ioLogik E2240 User's Manual

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ioLogik E2240 User's Manual

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Introduction

The ioLogik E2240 is a stand-alone Active Remote I/O Server that can connect sensors for automation applications over Ethernet and IP-based networks.

The following topics are covered in this chapter:

- **Overview**
  - Traditional Remote I/O
  - Active Remote I/O
  - Click&Go
  - Optional Liquid Crystal Display Module (LCM)
- **Product Features**
- **Packing List**
- **Product Specifications**
- **Physical Dimensions**
- **Hardware Reference**
  - Panel Guide
  - LED Indicators

Overview

(shown with and without optional LCM)

The ioLogik E2240 is part of the E2000 series of ioLogik Active Remote I/O servers, which are designed for intelligent, pro-active status reporting of attached sensors, transmitters, transducers, and valves over a network. As an Easy View device, the ioLogik E2240 supports an optional hot-pluggable Liquid Crystal Display Module (LCM), as shown above, to view and configure device settings.

Traditional Remote I/O

Ethernet remote I/O solutions have been on the market for a long time. Traditional solutions are "passive," in the sense that I/O servers wait passively to be polled by a host computer. The response time in this type of setup, however, tends to be on the order of seconds. The "passive" remote I/O structure is simply inadequate for Data Acquisition and Control (DAC) systems that require an efficient, real-time I/O solution with a response time on the order of hundredths of seconds.

Active Remote I/O

Moxa's **Active Remote I/O** line was developed specifically to address the limitations of the traditional passive approach. Rather than requiring the host computer to poll the I/O device server over the network for the status of each I/O device, an **Active Remote I/O server** intelligently sends the host computer status information only under specified conditions. This is a **report by exception** approach, which greatly reduces the load on CPU and network resources. Network packets are far fewer in number and far smaller in size, since I/O information is only sent when necessary, and only information from the specified I/O device is sent. Based on field tests of an ioLogik E2000 series server used in an RFID system, 50 ms is the typical response time over a 100 Mbps Ethernet network. Moxa's active I/O messaging system uses TCP or UDP for I/O messaging and supports sending messages to up to ten host computers simultaneously.

In addition to providing intelligent status reporting, Active Remote I/O servers are backwards compatible, with all of the functions and capabilities of traditional passive remote I/O servers.

Click&Go

Moxa developed the Click&Go logic control interface for easy configuration and deployment of Active Remote I/O. Click&Go's intuitive, graphical interface lets administrators uses simple IF/THEN statements as rules to determine how the Active Remote I/O server responds to different I/O conditions. For example, the Active Remote I/O server could be programmed to adjust an attached voltage dial as well as send an e-mail or SNMP trap when an attached temperature sensor

reaches a certain value. Click&Go makes it easy to define a set of these rules, which will become the basis for your Active Remote I/O system.

Optional Liquid Crystal Display Module (LCM)

As a Moxa Easy View product, the ioLogik E2240 supports an optional hot-pluggable Liquid Crystal Display Module (LCM) for field management and configuration. The module can display network and I/O settings such as analog input value and range. The ioLogik E2240's IP address and netmask may also be configured using the module, and one module can be used to maintain and configure all your Easy View devices.

Product Features

- Click&Go logic builder for easy configuration of your Active Remote I/O system
- High-speed active I/O messaging
- 8-channels of mV/V/mA analog input (AI)with wire-off detection (at 4 to 20 mA)
- 2-channels of analog output (AO) for voltage or current actuator control
- 10/100 Mbps Ethernet with Modbus/TCP protocol connecting up 10 hosts
- Bundled Windows utility and quick programming library for VB, VC++, BCB (coming soon)
- Support for SCADA software such as Wonderware InTouch and GE Intellution iFix32
- SNMP for system management and I/O status
- Remote management over the network including firmware updates
- Configurable power-on and safe status AO modes
- Optional hot-pluggable LCM for status display and configuration
- NIST traceable calibration

Packing List

The ioLogik E2240 is shipped with the following items:

Standard Accessories

- ioLogik E2240 Active Remote I/O Server
- Document & Software CD

Optional Accessories

- LDP1602 ioLogik Liquid Crystal Display Module (LCM)

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

Product Specifications

LAN

Ethernet	10/100 Mbps, RJ45
Protection	1.5 KV magnetic isolation
Protocols	Modbus/TCP, TCP/IP, UDP, DHCP, Bootp, SNMP(MIB for I/O and Network), HTTP, Active I/O Messaging, IP filtering

Serial (Reserved)

Interface	RS-485 (2-wire): Data+, Data-, GND
Serial line protection	15 KV ESD for all signals

Serial Communication Parameters (Reserved)

Parity	None
Data bits	8
Stop bits	1
Flow control	None
Speed	1200 to 115200 bps
Protocol	Modbus/RTU
Built-in RTC	Yes

Analog Input

Inputs	8
Resolution	16-bit
Input range	+/-150 mV, +/-500 mV, +/-5 V, +/-10 V, 0 to 20 mA, 4 to 20 mA
Data format	16-bit integer (2's complement)
Accuracy	+/- 0.1%, FSR @ 25ºC, +/- 0.3%, FSR @ 0, 60ºC
Sampling rate (all channels)	10 samples/sec (voltage); 6 samples/sec (current)
Input impedance	900 kΩ
Built-in resistor for current input	102 Ω
Optical isolation	3K VDC

Analog Output

Outputs	2
Resolution	12-bit
Output range	0 to 10V, 4 to 20 mA
Data format	16-bit integer (2's complement)
Accuracy	Current: +/- 0.1%, FSR @ 25ºC, +/- 0.3%, FSR @ 0, 60ºC Voltage: +/- 0.2% FSR @ 25ºC; +/- 0.4%, FSR @ 0, 60ºC
CMR @ 50/60 Hz	95 dB min.
Zero drift	+/- 9 μV/ºC
Span drift	+/- 25 ppm/ºC
Load resistor	current load < 250 Ω voltage load > 1 MΩ

Power Requirements

Power input	24 VDC nominal, 12 to 48 VDC
Power consumption	282 mA @ 24 VDC (typical)
Field power	24 VDC nominal, up to 48 VDC

Mechanical Specifications

Wiring	I/O cable max. 14 AWG

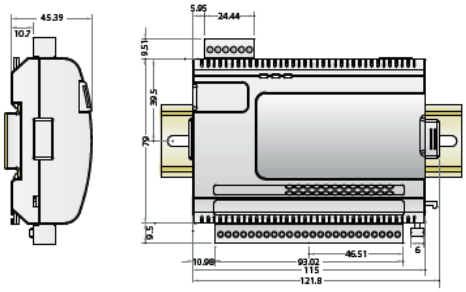
Environmental

Operating temperature	-10 to 60ºC (14 to 140ºF), 5 to 95%RH
Storage temperature	-40 to 85ºC (-4 to 185ºF), 5 to 95%RH

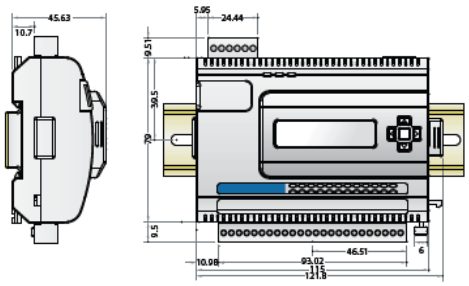
Shock	IEC60068-2-27
Freefall	IEC60068-2-32
Vibration	IEC60068-2-6
Agency Approvals	
EMI	FCC Part 15, CISPR (EN55022) Class A
EMS	IEC61000-4-2 (ESD), level 2/3, IEC61000-4-3 (RS), level 2, IEC61000-4-4 (EFT), level 2, IEC61000-4-5 (Surge), level 3, IEC61000-4-6 (CS), level 2, IEC61000-4-8 (PM), level 1, IEC61000-4-11 (Dip)
Safety	UL 508 (pending)
Warranty	2 years

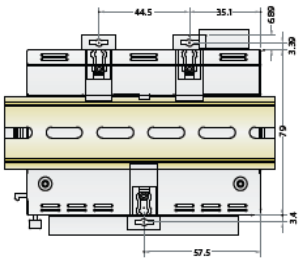
Physical Dimensions

Without LCD Display Module (unit: mm)



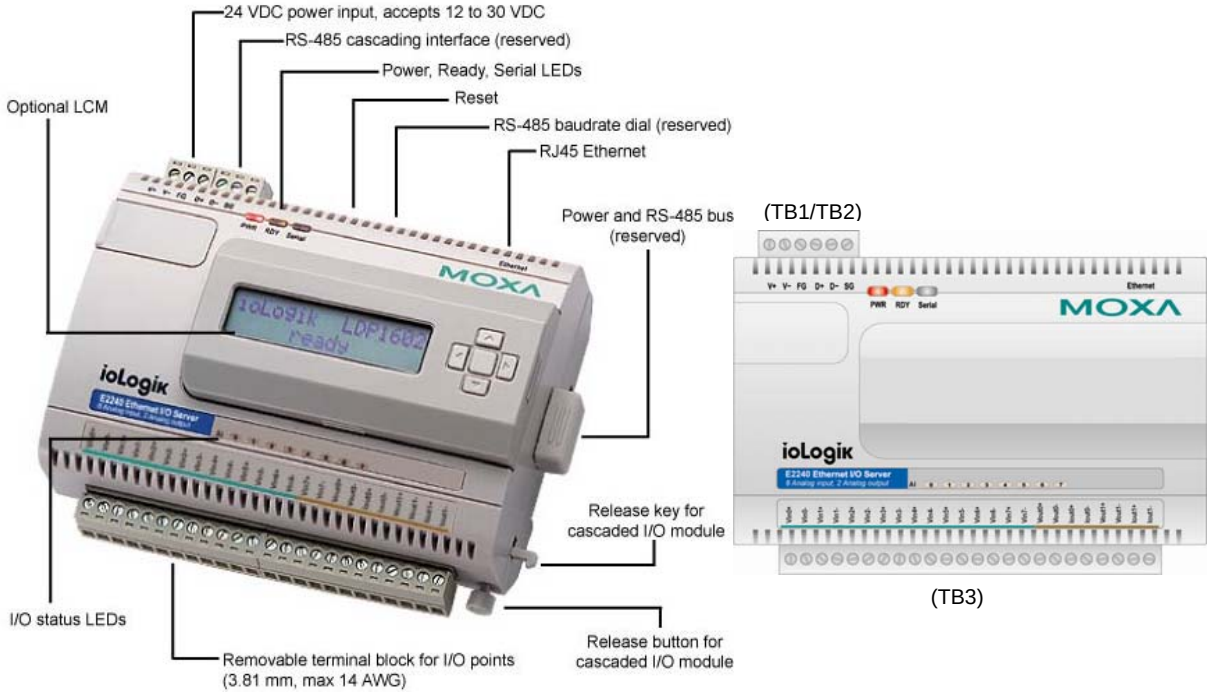
With LCD Display Module (unit: mm)





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 the reset button down for 5 sec. The RDY LED will turn red as you are holding the reset button down. The factory defaults will be loaded once the RDY LED turns green again. You may then release the reset button.

LED Indicators

Ethernet		
Ethernet	orange	Connected to a 10 Mbps Ethernet connection.
	green	Connected to a 100 Mbps Ethernet connection.
	(flashing)	Transmitting or receiving data
System		
PWR	red	Power is on
	off	Power is off
RDY	red	System error
	green (steady)	ioLogik E2240 is functioning normally
	green (flashing)	Click&Go ruleset is active
	green & red (flashing)	ioLogik E2240 is in Safe Status
	off	Power is off or there is a power problem.
Serial	(flashing)	Serial port is receiving/transmitting data
I/O		
AI x8 pins	green	ON status
	off	OFF status (current modes 4~20mA only)

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Initial Setup

This chapter describes how to install the ioLogik E2240.

The following topics are covered:

- **Hardware Installation**
  - Connecting the Power
  - Grounding the ioLogik E2240
  - Connecting to the Network
  - Setting the RS-485 Baudrate
- **Software Installation**

Hardware Installation

Connecting the Power

Connect the 12 to 48 VDC power line to the ioLogik E2240's terminal block (TB1). If power is properly supplied, the Power LED will glow a solid red color until the system is ready

ATTENTION

Disconnect the power before installing and wiring
Disconnect the power cord before installing and/or wiring your ioLogik E2240.

Do not exceed the maximum current for the wiring
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.

Grounding the ioLogik E2240

The ioLogik E2240 is equipped with two grounding points, one on the wall mount hole and the other on the DIN-rail mount.

Connecting to the Network

1. Connect the ioLogik E2240 to the host PC with an Ethernet cable. For initial setup of the ioLogik E2240, it is recommended that the ioLogik E2240 be configured using a direct connection to a host computer rather than remotely over the network.
2. Configure the host PC's IP address to 192.168.127.*xxx*. (*xxx*: from 001 to 253). In Windows, you will need to do this through the Control Panel.

ioLogik E2240 Default IP Address	Default Netmask	Default Gateway
192.168.127.254	255.255.255.0	None

3. Use ioAdmin or the web console to detect the ioLogik E2240. Once the ioLogik E2240 has been detected, modify the settings as needed for your network environment, then restart the server.

Setting the RS-485 Baudrate

The RS-485 port on the ioLogik E2240 is reserved to chain another RS-485 I/O server. The RS-485 port can run Modbus/RTU or I/O command sets. The baudrate is set by a physical dial on the back of the ioLogik R2110. The default settings are baudrate = 115200, parity check = N, data bits = 8, and stop bit = 1.

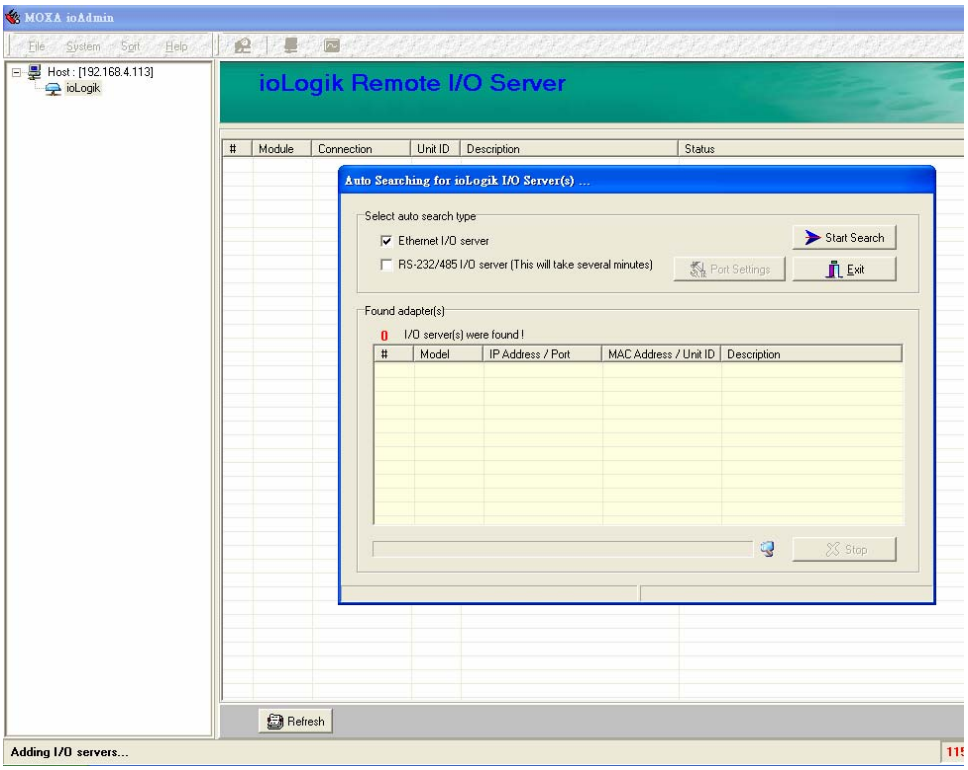
Baudrate for RS-485 (parameters are N, 8, 1)	Dial setting and corresponding baudrate: 0:115200 1:57600 2:38400 3:19200 4:9600 5:4800 6:2400 7:1200

For RS-485 cascading interface, the RS-485 Unit ID = 1.

