ioLogik E1200 Series User's Manual

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ioLogik E1200 series User's Manual

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1
Introduction

The ioLogik E1200 series is a stand-alone remote Ethernet I/O server that can connect sensors and on/off switches for automation applications over Ethernet and IP-based networks.

The following topics are covered in this chapter:

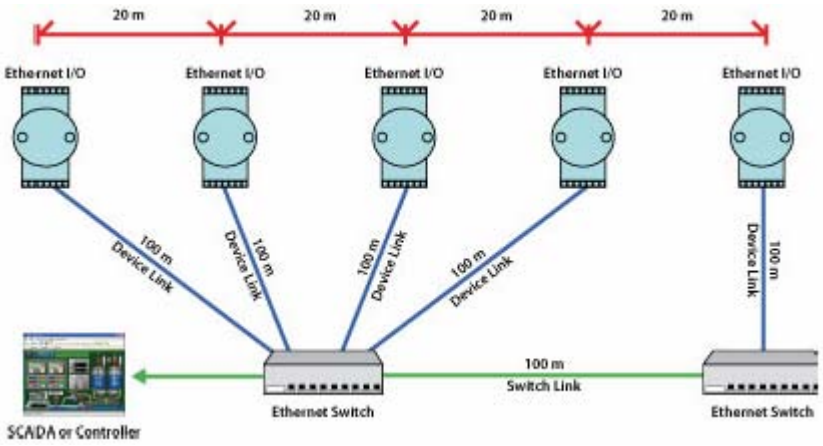
- **Overview**
  - Star Topology of Ethernet Automation
  - Daisy-chain Ethernet I/O Connection
  - Efficient Ethernet Device Connectivity
- **Product Model Information**
- **Product Features**
- **Package List**
- **Product Specifications**
- **Physical Dimensions**
- **Hardware Reference**
  - Panel Guide
  - LED Indicators

Overview

The ioLogik E1200 series is a stand-along, remote Ethernet I/O which has two embedded switch ports. They are designed for remote data acquisition and monitoring of attached sensors, transmitters, transducers, and valves over a network.

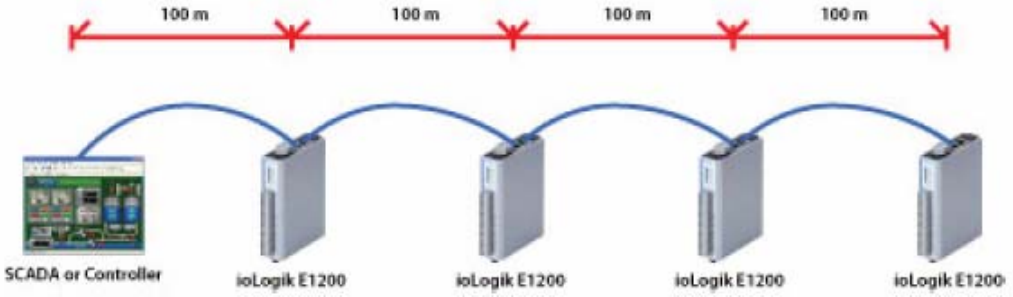
Star Topology of Ethernet Automation

Ethernet requires infrastructure equipment such as switches for connecting a variety of different devices to the network. This is unlike most field-bus automation networks that use a daisy-chain topology, which presents a bit of a problem for Ethernet automation applications since when connecting to Ethernet, meters and gauges must be formed in a "star" configuration. The ioLogik E1200 series provides an alternative to spending the time and money needed to figure out the best way to hook up your Ethernet switches. Since each E1200 unit has two built-in Ethernet switches, the E1200 solution is tailor-made for a daisy-chain type configuration.



Daisy-chain Ethernet I/O Connection

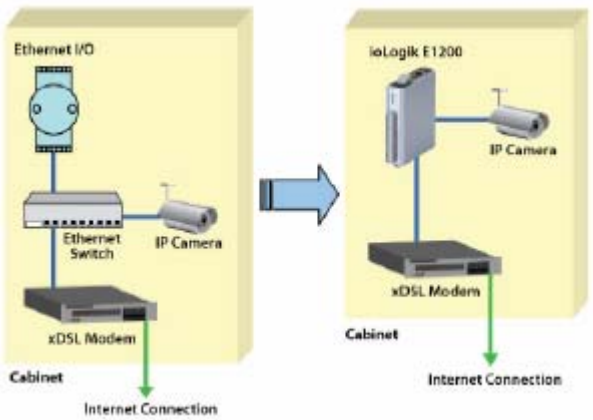
The ioLogik E1200 industrial remote Ethernet I/O has two embedded Ethernet switch ports that allow information to flow to another local Ethernet device or connect to the next ioLogik in the daisy-chain. Applications such as factory automation, security and surveillance systems, and tunnel monitoring, can make use of daisy-chain Ethernet for building multi-drop I/O networks over standard Ethernet cables. Many industrial automation users are familiar with the multi-drop configuration typically used in fieldbus applications. The daisy-chain function on the ioLogik E1200 not only increases the connection between machines and panels, but also lowers the cost of buying separate Ethernet switches, and at the same time reduces labor fees and cabling by a large percentage. For example, if a production facility contains 700 stations (20 points per station), the wiring cost reduction can reach 15% of the total implementation cost.



Efficient Ethernet Device Connectivity

The ioLogik E1200's built-in Ethernet switch ports can be cascaded to other Ethernet devices at the same location. A typical situation is a remote site that has a few sensors, devices, and Internet connectivity. Take a roadside cabinet as an example. The IP camera monitors activity on the street and an Ethernet I/O device handles environmental monitoring, intrusion, and alarms, and triggers the camera to take snapshots when needed.

The traditional approach for this kind of remote monitoring application requires an additional switch or hub for connecting the Ethernet I/O device to the IP camera. A better approach is to connect another Ethernet device such as a PLC controller or an IPC in the same cabinet and use the industrial switch embedded in the ioLogik E1200. Not only does this solution reduce the number of failure points associated with an additional switch or hub, but it also reduces the amount of wiring needed for power, signals, and the network. Space inside the cabinet can also be saved.



Product Model Information

Model	Description
ioLogik E1210	Remote Ethernet I/O with 2-port Ethernet switch and 16 DIs
ioLogik E1211	Remote Ethernet I/O with 2-port Ethernet switch and 16 DOs
ioLogik E1212	Remote Ethernet I/O with 2-port Ethernet switch, 8 DIs, and 8 DIOs
ioLogik E1214	Remote Ethernet I/O with 2-port Ethernet switch, 6 DIs, and 6 relays
ioLogik E1240	Remote Ethernet I/O with 2-port Ethernet switch and 8 AIs

Product Features

- Built-in 2-port Ethernet switch for daisy-chain topologies.
- Free support of Moxa's push-based Active OPC Server Lite.
  - Seamlessly connect to any SCADA system
  - Save 80% on network bandwidth
  - I/O response that's seven times faster
- User-defined Modbus/TCP addressing
- MXIO programming library for Windows and WinCE VB/VC.NET and Linux C APIs
- Web configuration with Import/Export function

Package List

The ioLogik E1200 is shipped with the following items:

Standard Accessories

- ioLogik E1210 Remote Ethernet I/O Server.
- Document and Software CD.
- Quick Installation Guide.

