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 Ethernet 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 Ethernet 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 Ethernet I/O servers, which are designed for intelligent, pro-active status reporting of attached sensors, transmitters, transducers, and valves over a network. The ioLogik E2240 also 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 systems that require an efficient, real-time I/O solution with a response time on the order of hundredths of seconds.

Active Ethernet I/O

Moxa's **Active Ethernet 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 Ethernet 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 Ethernet 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 Ethernet I/O. Click&Go's intuitive, graphical interface lets administrators use simple IF/THEN statements as rules to determine how the Active Ethernet I/O server responds to different I/O conditions. For example, the Active Ethernet 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 Ethernet 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 for easy configuration of your Active Ethernet I/O system
- High-speed active I/O messaging
- 8 mV/V/mA analog input (AI) channels with wire-off detection (at 4 to 20 mA)
- 2 analog output (AO) channels for voltage or current actuator control
- 10/100 Mbps Ethernet supporting 10 Modbus/TCP hosts
- Bundled Windows utility and quick programming library for VB, VC++, BCB
- Optional RS-485 modules for expandable I/O
- SCADA software support including Wonderware InTouch and GE Intellution iFix32
- SNMP for system management and I/O status
- Remote management over the network including firmware updates
- Configuration import using TFTP server
- User-defined power-on and safe status for AO channels
- 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 Ethernet 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.

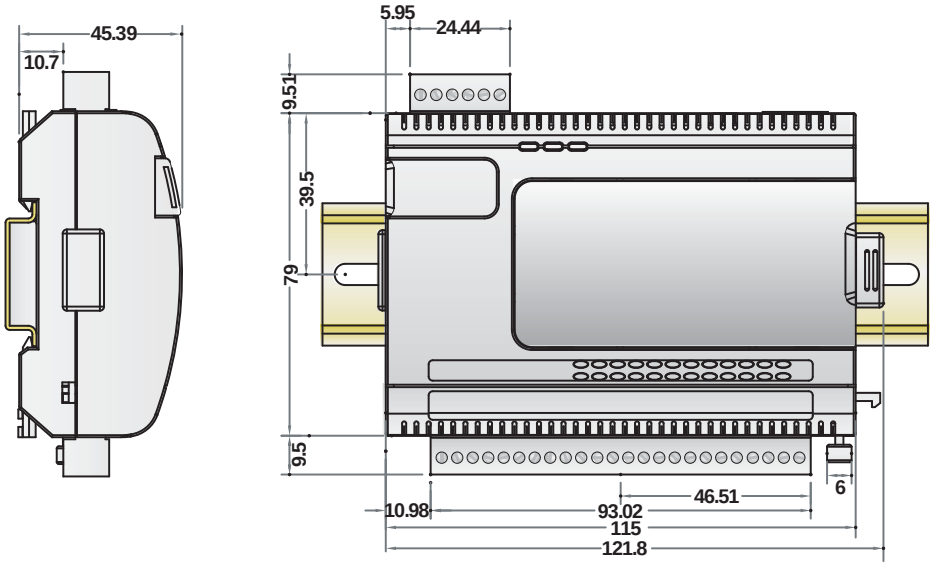
Product Specifications

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
Serial	
Interface	RS-485 (2-wire): Data+, Data-, GND
Serial Line Protection	15 KV ESD for all signals
Serial Communication Parameters	
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, differential
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
Accuracy	+/- 0.1%, FSR @ 25ºC, +/- 0.3%, FSR @ -10, 60ºC
Sampling Rate	All channels: 10 samples/sec (voltage), 6 samples/sec (current)
Input Impedance	900 kΩ
Built-in Resistor for Current Input	106 Ω
Optical Isolation	3000 VDC / 2000 Vrms
Analog Output	
Outputs	2, differential
Resolution	12-bit
Output Range	0 to 10V, 4 to 20 mA
Data Format	12-bit integer
Accuracy	+/- 0.1%, FSR @ 25ºC, +/- 0.3%, FSR @ -10, 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 36 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 (-40 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

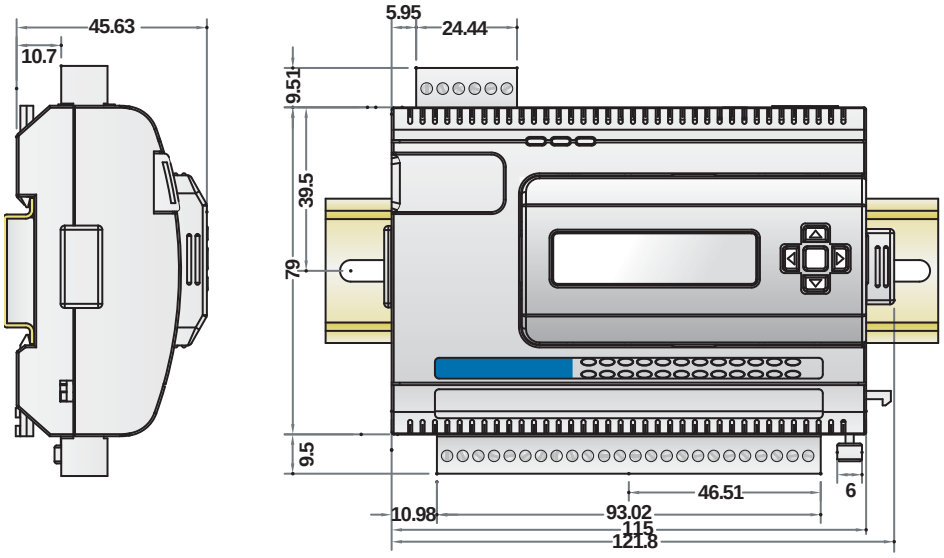
	CE: IEC61000-4-2 (ESD),Level 2/3, CE: IEC61000-4-3 (RS), Level 2, IEC61000-4-4 (EFT), Level 2, CE: IEC61000-4-5 (Surge), Level 3, IEC61000-4-6 (CS), Level 2, CE: IEC61000-4-8 (PM), Level 1, IEC61000-4-11 (Dip) CE: IEC61000-6-2 CE: IEC61000-6-4
Safety	UL 508
Warranty	2 years

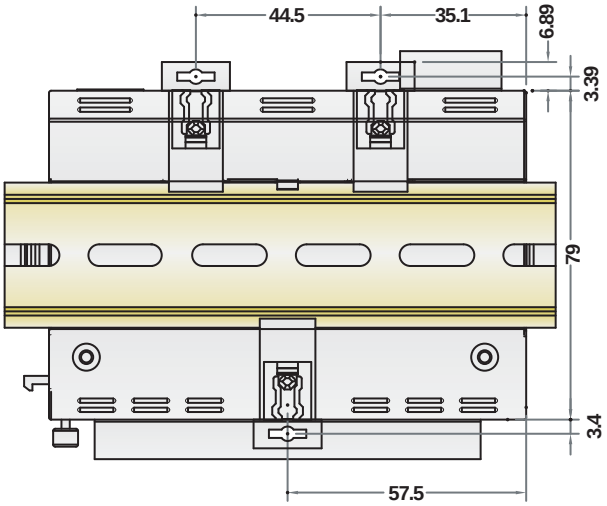
Physical Dimensions

Without LCD Module (Unit = mm)



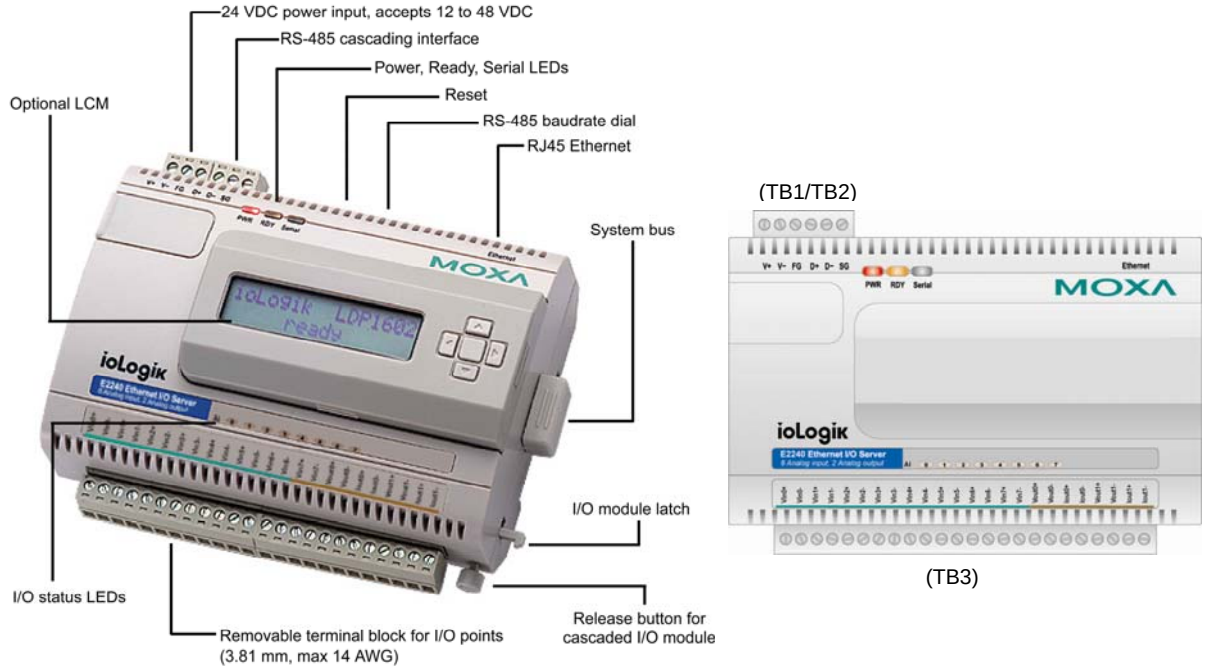
With LCD Module (Unit = mm)





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 is functioning normally
	green (flashing)	Click&Go logic is active
	green & red (flashing)	ioLogik 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 × 8 pins	green	ON status
	off	OFF status (current modes 4 to 20mA only)

2

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
  - Adding More I/O Channels
- **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.

To protect your system, power up the ioLogik first, then the sensors.
When powering down, shut off power to the sensors first, then the ioLogik.

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 back wall-mounting plate and the other on the DIN-rail attachment. Both grounding points are connected to the same conducting pathway.

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

Remember to restart the ioLogik E2240 after making any changes to the RS-485 baudrate.

Adding More I/O Channels

A cost effective way to add more I/O channels to your ioLogik E2000 I/O server is to attach the appropriate ioLogik R2000 I/O server. The two servers can be snapped together using the RS-485 system bus connector, as shown in the following figure. Additional analog I/O channels are obtained by attaching the ioLogik R2140, and additional digital channels are obtained using the ioLogik R2110. For additional details, please refer to the ioLogik R2140 or R2110 user's manual.

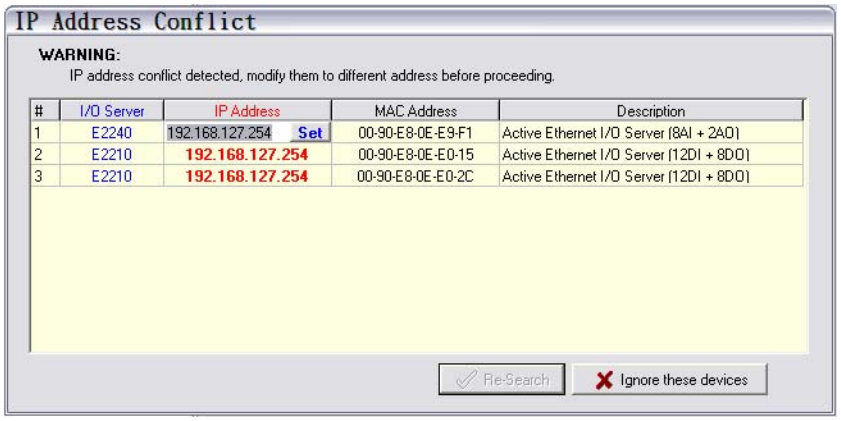
Software Installation

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.

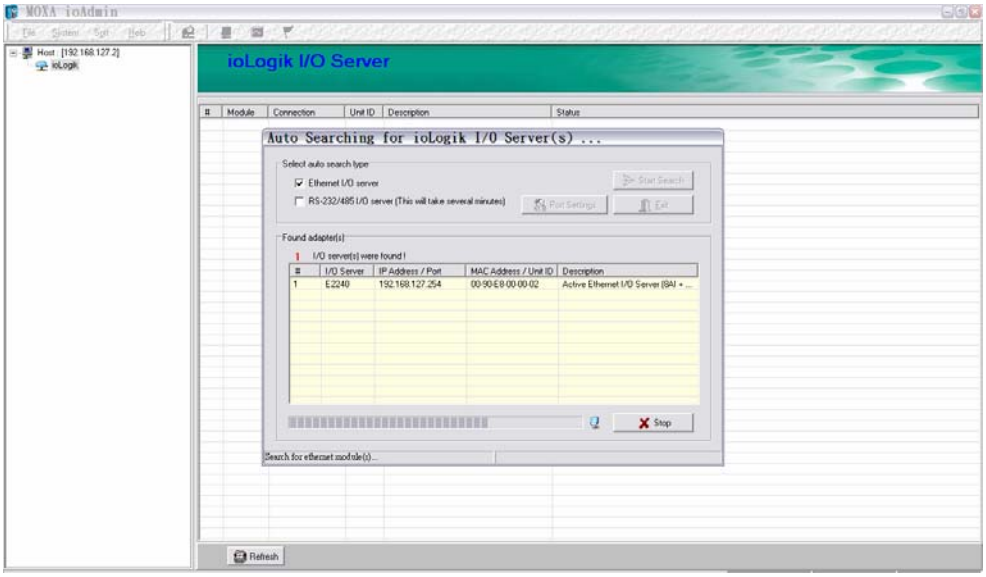
1. **Install from CD-ROM**: Insert the Document and Software CD into the host computer. In the root directory of the CD, locate and run SETUP.EXE. The installation program will guide you through the installation process and install the ioAdmin utility. You can also install the MXIO DLL library or ioEventLog separately.
2. **Connect host and server**: Configure the host IP address and connect the host to the ioLogik E2240 with an Ethernet cable.
3. **Open ioAdmin**: After installation is finished, run **ioAdmin** from **Start → Program Files → Moxa → IO Server → Utility → ioAdmin**.

   Connecting to a Network with Multiple ioLogik E2000 Units

   When connecting multiple ioLogik E2000 units to the same network, remember that each unit has the same default IP address. You will need to assign a different IP address to each unit to avoid IP conflicts. ioAdmin automatically detects IP conflicts and gives you a chance to modify each unit's IP address in the "IP Address" columns. Click **[Set]** to reboot the corresponding unit with its new IP address. Click **[Re-Search**] to refresh the list of units found by ioAdmin.

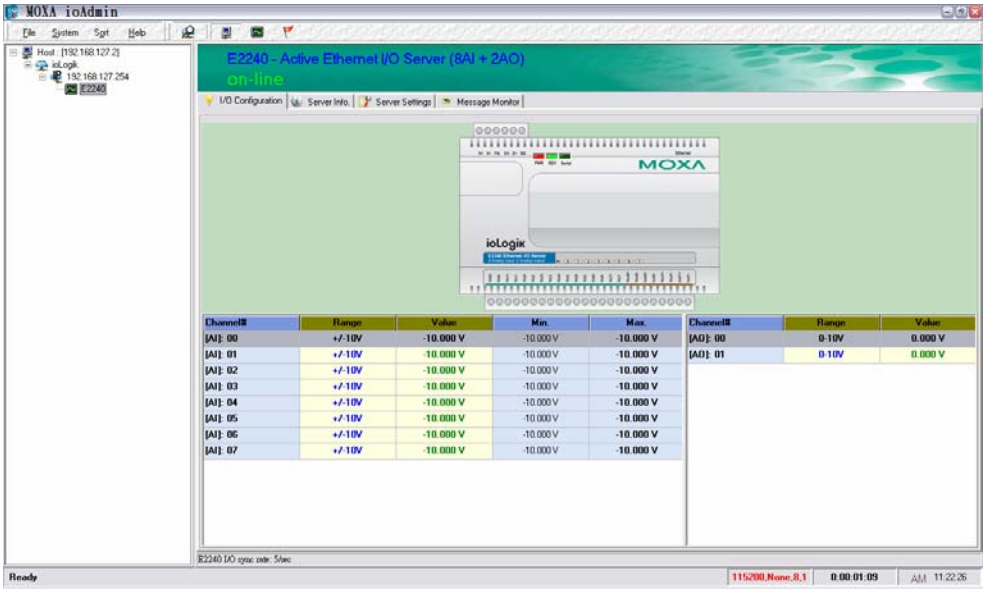


4. **Search the network for the server**: On the menu bar, select **System → Auto Scan Remote I/O Server**. A dialog window will pop up. Click **Start Search** to begin searching for the ioLogik E2240.



If ioAdmin is unable to find the ioLogik E2240, there may be a problem with your network settings. Please verify that your host and the ioLogik E2240 are on the same network segment.

5. **Monitor 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 set up or configure the ioLogik.

3

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
- **Menu Items**
- **Main Window**
- **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
- **Using TFTP to Import/Export Configuration**
- **Using ioEventLog**
  - Installing ioEventLog
  - Basic Functions
  - Configuration
  - Checking Connected Devices
  - Opening Log Files
  - Clearing the Log

Introduction to ioAdmin

The ioLogik I/O server may be managed and configured over the Ethernet by ioAdmin, a Windows 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.

A new feature in ioAdmin automatically detects IP conflicts between ioLogik E2000 units. If ioAdmin detects an IP conflict, a window will appear that allows you to resolve the IP conflict immediately and restart each unit. This feature was introduced in ioAdmin version 2.4.

