	CH6 DI counter trigger type 0:L2H, 1:H2L, 2: Both
72	0x47	1 word	CH7 DI counter trigger type

			0:L2H, 1:H2L, 2: Both
73	0x48	1 word	CH8 DI counter trigger type 0:L2H, 1:H2L, 2: Both
74	0x49	1 word	CH9 DI counter trigger type 0:L2H, 1:H2L, 2: Both
75	0x4A	1 word	CH10 DI counter trigger type 0:L2H, 1:H2L, 2: Both
76	0x4B	1 word	CH11 DI counter trigger type 0:L2H, 1:H2L, 2: Both
77	0x4C	1 word	CH12 DI counter trigger type 0:L2H, 1:H2L, 2: Both
78	0x4D	1 word	CH13 DI counter trigger type 0:L2H, 1:H2L, 2: Both
79	0x4E	1 word	CH14 DI counter trigger type 0:L2H, 1:H2L, 2: Both
80	0x4F	1 word	CH15 DI counter trigger type 0:L2H, 1:H2L, 2: Both
321	0x140	1 word	CH0 DO value 0=OFF, 1=ON
322	0x141	1 word	CH1 DO value 0=OFF, 1=ON
323	0x142	1 word	CH2 DO value 0=OFF, 1=ON
324	0x143	1 word	CH3 DO value 0=OFF, 1=ON
325	0x144	1 word	CH4 DO value 0=OFF, 1=ON
326	0x145	1 word	CH5 DO value 0=OFF, 1=ON
327	0x146	1 word	CH6 DO value 0=OFF, 1=ON
328	0x147	1 word	CH7 DO value 0=OFF, 1=ON
417	0x1A0	1 word	CH0 DO pulse width (ON)
418	0x1A1	1 word	CH1 DO pulse width (ON)
419	0x1A2	1 word	CH2 DO pulse width (ON)
420	0x1A3	1 word	CH3 DO pulse width (ON)
421	0x1A4	1 word	CH4 DO pulse width (ON)
422	0x1A5	1 word	CH5 DO pulse width (ON)
423	0x1A6	1 word	CH6 DO pulse width (ON)
424	0x1A7	1 word	CH7DO pulse width (ON)
449	0x1C0	1 word	CH0 DO pulse width (OFF)
450	0x1C1	1 word	CH1 DO pulse width (OFF)
451	0x1C2	1 word	CH2 DO pulse width (OFF)
452	0x1C3	1 word	CH3 DO pulse width (OFF)
453	0x1C4	1 word	CH4 DO pulse width (OFF)
454	0x1C5	1 word	CH5 DO pulse width (OFF)
455	0x1C6	1 word	CH6 DO pulse width (OFF)
456	0x1C7	1 word	CH7 DO pulse width (OFF)
481	0x1E0	1 word	CH0 DO save mode status 0: OFF, 1: ON, 3: hold last
482	0x1E1	1 word	CH1 DO save mode status 0: OFF, 1: ON, 3: hold last

483	0x1E2	1 word	CH2 DO save mode status 0: OFF, 1: ON, 3: hold last
484	0x1E3	1 word	CH3 DO save mode status 0: OFF, 1: ON, 3: hold last
485	0x1E4	1 word	CH4 DO save mode status 0: OFF, 1: ON, 3: hold last
486	0x1E5	1 word	CH5 DO save mode status 0: OFF, 1: ON, 3: hold last
487	0x1E6	1 word	CH6 DO save mode status 0: OFF, 1: ON, 3: hold last
488	0x1E7	1 word	CH7 DO save mode status 0: OFF, 1: ON, 3: hold last
513	0x200	1 word	CH0 DO mode 0: DO, 1: Pulse out
514	0x201	1 word	CH1 DO mode 0: DO, 1: Pulse out
515	0x202	1 word	CH2 DO mode 0: DO, 1: Pulse out
516	0x203	1 word	CH3 DO mode 0: DO, 1: Pulse out
517	0x204	1 word	CH4 DO mode 0: DO, 1: Pulse out
518	0x205	1 word	CH5 DO mode 0: DO, 1: Pulse out
519	0x206	1 word	CH6 DO mode 0: DO, 1: Pulse out
520	0x207	1 word	CH7 DO mode 0: DO, 1: Pulse out