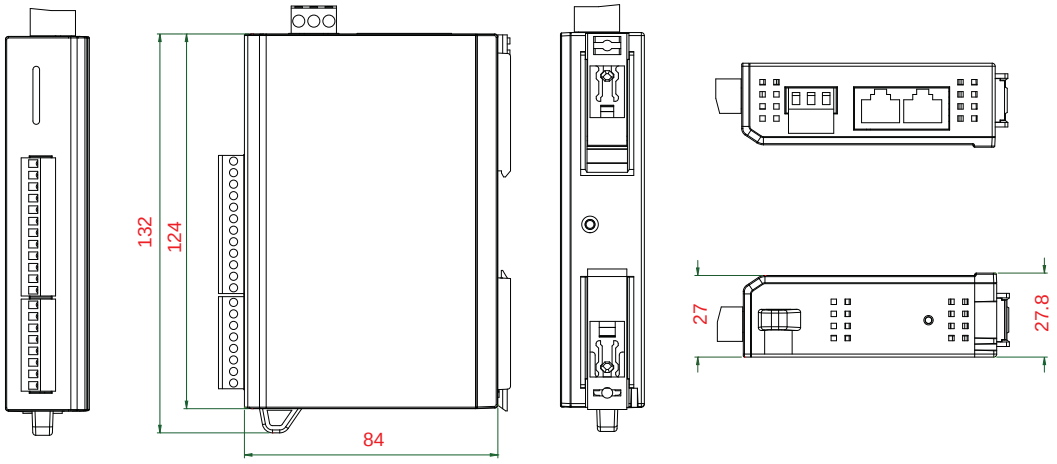
NOTE: *Notify your sales representative if any of the above items are missing or damaged.*

Product Specifications

LAN	
Ethernet	2 x 10/100 Mbps switch ports, RJ45
Protection	1.5 KV magnetic isolation
Protocols	Modbus/TCP, OPC Server, TCP/IP, UDP, DHCP, Bootp, HTTP
Analog Input	
Type	Differential input
Resolution	16 bits
I/O Mode	Voltage or Current
Input Range	0 to 10 VDC, 4 to 20 mA
Accuracy	±0.1% FSR @ 25°C; ±0.3% FSR @ -10 and 60°C
Built-in Resistor for Current Input	120 ohms
Input Impedance	10M ohms
Digital Input	
Sensor Type	NPN, PNP, and Dry contact
I/O Mode	DI or Event Counter
Dry Contact	Logic 0: short to GND; Logic 1: open
Wet Contact	Logic 0: 0 to 3 VDC; Logic 1: 10 to 30 VDC (DI COM to DI)
Isolation	3K VDC or 2K Vrms
Counter/Frequency	250 Hz, power off storage
Digital Output	
I/O Mode	DO or Pulse Output (up to 500 Hz)
Pulse Wave Width/Frequency	1 ms/500 Hz
Over-voltage Protection	45 VDC
Over-current Limit	600 mA per channel
Over-temperature Shutdown	175°C (typical), 150°C (min.)
Output Current Rating	Max. 200 mA per channel
Isolation	3K VDC or 2K Vrms
Relay Output	
Type:	Form A (N.O.) relay outputs, 5 A
Contact Rating	5 A @ 30 VDC, 5 A @ 250 VAC, 5 A @ 110 VAC
Inductance Load	2 A
Resistance Load	5 A
Breakdown Voltage	500 VAC
Relay On/Off Time	10 ms (Max.)
Initial Insulation Resistance	1G min. @ 500 VDC
Expected Life	100,000 times (Typical)
Initial Contact Resistance	100 milli-ohms (Max.)
Pulse Output	0.3 Hz at rated load

Environmental Limits	
Operating Temperature	-10 to 60°C (14 to 140°F)
Storage Temperature	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)
Power Requirement	
Power Input	24 VDC nominal, 12 to 36 VDC
Power Consumption	130 mA @ 24 VDC (typical)
Mechanical Specifications	
Wiring	I/O cable, 14 AWG Max.
Dimensions	27 x 132 x 84 mm
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	IEC 61000-4, IEC 61000-6
Shock	IEC60068-2-27
Freefall	IEC60068-2-32
Vibration	IEC60068-2-6
Agency Approvals	
EMC	FCC Part 15, CISPR (EN55022) Class A CE: IEC 61000-4-2 (ESD), Level 2/3 IEC 61000-4-3 (RS), Level 2 IEC 61000-4-4 (EFT), Level 2 IEC 61000-4-5 (Surge), Level 3 IEC 61000-4-6 (CS), Level 2 IEC 61000-4-8 (PM), Level 1 IEC 61000-4-11 (DIP) IEC 61000-6-2 IEC 61000-6-4 (EMC)
Warranty	2 years

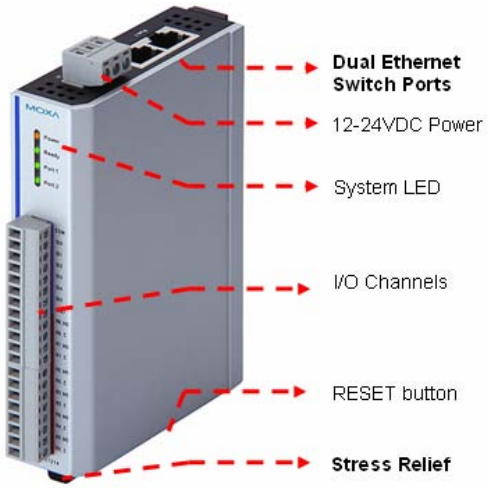
Physical Dimensions



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 in the reset button for 5 sec. The factory defaults will be loaded once the Ready LED turns green again. You may then release the reset button.

LED Indicators

LED	State	Description
Power	Amber	System power is ON
	OFF	System power is OFF
Ready	Green	System is ready
	Flashing	Flashes every 1 sec when the Locate function is triggered
	Flashing	Flashes every 0.5 sec when the firmware is being upgraded
	Flashing	Cycle on/off period of 0.5 sec.; shows "Safe Mode"
	OFF	System is not ready.
Port 1	Green	Ethernet connection enabled
	Flashing	Transmitting or receiving data
Port 2	Green	Ethernet connection enabled
	Flashing	Transmitting or receiving data

2
Initial Setup

This chapter describes how to install the ioLogik E1200.

The following topics are covered:

- **Hardware Installation**
  - Connecting the Power
  - Grounding the ioLogik E1200
  - Connecting to the Network
  - Jumper Settings
  - I/O Wiring Diagrams
- **Software Installation**
- **Load Factory Default**

Hardware Installation

Connecting the Power

Connect the 12 to 36 VDC power line to the ioLogik E1200's terminal block on the top panel. If power is properly supplied, the Power LED will glow a solid amber color.

ATTENTION

Disconnect the power before installing or wiring
Disconnect the power cord before installing or wiring your ioLogik E1200.

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. For safety reasons, the wires attached to the power should be at least 2 mm in diameter.

Grounding the ioLogik E1200

The ioLogik E1200 is equipped with a grounding point on the terminal block located on the top panel.

Connect the ground pin () if earth ground is available.