Software Installation

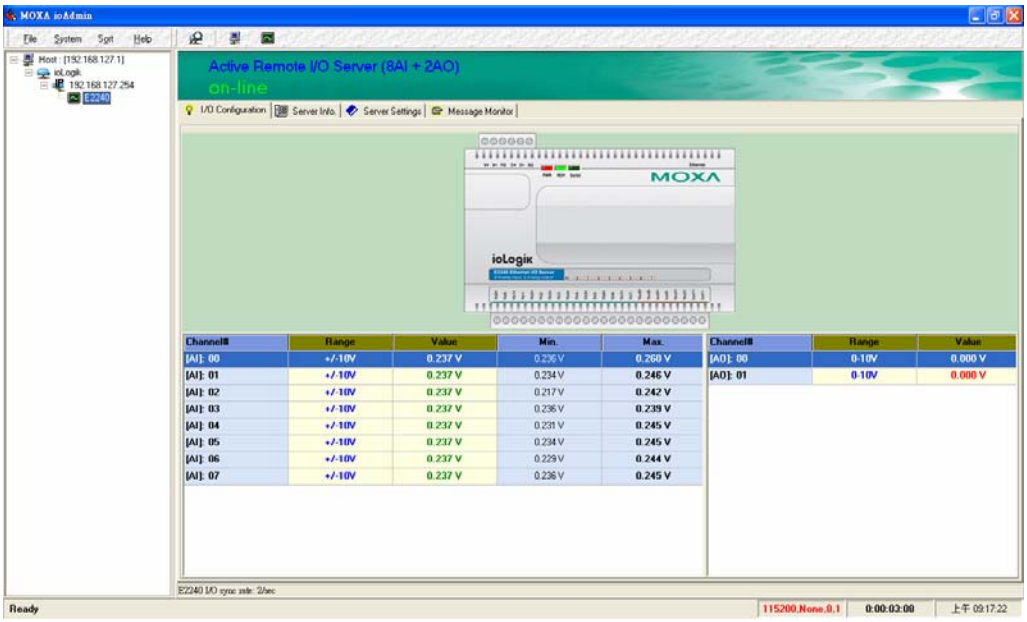
ioAdmin is a Windows utility provided for the configuration and management of the ioLogik E2240 and attached I/O devices. It may be used from anywhere on the network to monitor and configure the ioLogik E2240. You may also configure some of the settings through the web console or optional LCM.

1. **Installation from CD-ROM**: Insert the Software CD into the host computer. Run SETUP.EXE, which is located in the root directory. The installation program will guide you through the installation process and install the ioAdmin utility along with the MXIO DLL library.
2. **Open ioAdmin**: After installation is finished, run **ioAdmin** from **Start → Program Files → ioLogik → Utility → ioAdmin**.
3. **Search the network for the server**: On the menu bar, select **System → Auto Scan Remote I/O Server**. A dialog window will pop up. Click **Start Search** to begin searching for the ioLogik2000.



If ioAdmin is unable to find the ioLogik E2240, there may be a problem with your network settings.

4. **Monitoring I/O status**: Once the ioLogik E2240 is found by ioAdmin, you may view the status of all I/O devices on ioAdmin's main screen.



You may now use ioAdmin to setup or configure your the ioLogik E2240.

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Using ioAdmin

This chapter goes over the functions available in ioAdmin, the ioLogik E2240's main configuration and management utility.

The following topics are covered:

- **Introduction to ioAdmin**
- **Features of ioAdmin**
- **ioAdmin Main Screen**
  - Main Screen Overview
  - Wiring Guide
  - I/O Configuration Tab (General)
  - Server Info Tab
  - Server Settings Tab (General)
  - Message Monitor Tab
- **ioAdmin Administrator Functions**
  - I/O Configuration Tab (Administrator)
  - Server Settings Tab (Administrator)
  - Network Tab
  - Firmware Update Tab
  - Watchdog Tab
  - Click&Go Logic Tab
  - Server Context Menu

Introduction to ioAdmin

All ioLogik remote I/O Servers may be managed and configured over the Ethernet by ioAdmin, a Windows 2000/XP utility provided with your ioLogik E2240. ioAdmin's graphical-user interface gives you easy access to all status information and settings.

The ioLogik E2240 also supports configuration by web console and by optional LCM, but full configuration and management is only available through ioAdmin.

ioAdmin also includes Click&Go logic control for the configuration of your Active Remote I/O system.

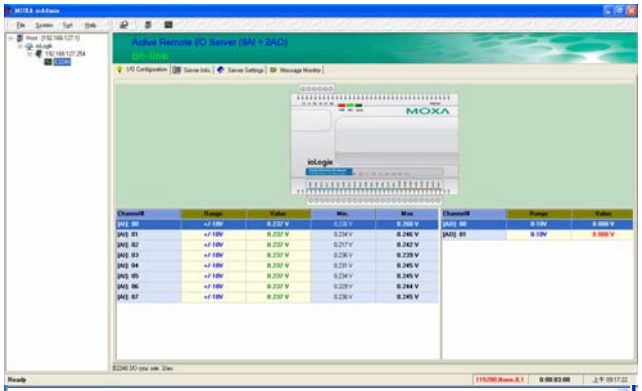
ioAdmin consists of following software:

- **ioAdmin with Click&Go Logic**
- **ioLogik 2000 Wiring Guide**
- **MXIO DLL library** (coming soon)

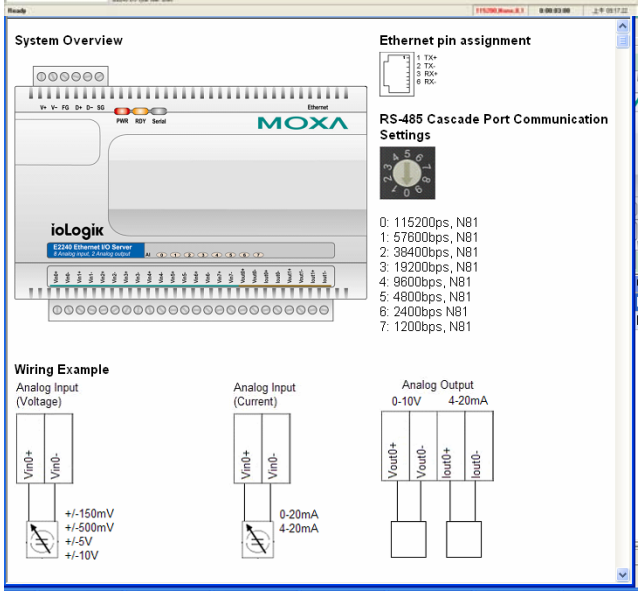
Features of ioAdmin

Remote Management
Over the Ethernet network, ioAdmin allows users to

- find and configure multiple ioLogik servers.
- monitor and configure attached I/O devices.
- test I/O devices.
- reset the server.



On-line Wiring Guide
An on-line wiring guide can be opened from within ioAdmin for your convenience. The easily accessible wiring guide can save administrators much time while planning or troubleshooting.



Configuration File

ioAdmin allows the entire configuration of the ioLogik E2240 to be saved as a file. The file is viewable as text and can serve three purposes:

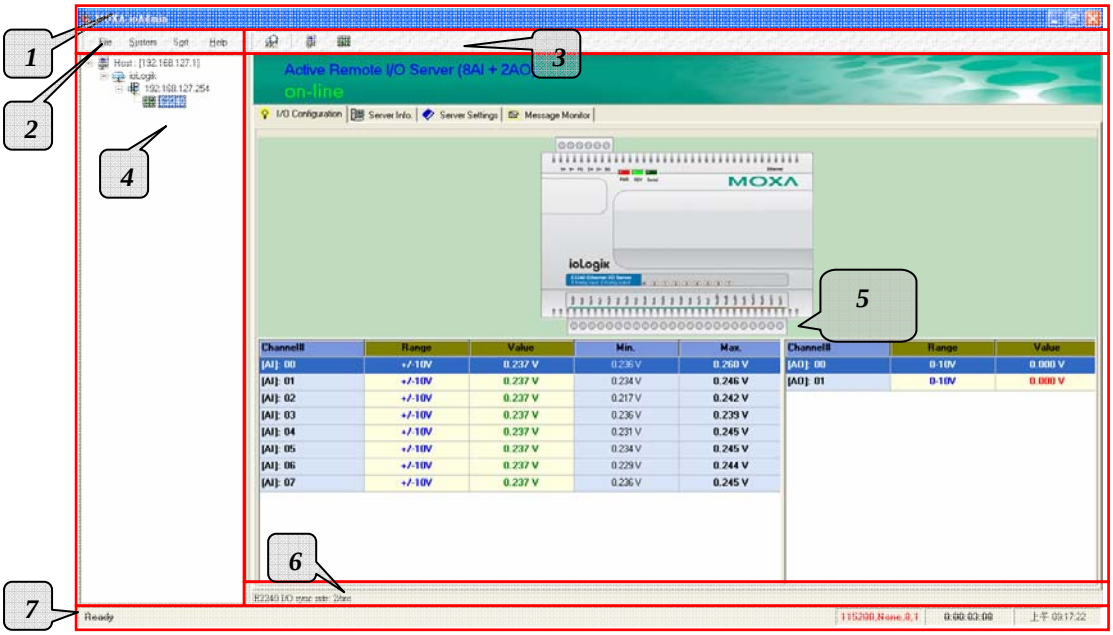
- as a record or backup of configuration
- as a template for the configuration of other servers
- as a quick reference guide for you to configure Modbus drivers in a SCADA system

```
ioLogik 2000 Network I/O Server Configuration
==============================================
Date: 7/25/2006
Time: 2:16:05 PM

[1. Model]
----------
MOD_TYPE=E2240 - Active Remote I/O Server (8AI + 2AO)
MOD_LOC=
MOD_NAME=a

[2. I/O Configurations]
-----------------------
AI00=4,(0-20mA)
AI01=3,(+/-10V)
AI02=3,(+/-10V)
AI03=3,(+/-10V)
AI04=3,(+/-10V)
AI05=3,(+/-10V)
AI06=3,(+/-10V)
AI07=3,(+/-10V)

AO00=1,(4-20mA),    AO00_PWN=0,(RAW),    AO00_SAFE=4094,(RAW)
AO01=0,(0-10V),            AO01_PWN=0,(RAW),    AO01_SAFE=0,(RAW)

[3. Modbus address table]
-------------------------
CHANNEL             I/O TYPE      MODBUS REFERENCE    MODBUS
ADDRESS (Dec, Hex)
AI00          Input         30001               0000, 0x0000
AI01          Input         30002               0001, 0x0001
AI02          Input         30003               0002, 0x0002
AI03          Input         30004               0003, 0x0003
AI04          Input         30005               0004, 0x0004
AI05          Input         30006               0005, 0x0005
AI06          Input         30007               0006, 0x0006
AI07          Input         30008               0007, 0x0007
AO00          Output        40001               0000, 0x0000
AO01          Output        40002               0001, 0x0001

[4. Timer Settings]
-------------------
TIME_ZONE     =49,((GMT+08:00)Taipei)
TIME_SERVER   =

[5. Network Settings]
```

ioAdmin Main Screen

Main Screen Overview

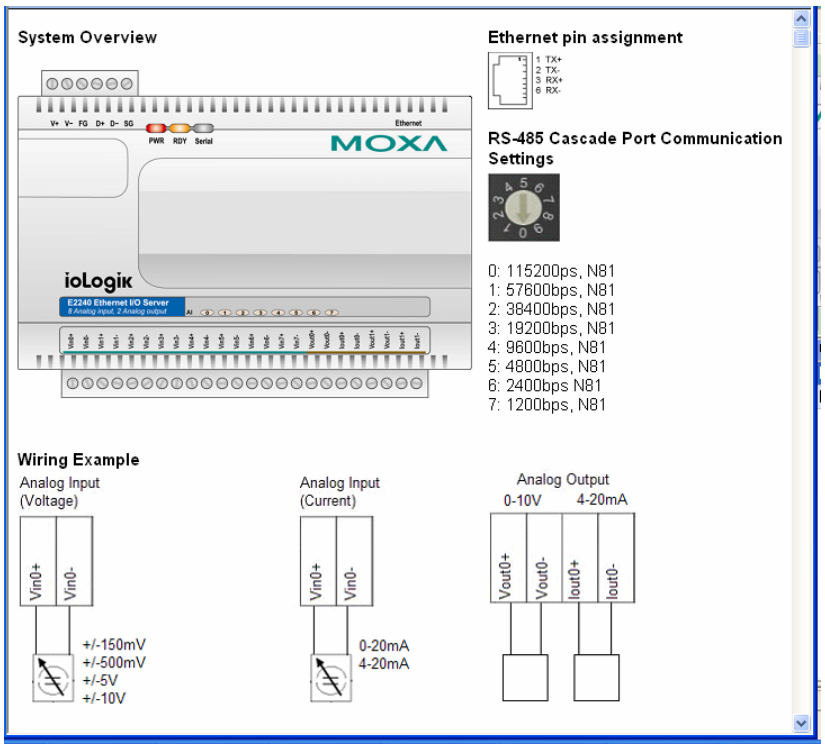
This is ioAdmin's main screen. The main window defaults to the I/O Configuration tab, which displays a graphic of the ioLogik E2240 and the status of every I/O channel below it. The other tabs in the main window take you to server and network settings, and further functions are available when you log on as an administrator. Note that configuration options are not available until you log on as an administrator.



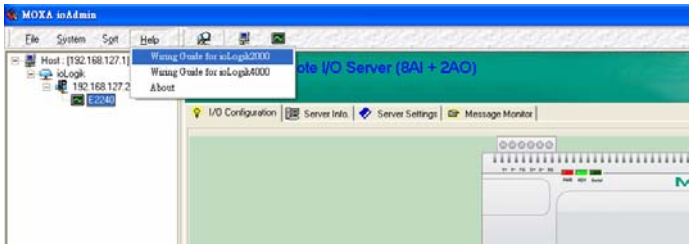
ioAdmin Main Screen	
1.	Title
2.	Menu bar
3.	Quick link
4.	Navigation panel
5.	Main window
6.	Sync. rate status
7.	Status bar

Wiring Guide

ioAdmin provides a wiring guide to the ioLogik E2240. You may access the wiring guide by right-clicking the graphic of the ioLogik E2240 in the I/O Configuration tab. Select "Wiring Guide" in the submenu to open a help file showing the wiring information and electrical characteristics of the ioLogik E2240.

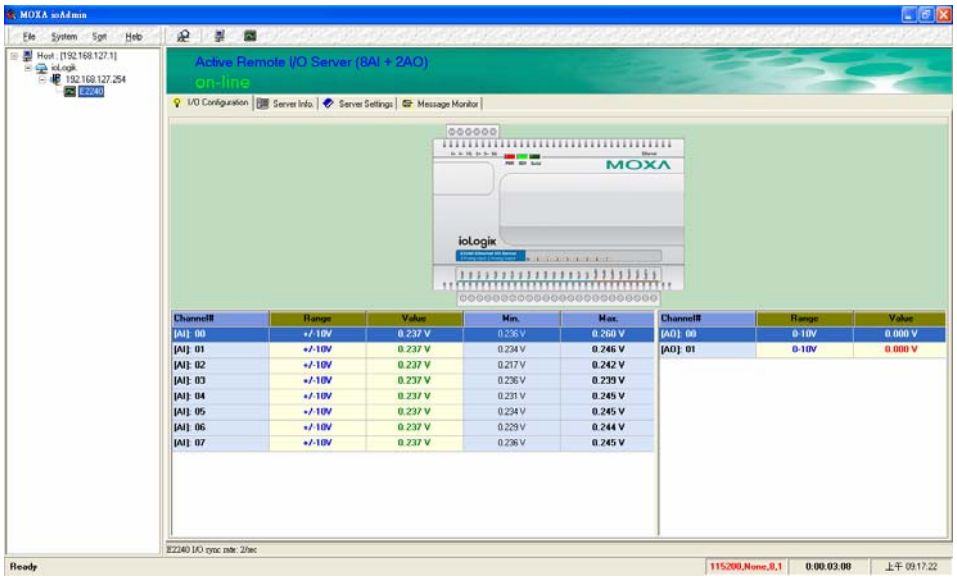


You may also access the On-line Wiring Guide through the Help menu on the menu bar.