R1214 Modbus Mapping

Coil 0x0XXXX

Reference	Address	Data Type	Description
1	0x0	1 bit	CH0 DI Counter start 0=OFF, 1=ON
2	0x1	1 bit	CH1 DI Counter start 0=OFF, 1=ON
3	0x2	1 bit	CH2 DI Counter start 0=OFF, 1=ON
4	0x3	1 bit	CH3 DI Counter start 0=OFF, 1=ON
5	0x4	1 bit	CH4 DI Counter start 0=OFF, 1=ON
6	0x5	1 bit	CH5 DI Counter start 0=OFF, 1=ON
33	0x20	1 bit	CH0 DI Counter reset 0=no effect, 1=reset
34	0x21	1 bit	CH1 DI Counter reset 0=no effect, 1=reset
35	0x22	1 bit	CH2 DI Counter reset 0=no effect, 1=reset
36	0x23	1 bit	CH3 DI Counter reset 0=no effect, 1=reset
37	0x24	1 bit	CH4 DI Counter reset 0=no effect, 1=reset
38	0x25	1 bit	CH5 DI Counter reset 0=no effect, 1=reset
65	0x40	1 bit	CH0 DI Counter overflow 0=no effect, 1=overflow
66	0x41	1 bit	CH1 DI Counter overflow 0=no effect, 1=overflow
67	0x42	1 bit	CH2 DI Counter overflow 0=no effect, 1=overflow
68	0x43	1 bit	CH3 DI Counter overflow 0=no effect, 1=overflow
69	0x44	1 bit	CH4 DI Counter overflow 0=no effect, 1=overflow
70	0x45	1 bit	CH5 DI Counter overflow 0=no effect, 1=overflow
97	0x60	1 bit	CH0 DI Power on counter start 0=OFF, 1=ON
98	0x61	1 bit	CH1 DI Power on counter start 0=OFF, 1=ON
99	0x62	1 bit	CH2 DI Power on counter start 0=OFF, 1=ON
100	0x63	1 bit	CH3 DI Power on counter start 0=OFF, 1=ON
101	0x64	1 bit	CH4 DI Power on counter start 0=OFF, 1=ON
102	0x65	1 bit	CH5 DI Power on counter start

			0=OFF, 1=ON
129	0x80	1 bit	CH0 DI Safe mode counter start 0=OFF, 1=ON
130	0x81	1 bit	CH1 DI Safe mode counter start 0=OFF, 1=ON
131	0x82	1 bit	CH2 DI Safe mode counter start 0=OFF, 1=ON
132	0x83	1 bit	CH3 DI Safe mode counter start 0=OFF, 1=ON
133	0x84	1 bit	CH4 DI Safe mode counter start 0=OFF, 1=ON
134	0x85	1 bit	CH5 DI Safe mode counter start 0=OFF, 1=ON
161	0xA0	1 bit	CH0 DI power failing counter storage 0=OFF, 1=ON
162	0xA1	1 bit	CH1 DI power failing counter storage 0=OFF, 1=ON
163	0xA2	1 bit	CH2 DI power failing counter storage 0=OFF, 1=ON
164	0xA3	1 bit	CH3 DI power failing counter storage 0=OFF, 1=ON
165	0xA4	1 bit	CH4 DI power failing counter storage 0=OFF, 1=ON
166	0xA5	1 bit	CH5 DI power failing counter storage 0=OFF, 1=ON
321	0x140	1 bit	CH0 DO Bit value 0=OFF, 1=ON
322	0x141	1 bit	CH1 DO Bit value 0=OFF, 1=ON
323	0x142	1 bit	CH2 DO Bit value 0=OFF, 1=ON
324	0x143	1 bit	CH3 DO Bit value 0=OFF, 1=ON
325	0x144	1 bit	CH4 DO Bit value 0=OFF, 1=ON
326	0x145	1 bit	CH5 DO Bit value 0=OFF, 1=ON
353	0x160	1 bit	CH0 DO Power on value 0=OFF, 1=ON
354	0x161	1 bit	CH1 DO Power on value 0=OFF, 1=ON
355	0x162	1 bit	CH2 DO Power on value 0=OFF, 1=ON
356	0x163	1 bit	CH3 DO Power on value 0=OFF, 1=ON
357	0x164	1 bit	CH4 DO Power on value 0=OFF, 1=ON