Connecting to the Network

1. The ioLogik E1200 has two built-in Ethernet switch ports for connecting a standard direct or cross-over Ethernet cable from either RJ45 port to the host PC. For initial setup of the ioLogik E1200, it is recommended that the ioLogik E1200 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* (where *xxx* ranges from 001 to 253). When using Windows, you will need to do the configuration from the Control Panel.

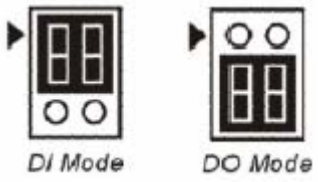
ioLogik E2210 Default IP Address	Default Netmask	Default Gateway
192.168.127.254	255.255.255.0	None

3. Use the web console or ioSearch configuration utility to connect to the ioLogik E1200. Once the ioLogik E1200 has been detected, modify the settings as needed for your network environment, and then restart the server.

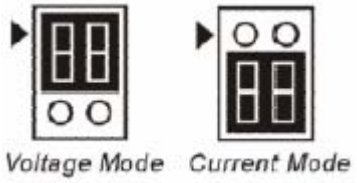
Jumper Settings

The ioLogik E1212 and E1240 require configuring the jumpers inside the enclosure. Remove the screw on the back panel and open the cover to configure the jumpers.

For the ioLogik E1212, DIO mode configuration is as follows (default is DO Mode)



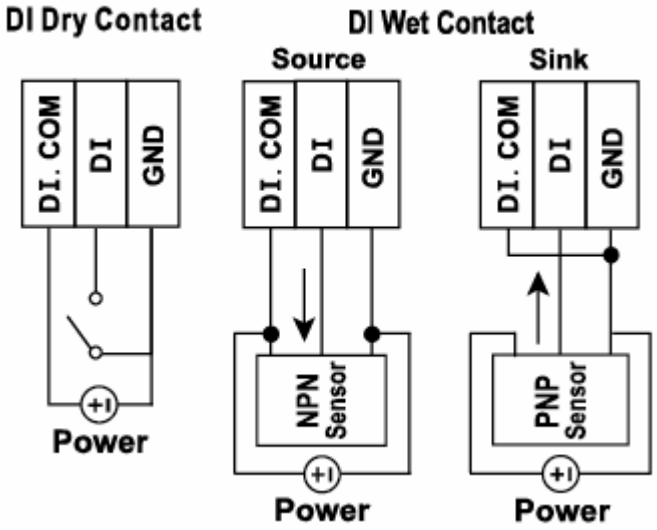
For the ioLogik E1240, analog mode configuration is as follows (default is Voltage Mode)

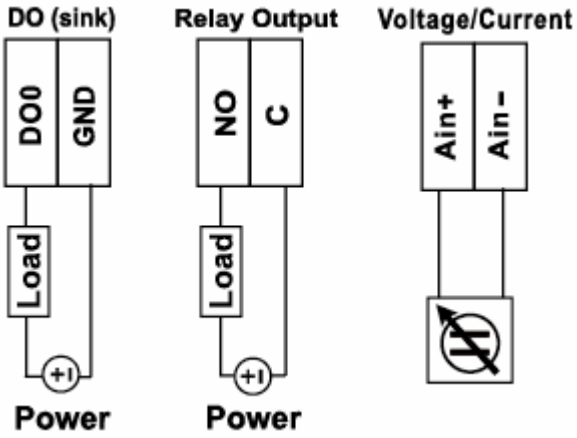


ATTENTION

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

I/O Wiring Diagrams

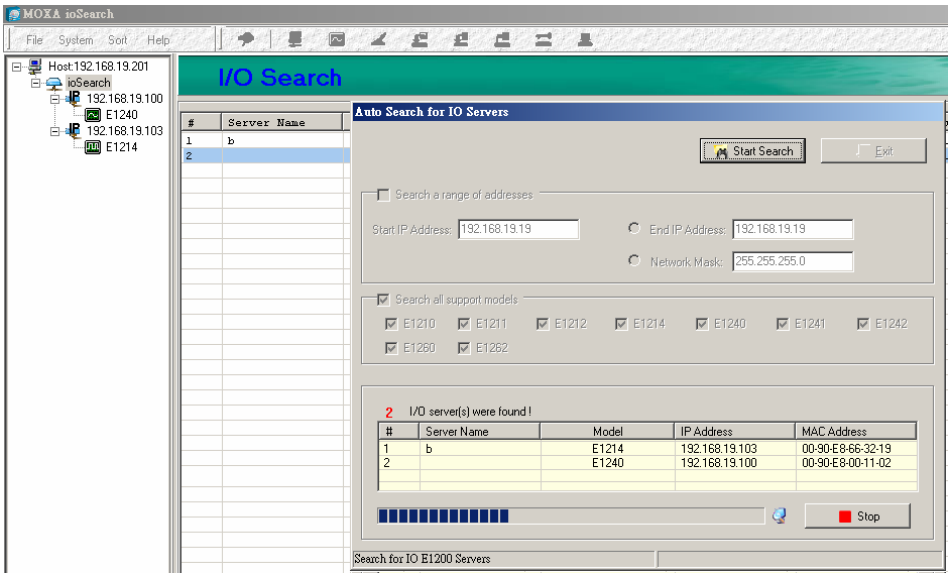




Software Installation

ioSearch is a search utility that helps the user locate an ioLogik E1200 on the local network. Find the ioSearch utility in the Document and Software CD under Software → ioSearch, or download the latest version from Moxa's website.

1. **Installing from the CD**: 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 ioSearch utility. You can also install the MXIO DLL library separately.
2. **Open ioSearch**: After installation is finished, run **ioSearch** from **Start → Program Files → MOXA →IO Server → Utility → ioSearch**
3. **Search the network for the server**: On the menu bar, select **System →Auto Scan Active Ethernet I/O Server**. A dialog window will pop up. Click **Start Search** to begin searching for the ioLogik E1200.



If multiple ioLogik E1200 units are installed on 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.

Load Factory Default

There are three ways to restore the ioLogik E1200 to the factory default.

1. Hold the RESET button for 5 seconds.
2. Right click the specified ioLogik in the ioSearch utility and select "Reset to Default".
3. Select "Load Factory Default" from the web console.

3
Using the Web Console

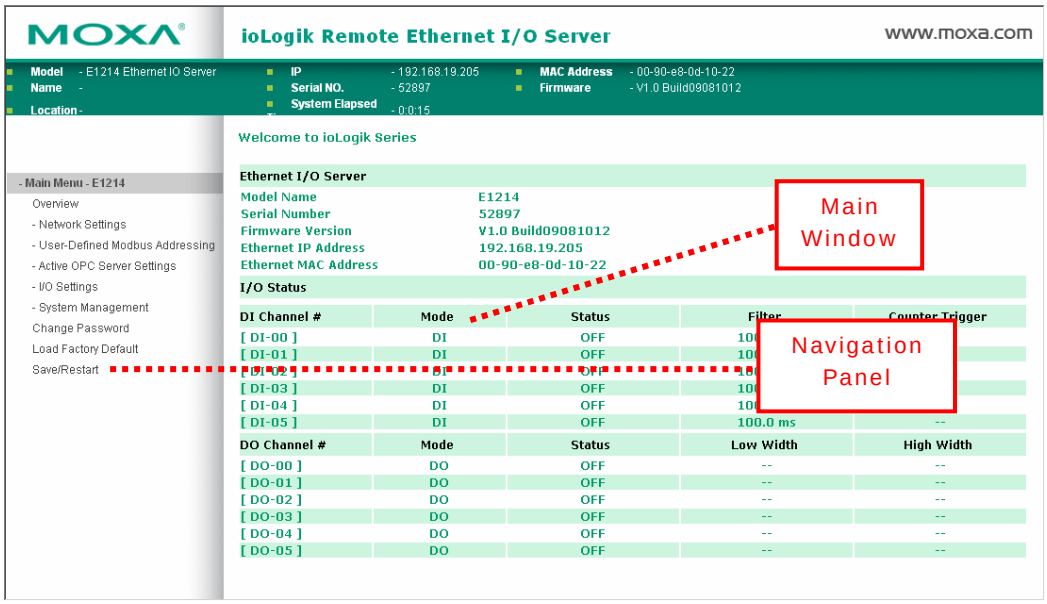
The ioLogik E1200's main configuration and management utility is the built-in web console, which can be used to configure a wide range of options.