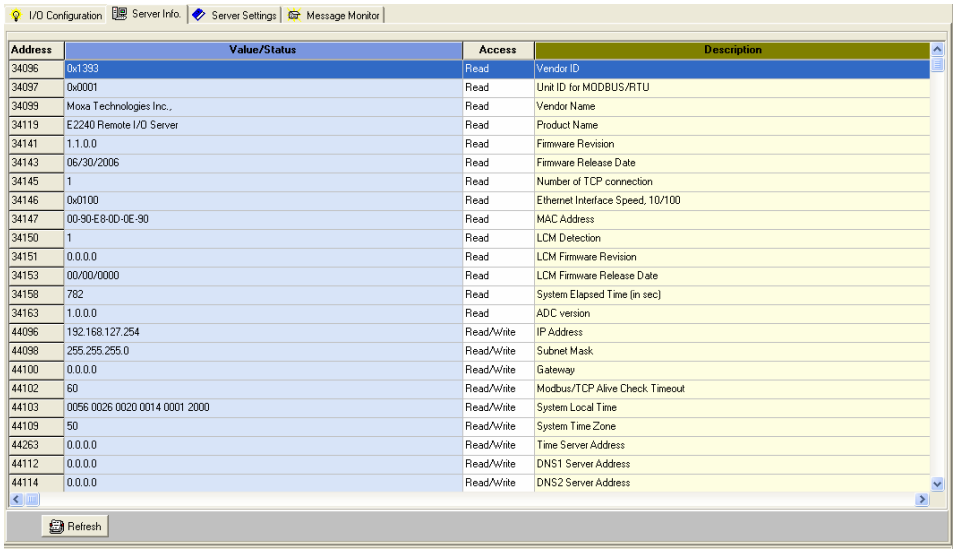
I/O Configuration Tab (General)

The I/O Configuration tab shows the status of every I/O channel underneath a graphic of the ioLogik. This is the default tab when you first open ioAdmin.



Server Info Tab

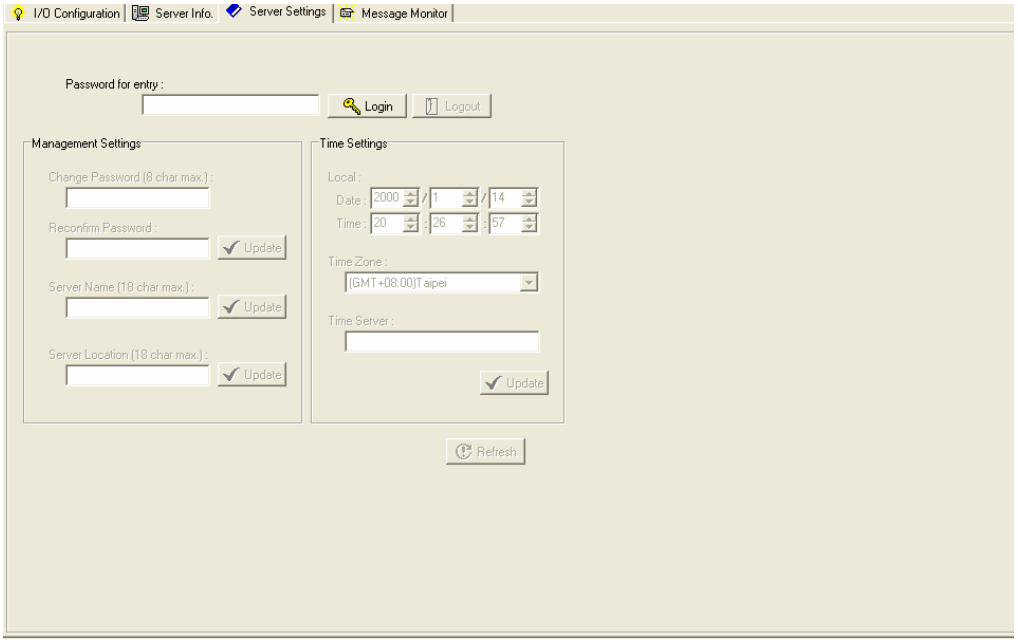
Server information, such as firmware version, is displayed in the Server Info tab.



Address	Value/Status	Access	Description
34096	0x1393	Read	Vendor ID
34097	0x0001	Read	Unit ID for MODBUS/RTU
34099	Moxa Technologies Inc.,	Read	Vendor Name
34119	E2240 Remote I/O Server	Read	Product Name
34141	1.1.0.0	Read	Firmware Revision
34143	06/30/2006	Read	Firmware Release Date
34145	1	Read	Number of TCP connection
34146	0x0100	Read	Ethernet Interface Speed, 10/100
34147	00-90-E8-0D-0E-90	Read	MAC Address
34150	1	Read	LCM Detection
34151	0.0.0.0	Read	LCM Firmware Revision
34153	00/00/0000	Read	LCM Firmware Release Date
34158	782	Read	System Elapsed Time (in sec)
34163	1.0.0.0	Read	ADC version
44096	192.168.127.254	Read/Write	IP Address
44098	255.255.255.0	Read/Write	Subnet Mask
44100	0.0.0.0	Read/Write	Gateway
44102	60	Read/Write	Modbus/TCP Alive Check Timeout
44103	0056 0026 0020 0014 0001 2000	Read/Write	System Local Time
44109	50	Read/Write	System Time Zone
44263	0.0.0.0	Read/Write	Time Server Address
44112	0.0.0.0	Read/Write	DNS1 Server Address
44114	0.0.0.0	Read/Write	DNS2 Server Address

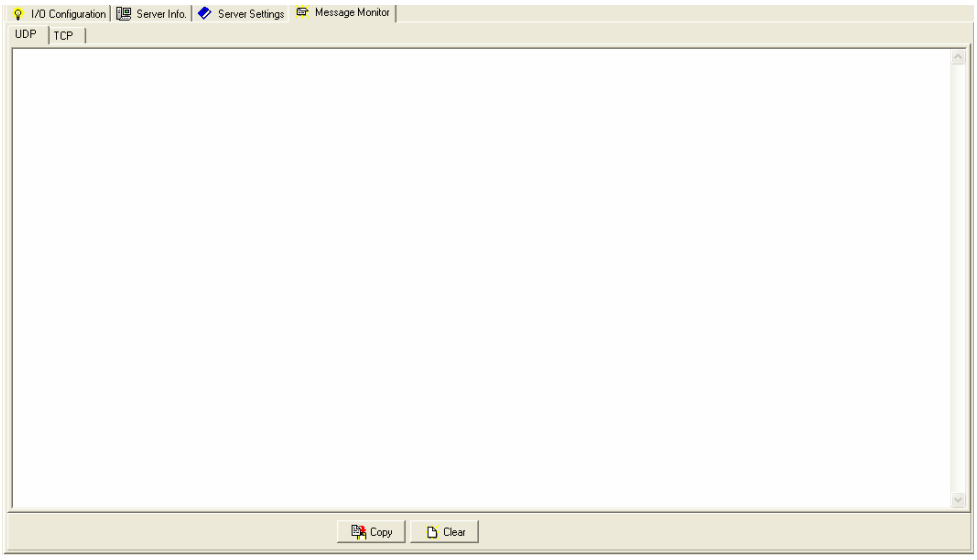
Server Settings Tab (General)

The Server Settings tab is where you log in as an administrator. This is required in order to gain access to the ioLogik E2240 configuration options. If no administrator password has been set up, simply click on **Login** and leave the **Password for entry** field blank. Please refer to the *ioAdmin Administrator Functions* section later on in this chapter for more detail.



Message Monitor Tab

The Message Monitor tab will display any TCP/UDP I/O messages received from the ioLogik E2240. When you install the ioLogik E2240 for the first time, the active I/O messaging ruleset will not have been defined yet, so there will be no messages in the Message Monitor Tab. Please refer to Chapter 5: *Click&Go Logic* for information on how to program the ioLogik E2240's active I/O messaging system. Once the active I/O messaging system has been configured and activated, TCP/UDP messages sent from the ioLogik E2240 will be viewable in the Message Monitor tab.



ioAdmin Administrator Functions

For full access to all configuration options, log in as an administrator in the Server Settings tab. This is required whenever you start up ioAdmin or boot up/restart the ioLogik E2240. When you install the ioLogik E2240 for the first time, the password will be blank and you may simply click on **Login**. Additional functions will available after logging in, including the following new tabs:

When making configuration changes, you will need to click on **Update** or on **Apply** to save the changes. Some changes will require a restart of the ioLogik E2240 in order to take effect, and you will be given the option to restart the computer if necessary.

ATTENTION

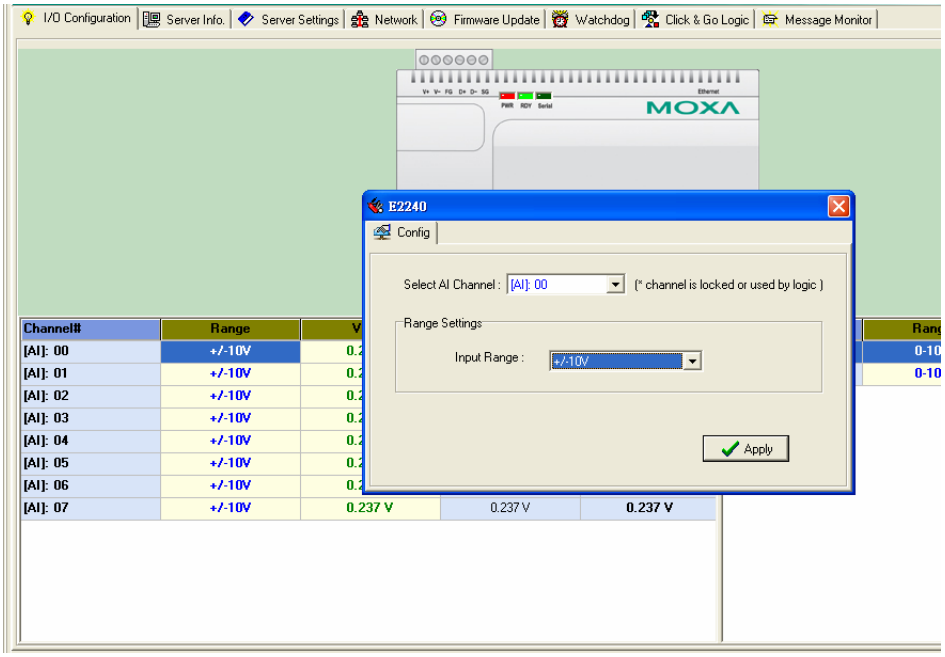
You MUST log in to access any administrator function, including Network, Communication Watchdog Timer, and Firmware Update tabs. If you forget the password, you may hold down the Reset button to clear the password and load factory defaults. **This will result in the loss of all configuration settings and your Click&Go Logic active I/O messaging program!**

I/O Configuration Tab (Administrator)

When logged on as an administrator, you may double click on a channel in the I/O Configuration tab to configure that channel's settings.

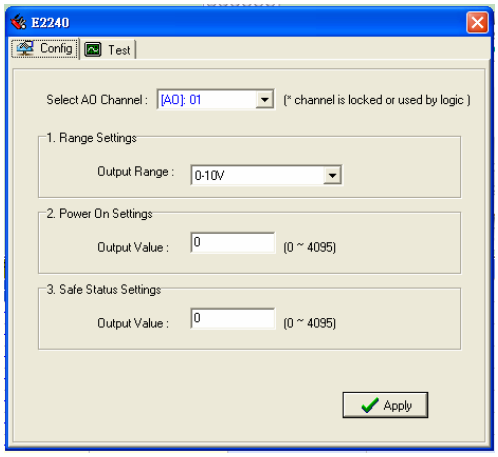
Configuring Analog Input Channels

The ioLogik E2240 is equipped with 8 AI (analog input) channels that can be set individually to +/-150 mV, +/-500 mV, +/-5V, +/-10V, 0-20 mA, and 4-20 mA.



Configuring Analog Output Channels

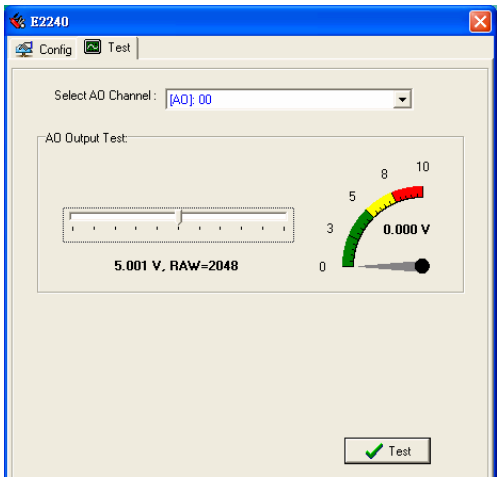
The ioLogik E2240 is equipped with 2 AO (analog output) channels that can be set individually to 0-10V, 4-20 mA.



Power On Settings: Use this field to set the initial value for the AO channel when the ioLogik E2240 is powered on. The **Power On Settings** field uses raw data values. If you do not know how to translate the raw data values into real values, use the **Test** function for assistance.

Safe Status Settings: Use this field to specify how the AO channel responds to a break in network communication. When the network connection is lost for the amount of time specified in the Host Connection Watchdog, the ioLogik E2240 enters Safe Status, and the AO channel's Safe Status settings will go into effect. Note that the Host Connection Watchdog is disabled by default. If the Host Connection Watchdog is disabled, the ioLogik E2240 will never enter Safe Status and the Safe Status settings will have no effect.

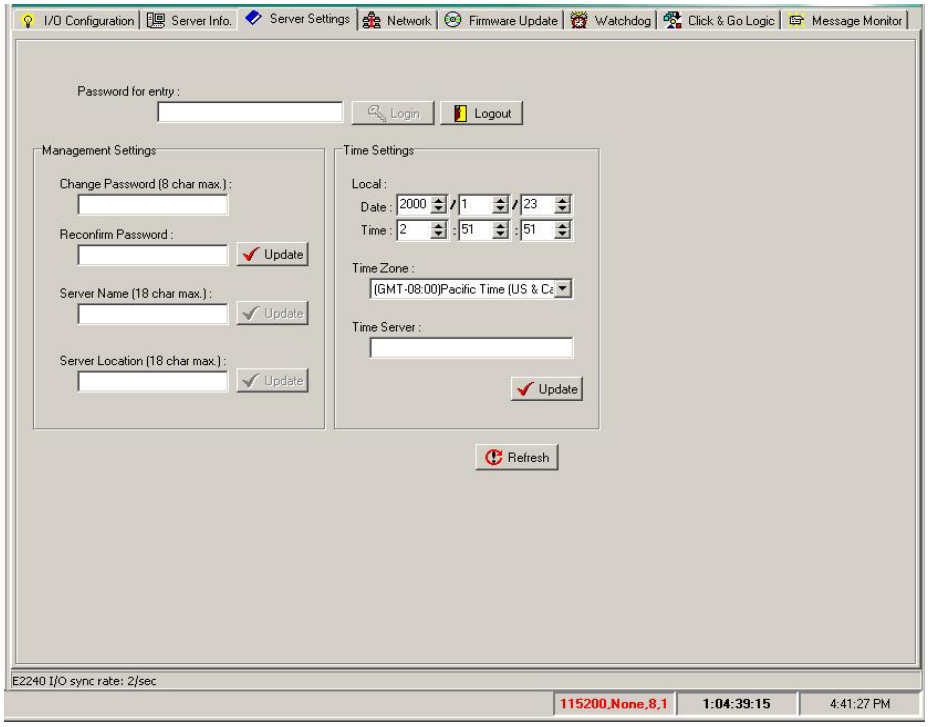
Test I/O: You can test the AO channel in the **Test** tab,



Note that the slider shows both the raw data value and the engineering value (V/mA). You may use this as a guide when entering values for the Power On and Safe Status settings.