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

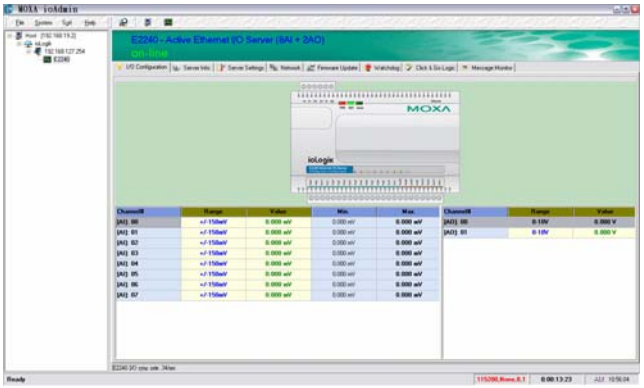
ioAdmin consists of following software:

- **ioAdmin with Click&Go Logic**
- **ioLogik 2000 Wiring Guide**
- **ioLogik 4000 Wiring Guide**

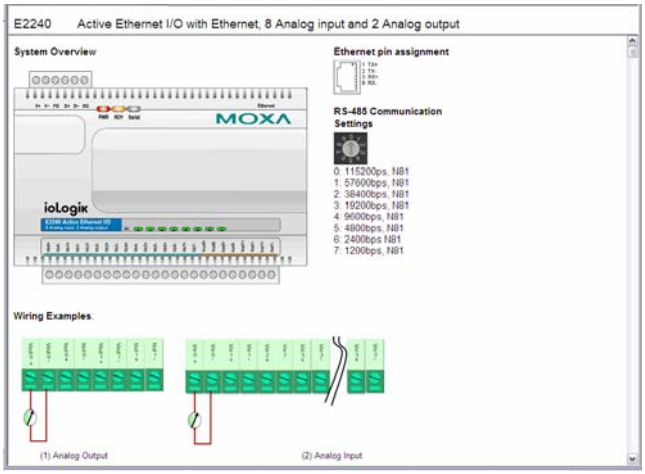
Features of ioAdmin

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

The file includes the following information:

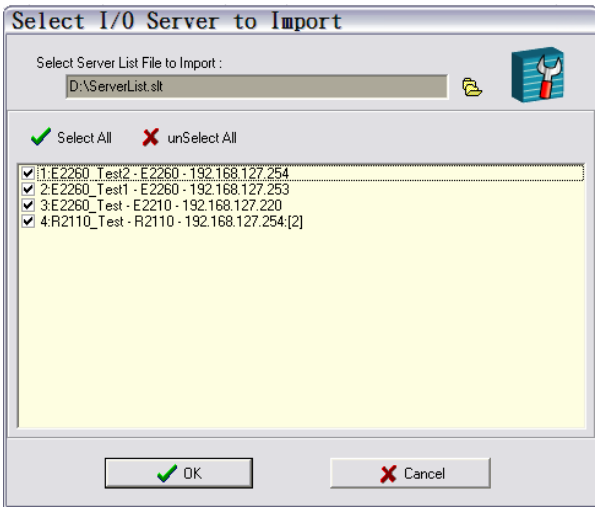
1. File title, Date, and Time
2. Model information
3. Modbus address

```
ioLogik E2240 Network I/O Server Configuration
==============================================
Date: 2006/12/7
Time: 09:38:28 AM

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

[2. I/O Configurations]
-----------------------
AI00=5,(4 to 20mA)
AI01=5,(4 to 20mA)
AI02=3,(+/-10V)
AI03=3,(+/-10V)
AI04=3,(+/-10V)
AI05=3,(+/-10V)
AI06=3,(+/-10V)
AI07=3,(+/-10V)

AO00=1,(4 to 20mA), AO00_PWN=4095,(RAW),AO00_SAFE=4095,(RAW)
AO01=1,(4 to 20mA), 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
```

Server Management List

ioAdmin can import and export a list of ioLogik servers that are being managed. This file can make it easier to manage all devices on the network, and includes the following information:

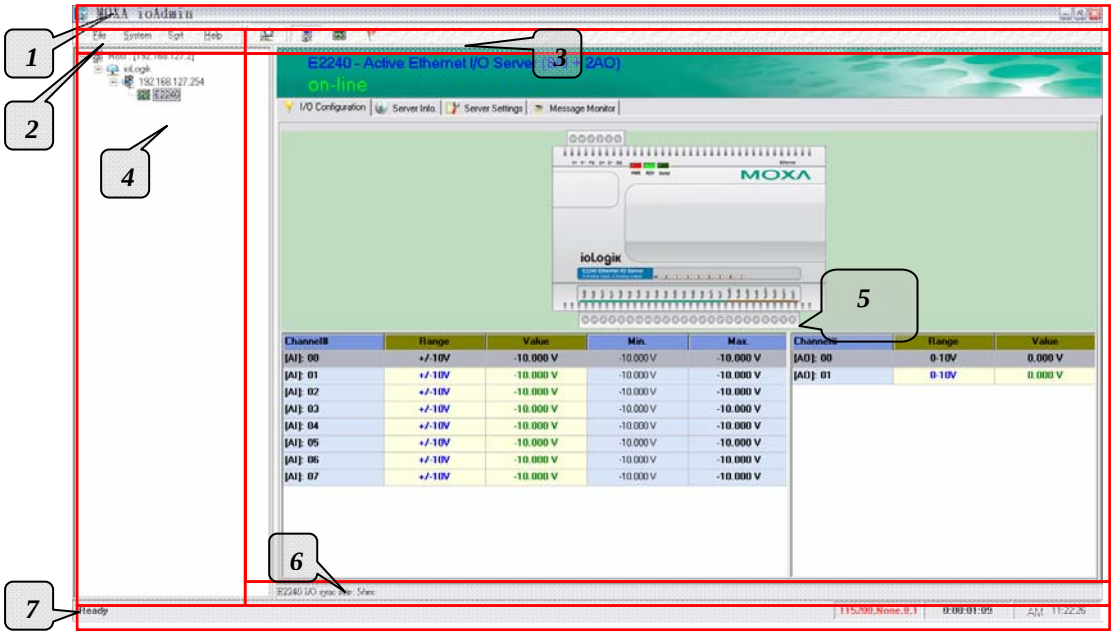
- server name
- module type
- IP address
- unit ID



ioAdmin Main Screen

Main Screen Overview

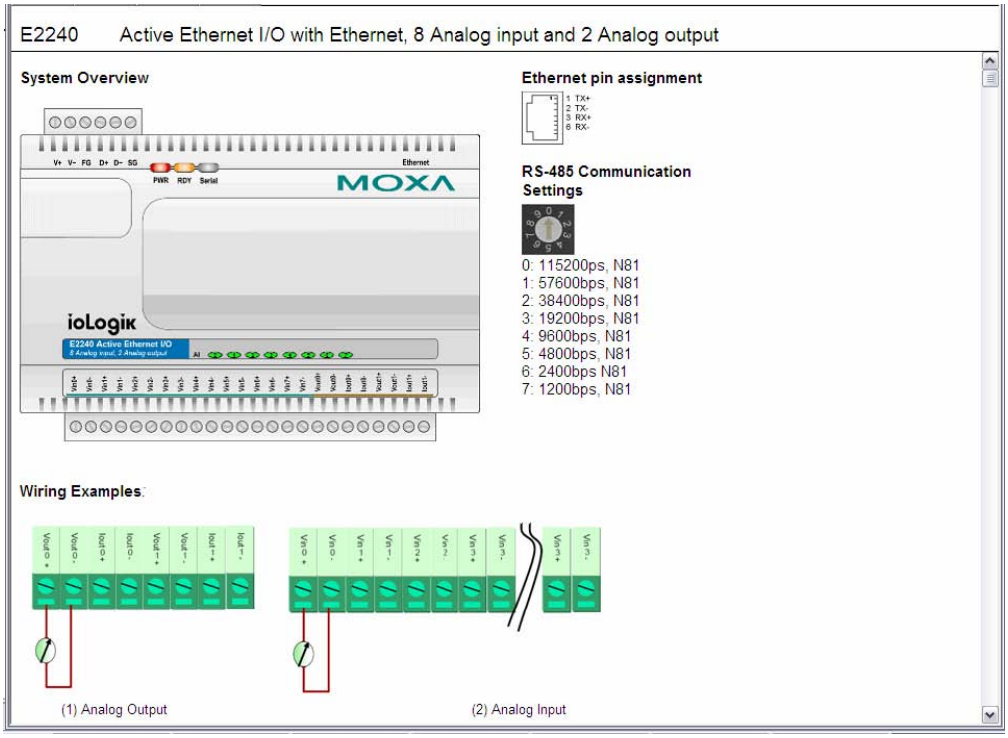
This is ioAdmin's main screen. The main window defaults to the I/O Configuration tab, which displays a graphic of the ioLogik E2240 and the status of every I/O channel below it. The other tabs in the main window take you to server and network settings, and further functions are available when you log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



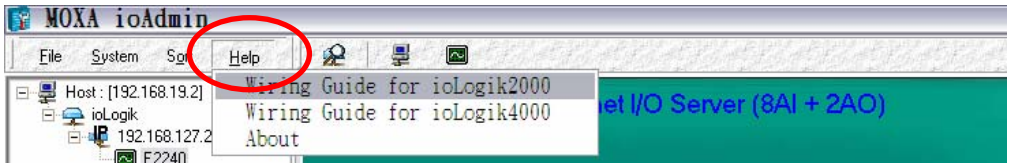
ioAdmin Main Screen	
1.	Title
2.	Menu bar
3.	Quick link
4.	Navigation panel
5.	Main window
6.	Sync. rate status
7.	Status bar

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.



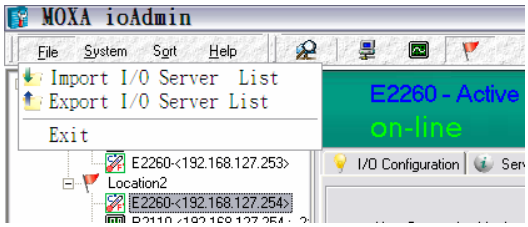
You may also access the On-line Wiring Guide through the Help menu on the menu bar.



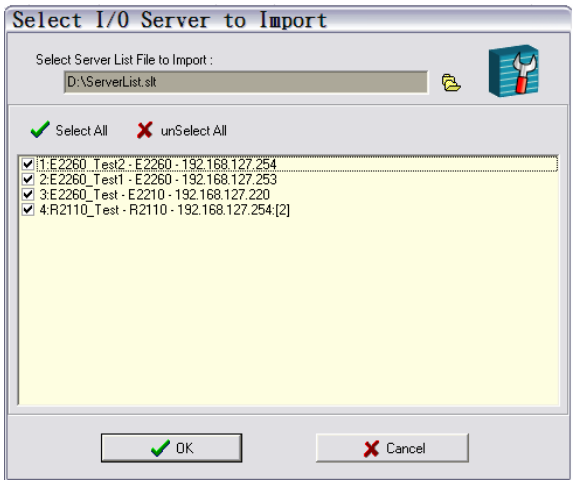
Menu Items

File

From the **File** menu, you can export the list of I/O servers that are currently displayed in the navigation panel. You also can import a list of I/O servers into ioAdmin.



When importing a server list, you will be prompted to select which servers on the list need to be imported.



The file will have a .SLT extension and can be opened as a text file. The server list will provide the following information for each server:

- server name
- module type
- IP address
- unit ID

System

Several operations are possible from the **System** menu.

Auto Scan Active Ethernet I/O Server 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.

Network Interface allows you to select a network to use, if the PC has multiple network adapters installed.

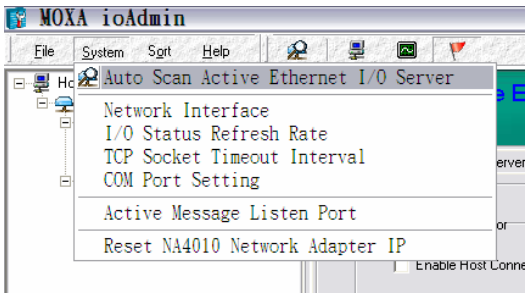
I/O Status Refresh Rate is used to adjust how often the I/O server is polled for device status. The current rate is displayed on the status bar at the bottom of the window. Note that higher sync rates result in higher loads on the network.

TCP Socket Timeout Interval allows you to select the preferred timeout value for TCP socket communication.

COM Port Setting is used to set the parameters for Modbus communication, such as baudrate, data bits, and timeout interval. For most applications, this will involve connecting to ioLogik R-Series devices.

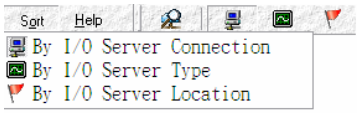
Active Message Listen Port specifies the port number to use for Active Ethernet I/O messages. If your network uses a firewall, you can coordinate this setting with your firewall settings to ensure that active messages get through.

Reset NA4010 Network Adapter IP is used to re-assign an IP address to the NA-4010 network adapter, for ioLogik 4000 systems.



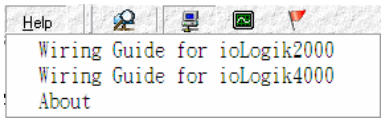
Sort

The **Sort** menu allows the server list in the navigation panel to be sorted by connection, type, and location.



Help

In the **Help** menu, you can view wiring guides and information about ioAdmin.



Quick Links

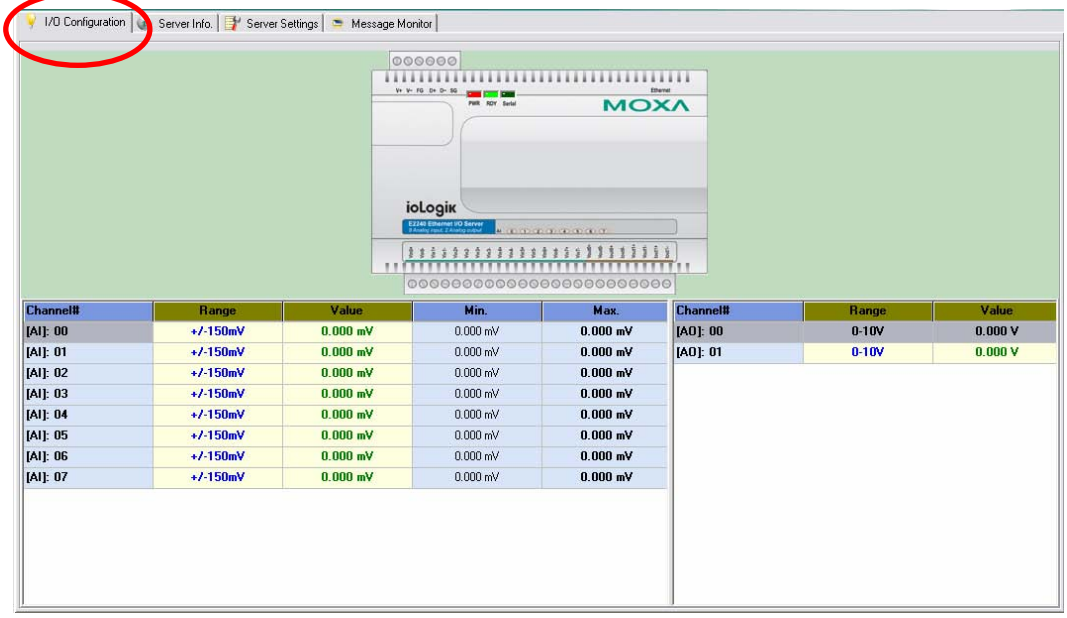
Quick links are provided to search for I/O servers on the network and sort the server list.

	Search network for I/O server
	Sort by connection
	Sort by I/O server type
	Sort by location

Main Window

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 ioAdmin.

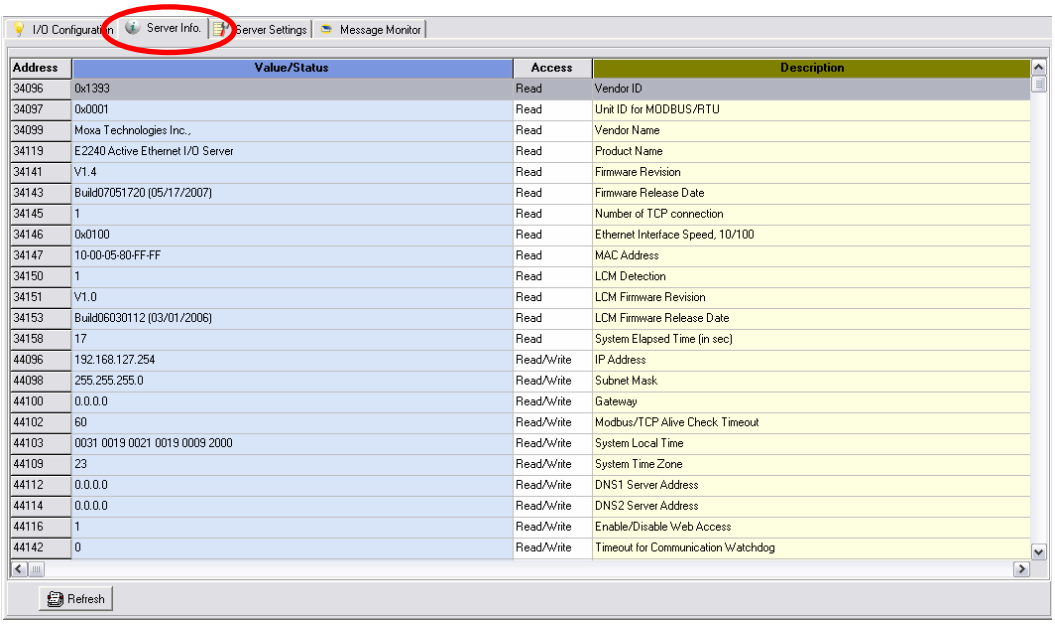


Channel#	Range	Value	Min.	Max.
[AI]: 00	+/-150mV	0.000 mV	0.000 mV	0.000 mV
[AI]: 01	+/-150mV	0.000 mV	0.000 mV	0.000 mV
[AI]: 02	+/-150mV	0.000 mV	0.000 mV	0.000 mV
[AI]: 03	+/-150mV	0.000 mV	0.000 mV	0.000 mV
[AI]: 04	+/-150mV	0.000 mV	0.000 mV	0.000 mV
[AI]: 05	+/-150mV	0.000 mV	0.000 mV	0.000 mV
[AI]: 06	+/-150mV	0.000 mV	0.000 mV	0.000 mV
[AI]: 07	+/-150mV	0.000 mV	0.000 mV	0.000 mV

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

Server Info Tab

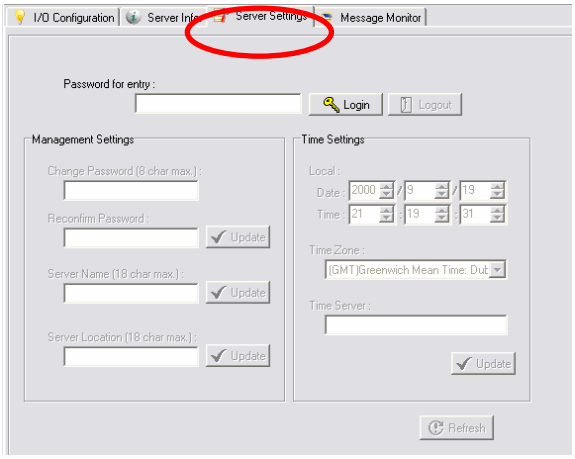
Server information, such as firmware revision, is displayed in the **Server Info** tab.



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 Active Ethernet I/O Server	Read	Product Name
34141	V1.4	Read	Firmware Revision
34143	Build07051720 (05/17/2007)	Read	Firmware Release Date
34145	1	Read	Number of TCP connection
34146	0x0100	Read	Ethernet Interface Speed, 10/100
34147	10-00-05-80-FF-FF	Read	MAC Address
34150	1	Read	LCM Detection
34151	V1.0	Read	LCM Firmware Revision
34153	Build06030112 (03/01/2006)	Read	LCM Firmware Release Date
34158	17	Read	System Elapsed Time (in sec)
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	0031 0019 0021 0019 0009 2000	Read/Write	System Local Time
44109	23	Read/Write	System Time Zone
44112	0.0.0.0	Read/Write	DNS1 Server Address
44114	0.0.0.0	Read/Write	DNS2 Server Address
44116	1	Read/Write	Enable/Disable Web Access
44142	0	Read/Write	Timeout for Communication Watchdog

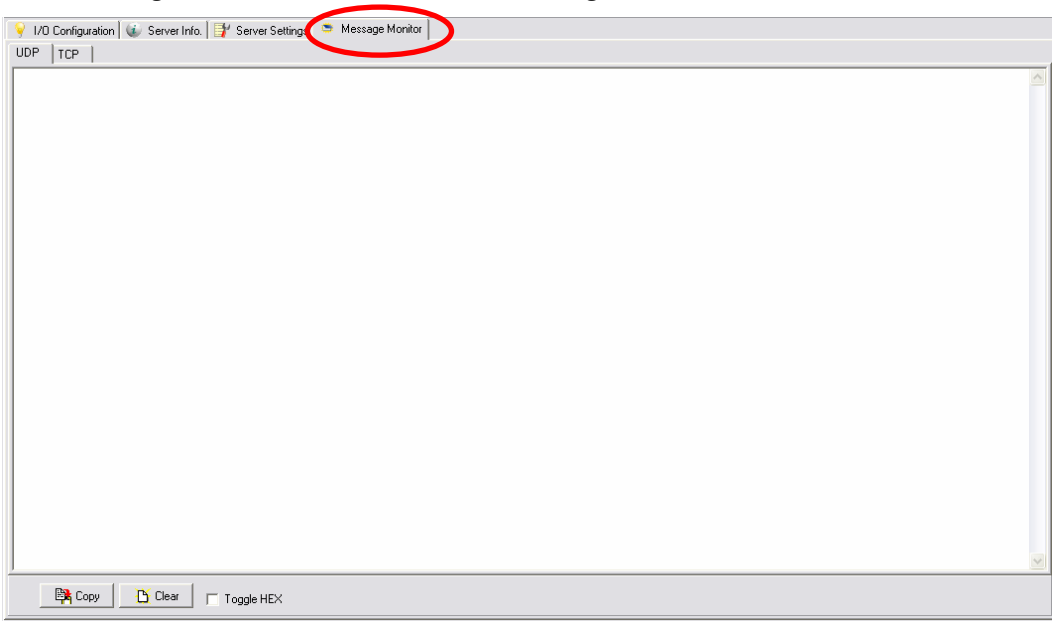
Server Settings Tab (General)

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. Additional information on ioAdmin administrator functions is provided later in this chapter.