The following topics are covered:

- **Introduction to the Web Console**
- **Overview**
- **Network Settings**
  - General Settings
  - Ethernet Configuration
- **User-defined Modbus Addressing**
  - User-defined Modbus Addressing
  - Default Address
- **I/O Settings**
  - DI Channels
  - DO Channels
  - AI Channels
- **System Management**
  - IP Accessibility
  - Network Connection
  - Firmware Update
  - Import System Config
  - Export System Config
- **Change Password**
- **Load Factory Default**
- **Save/Restart**

Introduction to the Web Console

The ioLogik E1200 web console is a browser-based configuration utility. When the ioLogik E1200 is connected to your network, you may enter the server's IP address in your web browser to access the web console.



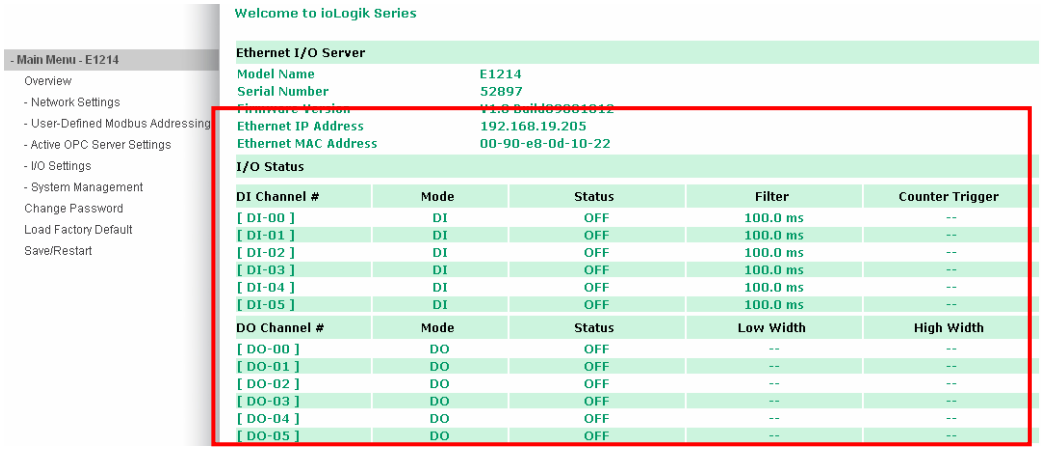
The left panel is the navigation panel and contains an expandable menu tree for navigating among the various settings and categories. When you click on a menu item in the navigation panel, the main window will display the corresponding options for that item. Configuration changes can then be made in the main window. For example, if you click on **Network 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 E1200 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 E1200 without saving your configuration, the ioLogik E1200 will discard all submitted changes.

Overview

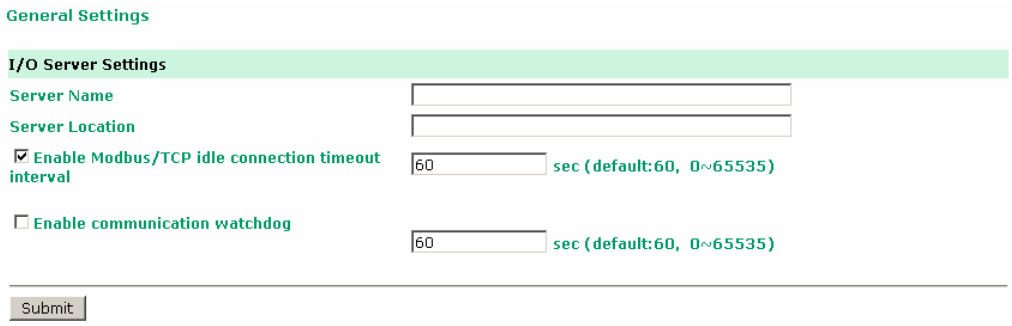
The Overview page contains basic information about the ioLogik E1200, including the model name, serial number, firmware version, MAC address, and current IP address. Most importantly, you can see the current I/O status by hitting the F5 key on the computer keyboard to refresh the page.



Network Settings

General Settings

On the General Settings page, you can assign a server name and location to assist you in differentiating between different ioLogik E1200 units. You may also configure the Modbus/TCP idle interval or enable the Communication Watchdog function.

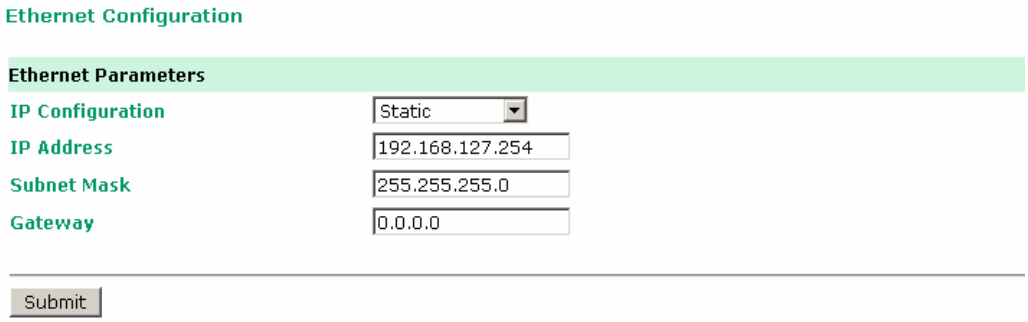


The Connection Watchdog activates the safe status (Safe Mode) when the ioLogik E1200 loses its network connection for the specified amount of time. Safe Mode is designed especially for products that have output channels to output a suitable value or status when the ioLogik E1200 cannot be controlled by a remote PC (due to network failure, for example). By default, the Watchdog is disabled. Users can configure how each output channel responds on the I/O Settings page.

To enable the Watchdog, check **Enable connection watchdog**, set the timeout value, and then restart the server. With Watchdog enabled, the ioLogik E1200 will enter Safe Status after there is a disruption in communication that exceeds the time specified.