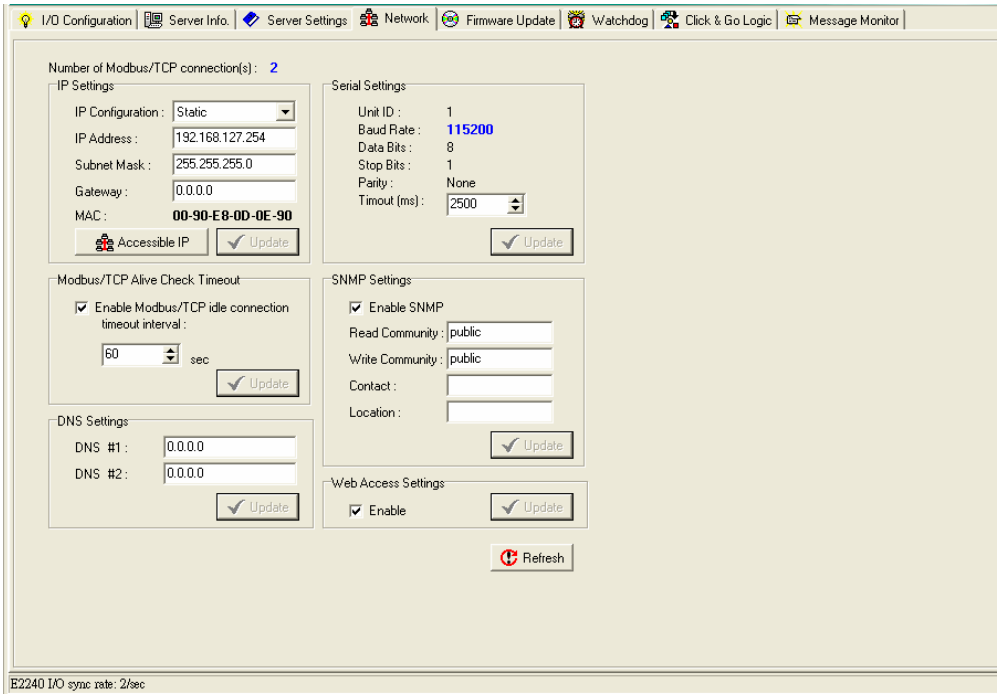
Server Settings Tab (Administrator)

You may set up a password, server name, location, date, time, and area in the Server Settings tab.



Network Tab

The Network tab is where you configure IP settings, Modbus/TCP Alive Check Timeout settings, DNS settings, Serial settings, SNMP settings, and Web Access settings for the ioLogik E2240.



IP Settings: You can set up a static or dynamic IP address for the ioLogik E2240, as well as the subnet mask and gateway address. The **Accessible IP** screen can be used to control network access to the ioLogik E2240 and attached sensors. Network requests that originate from sources that are not listed in the accessible IP list will be unable to use Modbus/TCP or ioAdmin to access the ioLogik E2240.

Modbus/TCP Alive Check Timeout Settings: The Modbus/TCP Alive Check Timeout is designed to avoid TCP connection failure. When the host is down, the ioLogik E2240 will continue to wait for a response from the host. This will cause the TCP port to be indefinitely occupied by the host. When the Modbus/TCP idle connection timeout interval is enabled, the ioLogik E2240 will close the TCP connection automatically if there is no TCP activity for the specified time.

DNS Settings: Use this field to specify up the IP addresses of up to 2 DNS servers. These two DNS servers may be used to find available e-mail addresses when configuring e-mail messages in Click&Go.

Serial Settings: You may view the reserved RS-485 communication parameters here, and you may set the timeout value for breaks in RS-485 communication. Note that the other serial communication parameters cannot be modified. If you wish to adjust the baudrate, you will need to use the physical dial on the back panel of the ioLogik E2240.

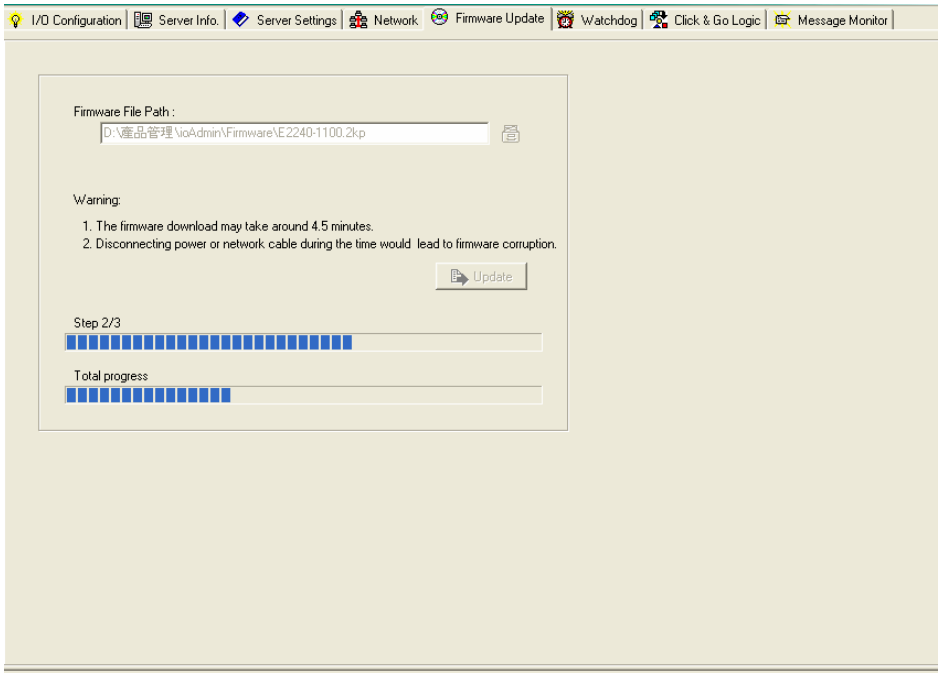
SNMP Settings: The ioLogik E2240 provides SNMP v2 (Simple Network Management Protocol) to allow monitoring of network and I/O devices with SNMP Network Management software. It is useful in building automation and telecom applications. Use these fields to enable SNMP and set the read and write community strings.

Web Access Settings: This field enables and disables the ioLogik E2240's web console. The web console allows the configuration of many settings using a web browser that is directed to the server's

IP address. If the web console is not enabled in this field, you will not be able to access the web console.

Firmware Update Tab

The ioLogik E2240 supports remote firmware updates through the Firmware Update tab. Enter the path to the firmware file or click on the icon to browse for the file. Click on **Update** to update the firmware. The wizard will lead you through the process until the server is restarted.



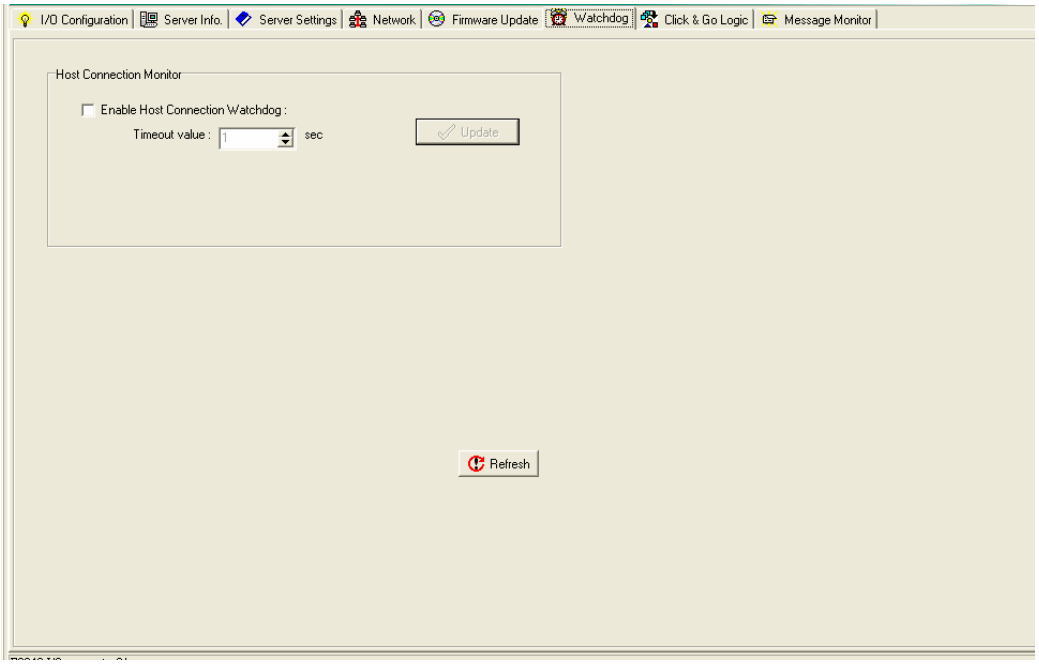
WARNING

Do not interrupt the firmware update process! An interruption in the process may result in your device becoming unrecoverable.

After the firmware is updated, the ioLogik will restart and you will have to log in again to access administrator functions.

Watchdog Tab

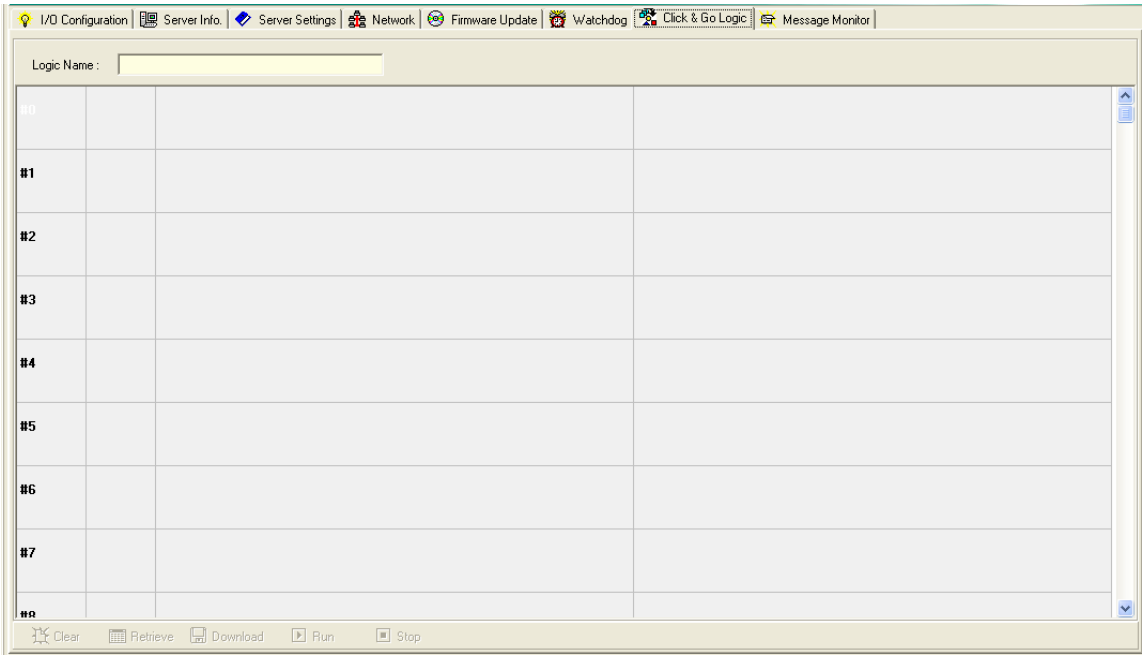
The Watchdog tab is where you configure the Host Connection Watchdog, which is used with the Safe Status settings to define each AO channel's response to a lost network connection. When the ioLogik E2240 loses its network connection for the amount of time specified in the timeout, the Host Connection Watchdog will switch the ioLogik E2240 to Safe Status and the AO 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 E2240 will enter safe status if the network 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", indicating that the server is in safe status. Click **Clear Alarm** to exit safe status and return to normal operation.

Click&Go Logic Tab

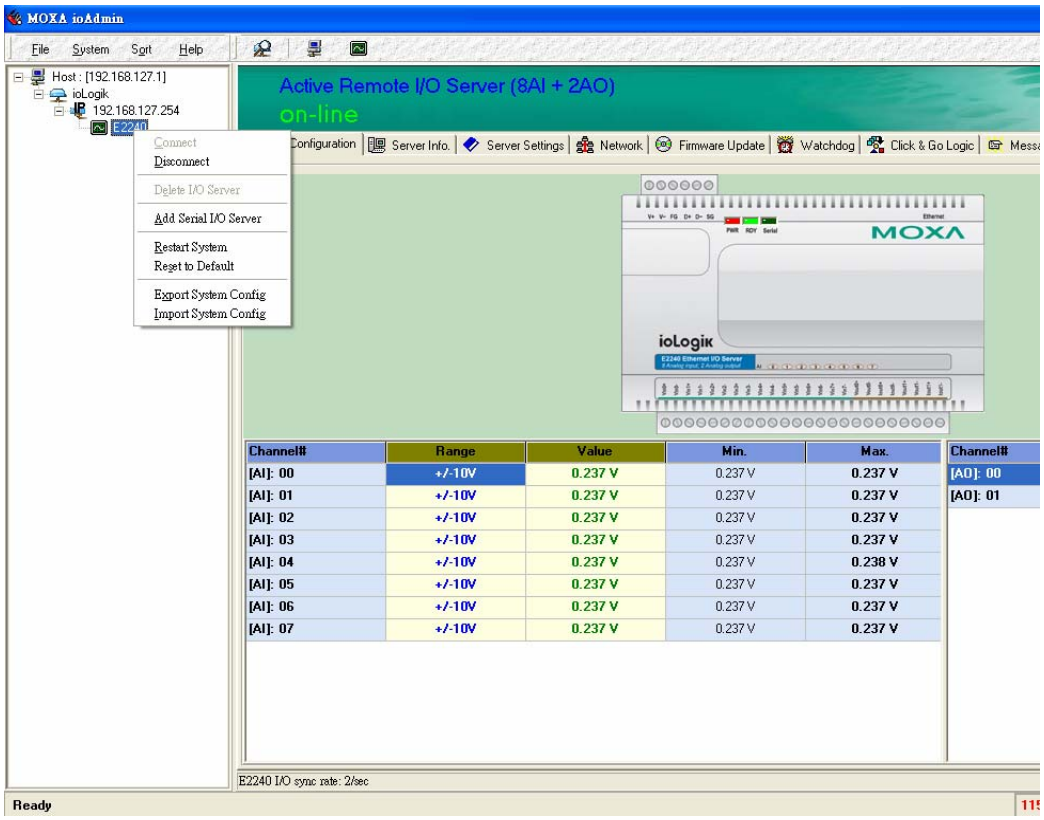
The Click&Go Logic tab is where administrators set up the ioLogik E2240's active I/O messaging program. Instead of the server reacting passively to a host's repeated polling requests for I/O data, the ioLogik E2240 server proactively sends I/O information to the host when an I/O channel satisfies conditions that you specify. Click&Go Logic was developed by Moxa to provide a powerful and easy-to-use tool for defining the conditions under which I/O information will be sent over the network. Please refer to Chapter 5: *Click&Go Logic* for more detailed information.