358	0x165	1 bit	CH5 DO Power on value 0=OFF, 1=ON
385	0x180	1 bit	CH0 DO Pulse start 0=OFF, 1=ON
386	0x181	1 bit	CH1 DO Pulse start 0=OFF, 1=ON
387	0x182	1 bit	CH2 DO Pulse start 0=OFF, 1=ON
388	0x183	1 bit	CH3 DO Pulse start 0=OFF, 1=ON
389	0x184	1 bit	CH4 DO Pulse start 0=OFF, 1=ON
390	0x185	1 bit	CH5 DO Pulse start 0=OFF, 1=ON
417	0x1A0	1 bit	CH0 DO Power Pulse start 0=OFF, 1=ON
418	0x1A1	1 bit	CH1 DO Power Pulse start 0=OFF, 1=ON
419	0x1A2	1 bit	CH2 DO Power Pulse start 0=OFF, 1=ON
388	0x1A3	1 bit	CH3 DO Power Pulse start 0=OFF, 1=ON
389	0x1A4	1 bit	CH4 DO Power Pulse start 0=OFF, 1=ON
390	0x1A5	1 bit	CH5 DO Power Pulse start 0=OFF, 1=ON
449	0x1C0	1 bit	CH0 DO Safe mode Pulse start 0=OFF, 1=ON
450	0x1C1	1 bit	CH1 DO Safe mode Pulse start 0=OFF, 1=ON
451	0x1C2	1 bit	CH2 DO Safe mode Pulse start 0=OFF, 1=ON
452	0x1C3	1 bit	CH3 DO Safe mode Pulse start 0=OFF, 1=ON
453	0x1C4	1 bit	CH4 DO Safe mode Pulse start 0=OFF, 1=ON
454	0x1C5	1 bit	CH5 DO Safe mode Pulse start 0=OFF, 1=ON
480	0x1E0	1 bit	CH0 DO reset user relay counter 1= reset
481	0x1E1	1 bit	CH1 DO reset user relay counter 1= reset

482	0x1E2	1 bit	CH2 DO reset user relay counter 1= reset
483	0x1E3	1 bit	CH3 DO reset user relay counter 1= reset
484	0x1E4	1 bit	CH4 DO reset user relay counter 1= reset
485	0x1E5	1 bit	CH5 DO reset user relay counter 1= reset

Input Coil 0x1XXXX

Reference	Address	Data Type	Description
1	0x0	1 bit	CH0 DI Bit value 0=OFF, 1=ON
2	0x1	1 bit	CH1 DI Bit value 0=OFF, 1=ON
3	0x2	1 bit	CH2 DI Bit value 0=OFF, 1=ON
4	0x3	1 bit	CH3 DI Bit value 0=OFF, 1=ON
5	0x4	1 bit	CH4 DI Bit value 0=OFF, 1=ON
6	0x5	1 bit	CH5 DI Bit value 0=OFF, 1=ON

Input Register 0x3XXXX

Reference	Address	Data Type	Description
1	0x0	1 word	CH0 DI value 0=OFF, 1=ON
2	0x1	1 word	CH1 DI value 0=OFF, 1=ON
3	0x2	1 word	CH2 DI value 0=OFF, 1=ON
4	0x3	1 word	CH3 DI value 0=OFF, 1=ON
5	0x4	1 word	CH4 DI value 0=OFF, 1=ON
6	0x5	1 word	CH5 DI value 0=OFF, 1=ON
33	0x20	2 words	CH0 DI counter value
35	0x22	2 words	CH1 DI counter value
37	0x24	2 words	CH2 DI counter value
39	0x26	2 words	CH3 DI counter value
41	0x28	2 words	CH4 DI counter value
43	0x2A	2 words	CH5 DI counter value
321	0x140	2 words	CH0 Relay total count
323	0x142	2 words	CH1 Relay total count
325	0x144	2 words	CH2 Relay total count
327	0x146	2 words	CH3 Relay total count
329	0x148	2 words	CH4 Relay total count