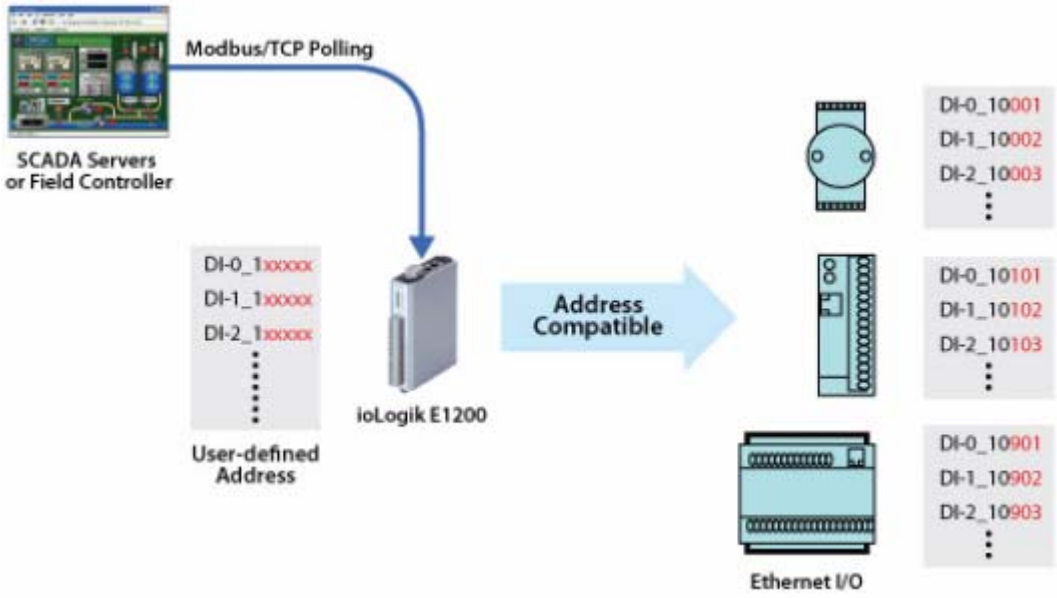
Ethernet Configuration

On the Ethernet Configuration page, you can set up a static or dynamic IP address for the ioLogik E1200, and configure the subnet mask and gateway address.



User-defined Modbus Addressing

To control an input or output channel of a remote Ethernet I/O device running the most general Modbus/TCP protocol requires specifying the Modbus address of those input and output channels. This can take quite a bit of effort since you may need to look up the address and data type in the user's manual for address mapping, and can also cause problems once the I/O channels change or a device is replaced. The ioLogik E1200's user-defined Modbus addressing offers the flexibility to make the Modbus address dynamic, and the address can be configured to be compatible with other Modbus devices. When a system is being replicated, or a data acquisition I/O is being replaced, the user-defined Modbus eliminates the effort of reconfiguring the PC control software or field controller.



User-defined Modbus Addressing

The input and output address can be configured in a different format on a specific settings page. Check the "Enable User-defined Modbus Addressing" box, select the Modbus function, and then configure the start address of each item.

User-defined Modbus Addressing

☑ Enable User-defined Modbus Addressing

User-defined Modbus address

No.	Description	User-defined Start Address (DEC)	Function Code	Read/Write	Reference Address (DEC)	Total Channels	Data Type
1	DI Value	0001	02:INPUT STATUS	R	10001	16	1 bit
2	DI Counter Value (Double Word)	0017	01:COIL STATUS 02:INPUT STATUS 03:HOLDING REGISTER 04:INPUT REGISTER	R	30017	16	2 WORD
3	DI Value All Channel (Ch0-Ch15)	0049		R	30049	1	1 WORD
4	DI Counter Start/Stop	0257	01:COIL STATUS	RW	00257	16	1 bit
5	DI Counter Clear	0273	01:COIL STATUS	RW	00273	16	1 bit

Submit Load Default

ATTENTION

Disable the user-defined modbus addressing function if using the MXIO(.NET) library or using Active OPC Server to control or monitor the ioLogik E1200's I/O Status.

Default Address

On this settings page, you can view the default Modbus address for all I/O devices. The page only displays the start address of each item. For example, if the DI Value starts from 10001, then the 1st DI channel's Modbus address is 10001 and the 2nd DI is 10002.

Default Modbus Address

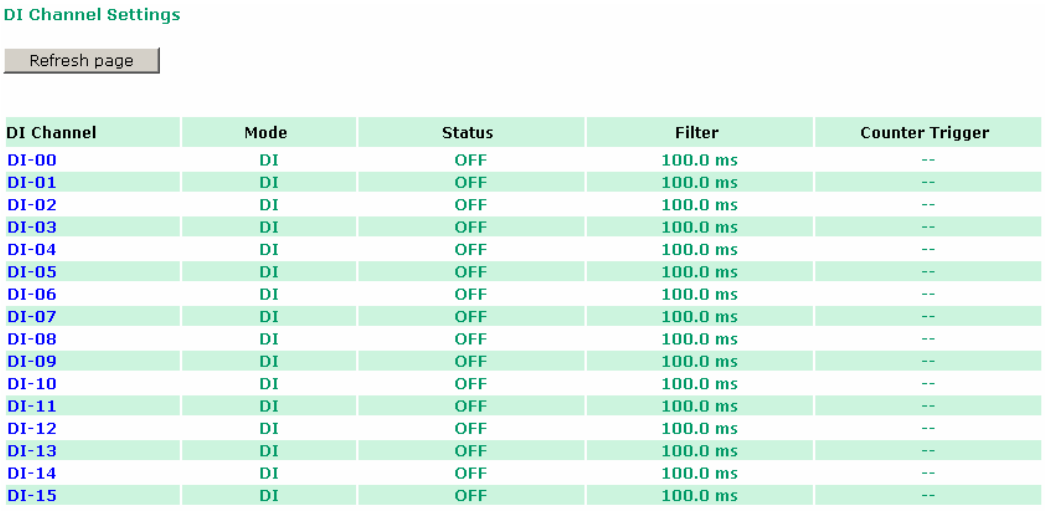
Default Modbus address

No.	Description	User-defined Start Address (DEC)	Function Code	Read/Write	Reference Address (DEC)	Total Channels	Data Type
1	DI Value	0001	02:INPUT STATUS	R	10001	16	1 BIT
2	DI Counter Value Double Word	0017	04:INPUT REGISTER	R	30017	16	2 WORD
3	DI Value All Channel (Ch0-Ch15)	0049	04:INPUT REGISTER	R	30049	1	1 WORD
4	DI Counter Start/Stop	0257	01:COIL STATUS	RW	00257	16	1 BIT
5	DI Counter Clear	0273	01:COIL STATUS	RW	00273	16	1 BIT

I/O Settings

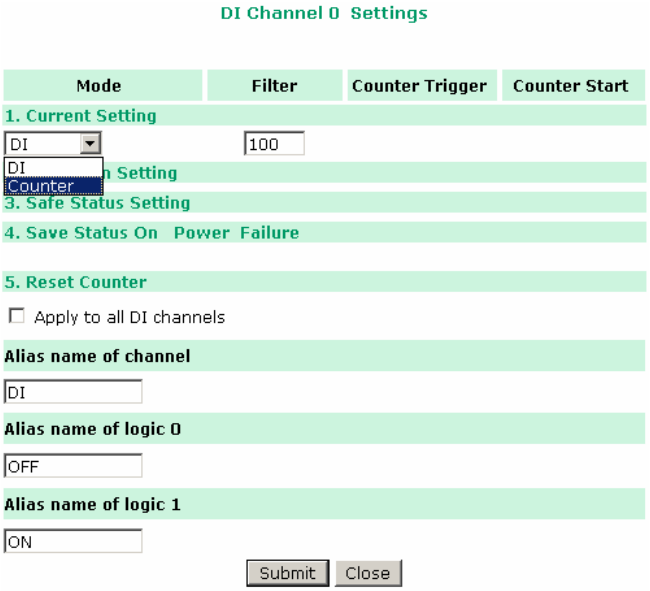
DI Channels

The status of each DI (digital input) channel appears on the DI Channels page.