Changes made in the Click&Go Logic tab are not effective until the ioLogik E2240 is restarted. Note that when Click&Go Logic is being used, the range and units of I/O channel being used in Click&Go Logic may not be modified.

Server Context Menu

The Server context menu is accessed by right clicking on the server model name in the navigation panel.



Connect

Select this command to have ioAdmin attempt a re-connection over the network to the selected ioLogik server.

Disconnect

Select this command to have ioAdmin drop the network connection with the selected ioLogik server.

Delete I/O Server

Select this command to have ioAdmin remove the selected server.

Add Serial I/O Server

Select this command to add a server by using its Unit ID.

Restart System

Select this command to restart your ioLogik E2240 from a remote site

Reset to Default

Select this command to reset all settings, including console password, to factory default values.

Export System Config

Select this command to export the configuration of the ioLogik E2240 to a text file. It is strongly recommended you use this method to back up your configuration after you have finished configuring the ioLogik E2240 for your application.

Below is an example of the exported configuration file

```
ioLogik 2000 Network I/O Server Configuration
==============================================
Date: 7/25/2006
Time: 2:16:05 PM

[1. Model]
----------
MOD_TYPE=E2240 - Active Remote I/O Server (8AI + 2AO)
MOD_LOC=
MOD_NAME=a

[2. I/O Configurations]
-----------------------
AI00=4,(0-20mA)
AI01=3,(+/-10V)
AI02=3,(+/-10V)
AI03=3,(+/-10V)
AI04=3,(+/-10V)
AI05=3,(+/-10V)
AI06=3,(+/-10V)
AI07=3,(+/-10V)

AO00=1,(4-20mA),     AO00_PWN=0,(RAW),AO00_SAFE=4094,(RAW)
AO01=0,(0-10V),      AO01_PWN=0,(RAW),AO01_SAFE=0,(RAW)

[3. Modbus address table]
-------------------------
CHANNEL        I/O TYPE    MODBUS REFERENCE  MODBUS ADDRESS (Dec, Hex)
AI00           Input       30001             0000, 0x0000
AI01           Input       30002             0001, 0x0001
AI02           Input       30003             0002, 0x0002
AI03           Input       30004             0003, 0x0003
AI04           Input       30005             0004, 0x0004
AI05           Input       30006             0005, 0x0005
AI06           Input       30007             0006, 0x0006
AI07           Input       30008             0007, 0x0007
AO00           Output            40001             0000, 0x0000
AO01           Output            40002             0001, 0x0001

[4. Timer Settings]
-------------------
TIME_ZONE =49,((GMT+08:00)Taipei)
TIME_SERVER    =

[5. Network Settings]
```

Import System Config

Select this command to reload a configuration that was exported to a text file. You will need to restart the ioLogik E2240 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 E2240's.

4

Using the Web Console

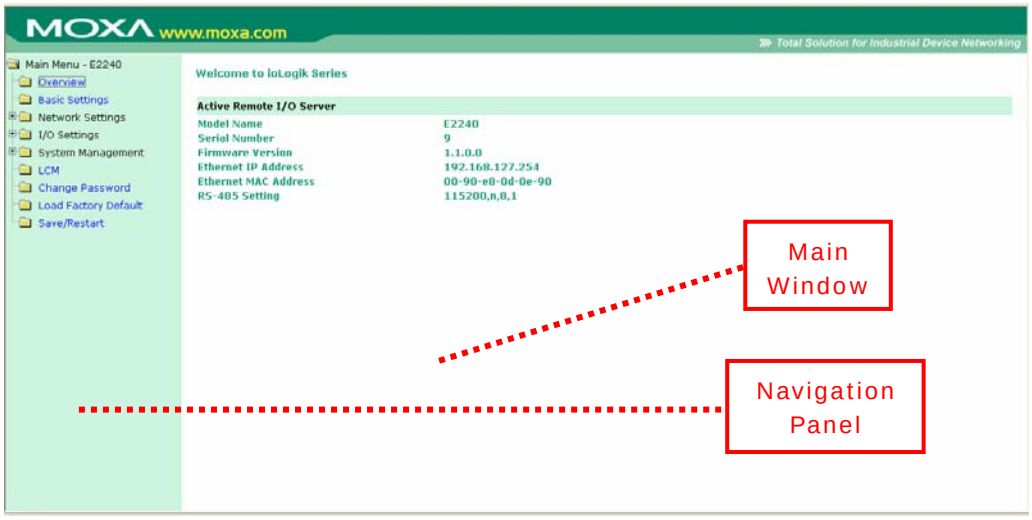
You may use the ioLogik E2240's built in web console to configure many options.

The following topics are covered:

- **Introduction to the Web Console**
- **Basic Settings**
- **Network Settings**
  - General Settings
  - Ethernet Configuration
  - RS-485 Settings
- **I/O Settings**
  - AI Channels
  - AO Channels
- **System Management**
  - Accessible IP Settings
  - SNMP Agent
  - Network Connection
- **LCM**
- **Change Password**
- **Load Factory Default**
- **Save/Restart**

Introduction to the Web Console

The ioLogik E2240 web console is a browser-based configuration utility. When the ioLogik E2240 is connected to your network, you may enter the server's IP address in your web browser to access the web console. Note that although most configuration options are available in the web console, some settings are only available through ioAdmin. Furthermore, the web console can be disabled under Web Access Settings in ioAdmin. If you are unable to access the web console, check the Web Access Settings in ioAdmin.



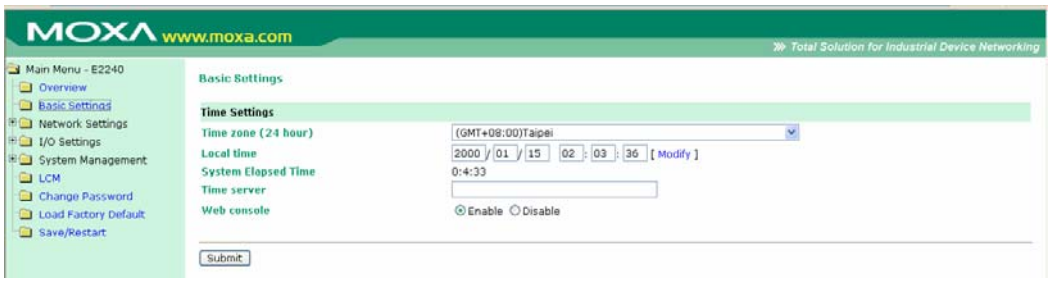
The left panel is the navigation panel and contains an expandable menu tree for navigating among the various settings and categories. When you click on a menu item in the navigation panel, the main window will display the corresponding options for that item. Configuration changes can then be made in the main window. For example, if you click on **Basic Settings** in the navigation panel, the main window will show a page of basic settings that you can configure.

You must click on the **Submit** button after making configuration changes. The **Submit** button will be located at the bottom of every page that has configurable settings. If you navigate to another page without clicking the **Submit** button, your changes will not be retained.

Submitted changes will not take effect until they are saved and the ioLogik E2240 is restarted! You may save and restart the server in one step by clicking on the **Save/Restart** button after you submit a change. If you need to make several changes before restarting, you may save your changes without restarting by selecting **Save/Restart** in the navigation panel. If you restart the ioLogik E2240 without saving your configuration, the ioLogik E2240 will discard all submitted changes.

Basic Settings

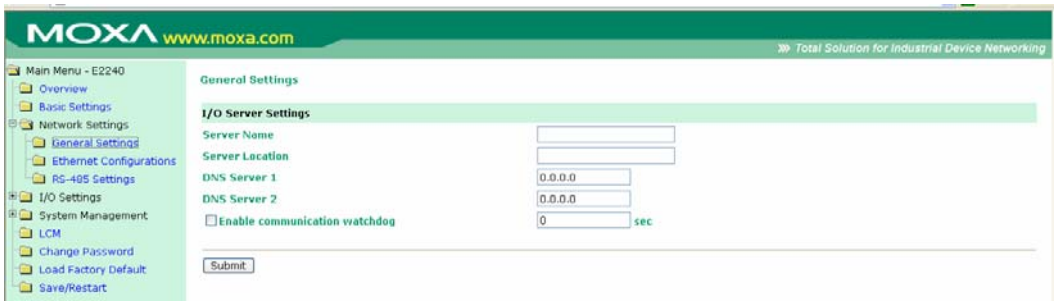
On the Basic Settings page, you may set the ioLogik E2240's system time or provide the IP address of a time server for time synchronization.



Network Settings

General Settings

On the General Settings page, you may assign a server name and location to assist you in differentiating between different I/O servers. You may also enable the Host Communication Watchdog and define the timeout value.

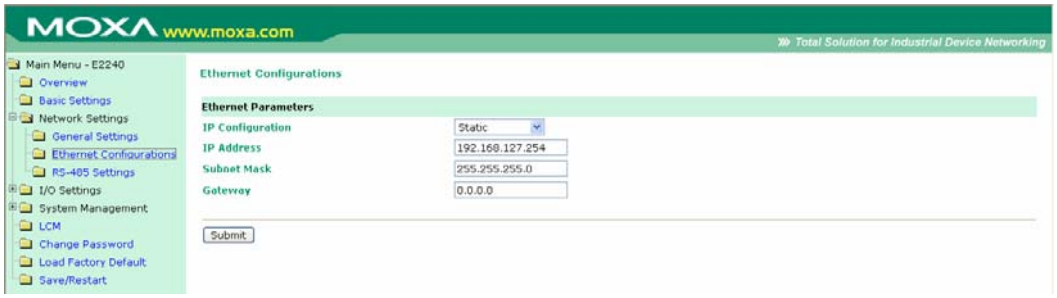


The Host Connection Watchdog activates Safe Status when the ioLogik E2240 loses its network connection for the specified amount of time. By default, the Watchdog is disabled. When the Watchdog is enabled and a timeout occurs, the ioLogik E2240 will enter Safe Status. You may use ioAdmin to configure how each AO channel responds in that channel's Safe Status settings.

To enable the Watchdog, check off **Enable connection watchdog**, set the timeout value, and restart the server. With Watchdog enabled, the ioLogik E2240 will enter Safe Status after there is disruption in communication that exceeds the time specified.

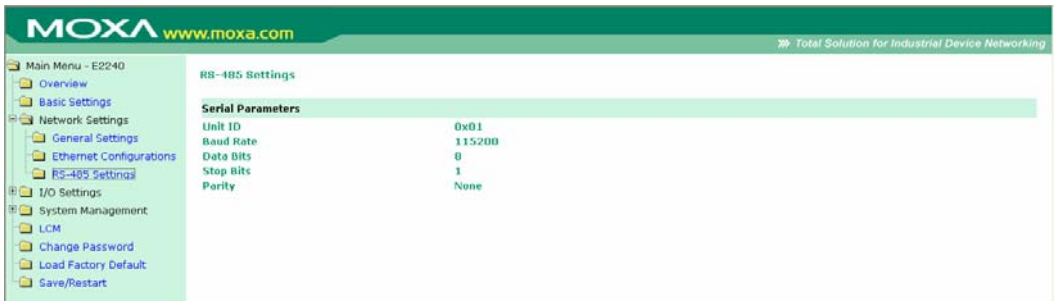
Ethernet Configuration

On the Ethernet Configuration page, you may set up a static or dynamic IP address for the ioLogik E2240, as well as the subnet mask and gateway address.



RS-485 Settings

On the RS-485 Settings page, you may view the serial communication parameters, but no configuration changes are allowed. The baudrate may only be configured by the physical dial on the back of the ioLogik E2240. This is a reserved function.

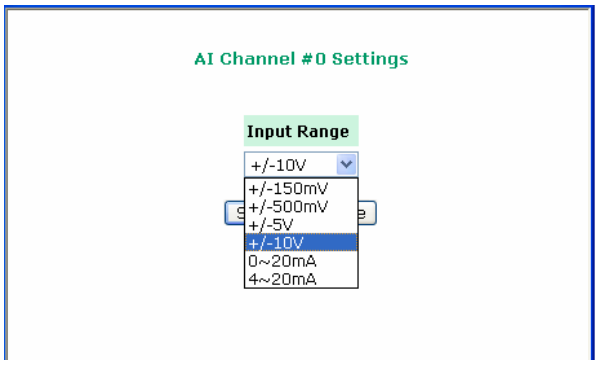


I/O Settings

AI Channels

On the AI Channels page, you may view the status and range of each AI (analog input) channel. Under **Min** and **Max**, you may view the minimum and maximum values that have been detected for each sensor since the ioLogik E2240 was powered on.

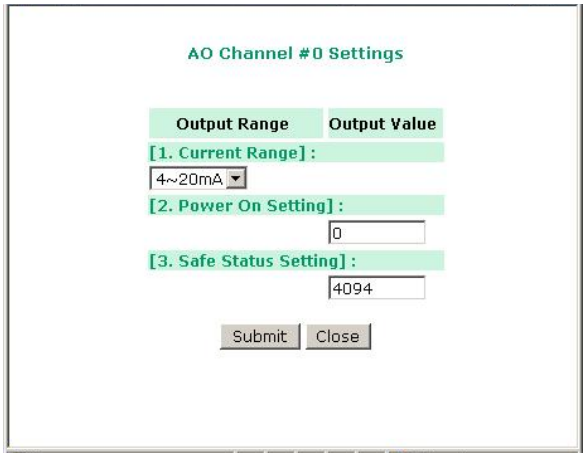
You may also configure each channel's analog input mode and range by clicking on the channel. The available options are **+/-150 mV**, **+/- 500 mV**, **+/-5V**, **+/-10V**, **0~20 mA,** and **4~20 mA**.



AO Channels

On the AO Channels page, you may configure each AO (analog output) channel by clicking on the channel. The available options are 0-10V, and 4~20 mA. You may use the **Power On** field to specify the channel's initial value when the ioLogik E2240 is powered on, and the **Safe Status** field to specify channel's value when the ioLogik E2240 enters Safe Status. Note that Safe Status is

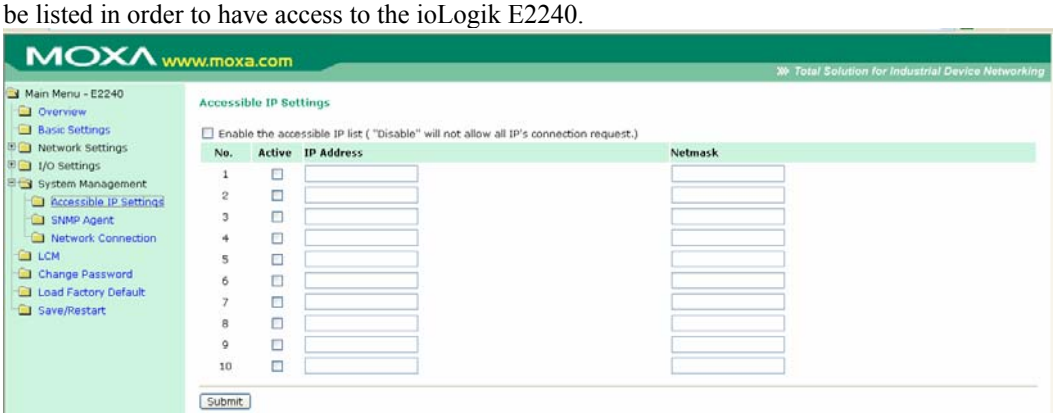
controlled by the Host Connection Watchdog, which is disabled by default. If the Host Connection Watchdog is disabled, the ioLogik E2240 will never enter Safe Status and your Safe Status settings will have no effect.



System Management

Accessible IP Settings

On the Accessible IP Settings page, you may control network access to the ioLogik E2240 by allowing only specified IP addresses. When the accessible IP list is enabled, a host's IP address must be listed in order to have access to the ioLogik E2240.



You may add a specific address or range of addresses by using a combination of IP address and netmask, as follows:

To allow access to a specific IP address
Enter the IP address in the corresponding field; enter **255.255.255.255** for the netmask.