331	0x14A	2 words	CH5 Relay total count
333	0x14C	2 words	CH6 Relay total count
335	0x14E	2 words	CH7 Relay total count
385	0x180	2 words	CH0 Relay user count
387	0x182	2 words	CH1 Relay user count
389	0x184	2 words	CH2 Relay user count
391	0x186	2 words	CH3 Relay user count
393	0x188	2 words	CH4 Relay user count
395	0x18A	2 words	CH5 Relay user count
397	0x18C	2 words	CH6 Relay user count
399	0x18E	2 words	CH7 Relay user count

Holding Register 0x4XXXX

Reference	Address	Data Type	Description
1	0x0	1 word	CH0 DI Mode 0=DI, 1=Counter
2	0x1	1 word	CH1 DI Mode 0=DI, 1=Counter
3	0x2	1 word	CH2 DI Mode 0=DI, 1=Counter
4	0x3	1 word	CH3 DI Mode 0=DI, 1=Counter
5	0x4	1 word	CH4 DI Mode 0=DI, 1=Counter
6	0x5	1 word	CH5 DI Mode 0=DI, 1=Counter
33	0x20	1 word	CH0 DI filter value
34	0x21	1 word	CH1 DI filter value
35	0x22	1 word	CH2 DI filter value
36	0x23	1 word	CH3 DI filter value
37	0x24	1 word	CH4 DI filter value
38	0x25	1 word	CH5 DI filter value
65	0x40	1 word	CH0 DI counter trigger type 0:L2H, 1:H2L, 2: Both
66	0x41	1 word	CH1 DI counter trigger type 0:L2H, 1:H2L, 2: Both
67	0x42	1 word	CH2 DI counter trigger type 0:L2H, 1:H2L, 2: Both
68	0x43	1 word	CH3 DI counter trigger type 0:L2H, 1:H2L, 2: Both
69	0x44	1 word	CH4 DI counter trigger type 0:L2H, 1:H2L, 2: Both
70	0x45	1 word	CH5 DI counter trigger type 0:L2H, 1:H2L, 2: Both
321	0x140	1 word	CH0 DO value 0=OFF, 1=ON
322	0x141	1 word	CH1 DO value 0=OFF, 1=ON
323	0x142	1 word	CH2 DO value 0=OFF, 1=ON

324	0x143	1 word	CH3 DO value 0=OFF, 1=ON
325	0x144	1 word	CH4 DO value 0=OFF, 1=ON
326	0x145	1 word	CH5 DO value 0=OFF, 1=ON
353	0x160	2 words	CH0 Relay pulse out count
355	0x162	2 words	CH1 Relay pulse out count
357	0x164	2 words	CH2 Relay pulse out count
359	0x166	2 words	CH3 Relay pulse out count
361	0x168	2 words	CH4 Relay pulse out count
363	0x16A	2 words	CH5 Relay pulse out count
365	0x16C	2 words	CH6 Relay pulse out count
367	0x16E	2 words	CH7 Relay pulse out count
417	0x1A0	1 word	CH0 DO pulse width (ON)
418	0x1A1	1 word	CH1 DO pulse width (ON)
419	0x1A2	1 word	CH2 DO pulse width (ON)
420	0x1A3	1 word	CH3 DO pulse width (ON)
421	0x1A4	1 word	CH4 DO pulse width (ON)
422	0x1A5	1 word	CH5 DO pulse width (ON)
449	0x1C0	1 word	CH0 DO pulse width (OFF)
450	0x1C1	1 word	CH1 DO pulse width (OFF)
451	0x1C2	1 word	CH2 DO pulse width (OFF)
452	0x1C3	1 word	CH3 DO pulse width (OFF)
453	0x1C4	1 word	CH4 DO pulse width (OFF)
454	0x1C5	1 word	CH5 DO pulse width (OFF)
481	0x1E0	1 word	CH0 DO save mode status 0: OFF, 1: ON, 3: hold last
482	0x1E1	1 word	CH1 DO save mode status 0: OFF, 1: ON, 3: hold last