DI Channel	Mode	Status	Filter	Counter Trigger
DI-00	DI	OFF	100.0 ms	--
DI-01	DI	OFF	100.0 ms	--
DI-02	DI	OFF	100.0 ms	--
DI-03	DI	OFF	100.0 ms	--
DI-04	DI	OFF	100.0 ms	--
DI-05	DI	OFF	100.0 ms	--
DI-06	DI	OFF	100.0 ms	--
DI-07	DI	OFF	100.0 ms	--
DI-08	DI	OFF	100.0 ms	--
DI-09	DI	OFF	100.0 ms	--
DI-10	DI	OFF	100.0 ms	--
DI-11	DI	OFF	100.0 ms	--
DI-12	DI	OFF	100.0 ms	--
DI-13	DI	OFF	100.0 ms	--
DI-14	DI	OFF	100.0 ms	--
DI-15	DI	OFF	100.0 ms	--

You can also configure each channel's digital input mode and parameters by clicking on the channel. DI channels can operate in DI mode or Event Counter mode.

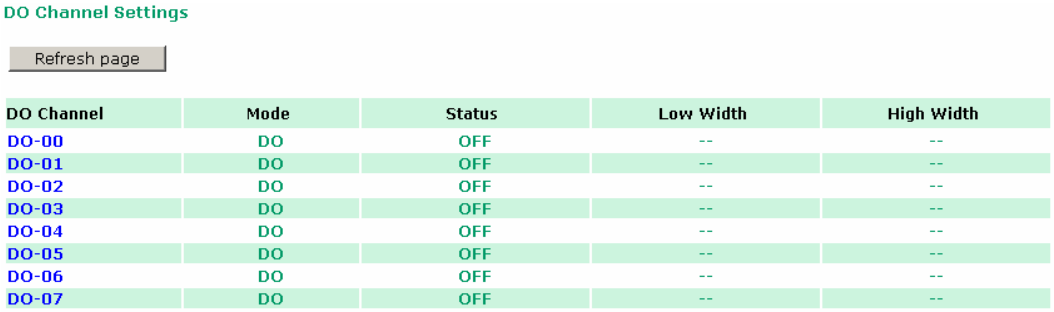


For Event Counter mode, configure the low width and high width in multiples of 0.5 ms. The counter should be set to either **start**, or **stop**. If it is in **stop** mode, the counter can be activated by the Modbus command. Make sure that the Counter Filter is not set to 0; otherwise, the counter will never be activated.

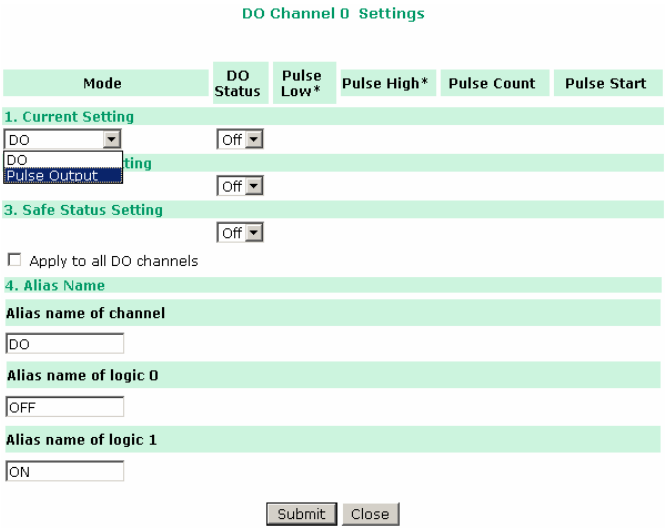
The alias name and the logic definition can also be configured on this page.

DO Channels

On the DO Channels page, configure each DO (digital output) channel by clicking on the channel. DO Channels can operate in DO mode or Pulse Output mode. In DO mode, output is either on or off. In Pulse Output mode, a configurable square wave is generated.



The **Power On Setting** field is used to specify the channel's configuration when the ioLogik E1200 is powered on, and the **Safe Status Setting** field specifies the channel's configuration when the ioLogik E1200 enters Safe Mode. Note that Safe Status is controlled by the Connection Watchdog, which is disabled by default. If the Connection Watchdog is disabled, the ioLogik E1200 will never enter Safe Mode and your Safe Status settings will have no effect.



Users may also configure the alias name and the logic definition on this page.

ATTENTION

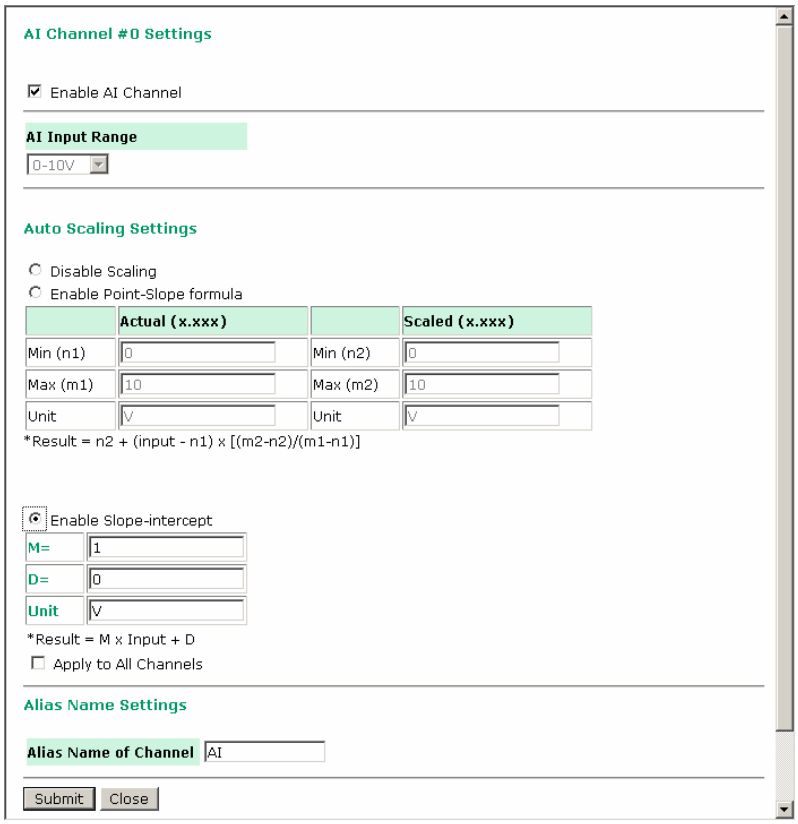
Remove the screw on the back panel and open the cover to configure the jumpers for input or output selection of the DIO channels. Refer to chapter 2 for detailed jumper settings.

AI Channels

The current status of each AI (analog input) channel can be viewed on the AI Channels page.