To allow access to hosts on a specific subnet
For both the IP address and netmask, use **0** for the last digit (e.g., **192.168.1.0** and **255.255.255.0**).

To allow unrestricted access
Deselect the **Enable the accessible IP list** option.

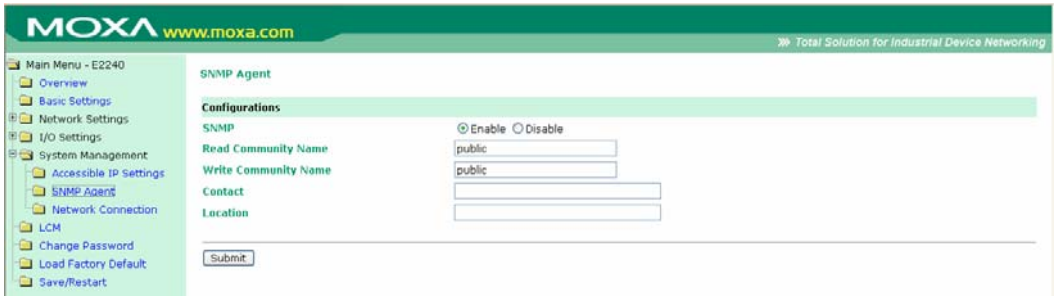
Refer to the following table for additional configuration examples.

Allowed Hosts	IP address/Netmask
Any host	Disable
192.168.1.120	192.168.1.120 / 255.255.255.255

Allowed Hosts	IP address/Netmask
192.168.1.1 to 192.168.1.254	192.168.1.0 / 255.255.255.0
192.168.0.1 to 192.168.255.254	192.168.0.0 / 255.255.0.0
192.168.1.1 to 192.168.1.126	192.168.1.0 / 255.255.255.128
192.168.1.129 to 192.168.1.254	192.168.1.128 / 255.255.255.128

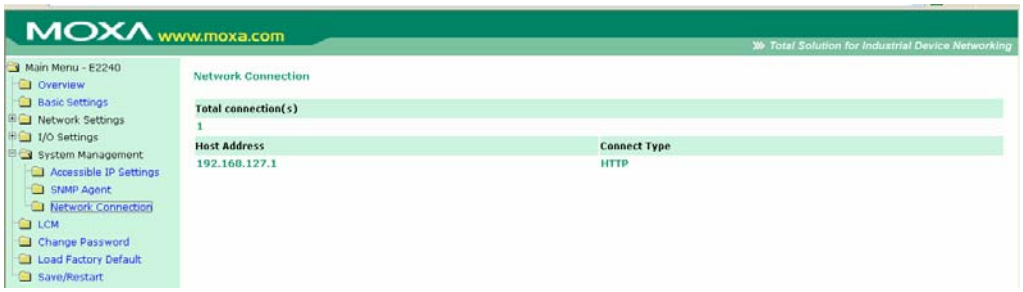
SNMP Agent

On the SNMP Agent page, you may enable SNMP and set the read and write community strings. The ioLogik E2240 provides SNMP v2 (Simple Network Management Protocol) to allow monitoring of network and I/O devices with SNMP Network Management software. It is useful in building automation and telecom applications.



Network Connection

On the Network Connection page, you may view the TCP connections from other hosts. This may assist you in the management of your devices.



LCM

If you have installed the optional LCM, you may view the status and firmware details on the LCM page.

Change Password

For all changes to the ioLogik E2240's password protection settings, you will first need to enter the old password. Leave this blank if you are setting up password protection for the first time. To set up a new password or change the existing password, enter your desired password under both **New password** and **Confirm password**. To remove password protection, leave the **New password** and **Confirm password** fields blank.

ATTENTION

If you forget the password, the ONLY way to configure the ioLogik E2240 is by using the reset button to load the factory defaults.
Before you set a password for the first time, it is a good idea to export the configuration to a file when you have finished setting up your ioLogik E2240. Your configuration can then be easily imported back into the ioLogik E2240 if you need to reset the ioLogik E2240 due to a forgotten password or for other reasons.

Load Factory Default

This function will reset all of the ioLogik E2240's settings to the factory default values. All previous settings including the console password will be lost.

Save/Restart

If you change the configuration, do not forget to reboot the system.

5

Click&Go Logic

Click&Go Logic was developed by Moxa to provide an easy way to program your ioLogik E2240 for active I/O messaging. In the chapter, we will show you how Click&Go Logic works and how to use it to develop your active I/O messaging program.

The following topics are covered in this chapter:

- **Overview**
- **Features**
- **Click&Go Logic Basics**
- **Working with Click&Go Rules**
  - IF conditions
  - THEN actions
- **Working with Click&Go Rulesets**
  - Activating the Ruleset
  - Ruleset Management Bar
  - Ruleset Import/Export

Overview

The ioLogik E2240's active remote I/O system eliminates the need for host computers to continually poll I/O devices for status. Instead, the server itself is able to monitors the status of each I/O device and take the appropriate action when the I/O status satisfies a user-defined condition. For example, the ioLogik E2240 could be configured to send a TCP/UDP message only when the temperature sensor attached to AI(0) exceeds a certain level. This structure results in a much improved response time and a much-reduced load on the host computer's CPU and on network bandwidth.

Click&Go Logic was developed by Moxa for easy and intuitive configuration of rules that determine when and how I/O information is transmitted over the network. Using simple If – Then statements, you may set the conditions that need to be satisfied on one side and the resulting actions on the other side. Up to three conditions and three actions can be combined in any one rule, and you may define up to 16 rules. SNMP traps and TCP/UDP messages may be configured for transmission to up to 10 computers simultaneously.

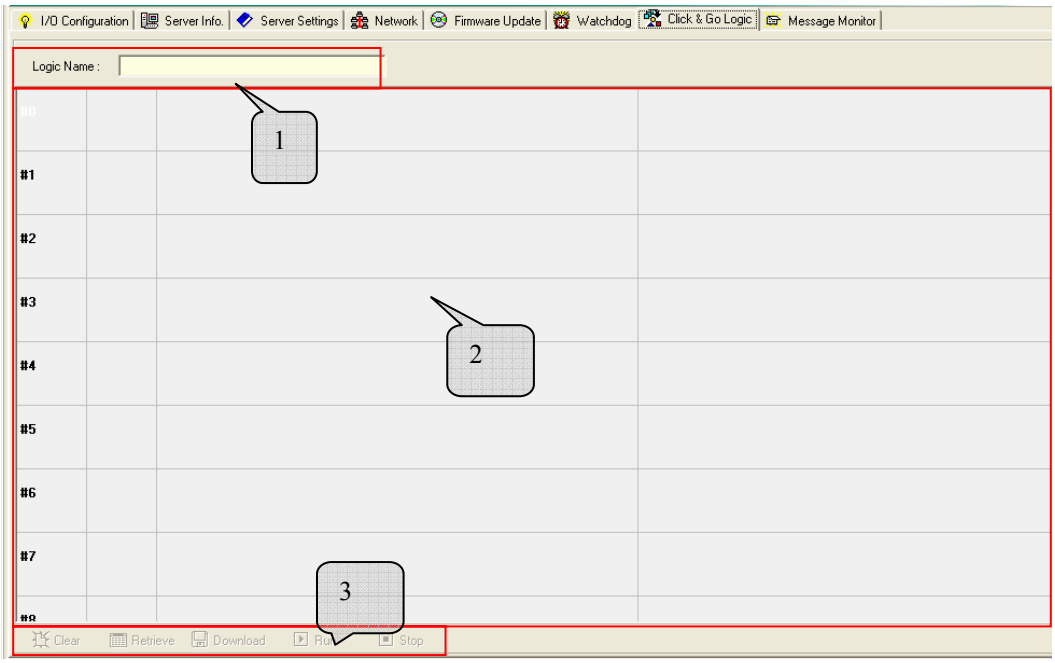
Features

Click&Go Logic's key features are as follows:

- Easy local logic control using intuitive IF/THEN style construction
- Up to 16 user-defined rules
- Up to 3 I/O-based conditions and 3 AO or network actions per rule
- Choice of email, TCP, UDP, or SNMP Trap for active I/O messaging
- Customizable message content with dynamic fields for time, date, IP address, and more
- Support multi-destination active I/O messaging up to 10 host computers for TCP/UDP.

Click&Go Logic Basics

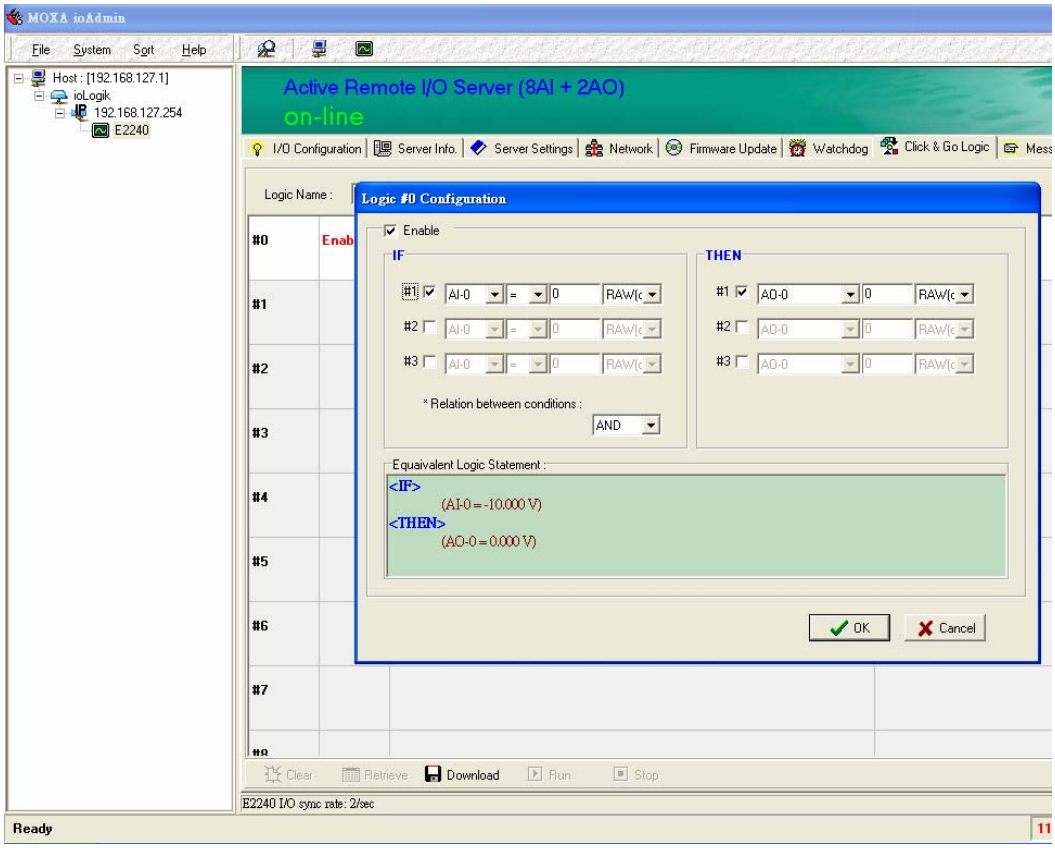
To use Click&Go Logic, open ioAdmin and log on as an administrator on the **Server Settings** tab. Once you are logged on, go to the **Click&Go Logic** tab. It should appear as below:



Click&Go Logic Tab	
1.	**Logic Name**: In this field, you may assign a name for the set of rules.
2.	**Rules List**: In this area, each rule's conditions, actions, and status are displayed.
3.	**Ruleset Management Bar**: In this area, you manage the ruleset

Working with Click&Go Rules

Rules are the building blocks of your active I/O system. In the main screen, you will see a list of the rules in the current ruleset. Double click on a rule to open that rule's configuration window, or double click on an empty rule to start a new rule.



The screen is divided into three parts: IF, THEN, and Equivalent Logic Statement. The IF and THEN areas are where you define the rule. The **Equivalent Logic Statement** shows a real-time text-based summary of the rule. It can be a useful way to make sure that the rule is designed as you intended.

ATTENTION

When configuring input or output control or response values, **you must select the unit of measurement before entering a value**. If you select a unit of measurement after entering a value, the value will not be retained. Also, when an I/O channel is being used in a Click&Go Logic rule, the channel's range and units may not be modified.

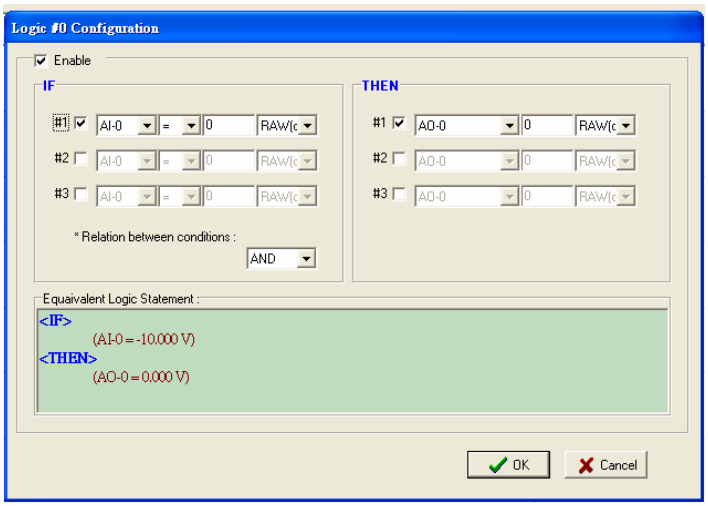
IF conditions

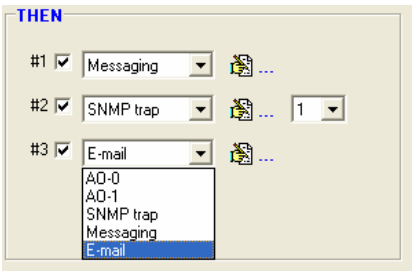
Under the **IF** column, you may set up to 3 sensor conditions that must be satisfied for the actions under the **THEN** column to take place. Use the pull downs to specify the conditions and units of measurement are (e.g. A1=0 mV). The available operators are =,<,>,<=,>=.

Under **Relation between condition**, select **AND** to specify that all conditions must satisfied for the action to take place; select **OR** to specify that any one of the conditions may be satisfied for the action to take place.

THEN actions

Under the **THEN** column, you may set up to 3 actions that will be performed if the conditions under the **IF** column are satisfied. The available actions are AO setting, SNMP trap, Messaging (by TCP/UDP), and Email. Additional parameters may be configured for SNMP trap, Messaging, and Email actions by clicking the memo icon: 



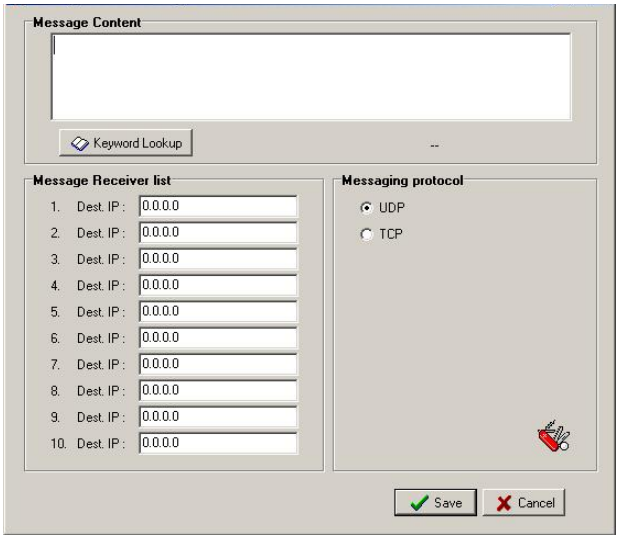


AO Channel

Select AO Channel to have the AO Channel respond to the IF conditions with a specific value. You may enter the value in RAW, %, or mV/V/mA.