483	0x1E2	1 word	CH2 DO save mode status 0: OFF, 1: ON, 3: hold last
484	0x1E3	1 word	CH3 DO save mode status 0: OFF, 1: ON, 3: hold last
485	0x1E4	1 word	CH4 DO save mode status 0: OFF, 1: ON, 3: hold last
486	0x1E5	1 word	CH5 DO save mode status 0: OFF, 1: ON, 3: hold last
513	0x200	1 word	CH0 DO mode 0: DO, 1: Pulse out
514	0x201	1 word	CH1 DO mode 0: DO, 1: Pulse out
515	0x202	1 word	CH2 DO mode 0: DO, 1: Pulse out
516	0x203	1 word	CH3 DO mode 0: DO, 1: Pulse out
517	0x204	1 word	CH4 DO mode 0: DO, 1: Pulse out
518	0x205	1 word	CH5 DO mode 0: DO, 1: Pulse out
545	0x220	1 word	CH0 Relay power on delay
546	0x221	1 word	CH1 Relay power on delay
547	0x222	1 word	CH2 Relay power on delay
548	0x223	1 word	CH3 Relay power on delay
549	0x224	1 word	CH4 Relay power on delay
550	0x225	1 word	CH5 Relay power on delay
551	0x226	1 word	CH6 Relay power on delay
552	0x227	1 word	CH7 Relay power on delay

R1240 Modbus Mapping

Coil 0x0XXXX

Reference	Address	Data Type	Description
705	0x2C0	1 bit	CH0 AI reset min value counter 1= reset
706	0x2C1	1 bit	CH1 AI reset min value counter 1= reset
707	0x2C2	1 bit	CH2 AI reset min value counter 1= reset
708	0x2C3	1 bit	CH3 AI reset min value counter 1= reset
709	0x2C4	1 bit	CH4 AI reset min value counter 1= reset
710	0x2C5	1 bit	CH5 AI reset min value counter 1= reset
711	0x2C6	1 bit	CH6 AI reset min value counter 1= reset
712	0x2C7	1 bit	CH7 AI reset min value counter 1= reset
737	0x2E0	1 bit	CH0 AI reset max value counter 1= reset
738	0x2E1	1 bit	CH1 AI reset max value counter 1= reset
739	0x2E2	1 bit	CH2 AI reset max value counter 1= reset
740	0x2E3	1 bit	CH3 AI reset max value counter 1= reset
741	0x2E4	1 bit	CH4 AI reset max value counter 1= reset
742	0x2E5	1 bit	CH5 AI reset max value counter 1= reset
743	0x2E6	1 bit	CH6 AI reset max value counter 1= reset
744	0x2E7	1 bit	CH7 AI reset max value counter 1= reset

Input Register 0x3XXXX

Reference	Address	Data Type	Description
705	0x2C0	1 word	CH0 AI raw value
706	0x2C1	1 word	CH1 AI raw value
707	0x2C2	1 word	CH2 AI raw value
708	0x2C3	1 word	CH3 AI raw value
709	0x2C4	1 word	CH4 AI raw value
710	0x2C5	1 word	CH5 AI raw value
711	0x2C6	1 word	CH6 AI raw value
712	0x2C7	1 word	CH7 AI raw value
737	0x2E0	1 word	CH0 AI min raw value
738	0x2E1	1 word	CH1 AI min raw value
739	0x2E2	1 word	CH2 AI min raw value