AI Channel	Range	Value	Min.	Max.
AI-00	0-10V	0.010V	0.007V	0.010V
AI-01	0-10V	0.009V	0.009V	0.012V
AI-02	0-10V	0.009V	0.006V	0.009V
AI-03	0-10V	0.007V	0.007V	0.010V
AI-04	0-10V	0.010V	0.010V	0.013V
AI-05	0-10V	0.009V	0.009V	0.012V
AI-06	0-10V	0.008V	0.008V	0.011V
AI-07	0-10V	0.009V	0.009V	0.012V

Click on a specific channel to enable or disable the AI channel by checking the "Enable AI Channel" box. The Auto Scaling and Slope-intercept function of the AI value can be defined on this page.



ATTENTION

Remove the screw on the back panel and open the cover to configure the jumpers to select voltage or current measurement for the AI channels. Refer to chapter 2 for detailed jumper settings.

The Auto scaling function maps the original AI value linearly to a scaled value. Note that the scaled value's Modbus address differs from the original value.

Auto Scaling Settings

○ Disable Scaling
◉ Enable Point-Slope formula

	Actual (x.xxx)		Scaled (x.xxx)
Min (n1)	0.000	Min (n2)	0.000
Max (m1)	10.000	Max (m2)	1000.000
Unit	V	Unit	ppm

*Result = n2 + (input - n1) x [(m2-n2)/(m1-n1)]

The slope-intercept function is used to compensate when the measurement requires a slight adjustment.

◉ Enable Slope-intercept

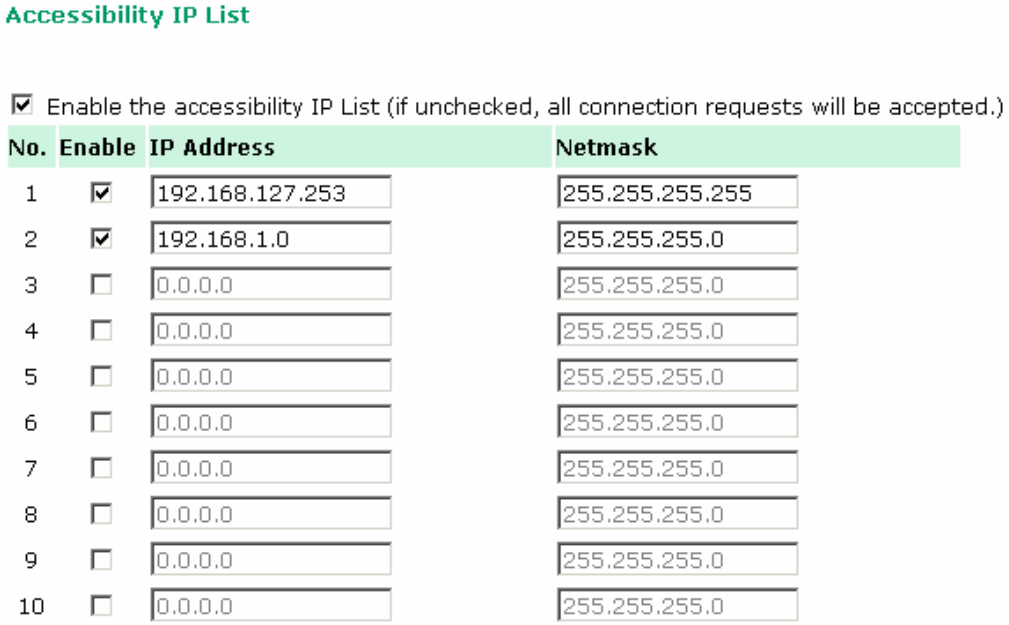
M=	1.1
D=	0.02
Unit	V

*Result = M x Input + D

System Management

IP Accessibility

You can control network access to the ioLogik E1200 from the IP Accessibility page by only allowing access from specific IP addresses. When the accessible IP list is enabled, a host's IP address must be listed in order to gain access to the ioLogik E1200.



Specify a range of addresses by using a combination of an IP address and netmask, as follows:

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

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

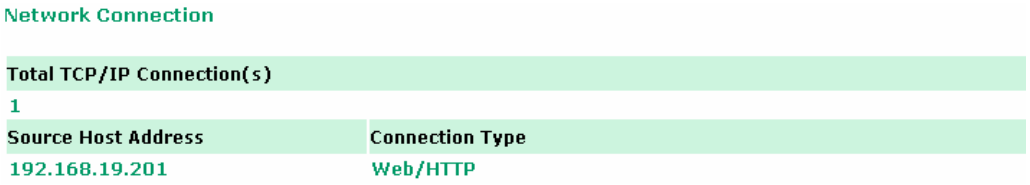
To allow unrestricted access
Deselect the **Enable the accessible IP list** option.

Refer to the following table for additional configuration examples.

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

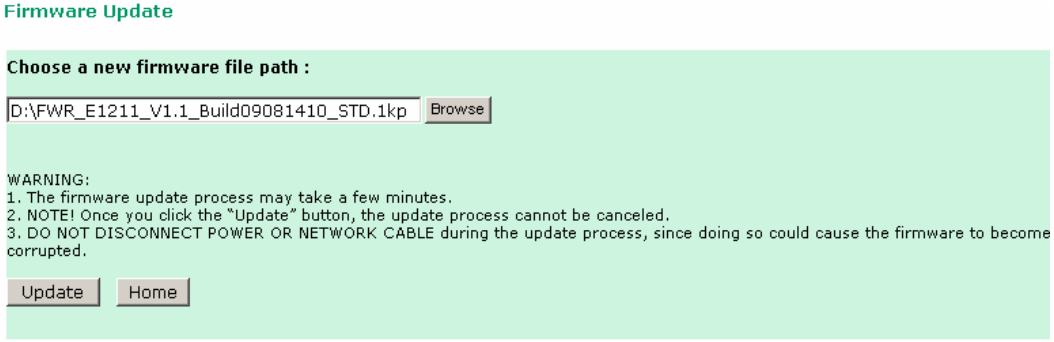
Network Connection

TCP connections from other hosts appear on the Network Connection page. This information can assist you with managing your devices.



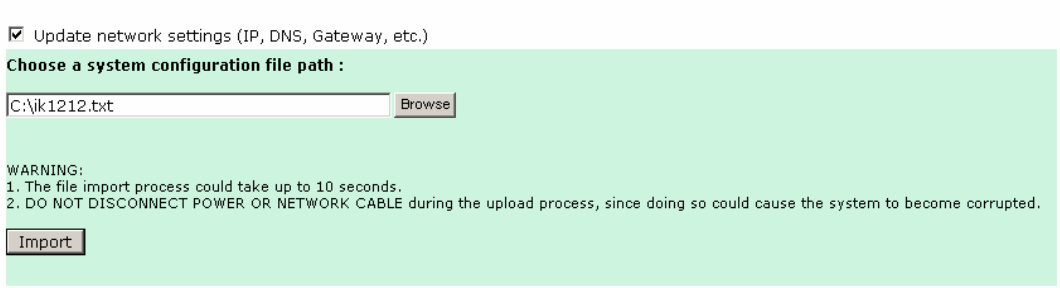
Firmware Update

Load new or updated firmware onto the ioLogik from the Firmware Update page.