Message Monitor Tab

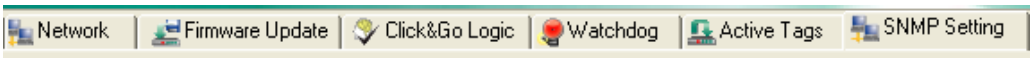
The **Message Monitor** tab will display any TCP/UDP I/O messages received from the ioLogik E2240. When you install the ioLogik E2240 for the first time, the active I/O messaging ruleset will not have been defined yet, so there will be no messages in the Message Monitor Tab. Please refer to Chapter 5 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.



Messages can be displayed in ASCII or in HEX. To display messages in HEX, make sure that "Toggle HEX" is checked.

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 **Update** or **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

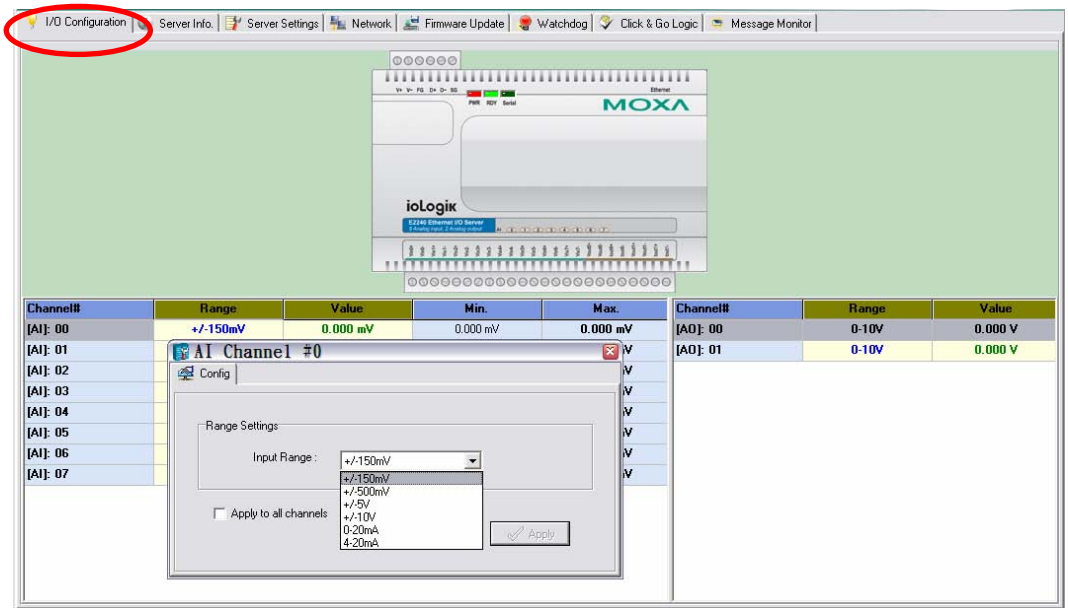
You must log in to access any administrator function, including Network, Communication Watchdog Timer, and Firmware Update tabs. If you forget the password, you may hold down the Reset button to clear the password and load factory defaults. **This will result in the loss of all configuration settings 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.

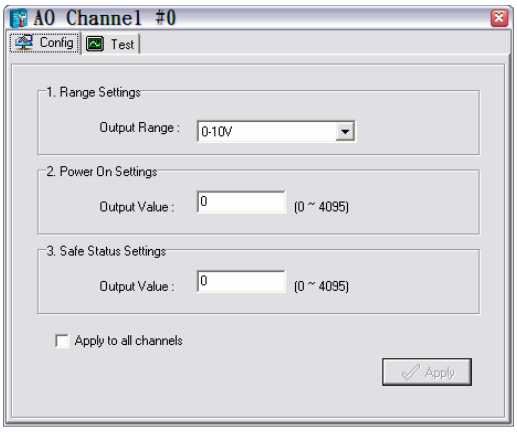
Configuring Analog Input Channels

The ioLogik E2240 is equipped with 8 AI (analog input) channels that can be set individually to +/-150 mV, +/-500 mV, +/-5V, +/-10V, 0 to 20 mA, and 4 to 20 mA. You may also set all channels at once using the "Apply to all channels" checkbox.



Configuring Analog Output Channels

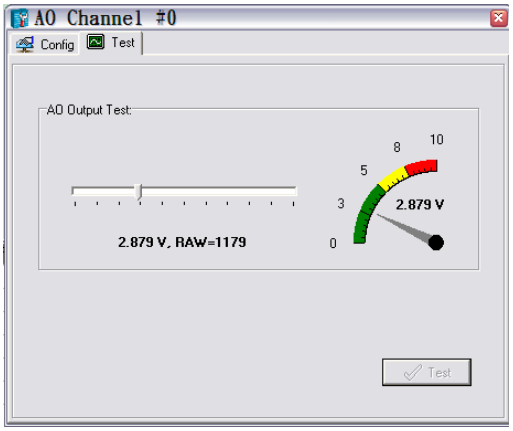
The ioLogik E2240 is equipped with 2 AO (analog output) channels that can be set individually to 0-10V, 4 to 20 mA. You may also set all channels at once using the "Apply to all channels" checkbox.



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,



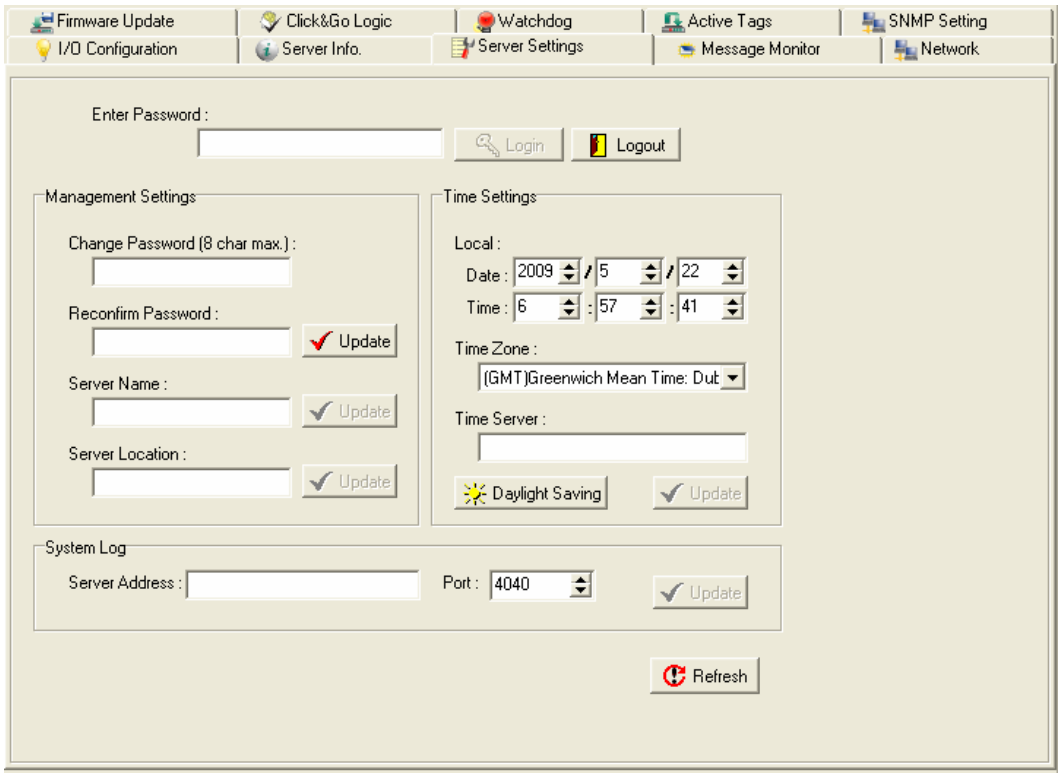
Note that the slider shows both the raw data value and the engineering value (V/mA). You may use this as a guide when entering values for the Power On and Safe Status settings.

Alias Name

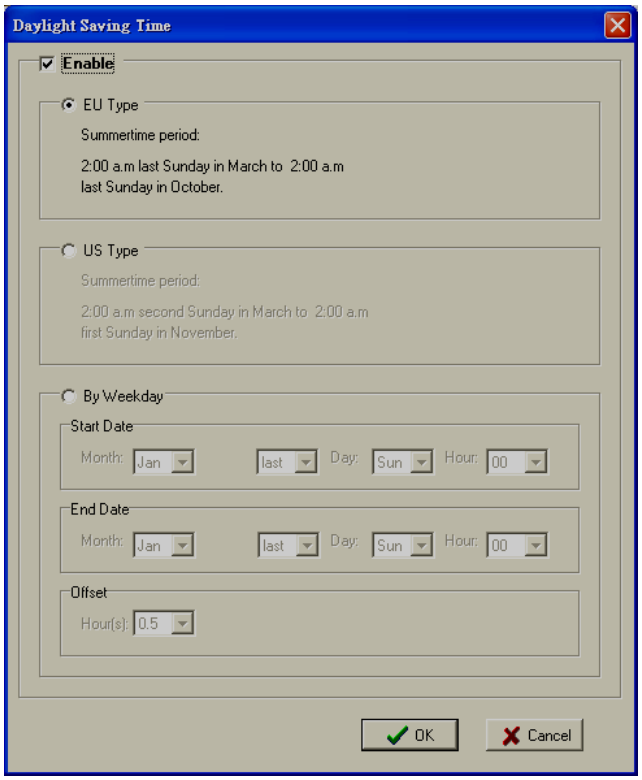
Click the **Alias Name** tab to customize the channel name. You may use names with up to 16 characters. If you have already set the Alias Name on the I/O Configuration page, the channel name will appear in Click&Go, Active message, and Web.

Server Settings Tab (Administrator)

You may set the password, server name, location, date, time, time zone, and time server in the Server Settings tab. ioAdmin supports long server names and a location description up to 58 characters.



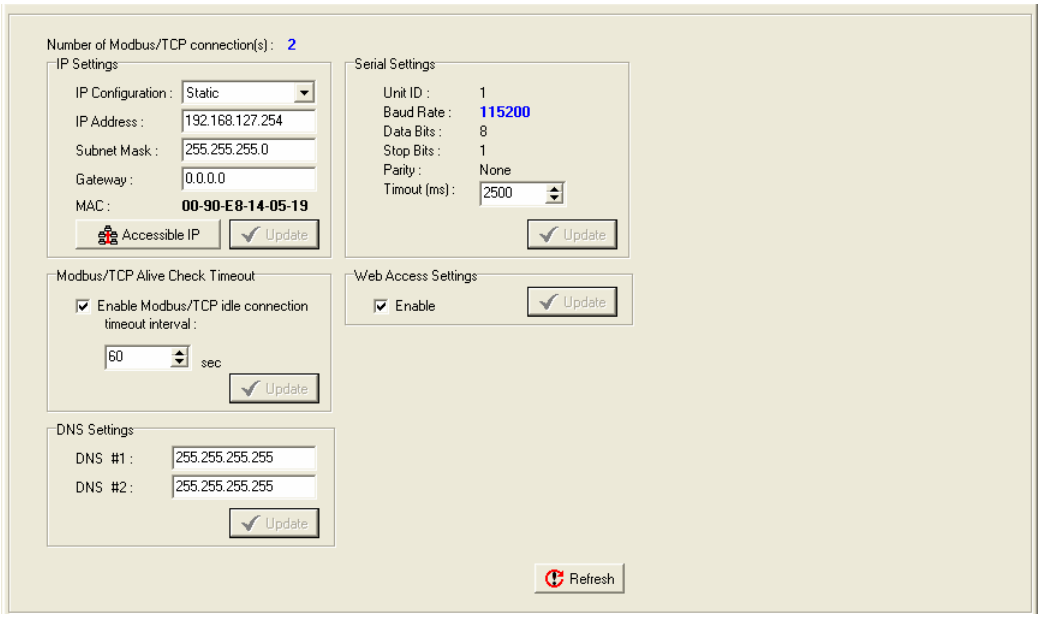
You may set up the Daylight Saving schedule by clicking the "Daylight Saving" button. You may choose EU type, US type, or User defined type. User defined type allows you to define the days and offset hours.



If you will be using ioEventLog to receive server status reports, such as for warm or cold starts, you need to specify the IP address and port number for the PC that will be running ioEventLog in the "System Log" field. The default port number is 4040. For additional information, please refer to the ioEventLog section later in this chapter.

Network Tab

The **Network** tab is where you configure IP settings, Modbus/TCP Alive Check Timeout settings, DNS settings, Serial 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.

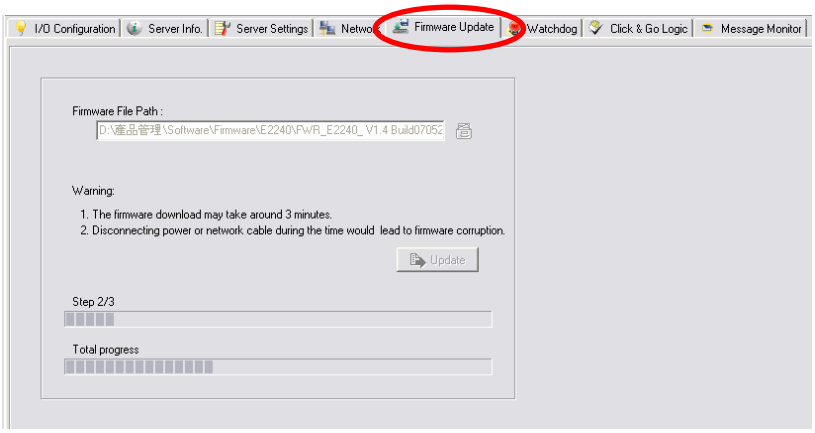
DNS Settings: Use this field to specify up the IP addresses of up to 2 DNS servers. These two DNS servers may be used to find available e-mail addresses when configuring e-mail messages in Click&Go.

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.

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 **Update** to update the firmware. The wizard will lead you through the process until the server is restarted.



ATTENTION

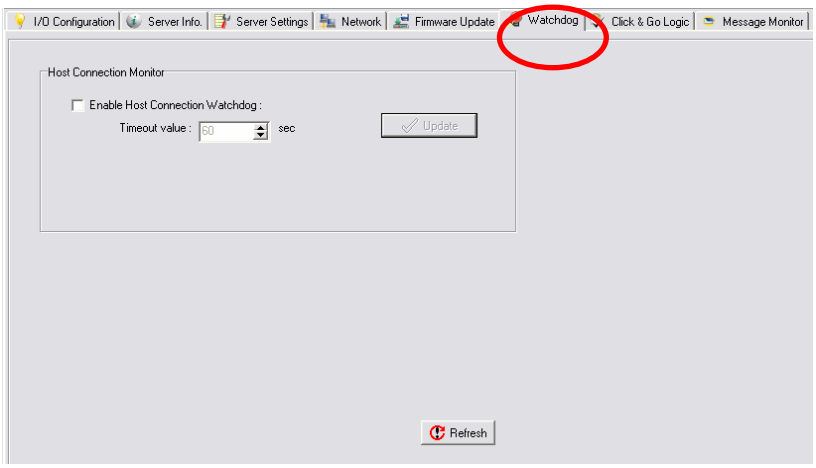
Do not interrupt the firmware update process! An interruption in the process may result in your device becoming unrecoverable.

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

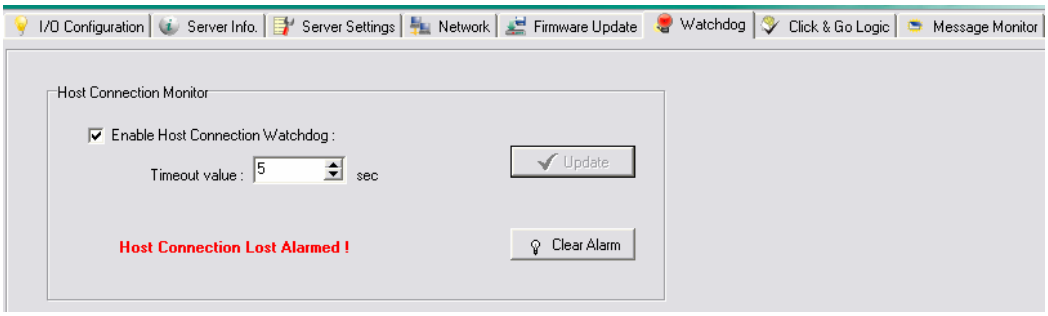
The firmware on any attached I/O expansion module, such as an ioLogik R2000 server, must be updated over the RS-485 bus. Firmware on cascaded modules cannot be updated over Ethernet.

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.

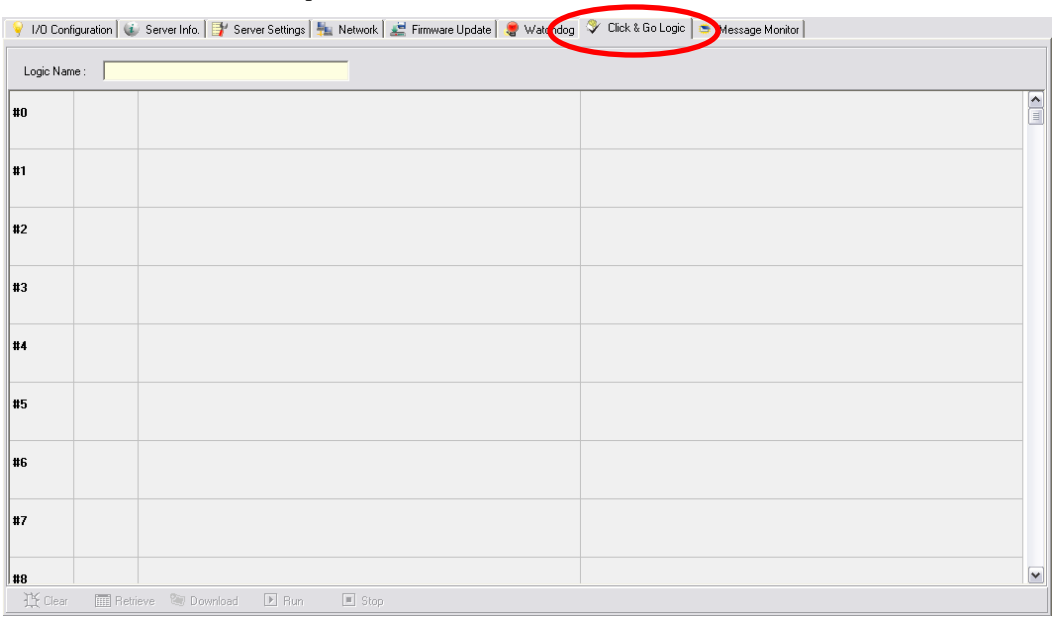


After the Watchdog is enabled, the ioLogik E2240 will enter safe status if the network connection is lost. Once the connection has been restored, you will need to return to the Watchdog Tab in order to exit safe status. There will be a message saying "Host Connection Lost", indicating that the server is in safe status. Click **Clear Alarm** to exit safe status and return to normal operation.