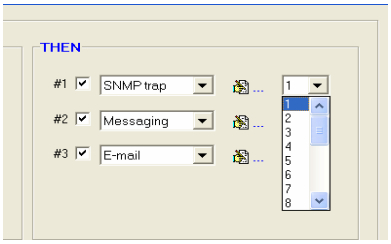
Active I/O Messaging

Select **Messaging** for active I/O messaging via TCP/UDP. This option allows you to select either TCP or UDP as the protocol to send the I/O message. Note that TCP and UDP cannot be used at the same time within a ruleset. In the additional parameters, you may edit the message and set the IP address of up to 10 destinations. Dynamic fields such as time, date, IP address, and I/O status may be inserted in your message by clicking on the **Keyword Lookup** button.

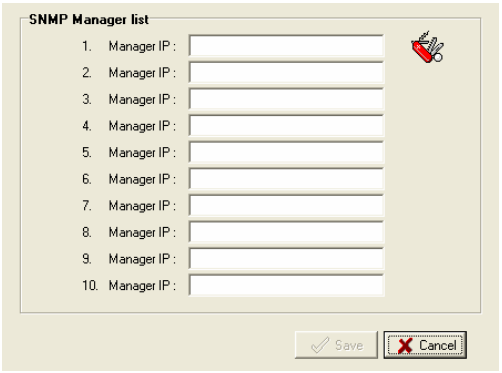


SNMP trap

Select **SNMP trap** and select a trap number between 1 and 20 to be sent. You may need to consult with your network administrator to determine how trap numbers will be used and defined in your network.



In the additional parameters, you may specify up to 10 IP addresses to receive the SNMP trap.

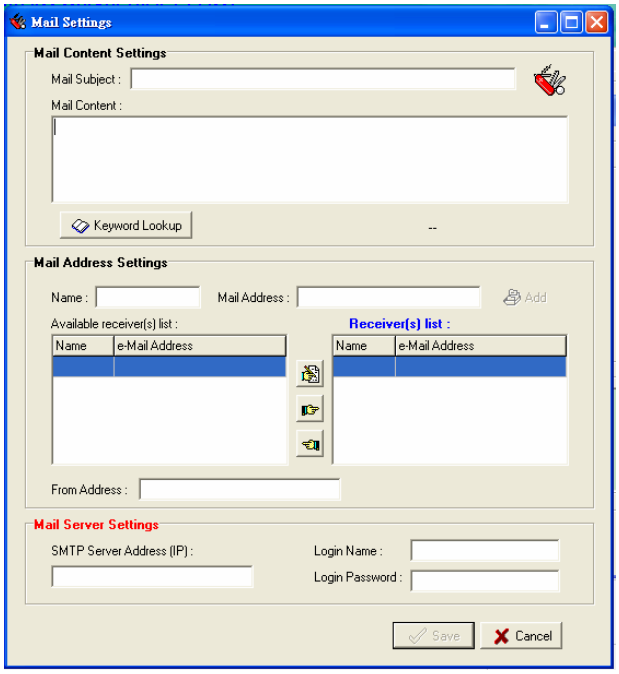


Email

Select **E-mail** to send a user-defined email to the specified addresses. In the additional parameters, you may edit the message and define the recipients of the e-mail. Dynamic fields such as time, date, IP address, and I/O status may be inserted in your message by clicking on the **Keyword Lookup** button.

To add a recipient, you must first add the recipient's e-mail address to the **Available receivers list**. You may then use the finger icons to move e-mail addresses to and from the **Receivers list**. To edit an e-mail address, click on the memo icon. Note that the Available Receivers list will already contain a list of names if you provided the DNS server information in the Network Settings tab.

Under **Mail Server Settings**, you must configure the IP address of the SMTP server with your username and password. Since the ioLogik E2240 supports DNS, you may enter the domain name of the SMTP server.



Working with Click&Go Rulesets

Activating the Ruleset

A Click&Go Logic ruleset is simply the set of rules that you have defined. On the Click&Go Logic tab, the list of rules that are displayed make up the current ruleset, with up to 16 rules allowed. The ruleset is the brain of your active I/O system and determines what I/O information is sent, where it is sent, how it is sent, and under what I/O conditions it is sent. This simple but powerful tool is significantly more efficient with network and CPU resources than traditional blanket polling methods.

In order to start working as an active remote I/O server rather than a passive remote I/O server, the ioLogik E2240 will need to download the ruleset into its memory, reboot, and activate the ruleset.

1. The ruleset must first be downloaded from ioAdmin onto the ioLogik E2240. You may do so by clicking on **Download** in the Ruleset Management bar.
2. Now that the ruleset has been downloaded, you must restart the ioLogik E2240 in order for the new ruleset to be made effective. You may do this by right clicking on the server name in the navigation panel in ioAdmin and selecting **Restart**. Do not use the reset button, as that will load all factory defaults and erase your ruleset from memory.
3. After the ioLogik E2240 has restarted, the active I/O message system will be ready for activation with the new ruleset in place. First, you will need to log in as an administrator again in ioAdmin's Server Setting tab. Once you have logged in, click **Run** in the Ruleset Management bar on the Click&Go Logic tab. This will activate the ruleset and the ioLogik E2240 will begin working as an active remote I/O server. Note that the ioLogik E2240 can run the ruleset independently of the host computer and network connection.

Ruleset Management Bar

- **Clear**: The Clear command erases the ruleset in both ioAdmin and the ioLogik E2240.
- **Retrieve**: The Retrieve command copies the ruleset from the ioLogik E2240 into ioAdmin.
- **Download**: The Download command copies the ruleset from ioAdmin onto the ioLogik E2240.
- **Run**: The Run command starts the active I/O messaging system using the ruleset that the ioLogik E2240 booted up with.
- **Stop**: The Stop command stops the active I/O messaging system.

Ruleset Import/Export

Although rulesets alone cannot be imported and exported, the entire system configuration including the current ruleset may be imported and exported. As you make changes to a ruleset, you may export the system configuration in order to save that ruleset.

A

Liquid Crystal Display Module (LCM)

As an *Easy View* device, the ioLogik E2240 supports an optional detachable Liquid Crystal Display Module (LCM) for easier field maintenance. The LCM is hot-pluggable and can be used to configure the network settings or display other settings. When plugged in, the module displays the ioLogik E2240 "home page," and pressing any button takes you into the settings and configuration.

LCM Controls

The up and down buttons navigate between the current options. The right and left buttons enter and exit the submenus. On the ioLogik R2110, the center button is used only when restarting the server.

Button	Function
Up	go to the previous item
Down	go to the next item
Left	exit the current submenu and return to the previous menu (go up one level)
Right	enter the selected submenu (go down one level)
Center	enter/exit editing mode

If you see an "e" in the upper right hand corner of the display, the current field is editable using the LCM.

LCM Options

Display	Explanation / Actions
`<ioLogik E2240>`	This is the default "home page" showing the IP address. Press the down button to view the submenus.
`<ioLogik E2240>` `server`	Enter this submenu to display information about the specific server you are viewing: ● serial number ● name ● location ● E2240 f/w ver ● lcm f/w ver ● model name

Display	Explanation / Actions
<ioLogik E2240> network	Enter this submenu to display information and settings for the network: ● Ethernet link ● MAC address ● IP mode ● IP address ● netmask ● gateway ● DNS server-1 ● DNS server-2
<ioLogik E2240> click&go	Enter this submenu to display information about the ruleset being used by the active I/O system. ● name ● status
<ioLogik E2240> serial port	Enter this submenu to display the RS-485 cascade port settings.
<ioLogik E2240> i/o setting	Enter this submenu to access I/O channel status. Here are examples of settings that you might see: ● ai-00= 0-20mA:1.89mA ● ai-01= +/-10V:0.23V Press up or down to navigate through the different I/O channels without having to go back to the previous menu.
<ioLogik E2240> console	Enter this submenu to see if the web console is enabled or disabled.
<ioLogik E2240> ping	Select this option to enter an IP address to ping. If you get a "timeout" error, it indicates that the E2240 cannot reach that IP address. Otherwise, the display will show the response time.
<ioLogik E2240> save/restart	Enter this submenu, then enter the **restart now** submenu to display the **restart** option. You may press the center button at that point in order to reboot the ioLogik E2240. For this device, no other options are currently available for this set of submenus.

WARNING

Any configuration changes that are made through the LCM will not take effect until the ioLogik E2240 is restarted.

B

Modbus/TCP Address Mappings

E2240 Modbus Mapping

0xxxx Read/Write Coils (Support function 1,5,15)

Reference	Address	Data Type	Description
00001	0x0000	1bit	Reset CH0 AI Min Value Read: always 0 Write : 1: reset AI Min value 0: return Illegal Data Value
00002	0x0001	1bit	Reset CH1 AI Min Value Read: always 0 Write : 1: reset AI Min value 0: return Illegal Data Value
00003	0x0002	1bit	Reset CH2 AI Min Value Read: always 0 Write : 1: reset AI Min value 0: return Illegal Data Value
00004	0x0003	1bit	Reset CH3 AI Min Value Read: always 0 Write : 1: reset AI Min value 0: return Illegal Data Value
00005	0x0004	1bit	Reset CH4 AI Min Value Read: always 0 Write : 1: reset AI Min value 0: return Illegal Data Value
00006	0x0005	1bit	Reset CH5 AI Min Value Read: always 0 Write : 1: reset AI Min value 0: return Illegal Data Value
00007	0x0006	1bit	Reset CH6 AI Min Value Read: always 0 Write : 1: reset AI Min value 0: return Illegal Data Value
00008	0x0007	1bit	Reset CH7 AI Min Value Read: always 0 Write : 1: reset AI Min value 0: return Illegal Data Value
00009	0x0008	1bit	Reset CH0 AI Max Value Read: always 0 Write : 1: reset AI Max value 0: return Illegal Data Value
00010	0x0009	1bit	Reset CH1 AI Max Value Read: always 0 Write : 1: reset AI Max value 0: return Illegal Data Value
00011	0x000A	1bit	Reset CH2 AI Max Value Read: always 0 Write : 1: reset AI Max value 0: return Illegal Data Value

Reference	Address	Data Type	Description
00012	0x000B	1bit	Reset CH3 AI Max Value Read: always 0 Write : 1: reset AI Max value 0: return Illegal Data Value
00013	0x000C	1bit	Reset CH4 AI Max Value Read: always 0 Write : 1: reset AI Max value 0: return Illegal Data Value
00014	0x000D	1bit	Reset CH5 AI Max Value Read: always 0 Write : 1: reset AI Max value 0: return Illegal Data Value
00015	0x000E	1bit	Reset CH6 AI Max Value Read: always 0 Write : 1: reset AI Max value 0: return Illegal Data Value
00016	0x000F	1bit	Reset CH7 AI Max Value Read: always 0 Write : 1: reset AI Max value 0: return Illegal Data Value

1xxxx Read only Coils (Support function 2)

Reference	Address	Data Type	Description
00001	0x0000	1 bit	CH0 AI LED 1:On 0:Off
00002	0x0001	1 bit	CH1 AI LED 1:On 0:Off
00003	0x0002	1 bit	CH2 AI LED 1:On 0:Off
00004	0x0003	1 bit	CH3 AI LED 1:On 0:Off
00005	0x0004	1 bit	CH4 AI LED 1:On 0:Off
00006	0x0005	1 bit	CH5 AI LED 1:On 0:Off
00007	0x0006	1 bit	CH6 AI LED 1:On 0:Off
00008	0x0007	1 bit	CH7 AI LED 1:On 0:Off

3xxxx Read only Registers (Support function 4)

Reference	Address	Data Type	Description
30001	0x0000	1 word	CH0 Read AI Value
30002	0x0001	1 word	CH1 Read AI Value
30003	0x0002	1 word	CH2 Read AI Value
30004	0x0003	1 word	CH3 Read AI Value
30005	0x0004	1 word	CH4 Read AI Value
30006	0x0005	1 word	CH5 Read AI Value
30007	0x0006	1 word	CH6 Read AI Value
30008	0x0007	1 word	CH7 Read AI Value
30009	0x0008	1 word	CH0 Read AI Min Value
30010	0x0009	1 word	CH1 Read AI Min Value
30011	0x000A	1 word	CH2 Read AI Min Value
30012	0x000B	1 word	CH3 Read AI Min Value
30013	0x000C	1 word	CH4 Read AI Min Value
30014	0x000D	1 word	CH5 Read AI Min Value
30015	0x000E	1 word	CH6 Read AI Min Value
30016	0x000F	1 word	CH7 Read AI Min Value
30017	0x0010	1 word	CH0 Read AI Max Value
30018	0x0011	1 word	CH1 Read AI Max Value
30019	0x0012	1 word	CH2 Read AI Max Value

Reference	Address	Data Type	Description
30020	0x0013	1 word	CH3 Read AI Max Value
30021	0x0014	1 word	CH4 Read AI Max Value
30022	0x0015	1 word	CH5 Read AI Max Value
30023	0x0016	1 word	CH6 Read AI Max Value
30024	0x0017	1 word	CH7 Read AI Max Value

4xxxx Read/Write Registers (Support function 3,6,16)

Address	Data Type	Description
0x0000	1 word	CH0 AO Value (0 ~ 4095)
0x0001	1 word	CH1 AO Value (0 ~ 4095)
0x0002	1 word	CH0 AO PowerOn Value (0 ~ 4095)
0x0003	1 word	CH1 AO PowerOn Value (0 ~ 4095)
0x0004	1 word	CH0 AO Safe Value (0 ~ 4095)
0x0005	1 word	CH1 AO Safe Value (0 ~ 4095)
0x0006	1 word	CH0 AO Range 0: 0-10 VDC 1: 4-20 mA Others : return Illegal Data Value
0x0007	1 word	CH1 AO Range 0: 0-10 VDC 1: 4-20 mA Others : return Illegal Data Value
0x0008	1 word	CH0 AO PowerOn Range 0: 0-10 VDC 1: 4-20 mA Others : return Illegal Data Value
0x0009	1 word	CH1 AO PowerOn Range 0: 0-10 VDC 1: 4-20 mA Others : return Illegal Data Value
0x000A	1 word	CH0 AO Safe Range 0: 0-10 VDC 1: 4-20 mA Others : return Illegal Data Value
0x000B	1 word	CH1 AO Safe Range 0: 0-10 VDC 1: 4-20 mA Others : return Illegal Data Value
0x000C	1 word	CH0 AI Range 00 : +/-150 mV 01 : +/-500 mV 02 : +/-5V 03 : +/-10V 04 : 0-20 mA 05 : 4-20 mA Others : return Illegal Data Value
0x000D	1 word	CH1 AI Range 00 : +/-150 mV 01 : +/-500 mV 02 : +/-5V 03 : +/-10V 04 : 0-20 mA 05 : 4-20 mA Others : return Illegal Data Value

Address	Data Type	Description
0x000E	1 word	CH2 AI Range 00 : +/-150 mV 01 : +/-500 mV 02 : +/-5V 03 : +/-10V 04 : 0-20 mA 05 : 4-20 mA Others : return Illegal Data Value
0x000F	1 word	CH3 AI Range 00 : +/-150 mV 01 : +/-500 mV 02 : +/-5V 03 : +/-10V 04 : 0-20 mA 05 : 4-20 mA Others : return Illegal Data Value
0x0010	1 word	CH4 AI Range 00 : +/-150 mV 01 : +/-500 mV 02 : +/-5V 03 : +/-10V 04 : 0-20 mA 05 : 4-20 mA Others : return Illegal Data Value
0x0011	1 word	CH5 AI Range 00 : +/-150 mV 01 : +/-500 mV 02 : +/-5V 03 : +/-10V 04 : 0-20 mA 05 : 4-20 mA Others : return Illegal Data Value
0x0012	1 word	CH6 AI Range 00 : +/-150 mV 01 : +/-500 mV 02 : +/-5V 03 : +/-10V 04 : 0-20 mA 05 : 4-20 mA Others : return Illegal Data Value
0x0013	1 word	CH7 AI Range 00 : +/-150 mV 01 : +/-500 mV 02 : +/-5V 03 : +/-10V 04 : 0-20 mA 05 : 4-20 mA Others : return Illegal Data Value
0x0014	1 word	CH0 AI PowerOn Range 00 : +/-150 mV 01 : +/-500 mV 02 : +/-5V 03 : +/-10V 04 : 0-20 mA 05 : 4-20 mA Others : return Illegal Data Value