740	0x2E3	1 word	CH3 AI min raw value
741	0x2E4	1 word	CH4 AI min raw value
742	0x2E5	1 word	CH5 AI min raw value
743	0x2E6	1 word	CH6 AI min raw value
744	0x2E7	1 word	CH7 AI min raw value
769	0x300	1 word	CH0 AI max raw value
770	0x301	1 word	CH1 AI max raw value
771	0x302	1 word	CH2 AI max raw value
772	0x303	1 word	CH3 AI max raw value
773	0x304	1 word	CH4 AI max raw value
774	0x305	1 word	CH5 AI max raw value
775	0x306	1 word	CH6 AI max raw value
776	0x307	1 word	CH7 AI max raw value
801	0x320	2 words	CH0 AI value (eng. data)
803	0x322	2 words	CH1 AI value (eng. data)
805	0x324	2 words	CH2 AI value (eng. data)
807	0x326	2 words	CH3 AI value (eng. data)
809	0x328	2 words	CH4 AI value (eng. data)
811	0x32A	2 words	CH5 AI value (eng. data)
813	0x32C	2 words	CH6 AI value (eng. data)
815	0x32E	2 words	CH7 AI value (eng. data)
865	0x360	2 words	CH0 AI min value (eng. data)
867	0x362	2 words	CH1 AI min value (eng. data)
869	0x364	2 words	CH2 AI min value (eng. data)
871	0x366	2 words	CH3 AI min value (eng. data)
873	0x368	2 words	CH4 AI min value (eng. data)
875	0x36A	2 words	CH5 AI min value (eng. data)
877	0x36C	2 words	CH6 AI min value (eng. data)
879	0x36E	2 words	CH7 AI min value (eng. data)
929	0x3A0	2 words	CH0 AI max value (eng. data)
931	0x3A2	2 words	CH1 AI max value (eng. data)
933	0x3A4	2 words	CH2 AI max value (eng. data)
935	0x3A6	2 words	CH3 AI max value (eng. data)
937	0x3A8	2 words	CH4 AI max value (eng. data)
939	0x3AA	2 words	CH5 AI max value (eng. data)
941	0x3AC	2 words	CH6 AI max value (eng. data)
943	0x3AE	2 words	CH7 AI max value (eng. data)
993	0x3E0	1 word	CH0 AI status 0: normal, 1:burnout, 2: over-ranged, 3:under-ranged
994	0x3E1	1 word	CH1 AI status 0: normal, 1:burnout, 2: over-ranged, 3:under-ranged
995	0x3E2	1 word	CH2 AI status 0: normal, 1:burnout, 2: over-ranged, 3:under-ranged
996	0x3E3	1 word	CH3 AI status 0: normal, 1:burnout, 2: over-ranged, 3:under-ranged
997	0x3E4	1 word	CH4 AI status 0: normal, 1:burnout, 2: over-ranged, 3:under-ranged
998	0x3E5	1 word	CH5 AI status

			0: normal, 1:burnout, 2: over-ranged, 3:under-ranged
999	0x3E6	1 word	CH6 AI status 0: normal, 1:burnout, 2: over-ranged, 3:under-ranged
1000	0x3E7	1 word	CH7 AI status 0: normal, 1:burnout, 2: over-ranged, 3:under-ranged

Holding Register 0x4XXXX

Reference	Address	Data Type	Description
705	0x2C0	1 word	CH0 AI range 0: 0–10 V, 1:0–20 mA, 2: 4–20 mA burnout
706	0x2C1	1 word	CH1 AI range 0: 0–10 V, 1:0–20 mA, 2: 4–20 mA burnout
707	0x2C2	1 word	CH2 AI range 0: 0–10 V, 1:0–20 mA, 2: 4–20 mA burnout
708	0x2C3	1 word	CH3 AI range 0: 0–10 V, 1:0–20 mA, 2: 4–20 mA burnout
709	0x2C4	1 word	CH4 AI range 0: 0–10 V, 1:0–20 mA, 2: 4–20 mA burnout
710	0x2C5	1 word	CH5 AI range 0: 0–10 V, 1:0–20 mA, 2: 4–20 mA burnout
711	0x2C6	1 word	CH6 AI range 0: 0–10 V, 1:0–20 mA, 2: 4–20 mA burnout
712	0x2C7	1 word	CH7 AI range 0: 0–10 V, 1:0–20 mA, 2: 4–20 mA burnout
737	0x2E0	2 words	CH0 AI burnout value (float)
739	0x2E2	2 words	CH1 AI burnout value (float)
741	0x2E4	2 words	CH2 AI burnout value (float)
743	0x2E6	2 words	CH3 AI burnout value (float)
745	0x2E8	2 words	CH4 AI burnout value (float)
747	0x2EA	2 words	CH5 AI burnout value (float)
749	0x2EC	2 words	CH6 AI burnout value (float)
751	0x2EE	2 words	CH7 AI burnout value (float)