Click&Go Logic Tab

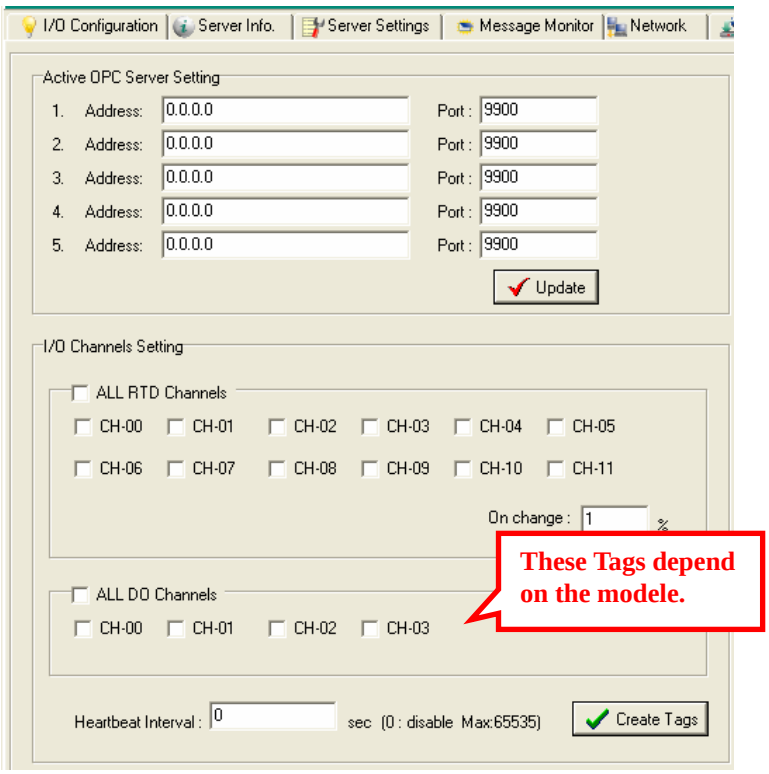
The **Click&Go Logic** tab is where administrators set up the ioLogik E2240's active I/O messaging program. Instead of the server reacting passively to a host's repeated polling requests for I/O data, the ioLogik E2240 server proactively sends I/O information to the host when an I/O channel satisfies 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 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.

Active Tags Tab

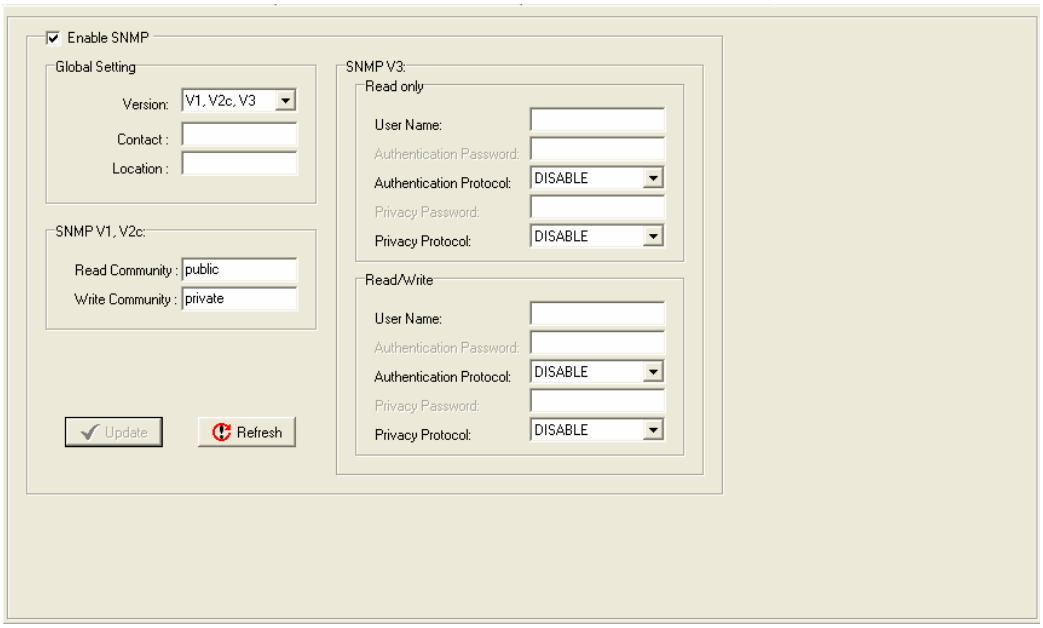
When logged in as an administrator, fill in the IP address in the **Active Tags** tab to configure Active OPC Address and Port settings. ioLogik Active Ethernet I/O can support up to 5 IPs at the same time. The Active OPC Server Address can be filled in using the IP address. The default port number is 9900. The port number should be the same as the setting in Active OPC Server's "Active Tag Listen Port". After the OPC setting and Channel Tags have been configured as desired, click **Create Tags**. The ioLogik Active Ethernet I/O will reboot in order for the settings to take effect.



The Heartbeat Interval is the time between each instance Active OPC server is informed that ioLogik is still working. The tags for Analog Value, such as AI, AO, RTD, TC, are synchronized with pre-defined percentages that are filled in the **On Change** column. The updated DI/DO/Relay tags can be synchronized by changing the status. If counter mode is used, **Advanced Settings** allows you to synchronize time by 100 to 60,000 ms. Please refer to the Active OPC Server section for more details about how to use Active OPC server.

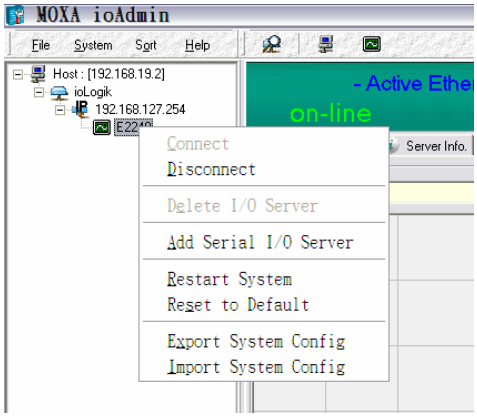
SNMP Settings Tab

The ioLogik Ethernet I/O supports SNMP V1, V2c, and V3 (Simple Network Management Protocol) to monitor 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 for SNMP V1 and V2c, or use authentication for SNMP V3.



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 manually add a server by using its unit ID.

Restart System

Select this command to restart the ioLogik from a remote site. You will need to log in as an administrator to use this function.

Reset to Default

Select this command to reset all settings, including console password, to factory default values. You will need to log in as an administrator to use this function.

Export System Config

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.

Below is an example of the exported configuration file

```
ioLogik E2240 Network I/O Server Configuration
==============================================
Date: 2006/12/7
Time: 09:38:28 AM

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

[2. I/O Configurations]
-----------------------
AI00=5,(4 to 20mA)
AI01=5,(4 to 20mA)
AI02=3,(+/-10V)
AI03=3,(+/-10V)
AI04=3,(+/-10V)
AI05=3,(+/-10V)
AI06=3,(+/-10V)
AI07=3,(+/-10V)

AO00=1,(4 to 20mA),  AO00_PWN=4095,(RAW),   AO00_SAFE=4095,(RAW)
AO01=1,(4 to 20mA),  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]
---------------------
NET_CONFIG     =0,(Static)
```

```
NET_IP          =192.168.127.254
NET_MASK  =255.255.255.0
NET_GATEWAY     =0.0.0.0
NET_MAC         =00-90-E8-0D-0E-DD
IDLE_TIMEOUT    =60,(sec)
BAUD            =115200,(bps)
DNS_1           =0.0.0.0
DNS_2           =0.0.0.0
WEB             =1,(sec)
SNMP            =1,(Enabled)
SNMP_READ =public
SNMP_RW         =
SNMP_CONTACT    =
SNMP_LOC        =
CONNECTION_WATCHDOG=0,(Disabled)

[6. Click&Go Settings]
----------------------
STATUS    =0
```

Import System Config

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.

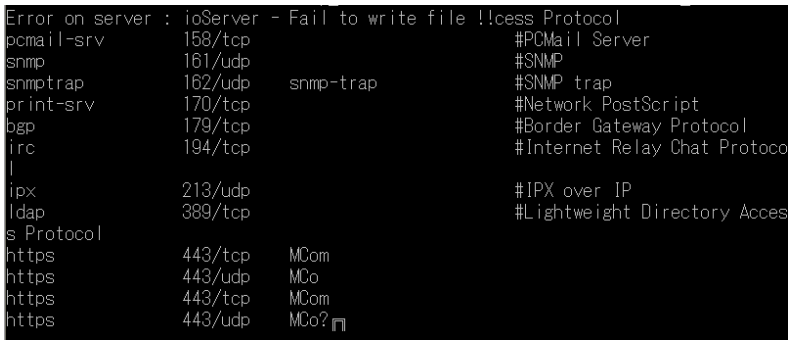
Using TFTP to Import/Export Configuration

TFTP (Trivial File Transfer Protocol) was defined in 1980 to provide basic FTP functionality in a very simple protocol. Due to TFTP's simplicity, it can be implemented using a very small amount of memory, an important consideration when it was first developed. ioLogik E2000 I/O servers support the use of TFTP to import or export configuration files.

The following is an example using Windows TFTP and an ioLogik E2240 with an IP address of 192.168.127.254:

1. Enter "TFTP 192.168.127.254 GET ik2240.txt" to get the ioLogik's configuration file.
2. Enter "TFTP 192.168.127.254 PUT ik2240.txt" to load a configuration file onto the ioLogik

You must use "**ik2240.txt**" as the destination filename when copying a configuration file to the ioLogik E2000 unit. Otherwise, you will receive an error message as shown below:



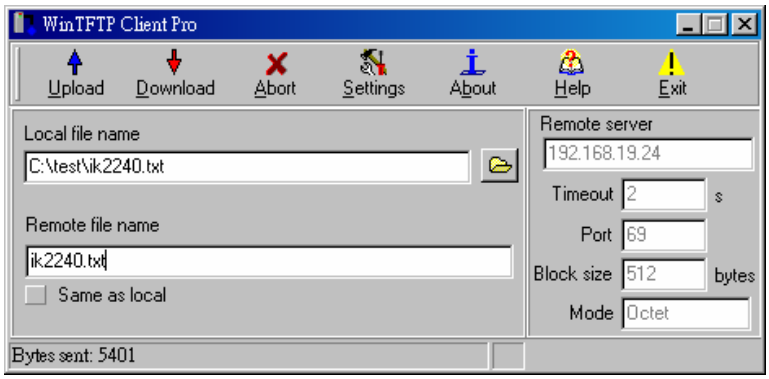
You can use TFTP in a batch file to transfer configuration files for different units. For example, you might have two configuration files that need to be copied to two different servers: **ik2240_1.txt** for 192.168.127.253, and **ik2240_2.txt** for 192.168.127.254. A batch file could be written as follows:

tftp 192.168.127.253 put ik2240_1.txt ik2240.txt

tftp 192.168.127.254 put ik2240_2.txt ik2240.txt

ATTENTION

You can import the configuration file from a TFTP server. For example, you can run TFTP Client software, open the configuration file, and enter the remote server's IP. Note that both ASCII and Octet mode are supported. When the download process is complete, the I/O server will reboot.



Using ioEventLog

Installing ioEventLog

ioEventLog is a Windows utility provided for the monitoring of the ioLogik E2240 and attached I/O devices. It may be used from anywhere on the network to monitor the ioLogik E2240.

1. Installation from CD: Insert the Document and 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 ioEventLog utility.
2. Open ioEventLog: After installation is finished, run ioEventLog from **Start → Program Files → Moxa → IO Server → Utility → ioEventLog**.

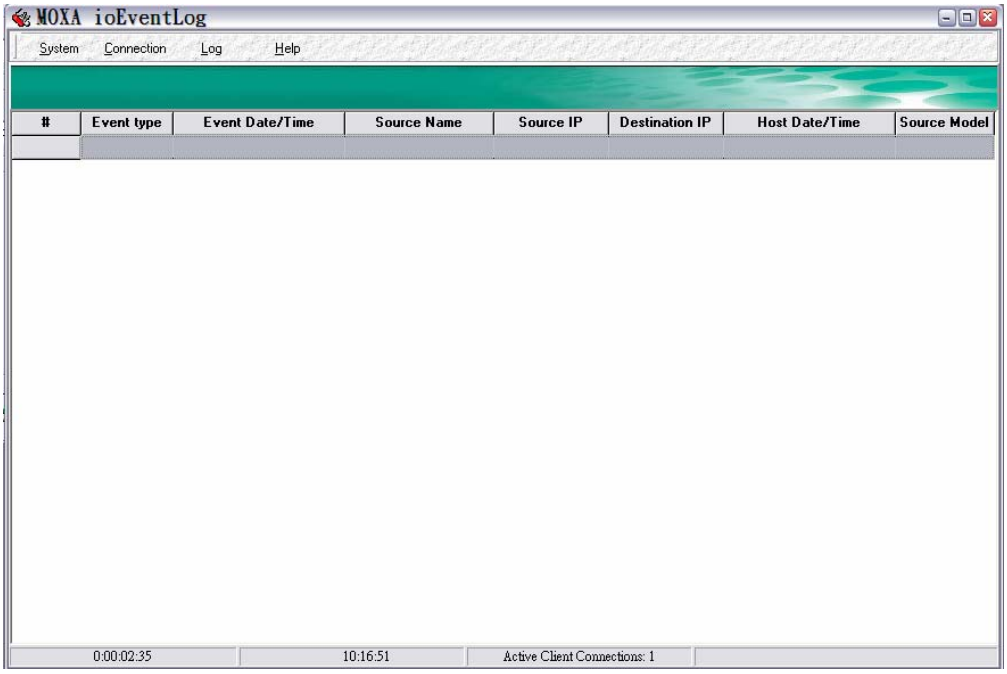
Basic Functions

ioEventLog is installed along with ioAdmin form the Document and Software CD. It is designed to help you keep a record of ioLogik status events over the network. The log is stored on the Windows PC. You will need to set up your ioLogik server to send status events to the PC's IP address. The following events are monitored:

- cold start
- warm start

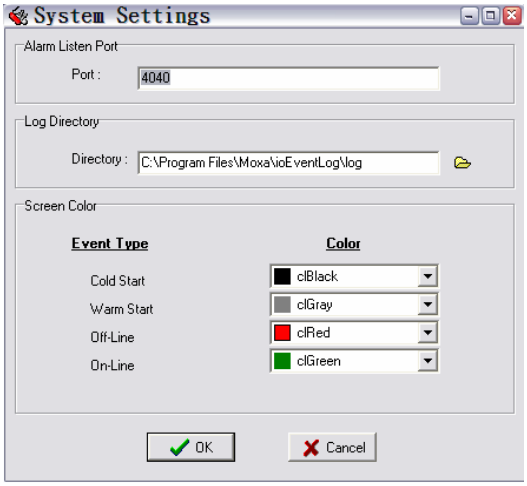
For each event, the following information is provided. The log can be sorted by any of these fields:

- event type
- event date and time
- ioLogik server source name
- source IP
- destination IP
- host date and time
- source model



Configuration

In the **System** menu, select Settings to configure ioEventLog.



The Alarm Listen Port is the TCP port number that will be monitored for status events. You can modify this setting as necessary to receive signals through a firewall. It will need to match the settings for the ioLogik server that is being monitored.

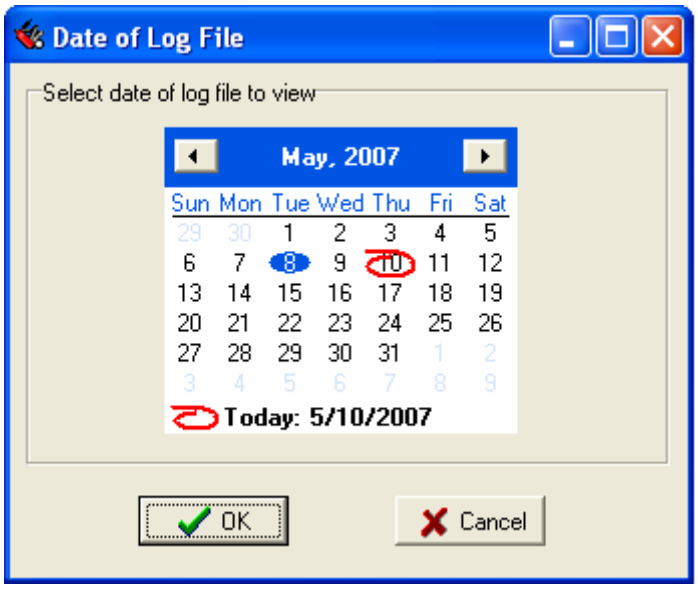
The Log Directory is where the log files will be stored. The default directory is C:\Program Files\Moxa\ioEventLog\log. A separate log file is created for each day, with file names assigned automatically. You can also select the color of each event type in the log.

Checking Connected Devices

You can see which I/O servers are already connected to ioEventLog by selecting Connected Device List from the Connection menu.

Opening Log Files

You can view previously saved logs by selecting Open from the Log menu. You will be prompted for the date that you wish to view.



The logs for the day that you select will be displayed in the Alarm Log Viewer window.

Clearing the Log

If you wish to clear the log, you can select Clear from Log menu. This will clear all events for the current day. The cleared events will not be saved in that day's logs. After the logs are cleared, new events will be displayed and recorded as usual.

4

Using the Web Console

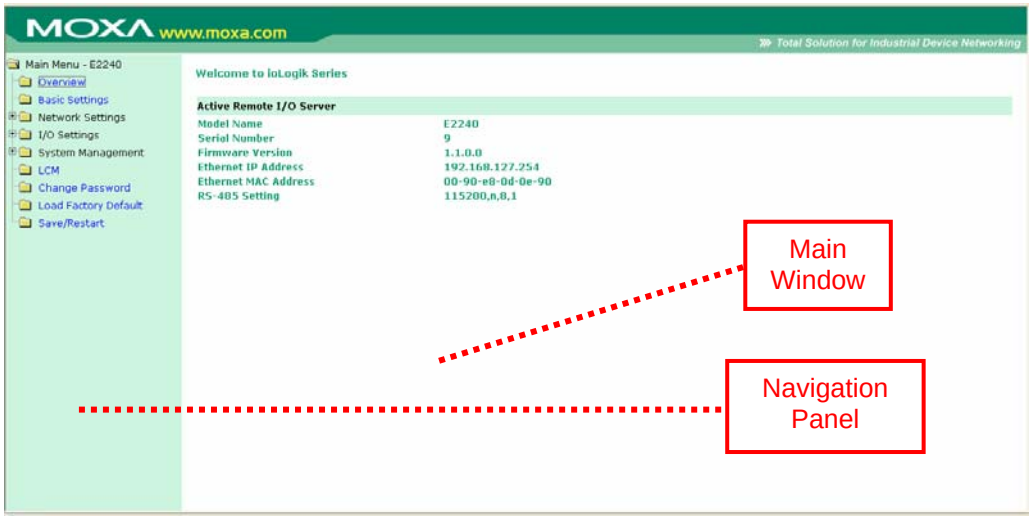
The ioLogik may be configured using its built in web console.

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**
- **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.



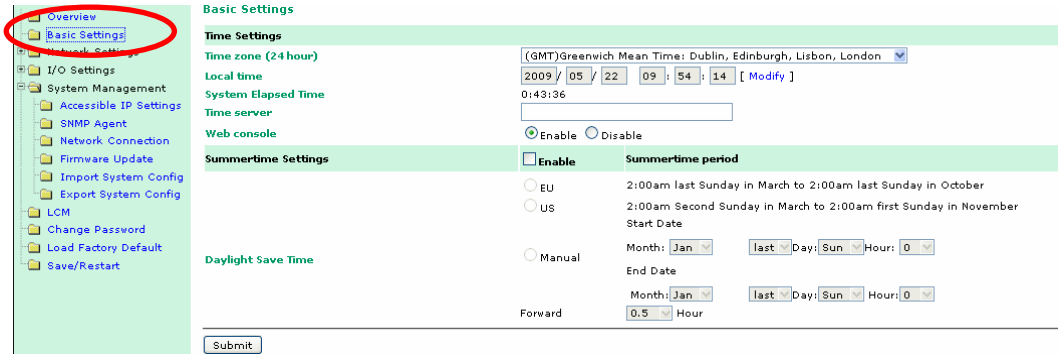
The left panel is the navigation panel and contains an expandable menu tree for navigating among the various settings and categories. When you click on a menu item in the navigation panel, the main window will display the corresponding options for that item. Configuration changes can then be made in 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

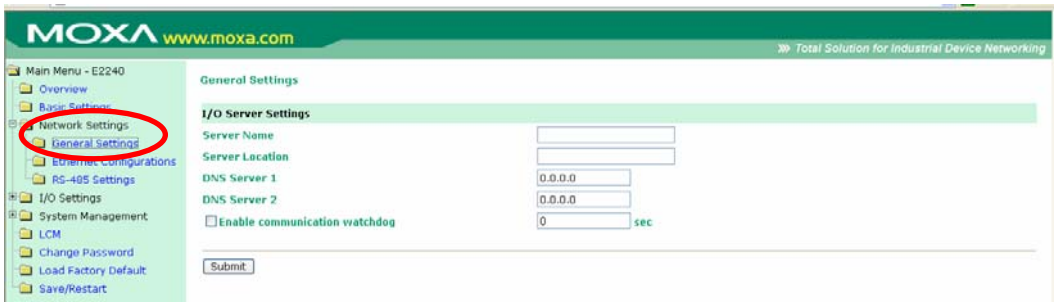
On the **Basic Settings** page, you may set the ioLogik E2240's system time or provide the IP address of a time server for time synchronization.