Address	Data Type	Description
0x0015	1 word	CH1 AI PowerOn Range 00 : +/-150 mV 01 : +/-500 mV 02 : +/-5V 03 : +/-10V 04 : 0-20 mA 05 : 4-20 mA Others : return Illegal Data Value
0x0016	1 word	CH2 AI PowerOn Range 00 : +/-150 mV 01 : +/-500 mV 02 : +/-5V 03 : +/-10V 04 : 0-20 mA 05 : 4-20 mA Others : return Illegal Data Value
0x0017	1 word	CH3 AI PowerOn Range 00 : +/-150 mV 01 : +/-500 mV 02 : +/-5V 03 : +/-10V 04 : 0-20 mA 05 : 4-20 mA Others : return Illegal Data Value
0x0018	1 word	CH4 AI PowerOn Range 00 : +/-150 mV 01 : +/-500 mV 02 : +/-5V 03 : +/-10V 04 : 0-20 mA 05 : 4-20 mA Others : return Illegal Data Value
0x0019	1 word	CH5 AI PowerOn Range 00 : +/-150 mV 01 : +/-500 mV 02 : +/-5V 03 : +/-10V 04 : 0-20 mA 05 : 4-20 mA Others : return Illegal Data Value
0x001A	1 word	CH6 AI PowerOn Range 00 : +/-150 mV 01 : +/-500 mV 02 : +/-5V 03 : +/-10V 04 : 0-20 mA 05 : 4-20 mA Others : return Illegal Data Value
0x001B	1 word	CH7 AI PowerOn Range 00 : +/-150 mV 01 : +/-500 mV 02 : +/-5V 03 : +/-10V 04 : 0-20 mA 05 : 4-20 mA Others : return Illegal Data Value

Address	Data Type	Description
0x001C	1 word	CH0 AI Safe Range 00 : +/-150 mV 01 : +/-500 mV 02 : +/-5V 03 : +/-10V 04 : 0-20 mA 05 : 4-20 mA Others : return Illegal Data Value
0x001D	1 word	CH1 AI Safe Range 00 : +/-150 mV 01 : +/-500 mV 02 : +/-5V 03 : +/-10V 04 : 0-20 mA 05 : 4-20 mA Others : return Illegal Data Value
0x001E	1 word	CH2 AI Safe Range 00 : +/-150 mV 01 : +/-500 mV 02 : +/-5V 03 : +/-10V 04 : 0-20 mA 05 : 4-20 mA Others : return Illegal Data Value
0x001F	1 word	CH3 AI Safe Range 00 : +/-150 mV 01 : +/-500 mV 02 : +/-5V 03 : +/-10V 04 : 0-20 mA 05 : 4-20 mA Others : return Illegal Data Value
0x0020	1 word	CH4 AI Safe Range 00 : +/-150 mV 01 : +/-500 mV 02 : +/-5V 03 : +/-10V 04 : 0-20 mA 05 : 4-20 mA Others : return Illegal Data Value
0x0021	1 word	CH5 AI Safe Range 00 : +/-150 mV 01 : +/-500 mV 02 : +/-5V 03 : +/-10V 04 : 0-20 mA 05 : 4-20 mA Others : return Illegal Data Value
0x0022	1 word	CH6 AI Safe Range 00 : +/-150 mV 01 : +/-500 mV 02 : +/-5V 03 : +/-10V 04 : 0-20 mA 05 : 4-20 mA Others : return Illegal Data Value

Address	Data Type	Description
0x0023	1 word	CH7 AI Safe Range 00 : +/-150 mV 01 : +/-500 mV 02 : +/-5V 03 : +/-10V 04 : 0-20 mA 05 : 4-20 mA Others : return Illegal Data Value

Function 8

Address	Data Field(Request)	Data Field (Response)	Description
0x0001	0x0000	Echo Request Data	Reboot
0x0001	0xFF00	Echo Request Data	Reset with Factory default

C

Used Network Port Numbers

E2210/E2240 Network Port Usage

Port	Type	Usage
80	TCP	Web Server
502	TCP	Modbus Communication
161	TCP	SNMP
68	UDP	BOOTPC
68	UDP	DHCP
4800	UDP	Auto search

D

SNMP Agents with MIB II & RS-232 like groups

RFC1213 MIB II Supported SNMP Variables

The ioLogik E2240 has built-in SNMP (Simple Network Management Protocol) agent software that supports RFC1317 RS-232 like groups and RFC 1213 MIB-II, I/O status MIB.

System MIB	Interfaces MIB	IP MIB	ICMP MIB
SysDescr	ifNumber	ipForwarding	IcmpInMsgs
SysObjectID	ifIndex	ipDefaultTTL	IcmpInErrors
SysUpTime	ifDescr	ipInreceives	IcmpInDestUnreachs
SysContact	ifType	ipInHdrErrors	IcmpInTimeExcds
SysName	ifMtu	ipInAddrErrors	IcmpInParmProbs
SysLocation	ifSpeed	ipForwDatagrams	IcmpInSrcQuenchs
SysServices	ifPhysAddress	ipInUnknownProtos	IcmpInRedirects
	ifAdminStatus	ipInDiscards	IcmpInEchos
	ifOperStatus	ipInDelivers	IcmpInEchoReps
	ifLastChange	ipOutRequests	IcmpInTimestamps
	ifInOctets	ipOutDiscards	IcmpTimestampReps
	ifInUcastPkts	ipOutNoRoutes	IcmpInAddrMasks
	ifInNUcastPkts	ipReasmTimeout	IcmpOutMsgs
	ifInDiscards	ipReasmReqds	IcmpOutErrors
	ifInErrors	ipReasmOKs	IcmpOutDestUnreachs

System MIB	Interfaces MIB	IP MIB	ICMP MIB
SysServices	ifInUnknownProtos	ipReasmFails	IcmpOutTimeExcds
	ifOutOctets	ipFragOKs	IcmpOutParmProbs
	ifOutUcastPkts	ipFragFails	IcmpOutSrcQuenchs
	ifOutNUcastPkts	ipFragCreates	IcmpOutRedirects
	ifOutDiscards	ipAdEntAddr	IcmpOutEchos

System MIB	Interfaces MIB	IP MIB	ICMP MIB
	ifOutErrors	ipAdEntIfIndex	IcmpOutEchoReps
	ifOutQLen	ipAdEntNetMask	IcmpOutTimestamps
	ifSpecific	ipAdEntBcastAddr	IcmpOutTimestampReps
		ipAdEntReasmMaxSize	IcmpOutAddrMasks
		ipRouteDest	IcmpOutAddrMaskReps
		ipRouteIfIndex	
		ipRouteMetric1	
		ipRouteMetric2	
		ipRouteMetric3	
		ipRouteMetric4	
		ipRouteNextHop	
		ipRouteType	
		ipRouteProto	
		ipRouteAge	
		ipRouteMask	
		ipRouteMetric5	
		ipRouteInfo	
		IpNetToMediaIfIndex	
		IpNetToMediaPhysAddress	
		IpNetToMediaNetAddress	
		IpNetToMediaType	
		IpRoutingDiscards	

UDP MIB	TCP MIB	SNMP MIB
UdpInDatagrams	tcpRtoAlgorithm	snmpInPkts
UdpNoPorts	tcpRtoMin	snmpOutPkts
UdpInErrors	tcpRtoMax	snmpInBadVersions
UdpOutDatagrams	tcpMaxConn	snmpInBadCommunityNames
UdpLocalAddress	tcpActiveOpens	snmpInBadCommunityUses
UdpLocalPort	tcpPassiveOpens	snmpInASNParseErrs
	tcpAttempFails	snmpInTooBigs
	tcpEstabResets	snmpInNoSuchNames
Address Translation MIB	tcpCurrEstab	snmpInBadValues
AtIfIndex	tcpInSegs	snmpInReadOnlys
AtPhysAddress	tcpOutSegs	snmpInGenErrs
AtNetAddress	tcpRetransSegs	snmpInTotalReqVars
AtNetAddress	tcpConnState	snmpInTotalSetVars
	tcpConnLocalAddress	snmpInGetRequests
	tcpConnLocalPort	snmpInGetNexts
	tcpConnRemAddress	snmpInSetRequests
	tcpConnRemPort	snmpInGetResponses
	tcpInErrs	snmpInTraps
	tcpOutRsts	snmpOutTooBigs
		snmpOutNoSuchNames
		snmpOutBadValues
		snmpOutGenErrs
		snmpOutGetRequests
		snmpOutGetNexts
		snmpOutSetRequests
		snmpOutGetResponses
		snmpOutTraps
		snmpEnableAuthenTraps

MOXA-IO-MIB	MOXA-IO-MIB	MOXA-IO-MIB
totalChannelNumber	AI03-Index	AI07-Index
serverMode	AI03-Type	AI07-Type
systemTime	AI03-Range	AI07-Range
firmwareVersion	AI03-Value	AI07-Value
AI00-Index	AI03-Min	AI07-Min
AI00-Type	AI03-Max	AI07-Max
AI00-Range	AI04-Index	AO00-Index
AI00-Value	AI04-Type	AO00-Type

MOXA-IO-MIB	MOXA-IO-MIB	MOXA-IO-MIB
AI00-Min	AI04-Range	AO00-Range
AI00-Max	AI04-Value	AO00-Value
AI01-Index	AI04-Min	AO01-Index
AI01-Type	AI04-Max	AO01-Type
AI01-Range	AI05-Index	AO01-Range
AI01-Value	AI05-Type	AO01-Value
AI01-Min	AI05-Range	
AI01-Max	AI05-Value	
AI02-Index	AI05-Min	
AI02-Type	AI05-Max	
AI02-Range	AI06Index	
AI02-Value	AI06-Type	
AI02-Min	AI06-Range	
AI02-Max	AI06-Value	
	AI06-Min	
	AI06-Max	

E

Factory Default Settings

The ioLogik E2240 is configured with the following factory defaults:

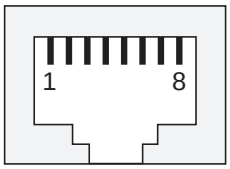
Default IP address:	**192.168.127.254**
Default Netmask:	**255.255.255.0**
Default Gateway:	**0.0.0.0**
Communication watchdog:	**Disable**
Modbus TCP alive check Timeout:	**60 secs**
AI Input Range:	**-10 to 10V**
AO Output Range:	**0 to 10V**
AO Safe Status:	**Off, 0V**
Password:	**NONE**
Module Name:	**NONE**
Module Location:	**NONE**
SNMP:	**Enable**
Community:	**Public**
Contact:	**NONE**
Location:	**NONE**

F

Pinouts and Cable Wiring

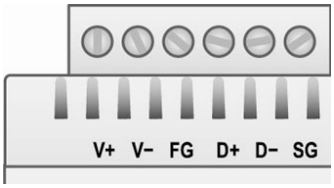
Ethernet Port Pinouts

Pin	Signal
1	Tx+
2	Tx-
3	Rx+
6	Rx-



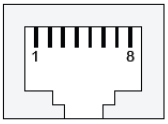
Serial Port Pinouts

E2240 RS-485 Network Adapter Pin Assignment



Pin Assignment of Terminal Blocks

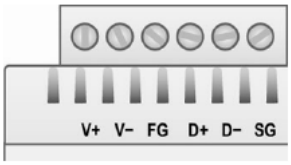
Ethernet



PIN	Signals
1	Tx+
2	Tx-
3	Rx+
6	Rx-

Power / RS-485

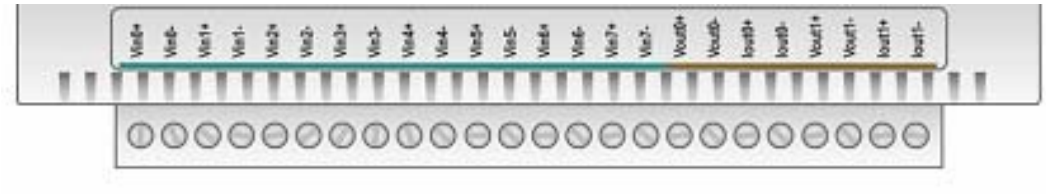
(TB1 / TB2)



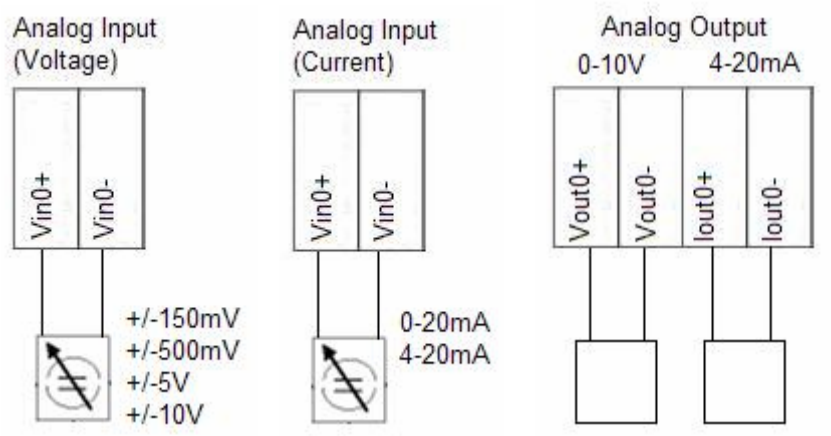
I/O (left to right)

Pin	1	2	3	4	5	6	7	8	9	10	11	12
Signal	Vin0+	Vin0-	Vin1+	Vin1-	Vin2+	Vin2-	Vin3+	Vin3-	Vin4+	Vin4-	Vin5+	Vin5-
Pin	13	14	15	16	17	18	19	20	21	22	23	24
Signal	Vin6+	Vin6-	Vin7+	Vin7-	Vout0+	Vout0-	Iout0+	Iout0-	Vout1+	Vout1-	Iout1+	Iout1-

(TB3)



I/O Device Wiring



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Service Information

This appendix shows you how to contact MOXA for information about the ioLogik E2240, and other products, and how to report problems.

In this appendix, we cover the following topics.

- **MOXA Internet Services**
- **Problem Report Form**
- **Product Return Procedure**

MOXA Internet Services

Customer satisfaction is our top priority. To ensure that customers receive the full benefit of our products, MOXA Internet Services has been set up to provide technical support, driver updates, product information, and user's manual updates.

The following services are provided

Technical Support E-mail Address

support@moxa.com

Website for Product Information

http://www.moxa.com

Problem Report Form

MOXA ioLogik E2240 Active Remote I/O Server

Customer name:	
Company:	
Tel:	**Fax:**
Email:	**Date:**

MOXA Product: ioLogik E2240

Serial Number: _____

Problem Description: Please describe the symptoms of the problem as clearly as possible, including any error messages you see. A clearly written description of the problem will allow us to reproduce the symptoms, and expedite the repair of your product.

Product Return Procedure

For product repair, exchange, or refund, the customer must complete each of the following:

- Provide evidence of original purchase.
- Obtain a Product Return Agreement (PRA) from the sales representative or dealer.
- Fill out the Problem Report Form (PRF) with as much detail as possible to minimize repair time.
- Carefully pack the product in an anti-static package and send it, pre-paid, to the dealer. The PRA should be visible on the outside of the package and should include a description of the problem along with the return address and telephone number.