R1241 Modbus Mapping

Holding Register 0x4XXXX

Reference	Address	Data Type	Description
1185	0x4A0	1 word	CH0 AO raw value
1186	0x4A1	1 word	CH1 AO raw value
1187	0x4A2	1 word	CH2 AO raw value
1188	0x4A3	1 word	CH3 AO raw value
1217	0x4C0	1 word	CH0 AO power on raw value
1218	0x4C1	1 word	CH1 AO power on raw value
1219	0x4C2	1 word	CH2 AO power on raw value
1220	0x4C3	1 word	CH3 AO power on raw value
1249	0x4E0	1 word	CH0 AO safe mode raw value
1250	0x4E1	1 word	CH1 AO safe mode raw value
1251	0x4E2	1 word	CH2 AO safe mode raw value
1252	0x4E3	1 word	CH3 AO safe mode raw value
1281	0x500	1 word	CH0 AO range 0: 0–10 V, 1:0–20 mA
1282	0x501	1 word	CH1 AO range 0: 0–10 V, 1:0–20 mA
1283	0x502	1 word	CH2 AO range 0: 0–10 V, 1:0–20 mA
1284	0x503	1 word	CH3 AO range 0: 0–10 V, 1:0–20 mA

B

Factory Defaults

The ioLogik R1200 series comes configured with the following factory default settings:

Baudrate	9600
Data Bits	8
Parity	None
Stop Bits	1
Watchdog	Disable
Watchdog Time Out	10 seconds
Server Name	Blank
Server Location	Blank
DI Mode	DI
Filter Time	100 ms
Trigger for Counter	Lo to Hi
Counter Status	Stop
DO Mode	DO
DO Safe Status	Disable
Power On Status	Disable
Low Width for Pulses	1 ms (1.5 s for relay)
High Width for Pulses	1 ms (1.5 s for relay)
Output Pulses	0 (continuous)
DIO Mode	DO
AI Mode	Voltage
Scaling and Slop-Intercept	Disable
AO Mode	Voltage
Scaling	Disable

C

Pinouts

R1210

(top to bottom)

1	COM 0
2	DI0
3	DI1
4	DI2
5	DI3
6	GND
7	DI4
8	DI5
9	DI6
10	DI7
11	COM 1
12	DI8
13	DI9
14	DI10
15	DI11
16	GND
17	DI12
18	DI13
19	DI14
20	DI15

R1212

(top to bottom)

1	COM0
2	DI0
3	DI1
4	DI2
5	DI3
6	GND
7	DI4
8	DI5
9	DI6
10	DI7
11	COM1
12	DIO0
13	DIO1
14	DIO2
15	DIO3
16	GND
17	DIO4
18	DIO5
19	DIO6
20	DIO7

R1214

(top to bottom)

1	COM
2	DI0
3	DI1
4	DI2
5	DI3
6	DI4
7	DI5
8	GND
9	R0_NO
10	R0_C
11	R1_NO
12	R1_C
13	R2_NO
14	R2_C
15	R3_NO
16	R3_C
17	R4_NO
18	R4_C
19	R5_NO
20	R5_C

R1240

(top to bottom)

1	AI0+
2	AI0-
3	AI1+
4	AI1-
5	AI2+
6	AI2-
7	AI3+
8	AI3-
9	AI4+
10	AI4-
11	AI5+
12	AI5-
13	AI6+
14	AI6-
15	AI7+
16	AI7-
17	
18	
19	
20	

R1241

(top to bottom)

1	VO0+
2	VO0-
3	IO0+
4	IO0-
5	VO1+
6	VO1-
7	IO1+
8	IO1-
9	VO2+
10	VO2-
11	IO2+
12	IO2-
13	VO3+
14	VO3-
15	IO3+
16	IO3-
17	
18	
19	EX_V
20	EX_C

D

FCC Interference Statement

Federal Communication Commission Warning

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

E

European Community (CE)

This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.