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.

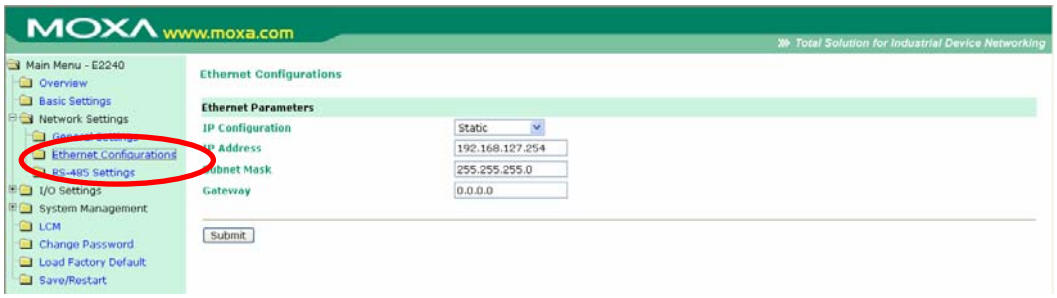


The Host Connection Watchdog activates Safe Status when the ioLogik E2240 loses its network connection for the specified amount of time. By default, the Watchdog is disabled. When the Watchdog is enabled and a timeout occurs, the ioLogik E2240 will enter Safe Status. You may use ioAdmin to configure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

To enable the Watchdog, select **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

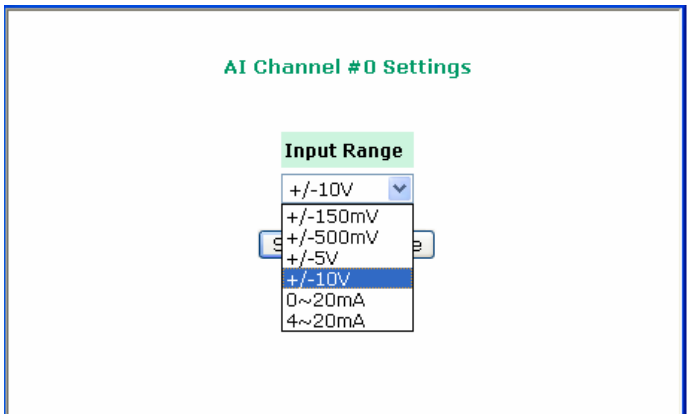
On the **RS-485 Settings** page, you may view the serial communication parameters, but no configuration changes are allowed. The baudrate may only be configured by the physical dial on the back of the ioLogik E2240. This is a reserved function.

I/O Settings

AI Channels

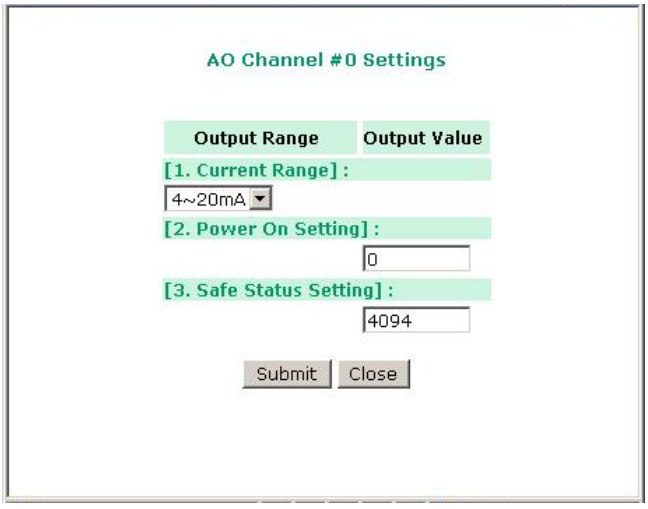
On the **AI Channels** page, you may view the status and range of each AI (analog input) channel. Under **Min** and **Max**, you may view the minimum and maximum values that have been detected for each sensor since the ioLogik E2240 was powered on.

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

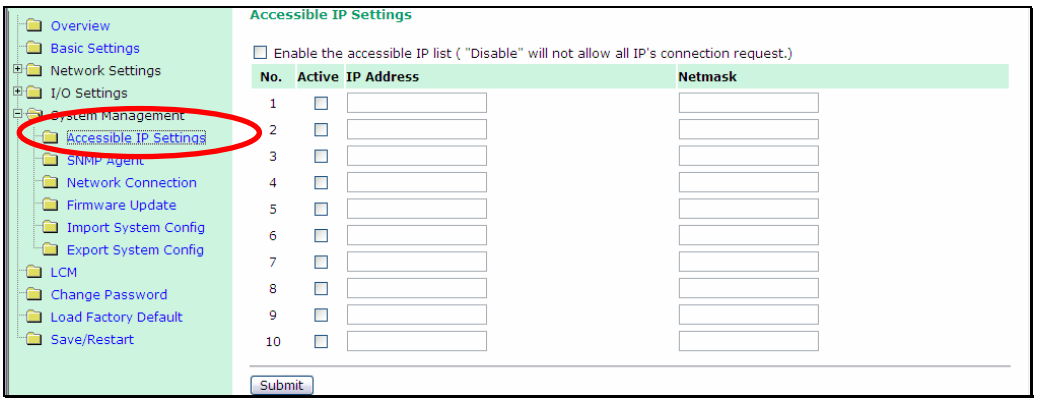
On the **AO Channels** page, you may configure each AO (analog output) channel by clicking on the channel. The available options are 0-10V, and 4~20 mA. You may use the **Power On** field to specify the channel's initial value when the ioLogik E2240 is powered on, and the **Safe Status** field to specify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

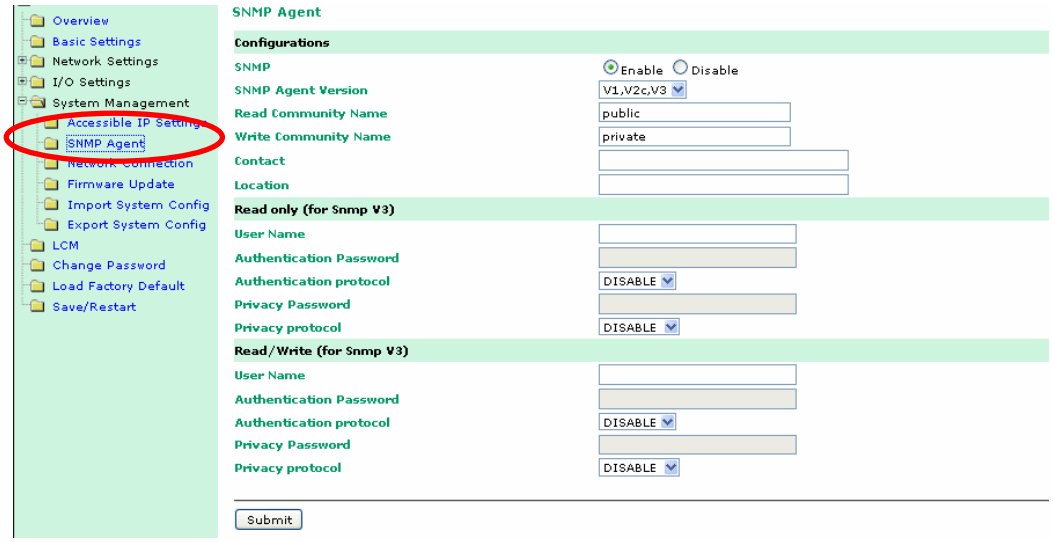
To allow unrestricted access
Deselect the **Enable the accessible IP list** option.

The following table contains additional configuration examples.

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

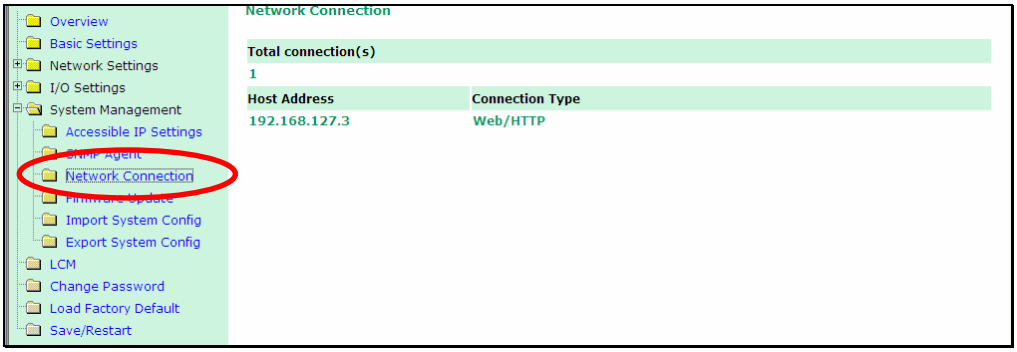
SNMP Agent

On the SNMP Agent page, you may enable SNMP and set the read and write settings. The ioLogik Ethernet I/O device supports SNMP v1, v2c, and V3 (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 for SNMP v1 and v2c, or use authentication for SNMP v3.



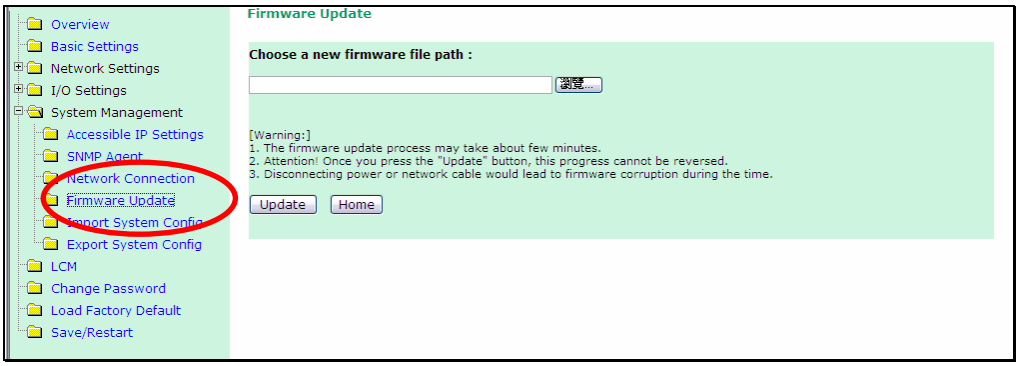
Network Connection

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



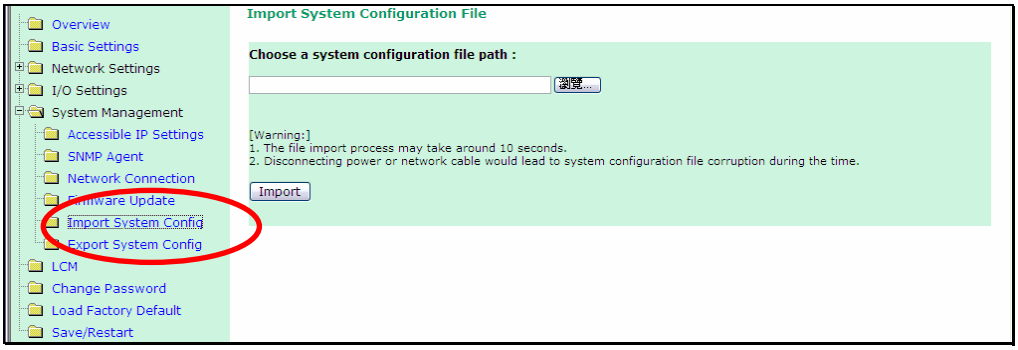
Firmware Update

On the **Firmware Update** page, you may load new or updated firmware onto the ioLogik.



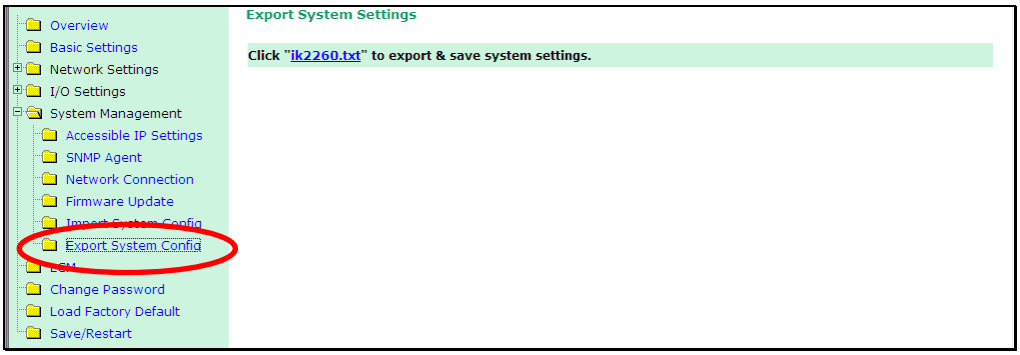
Import System Config

On the **Import System Config** page, you may import a configuration onto the ioLogik server. The configuration file must have been generated by ioAdmin or through the web console. This function can be used to duplicate settings between ioLogik servers. You will be prompted for the location of the configuration file (i.e., "ik2240.txt").



Export System Config

On the **Export System Config** page, you may save the ioLogik's configuration into a file for backup or import into another ioLogik server.



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, remember to reboot the system.

5

Active OPC Server Lite

In this chapter, we explain how to use ioAdmin to configure your ioLogik product.

The following topics are covered in this chapter:

- **OLE for Process Control**
- **Introduction to Active OPC Server Lite**
- **Active OPC Server Lite – From Pull to Push**
- **Features of Active OPC Server Lite**
- **Active OPC Server Lite Specifications**
  - Installation of Active OPC Server Lite
  - Installation of OPC Core Components
- **Active OPC Server LiteMain Screen Overview**
- **Menu Items**
  - File
  - System
  - Sort
  - Quick Links
- **Tag Generation**
  - Push Tag Configuration from ioAdmin
  - Advanced Settings
  - Heartbeat Interval
  - Read/Write Privilege
  - OPC Test Client

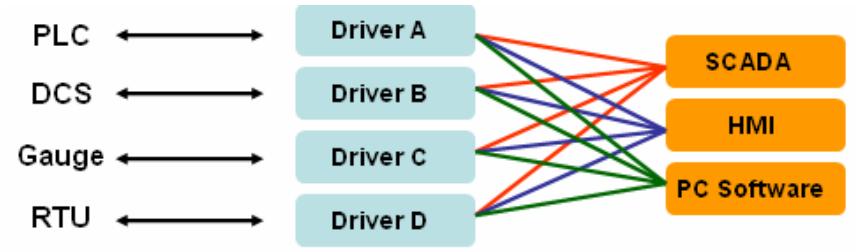
OLE for Process Control

OPC (originally OLE for process control) is an industry standard created with the collaboration of a number of leading worldwide automation hardware and software suppliers, working in cooperation with Microsoft. The standard defines methods for exchanging real-time automation data between PC-based clients using Microsoft operating systems. The organization that manages this standard is the OPC Foundation.

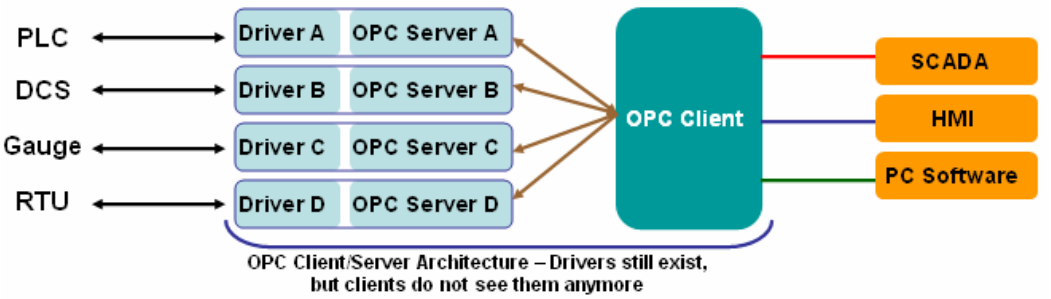
The OPC Specification is a non-proprietary technical specification that defines a set of standard interfaces based upon Microsoft's OLE/COM/DCOM platform and .NET technology. The application of the OPC standard interface makes possible interoperability between automation/control applications, field systems/devices and business/office applications.

Traditionally, each software or application developer was required to write a custom interface, or server/driver, to exchange data with hardware field devices. OPC eliminates this requirement by defining a common, high performance interface that permits this work to be done once, and then easily reused by HMI, SCADA, Control and custom applications.

[Drivers must be installed several times to connect to different devices]



[OPC Client/Server creates a common interface connecting to different devices]



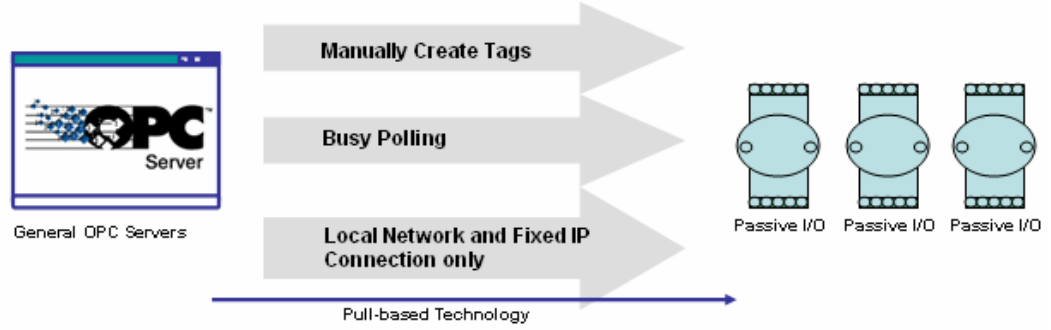
Introduction to Active OPC Server Lite

Moxa Active OPC Server Lite is a software package operated as an OPC driver of an HMI or SCADA system. It offers seamless connection from Moxa ioLogik series products to the SCADA systems, including the most popular Wonderware, Citect, and iFix. Active OPC Server Lite meets the latest standard of OPC DA3.0 that allows connections to various kinds of devices and host OPC machines.

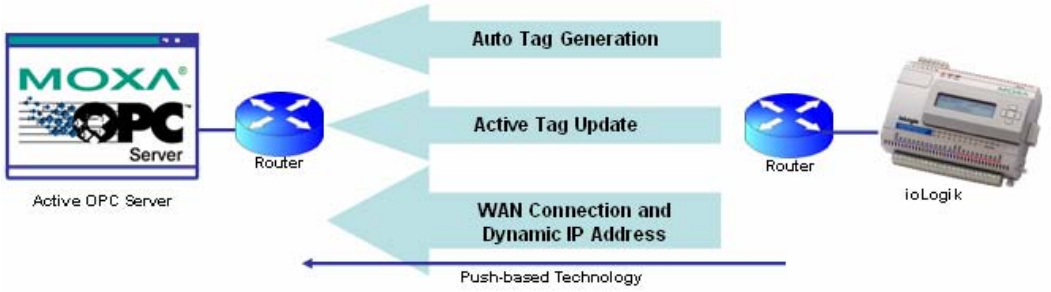
Active OPC Server Lite – From Pull to Push

When first looking up the I/O divices' Modbus table, users need to create one tag within 19 or more steps including specifying the IP address, selection of the protocols, and define the data type. The procedure is repeated over and over again until all the devices and tags are created. A technician can expect to take 1 minute to create just one tag. But what if there are 400 tags in the OPC system? Also, the more tags are used, the higher CPU loading will be taken.

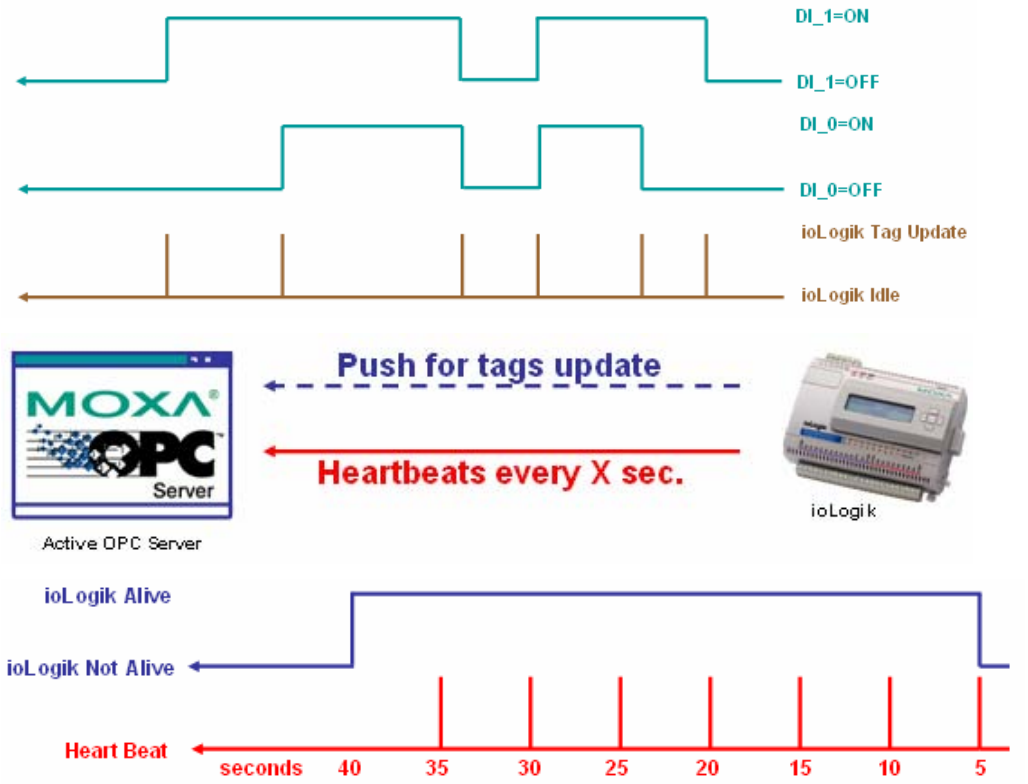
The general OPC also requires the connected I/O devices to use fixed IP address, if there are applications running on a public network (usually dynamic IPs) or portable measurements, there is no way to connect to an I/O device using OPC. This architecture is also called "pull" technology because the OPC server always polls the I/O devices from tag creation, IP connection and the tag status update.



Moxa Active Ethernet I/O – ioLogik series products provide the I/O status report via TCP/UDP message, e-mail or SNMP traps. These benefits have now expanded to the OPC technology. Without asking any questions, even the IP address, settings of a tag are automatically created by the ioLogik itself to notify which tag should be created. Users need only to launch the Active OPC Server program, and those I/O channels selected by a user will be "pushed" from an ioLogik to Active OPC Server.



The "push" technology also includes the update for the tags. When the I/O the status changes, there will be updates from the ioLogik to Active OPC Server Lite. Compared to constantly polling (pull-based) the status, this feature efficiently reduces the network bandwidth usage and speeds up the response time with event-driven, push-based status updates. At the same time, the heartbeat function visual confirms that ioLogik is "alive" and working.



Features of Active OPC Server Lite

Automatic tag generation

Without specifying IP addresses, I/O channels, and data formats one by one or editing and importing any configuration text files, Active OPC Server Lite creates the tags for the target ioLogik automatically. These tags are not fixed but created by users. After selecting the channels required to be update to Active OPC Server Lite, it will generate the tag configuration without asking any questions. Training for installation and configuration should be required to implement a general OPC Server package. For ioLogik users, learning the OPC technology, looking up Modbus address, configuring data format, assigning target IP and so on are not required.

Active tag update with heartbeat detection

ioLogik uses "Active" technology to update the I/O status. This includes the tag status update to Active OPC Server Lite. Compared to traditional OPC Servers, this mechanism reduces Ethernet bandwidth usage by 80%. At the same time, it increases the response time of the I/O channels 7 timers faster than before. The SCADA PC can now also be load balanced for its CPU time because it simply waits for updates instead of polling the I/O channel all the time.

Dynamic IP Address Support

Active OPC Server also delivers the flexibility of using dynamic IP addresses on the ioLogik. As for the traditional data acquisition application, I/O devices are not capable of using this approach. The flexibility of connections through firewall is also expanded.

Active OPC Server Lite Specifications

Hardware Requirements	
CPU	Intel Pentium (Pentium 4 and above)
RAM	512 MB (1024 MB recommended)
Network Interface	10/100Mb Ethernet
Software Requirements	
Operating System	Microsoft Windows 2000, XP or later
Editor (Not necessary)	Microsoft Office 2003 (Access 2003) or later
OPC Server Specifications	
OPC Data Access	1.0a, 2.0, 2.05a, 3.0
Max. tags	256
ioLogik Support	
Product Model	ioLogik E2210, E2212, E2214, E2240, E2242, E2260, E2262
Firmware version	V3.0 or above
ioAdmin version	V3.0 or above

Installation of Active OPC Server Lite

Active OPC Server Lite can be found in the **Document and Software CD**, or downloaded from Moxa Website. The following steps show how to install Active OPC Server Lite from the CD.

1. **Installation from CD**: Insert the Document and Software CD into the host computer. In the Software\AOPCLite directory of the CD, locate and run SETUP.EXE. The installation program will guide you through the installation process and install the Active OPC Server Lite utility.
2. **Open Active OPC Server Lite**: After installation is finished, run Active OPC Server Lite from the Windows Start menu: **Start →Program Files →MOXA →IO Server →ActiveOPC→ActiveOPC.**

Installation of OPC Core Components

OPC Core Components provides the necessary connection library of Active OPC Server Lite. This package must be installed in the computer where Active OPC Server Lite is.

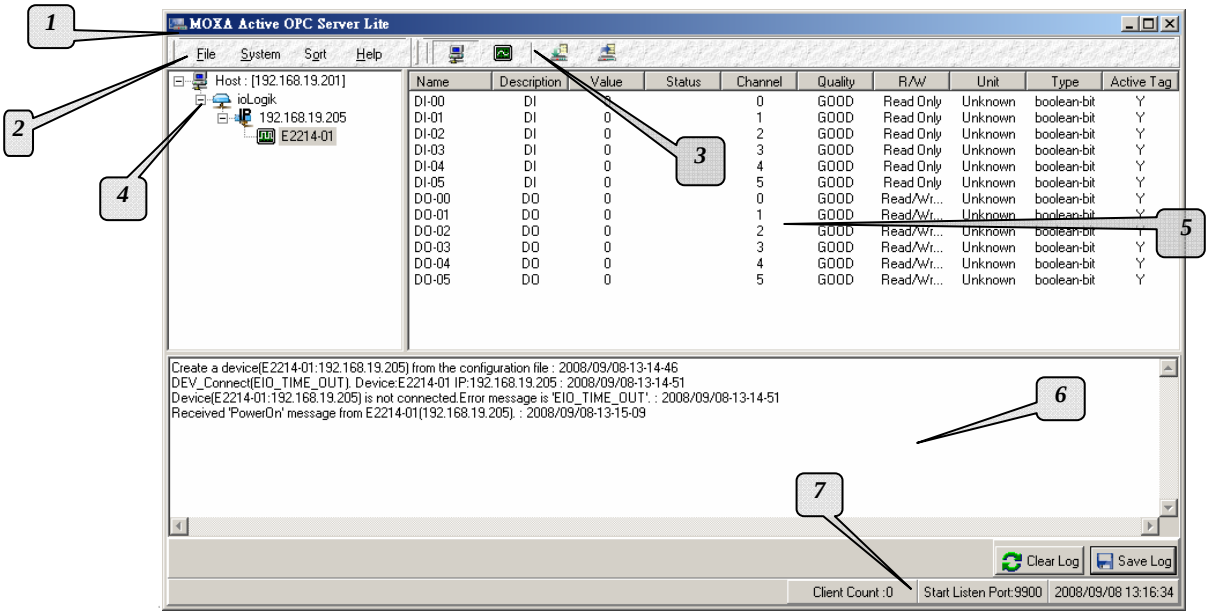
1. After Active OPC Server Lite installation is finished, run Setup OPC Core Components from the Windows Start menu: **Start →Program Files →MOXA →IO Server→ActiveOPC→Setup OPC Core Components**

The installation program will guide you through the installation process.

Active OPC Server Lite

Main Screen Overview

Active OPC Server Lite's main screen displays a figure of the mapped ioLogik with the status of every I/O tag. Note that configuration and tags are not available until you have the ioLogik to create the tags.

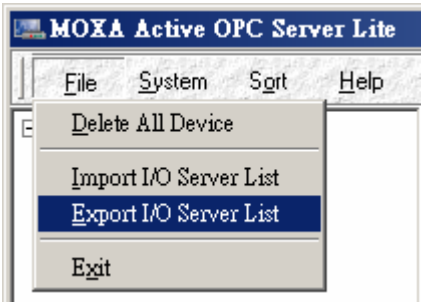


Active OPC Server Lite Main Screen
1. Title
2. Menu bar
3. Quick link
4. Navigation panel
5. Tag Window
6. Log Monitor
7. Status bar

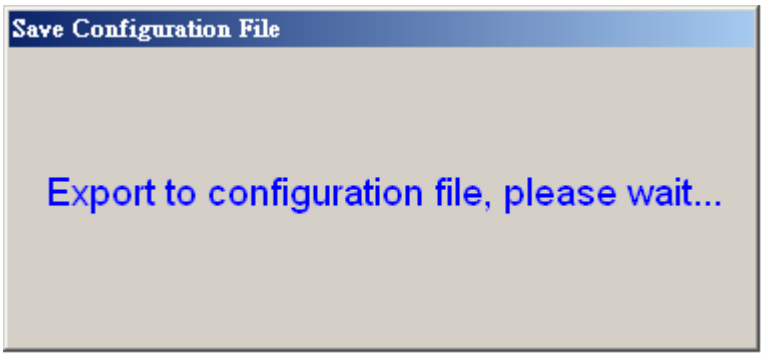
Menu Items

File

From the **File** menu, you can export the list of the ioLogik that are currently displayed in the navigation panel. You also can import a list into Active OPC Server Lite.

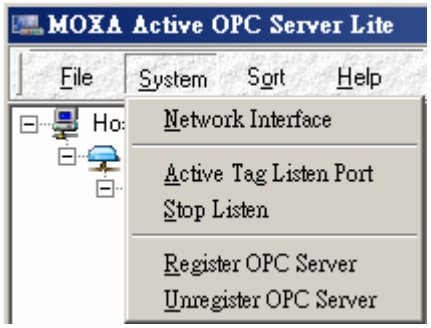


The file will have **.mdb** extension and can be opened using Microsoft Office - Access. The server list includes the current tag information of the mapped ioLogik. Saving the configuration when exiting the Active OPC Server is also recommended.



System

Several operations can be accessed from the **System** menu.



Network Interface allows you to select a network to use, if the PC has multiple network adaptors installed.

Active Tag Listen Port allows you to select the preferred TCP socket port for tag generation from ioAdmin.

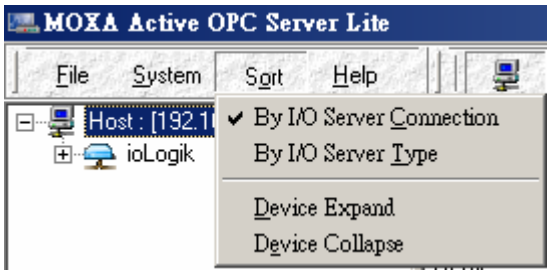
Stop Listen allows you to stop getting tag generation messages and I/O status updates.

Register OPC Server is used to register the DCOM components to the Windows system. After Active OPC Server Lite is installed, it will automatically configure the DCOM.

Unregister OPC Server is used to cancel the registration of the DCOM components from the Windows system.

Sort

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



Quick Links

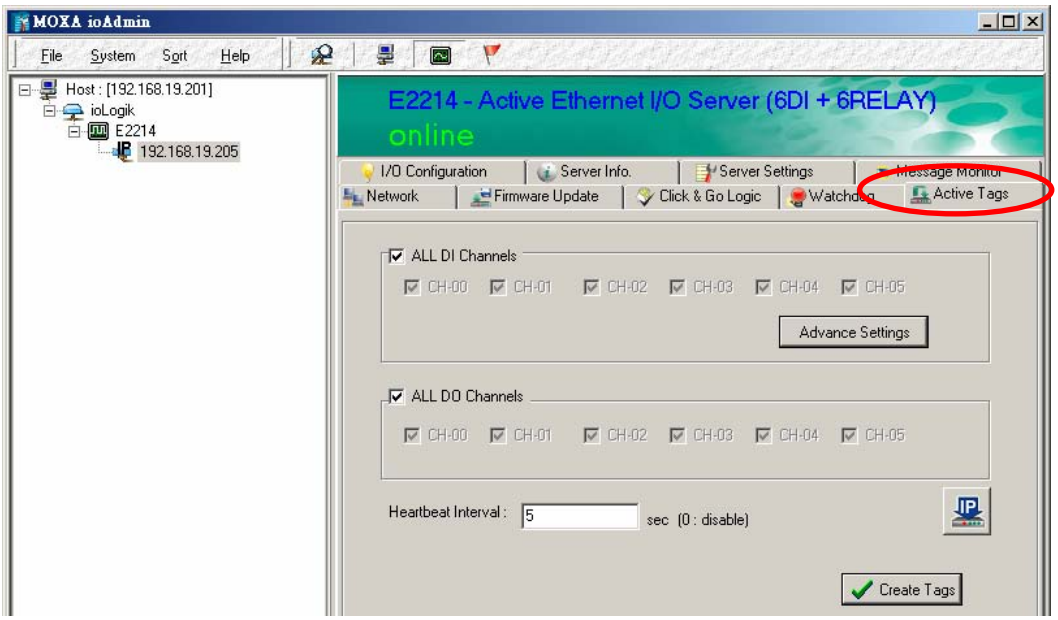
Quick links are provided to sort the server list and import/export configuration.

	Sort by connection
	Sort by server type
	Import configuration
	Export configuration

Tag Generation

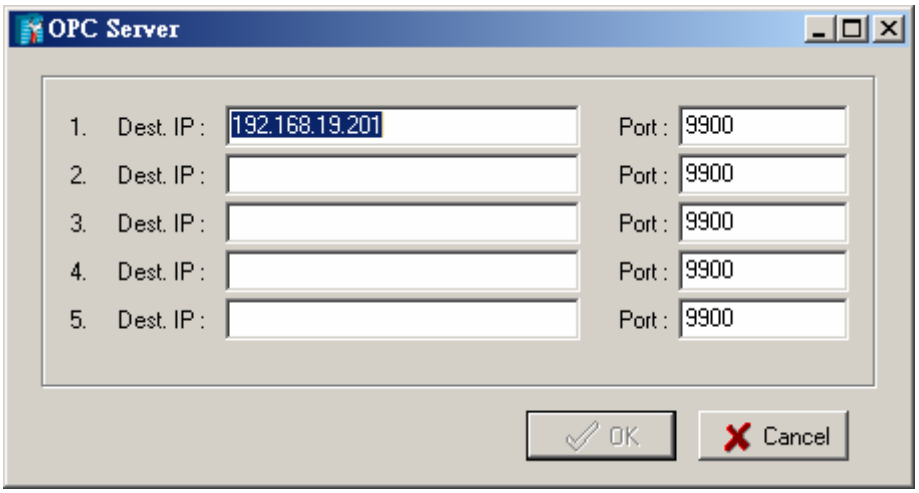
Push Tag Configuration from ioAdmin

Tag configuration of an ioLogik is specified by ioAdmin configuration utility. Start the ioAdmin, log in as an administrator and go to the **Active Tags**.



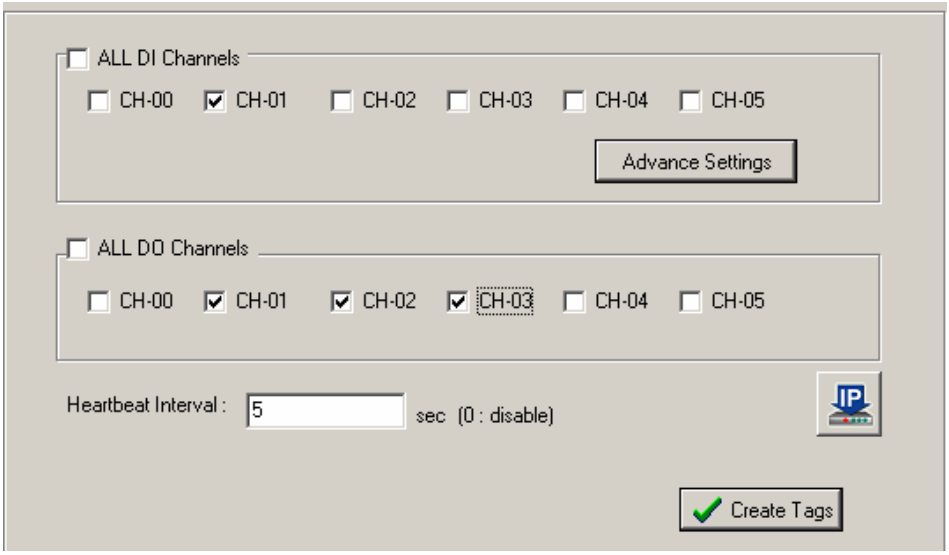
Following are the steps to create the tags.

1. Click on the **Set OPC Server Address** () button to specify the IP address of Active OPC Server Lite.



2. Click **Yes** to restart the ioLogik.

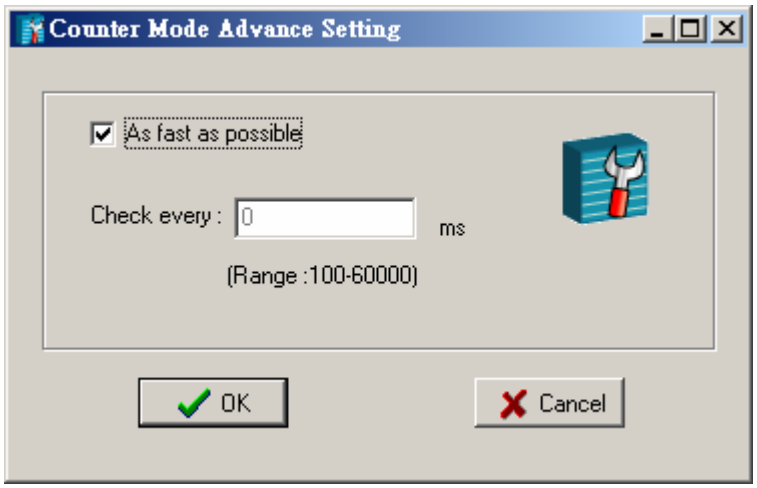
3. Specify the channels needed to be monitored by Active OPC Server Lite.



4. Click on the Create Tags button to push the tag configuration to Active OPC Server Lite.
5. Start the Active OPC Server Lite from Windows Start Menu. In the log monitor, a message will appear to confirm that the configuration was received. After that, tags are automatically created.

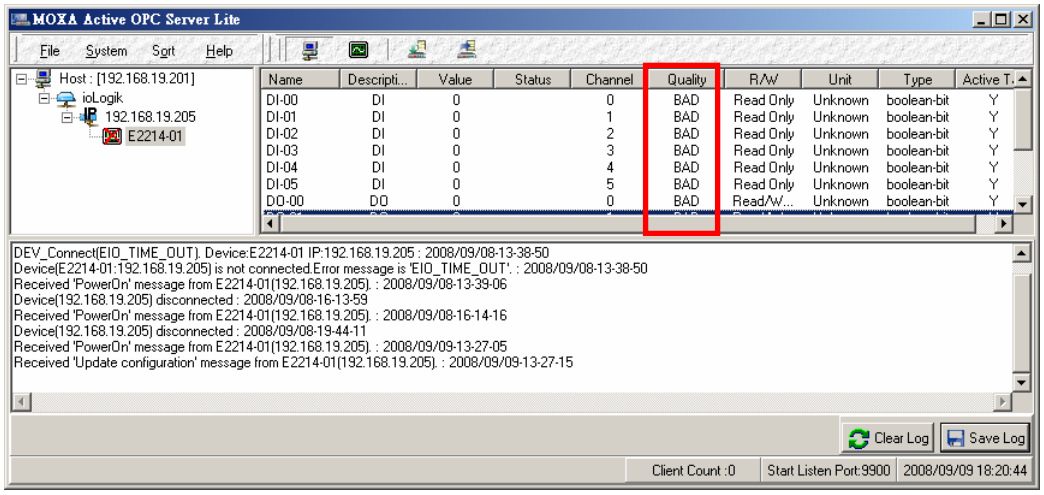
Advanced Settings

Advanced settings of the tags define the period that an ioLogik checks for the counter input status. By default, the status is checked as soon as it changes. Users can define the interval starting from 100 ms to 60 seconds.



Heartbeat Interval

Tags are event-driven and updated only when the status of an I/O channel changes, so when the status remains unchanged, there will not be an update to Active OPC Server Lite. To ensure the ioLogik is connected and alive, **Heartbeat Interval** can be used to determine the connection status between the ioLogik and Active OPC Server Lite. If the heartbeat interval is set and the network between the ioLogik and Active OPC Server Lite is down, Active OPC Server Lite will detect the stop of the heartbeat and the Quality column will show **BAD** to indicate the loss of the connection. Default interval is set to 0 seconds, which disables the heartbeat. The maximum interval is 65,535 seconds.



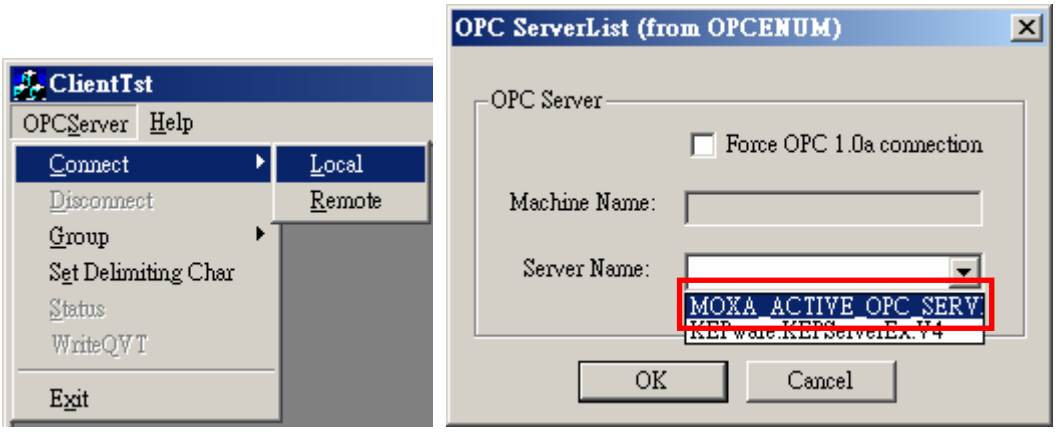
Read/Write Privilege

An input channel can only be read while an output channel is read/write acceptable showing on the Active OPC Server Lite. Note that if an output channel has been used in the Click&Go logic, the tags for that channel are read-only.

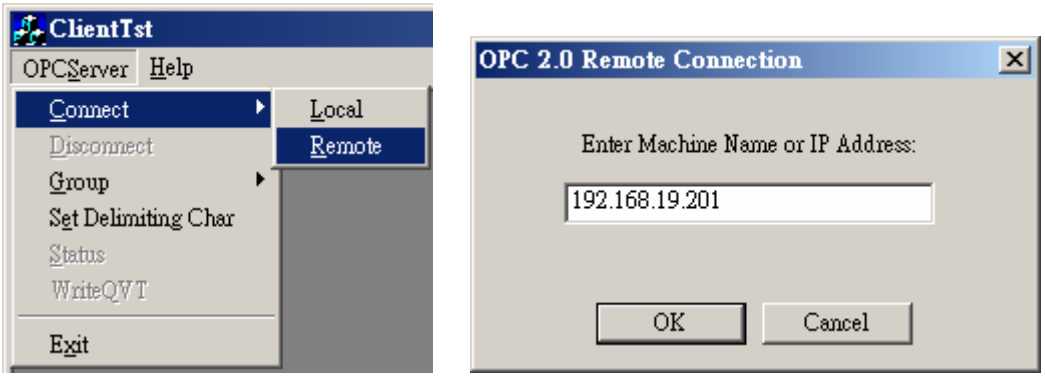
OPC Test Client

An OPC client software is embedded into the Active OPC Server Lite package for test purposes. After configuring the tags on the Active OPC Server Lite, this **ClientTest** can be launched from the Windows Start menu: **Start →Program Files →MOXA →IO Server →ActiveOPC→ClientTest**.

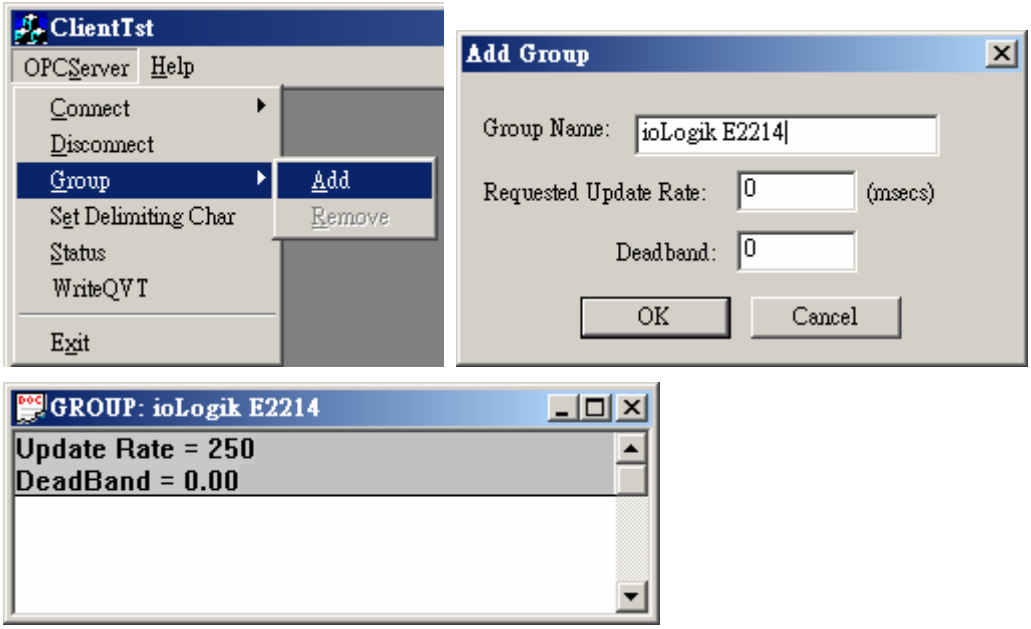
If Active OPC Server Lite is installed locally in the same PC, select **Connect → Local** from the menu bar. Specify the **MOXA ACTIVE OPC SERVER** in the **Server Name** column.



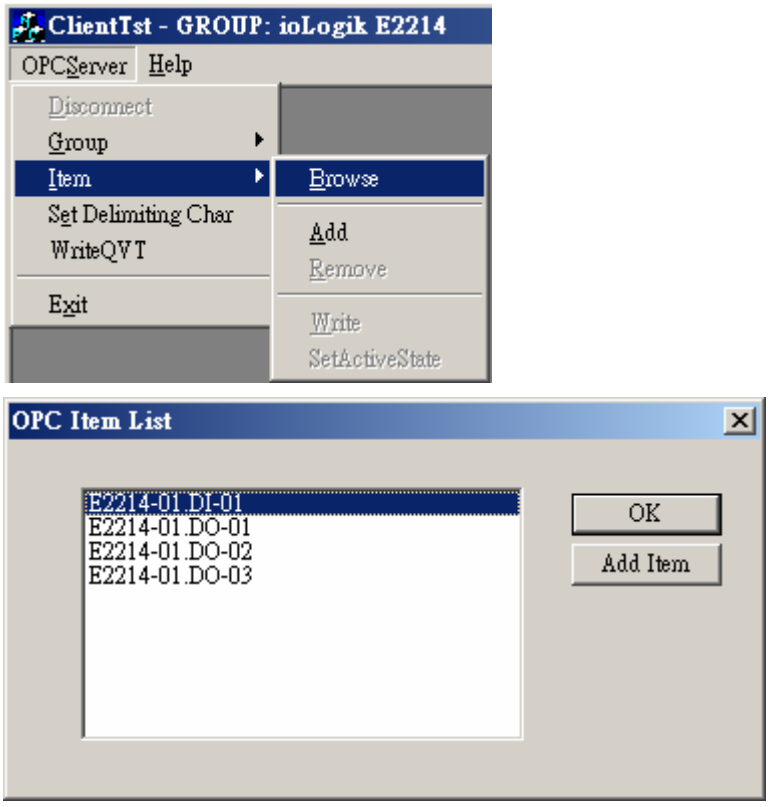
If the Active OPC Server Lite is installed on a remote PC, select **Connect → Remote** from the menu bar. Input the host name (i.e. Moxa_Client) or IP address and specify **MOXA ACTIVE OPC SERVER** in the **Server Name** column.

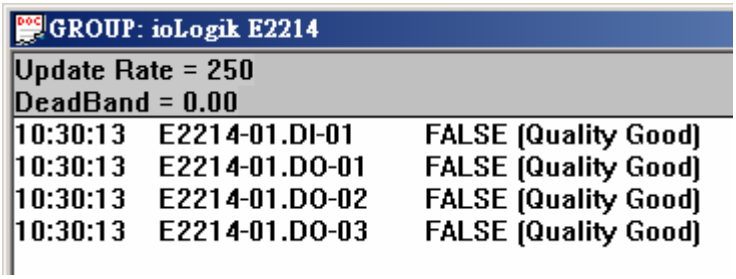


Click on the **Group → Add** and specify the **Group Name** (user-defined). A blank tag monitoring screen will start.

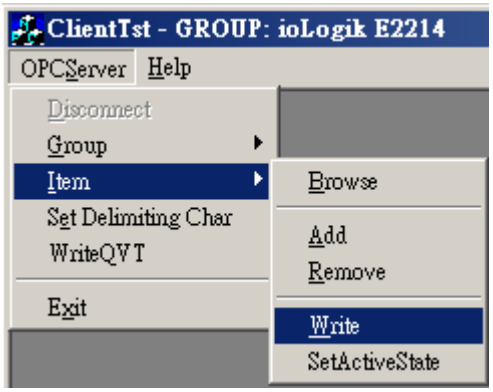


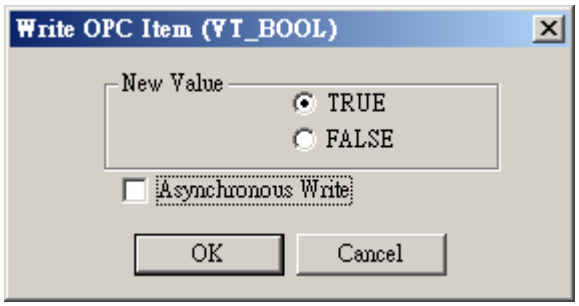
Click **Item → Browse** and select the channel needed to be monitored.





To write to the output channel, specify an output channel first. Then, select **Item → Write** from the menu bar.





A

Liquid Crystal Display Module (LCM)

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. The center button is used when modifying settings or 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

An "e" in the upper right hand corner of the display indicates that the parameter can be modified. Press the center button on the LCM to modify that parameter's settings.

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 to 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 to display the **restart now** submenu. Enter the **restart now** submenu to display the **restart** option. Press the center button to modify this option, then select **enable** to save changes and reboot the I/O server. The **disable** option has no effect.

ATTENTION

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 (Functions 1, 5, 15)

Reference	Address	Data Type	Description
00001	0x0000	1 bit	Reset CH0 AI min value Read: 0: no action Write: 1: reset AI min value 0: return illegal data value
00002	0x0001	1 bit	Reset CH1 AI min value Read: 0: no action Write: 1: reset AI min value 0: return illegal data value
00003	0x0002	1 bit	Reset CH2 AI min value Read: 0: no action Write: 1: reset AI min value 0: return illegal data value
00004	0x0003	1 bit	Reset CH3 AI min value Read: 0: no action Write: 1: reset AI min value 0: return illegal data value

Reference	Address	Data Type	Description
00005	0x0004	1 bit	Reset CH4 AI min value Read: 0: no action Write: 1: reset AI min value 0: return illegal data value
00006	0x0005	1 bit	Reset CH5 AI min value Read: 0: no action Write: 1: reset AI min value 0: return illegal data value
00007	0x0006	1 bit	Reset CH6 AI min value Read: 0: no action Write: 1: reset AI min value 0: return illegal data value
00008	0x0007	1 bit	Reset CH7 AI min value Read: 0: no action Write: 1: reset AI min value 0: return illegal data value
00009	0x0008	1 bit	Reset CH0 AI max value Read: 0: no action Write: 1: reset AI max value 0: return illegal data value
00010	0x0009	1 bit	Reset CH1 AI max value Read: 0: no action Write: 1: reset AI max value 0: return illegal data value
00011	0x000A	1 bit	Reset CH2 AI max value Read: 0: no action Write: 1: reset AI max value 0: return illegal data value

Reference	Address	Data Type	Description
00012	0x000B	1 bit	Reset CH3 AI max value Read: 0: no action Write: 1: reset AI max value 0: return illegal data value
00013	0x000C	1 bit	Reset CH4 AI max value Read: 0: no action Write: 1: reset AI max value 0: return illegal data value
00014	0x000D	1 bit	Reset CH5 AI max value Read: 0: no action Write: 1: reset AI max value 0: return illegal data value
00015	0x000E	1 bit	Reset CH6 AI max value Read: 0: no action Write: 1: reset AI max value 0: return illegal data value
00016	0x000F	1 bit	Reset CH7 AI max value Read: 0: no action Write: 1: reset AI max value 0: return illegal data value

1xxxx Read Only Coils (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 (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
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

Reference	Address	Data Type	Description
30023	0x0016	1 word	CH6 read AI max value
30024	0x0017	1 word	CH7 read AI max value

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

Reference	Address	Data Type	Description
40001	0x0000	1 word	CH0 AO value (0 to 4095)
40002	0x0001	1 word	CH1 AO value (0 to 4095)
40003	0x0002	1 word	CH0 AO power-on value (0 to 4095)
40004	0x0003	1 word	CH1 AO power-on value (0 to 4095)
40005	0x0004	1 word	CH0 AO safe value (0 to 4095)
40006	0x0005	1 word	CH1 AO safe value (0 to 4095)
40007	0x0006	1 word	CH0 AO range 0: 0 to 10 VDC 1: 4 to 20 mA Other: return illegal data value
40008	0x0007	1 word	CH1 AO range 0: 0 to 10 VDC 1: 4 to 20 mA Other: return illegal data value
40009	0x0008	1 word	CH0 AO power-on range 0: 0 to 10 VDC 1: 4 to 20 mA Other: return illegal data value
40010	0x0009	1 word	CH1 AO power-on range 0: 0 to 10 VDC 1: 4 to 20 mA Other: return illegal data value
40011	0x000A	1 word	CH0 AO safe range 0: 0 to 10 VDC 1: 4 to 20 mA Other: return illegal data value
40012	0x000B	1 word	CH1 AO safe range 0: 0 to 10 VDC 1: 4 to 20 mA Other: return illegal data value
40013	0x000C	1 word	CH0 AI range 00: +/-150 mV 01: +/-500 mV 02: +/-5V 03: +/-10V 04: 0 to 20 mA 05: 4 to 20 mA Other: return illegal data value

Reference	Address	Data Type	Description
40014	0x000D	1 word	CH1 AI range 00: +/-150 mV 01: +/-500 mV 02: +/-5V 03: +/-10V 04: 0 to 20 mA 05: 4 to 20 mA Other: return illegal data value
40015	0x000E	1 word	CH2 AI range 00: +/-150 mV 01: +/-500 mV 02: +/-5V 03: +/-10V 04: 0 to 20 mA 05: 4 to 20 mA Other: return illegal data value
40016	0x000F	1 word	CH3 AI range 00: +/-150 mV 01: +/-500 mV 02: +/-5V 03: +/-10V 04: 0 to 20 mA 05: 4 to 20 mA Other: return illegal data value
40017	0x0010	1 word	CH4 AI range 00: +/-150 mV 01: +/-500 mV 02: +/-5V 03: +/-10V 04: 0 to 20 mA 05: 4 to 20 mA Other: return illegal data value
40018	0x0011	1 word	CH5 AI range 00: +/-150 mV 01: +/-500 mV 02: +/-5V 03: +/-10V 04: 0 to 20 mA 05: 4 to 20 mA Other: return illegal data value

Reference	Address	Data Type	Description
40019	0x0012	1 word	CH6 AI range 00: +/-150 mV 01: +/-500 mV 02: +/-5V 03: +/-10V 04: 0 to 20 mA 05: 4 to 20 mA Other: return illegal data value
40020	0x0013	1 word	CH7 AI range 00: +/-150 mV 01: +/-500 mV 02: +/-5V 03: +/-10V 04: 0 to 20 mA 05: 4 to 20 mA Other: return illegal data value
40021	0x0014	1 word	CH0 AI power-on range 00: +/-150 mV 01: +/-500 mV 02: +/-5V 03: +/-10V 04: 0 to 20 mA 05: 4 to 20 mA Other: return illegal data value
40022	0x0015	1 word	CH1 AI power-on range 00: +/-150 mV 01: +/-500 mV 02: +/-5V 03: +/-10V 04: 0 to 20 mA 05: 4 to 20 mA Other: return illegal data value
40023	0x0016	1 word	CH2 AI power-on range 00: +/-150 mV 01: +/-500 mV 02: +/-5V 03: +/-10V 04: 0 to 20 mA 05: 4 to 20 mA Other: return illegal data value

Reference	Address	Data Type	Description
40024	0x0017	1 word	CH3 AI power-on range 00: +/-150 mV 01: +/-500 mV 02: +/-5V 03: +/-10V 04: 0 to 20 mA 05: 4 to 20 mA Other: return illegal data value
40025	0x0018	1 word	CH4 AI power-on range 00: +/-150 mV 01: +/-500 mV 02: +/-5V 03: +/-10V 04: 0 to 20 mA 05: 4 to 20 mA Other: return illegal data value
40026	0x0019	1 word	CH5 AI power-on range 00: +/-150 mV 01: +/-500 mV 02: +/-5V 03: +/-10V 04: 0 to 20 mA 05: 4 to 20 mA Other: return illegal data value
40027	0x001A	1 word	CH6 AI power-on range 00: +/-150 mV 01: +/-500 mV 02: +/-5V 03: +/-10V 04: 0 to 20 mA 05: 4 to 20 mA Other: return illegal data value
40028	0x001B	1 word	CH7 AI power-on range 00: +/-150 mV 01: +/-500 mV 02: +/-5V 03: +/-10V 04: 0 to 20 mA 05: 4 to 20 mA Other: return illegal data value

Reference	Address	Data Type	Description
40029	0x001C	1 word	CH0 AI safe range 00: +/-150 mV 01: +/-500 mV 02: +/-5V 03: +/-10V 04: 0 to 20 mA 05: 4 to 20 mA Other: return illegal data value
40030	0x001D	1 word	CH1 AI safe range 00: +/-150 mV 01: +/-500 mV 02: +/-5V 03: +/-10V 04: 0 to 20 mA 05: 4 to 20 mA Other: return illegal data value
40031	0x001E	1 word	CH2 AI safe range 00: +/-150 mV 01: +/-500 mV 02: +/-5V 03: +/-10V 04: 0 to 20 mA 05: 4 to 20 mA Other: return illegal data value
40032	0x001F	1 word	CH3 AI safe range 00: +/-150 mV 01: +/-500 mV 02: +/-5V 03: +/-10V 04: 0 to 20 mA 05: 4 to 20 mA Other: return illegal data value
40033	0x0020	1 word	CH4 AI safe range 00: +/-150 mV 01: +/-500 mV 02: +/-5V 03: +/-10V 04: 0 to 20 mA 05: 4 to 20 mA Other: return illegal data value

Reference	Address	Data Type	Description
40034	0x0021	1 word	CH5 AI safe range 00: +/-150 mV 01: +/-500 mV 02: +/-5V 03: +/-10V 04: 0 to 20 mA 05: 4 to 20 mA Other: return illegal data value
40035	0x0022	1 word	CH6 AI safe range 00: +/-150 mV 01: +/-500 mV 02: +/-5V 03: +/-10V 04: 0 to 20 mA 05: 4 to 20 mA Other: return illegal data value
40036	0x0023	1 word	CH7 AI safe range 00: +/-150 mV 01: +/-500 mV 02: +/-5V 03: +/-10V 04: 0 to 20 mA 05: 4 to 20 mA Other: return illegal data value
40337	0x0150	1 word	Internal Register 00 Value
40338	0x0151	1 word	Internal Register 01 Value
40339	0x0152	1 word	Internal Register 02 Value
40340	0x0153	1 word	Internal Register 03 Value
40341	0x0154	1 word	Internal Register 04 Value
40342	0x0155	1 word	Internal Register 05 Value
40343	0x0156	1 word	Internal Register 06 Value
40344	0x0157	1 word	Internal Register 07 Value
40345	0x0158	1 word	Internal Register 08 Value
40346	0x0159	1 word	Internal Register 09 Value
40347	0x015A	1 word	Internal Register 10 Value
40348	0x015B	1 word	Internal Register 11 Value
40349	0x015C	1 word	Internal Register 12 Value
40350	0x015D	1 word	Internal Register 13 Value
40351	0x015E	1 word	Internal Register 14 Value
40352	0x015F	1 word	Internal Register 15 Value
40353	0x0160	1 word	Internal Register 16 Value
40354	0x0161	1 word	Internal Register 17 Value
40355	0x0162	1 word	Internal Register 18 Value
40356	0x0163	1 word	Internal Register 19 Value

Reference	Address	Data Type	Description
40357	0x0164	1 word	Internal Register 20 Value
40358	0x0165	1 word	Internal Register 21 Value
40359	0x0166	1 word	Internal Register 22 Value
40360	0x0167	1 word	Internal Register 23 Value

C

Used Network Port Numbers

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
9020	TCP	Peer-to-peer function
69	UDP	Export/import file
9000	TCP	Active message (default)
9000	UDP	Active message (default)
9900	TCP	Active Tags updates (default)
4040	TCP	ioEventLog

D

SNMP MIB II

RFC1213 MIB II Supported SNMP Variables

The following SNMP variables are built into the ioLogik firmware and are compliant with RFC1213 MIB II.

System MIB			
SysDescr	SysUpTime	SysName	SysServices
SysObjectID	SysContact	SysLocation	

Interfaces MIB			
ifNumber	ifPhysAddress	ifInDiscards	ifOutDiscards
ifIndex	ifAdminStatus	ifInErrors	ifOutErrors
ifDescr	ifOperStatus	ifInUnknownProtos	ifOutQLen
ifType	ifLastChange	ifOutOctets	ifSpecific
ifMtu	ifInOctets	ifOutUcastPkts	
ifSpeed	ifInUcastPkts	ifOutNUcastPkts	

IP MIB			
ipForwarding	ipOutNoRoutes	ipAdEntBcastAddr	ipRouteAge
ipDefaultTTL	ipReasmTimeout	ipAdEntReasmMaxSize	ipRouteMask
ipInreceives	ipReasmReqds	ipRouteDest	ipRouteMetric5
ipInHdrErrors	ipReasmOKs	ipRouteIfIndex	ipRouteInfo
ipInAddrErrors	ipReasmFails	ipRouteMetric1	IpNetToMediaIfIndex
ipForwDatagrams	ipFragOKs	ipRouteMetric2	IpNetToMediaPhysAddress
ipInUnknownProtos	ipFragFails	ipRouteMetric3	IpNetToMediaNetAddress
ipInDiscards	ipFragCreates	ipRouteMetric4	IpNetToMediaType
ipInDelivers	ipAdEntAddr	ipRouteNextHop	IpRoutingDiscards
ipOutRequests	ipAdEntIfIndex	ipRouteType	
ipOutDiscards	ipAdEntNetMask	ipRouteProto	

ICMP MIB			
IcmpInMsgs	IcmpInEchos	IcmpOutDestUnreachs	IcmpOutTimestamps
IcmpInErrors	IcmpInEchoReps	IcmpOutTimeExcds	IcmpOutTimestampReps
IcmpInDestUnreachs	IcmpInTimestamps	IcmpOutParmProbs	IcmpOutAddrMasks
IcmpInTimeExcds	IcmpTimestampReps	IcmpOutSrcQuenchs	IcmpOutAddrMaskReps
IcmpInParmProbs	IcmpInAddrMasks	IcmpOutRedirects	
IcmpInSrcQuenchs	IcmpOutMsgs	IcmpOutEchos	
IcmpInRedirects	IcmpOutErrors	IcmpOutEchoReps	

Interfaces MIB			
ifNumber	ifPhysAddress	ifInDiscards	ifOutDiscards
ifIndex	ifAdminStatus	ifInErrors	ifOutErrors
ifDescr	ifOperStatus	ifInUnknownProtos	ifOutQLen
ifType	ifLastChange	ifOutOctets	ifSpecific
ifMtu	ifInOctets	ifOutUcastPkts	
ifSpeed	ifInUcastPkts	ifOutNUcastPkts	

UDP MIB			
UdpInDatagrams	UdpInErrors	UdpLocalAddress	
UdpNoPorts	UdpOutDatagrams	UdpLocalPort	

Address Translation MIB			
AtIfIndex	AtPhysAddress	AtNetAddress	

TCP MIB			
tcpRtoAlgorithm	tcpPassiveOpens	tcpOutSegs	tcpConnRemAddress
tcpRtoMin	tcpAttempFails	tcpRetransSegs	tcpConnRemPort
tcpRtoMax	tcpEstabResets	tcpConnState	tcpInErrs
tcpMaxConn	tcpCurrEstab	tcpConnLocalAddress	tcpOutRsts
tcpActiveOpens	tcpInSegs	tcpConnLocalPort	

SNMP MIB		
snmpInPkts	snmpInGenErrs	snmpOutBadValues
snmpOutPkts	snmpInTotalReqVars	snmpOutGenErrs
snmpInBadVersions	snmpInTotalSetVars	snmpOutGetRequests
snmpInBadCommunityNames	snmpInGetRequests	snmpOutGetNexts
snmpInBadCommunityUses	snmpInGetNexts	snmpOutSetRequests
snmpInASNParseErrs	snmpInSetRequests	snmpOutGetResponses
snmpInTooBigs	snmpInGetResponses	snmpOutTraps
snmpInNoSuchNames	snmpInTraps	snmpEnableAuthenTraps
snmpInBadValues	snmpOutTooBigs	
snmpInReadOnlys	snmpOutNoSuchNames	

Private MIB File and SNMP Variables

Moxa also provides an SNMP to I/O MIB file that can help you monitor I/O status with SNMP software. You can find the MIB file on the Document and Software CD.

Moxa-IO-MIB		
totalChannelNumber	AI03-Index	AI06-Min
serverMode	AI03-Type	AI06-Max
systemTime	AI03-Range	AI07-Index
firmwareVersion	AI03-Value	AI07-Type
AI00-Index	AI03-Min	AI07-Range
AI00-Type	AI03-Max	AI07-Value
AI00-Range	AI04-Index	AI07-Min
AI00-Value	AI04-Type	AI07-Max
AI00-Min	AI04-Range	AO00-Index
AI00-Max	AI04-Value	AO00-Type
AI01-Index	AI04-Min	AO00-Range
AI01-Type	AI04-Max	AO00-Value
AI01-Range	AI05-Index	AO01-Index
AI01-Value	AI05-Type	AO01-Type
AI01-Min	AI05-Range	AO01-Range
AI01-Max	AI05-Value	AO01-Value
AI02-Index	AI05-Min	
AI02-Type	AI05-Max	
AI02-Range	AI06-Index	

Moxa-IO-MIB		
AI02-Value	AI06-Type	
AI02-Min	AI06-Range	
AI02-Max	AI06-Value	

E

CGI Commands

Using a web browser or standard HTTP protocol will make it easier for a Security SCADA system to monitor and control an ioLogik via CGI commands.

Syntax to get the settings is as follows. Starting with the ioLogik's IP or URL, specify **getParam.cgi** with a question mark. Then specify the command with another question mark as the ending. The commands are case sensitive and the **&** sign is used to combine multiple commands.

http://IP/getParam.cgi?command _channel=?&command _channel=?&.....(Max 200 char)

Commands to get system information	Commands to get system information
DATE	FWR_V
TIME	MOD_NAME
IP	SN_NUM
LOC	MAC_ADDR
DESC	

Commands to get AI information	Commands to get AI information
AIValue_00	AIValue_01
AIRange_00 (0:+/-150mV, 1:+/-500mV, 2:+/-5V, 3:+/-10V, 4:0-20mA, 5:4-20mA)	AIRange_01 (0:+/-150mV, 1:+/-500mV, 2:+/-5V, 3:+/-10V, 4:0-20mA, 5:4-20mA)
AIMin_00	AIMin_01
AIMax_00	AIMax_01
AIValue_02	AIValue_03
AIRange_02 (0:+/-150mV, 1:+/-500mV, 2:+/-5V, 3:+/-10V, 4:0-20mA, 5:4-20mA)	AIRange_03 (0:+/-150mV, 1:+/-500mV, 2:+/-5V, 3:+/-10V, 4:0-20mA, 5:4-20mA)
AIMin_02	AIMin_03
AIMax_02	AIMax_03
AIValue_04	AIValue_05
AIRange_04 (0:+/-150mV, 1:+/-500mV, 2:+/-5V, 3:+/-10V, 4:0-20mA, 5:4-20mA)	AIRange_05 (0:+/-150mV, 1:+/-500mV, 2:+/-5V, 3:+/-10V, 4:0-20mA, 5:4-20mA)
AIMin_04	AIMin_05
AIMax_04	AIMax_05
AIValue_06	AIValue_07
AIRange_06 (0:+/-150mV, 1:+/-500mV, 2:+/-5V, 3:+/-10V, 4:0-20mA, 5:4-20mA)	AIRange_07 (0:+/-150mV, 1:+/-500mV, 2:+/-5V, 3:+/-10V, 4:0-20mA, 5:4-20mA)
AIMin_06	AIMin_07
AIMax_06	AIMax_07

Commands to get AO information	Commands to get AO information
AOValue_00	AOValue_01
AOValueP_00 (Power On Value)	AOValueP_01 (Power On Value)
AOValueS_00 (Safe Mode Value)	AOValueS_01 (Safe Mode Value)
AORange_00 (0:0-10V, 1:4-20mA)	AORange_01 (0:0-10V, 1:4-20mA)

Syntax to get the settings is as follows. Starting with the ioLogik's IP or URL, specify **setParam.cgi** with a question mark. Then specify the command with another question mark as the ending. Those commands are case sensitive and the **&** sign is used to combine multiple commands.

Commands to set AI channels	Commands to set AI channels
AIRange_00 (0:+/-150mV, 1:+/-500mV, 2:+/-5V, 3:+/-10V, 4:0-20mA, 5:4-20mA)	AIRange_01 (0:+/-150mV, 1:+/-500mV, 2:+/-5V, 3:+/-10V, 4:0-20mA, 5:4-20mA)
AIRange_02 (0:+/-150mV, 1:+/-500mV, 2:+/-5V, 3:+/-10V, 4:0-20mA, 5:4-20mA)	AIRange_03 (0:+/-150mV, 1:+/-500mV, 2:+/-5V, 3:+/-10V, 4:0-20mA, 5:4-20mA)
AIRange_04 (0:+/-150mV, 1:+/-500mV, 2:+/-5V, 3:+/-10V, 4:0-20mA, 5:4-20mA)	AIRange_05 (0:+/-150mV, 1:+/-500mV, 2:+/-5V, 3:+/-10V, 4:0-20mA, 5:4-20mA)
AIRange_06 (0:+/-150mV, 1:+/-500mV, 2:+/-5V, 3:+/-10V, 4:0-20mA, 5:4-20mA)	AIRange_07 (0:+/-150mV, 1:+/-500mV, 2:+/-5V, 3:+/-10V, 4:0-20mA, 5:4-20mA)

Commands to set AO channels	Commands to set AO Channels
AOValue_00	AOValue_01
AOValueP_00 (Power On Value)	AOValueP_01 (Power On Value)
AOValueS_00 (Safe Mode Value)	AOValueS_01 (Safe Mode Value)
AORange_00 (0:0-10V, 1:4-20mA)	AORange_01 (0:0-10V, 1:4-20mA)

F

Factory Default Settings

The ioLogik E2240 is configured with the following factory defaults:

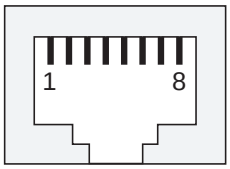
Default IP address:	**192.168.127.254**
Default Netmask:	**255.255.255.0**
Default Gateway:	**0.0.0.0**
Communication watchdog:	**Disable**
Modbus/TCP Alive Check:	**ON**
Modbus TCP Timeout Interval:	**60 seconds**
AI Input Range:	**-10 to 10V**
AO Output Range:	**0 to 10V**
AO Safe Status:	**Off, 0V**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

G

Pinouts and Cable Wiring

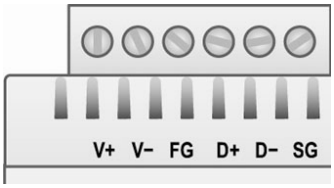
Ethernet Port Pinouts

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



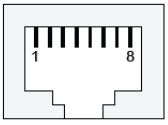
Serial Port Pinouts

E2240 RS-485 Network Adapter Pin Assignment



Pin Assignment of Terminal Blocks

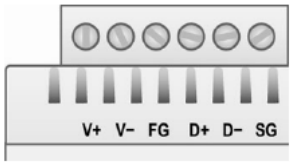
Ethernet



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

Power / RS-485

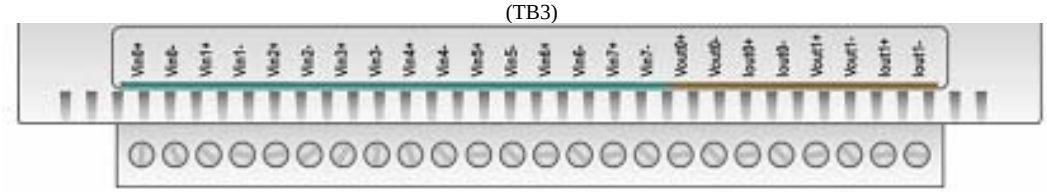
(TB1 / TB2)



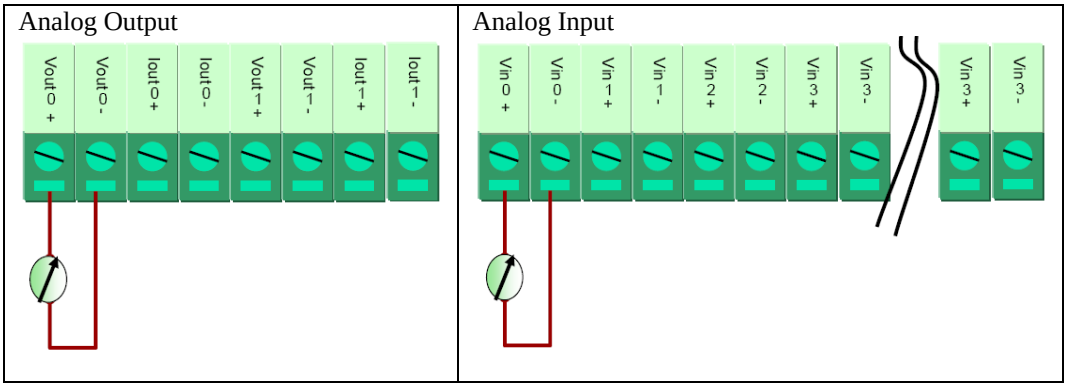
I/O (left to right)

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-

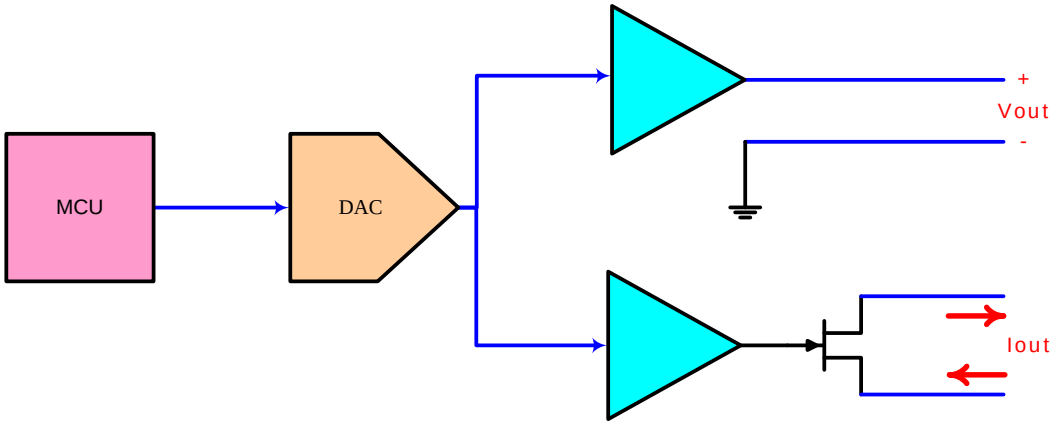
(TB3)



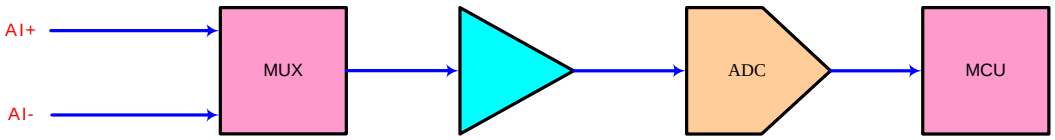
I/O Device Wiring



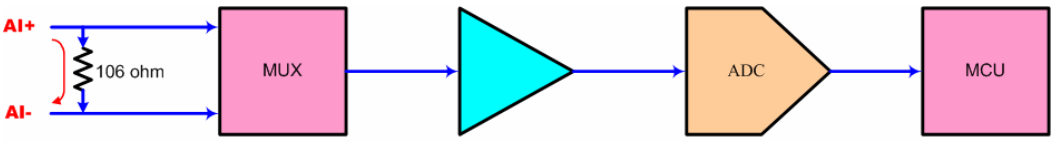
AO Schematic:



AIN Schematic (Voltage Mode)



AIN Schematic (Current Mode)



H

Restriction of Hazardous Substance Material Declaration

Electronic information products may contain hazardous materials, such as lead, mercury, cadmium, Cr＋6, multi-bromines biphenyl, and multi-bromines diphenyl oxide. In order to minimize the impact to human and environmental health, care must be taken when using, disposing of, and disassembling an electronic information product. The following table lists the hazardous substances and elements that are contained in this electronic information product.

	Product: ioLogik E2240					
	Toxic and Hazardous Substances and Elements					
Product Component	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr+6)	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
PCB (AIO)	X	O	O	O	O	O
ADG	X	O	O	O	O	O
PCB (CPU)	X	O	O	O	O	O
X: Component contains the substance O: Component does not contain the substance						