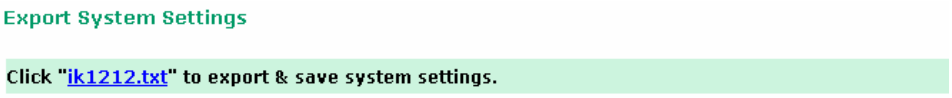
Import System Config

Import a configuration into the ioLogik server from the Import System Config page. This function can be used to duplicate settings between ioLogik servers. You will be prompted for the location of the configuration file (i.e., "ik1212.txt").



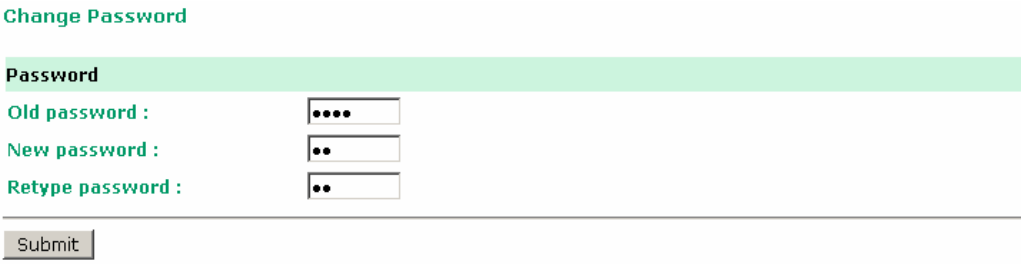
Export System Config

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



Change Password

For all changes to the ioLogik E1200'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.



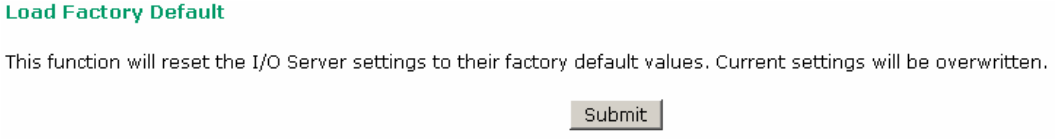
ATTENTION

If you forget the password, the ONLY way to configure the ioLogik E1200 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 E1200. Your configuration can then be easily imported back into the ioLogik E1200 if you need to reset the ioLogik E1200 due to a forgotten password or for other reasons.

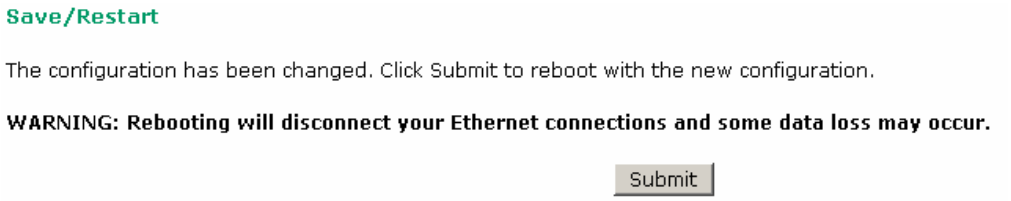
Load Factory Default

This function will reset all of the ioLogik E1200's settings to the factory default values. All previous settings, including the console password will be lost.



Save/Restart

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



4
Using ioSearch

In this chapter we cover ioSearch, which is used to search and locate ioLogik E1200 units.

The following topics are covered:

- **Introduction to ioSearch**
- **ioSearch Main Screen**
  - Main Screen Overview
- **Main Items**
  - System
  - Sort
  - Quick Links
- **Main Function**
  - Locate
  - Firmware Upgrade
  - Unlock
  - Import
  - Export
  - Change IP Address
  - Restart System
  - Reset to Default

Introduction to ioSearch

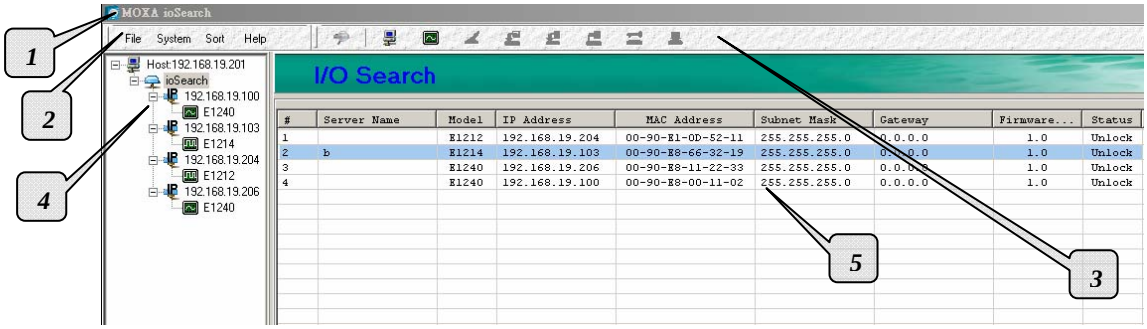
ioSearch is for locating or searching for an Logik E1200 on the physical network. The following functions are supported by the ioSearch utility.

- Search for and locate ioLogik E1200 units.
- IP address configuration.
- Firmware upgrade for multiple ioLogik E1200 units (same model).
- Export configuration files from multiple ioLogik E1200 units.
- Import a configuration file to multiple ioLogik E1200 units (same model).
- Reset to default for multiple ioLogik E1200 units.

ioSearch Main Screen

Main Screen Overview

The main screen displays the result of the broadcast search of the ioLogik E1200.



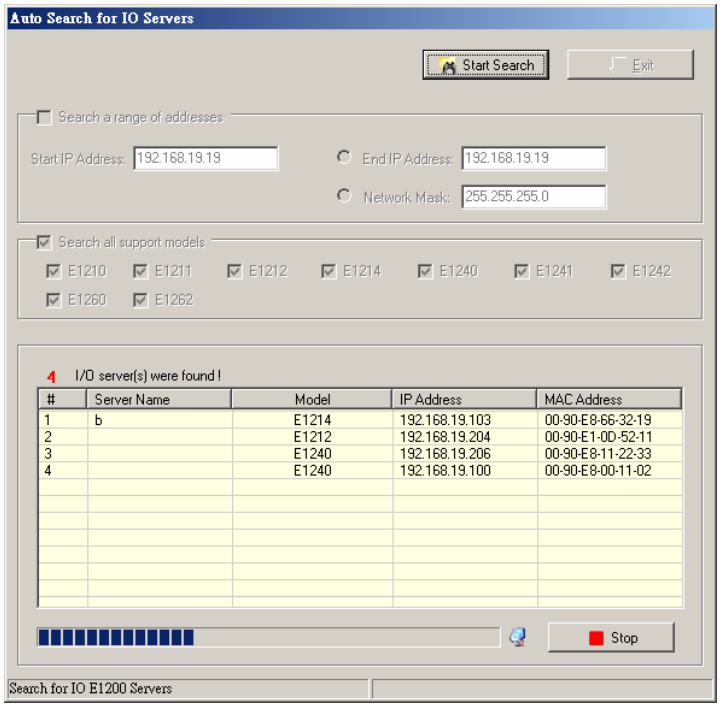
ioSearch Main Screen	
1.	Title
2.	Menu bar
3.	Quick link
4.	Navigation panel
5.	Main window

Main Items

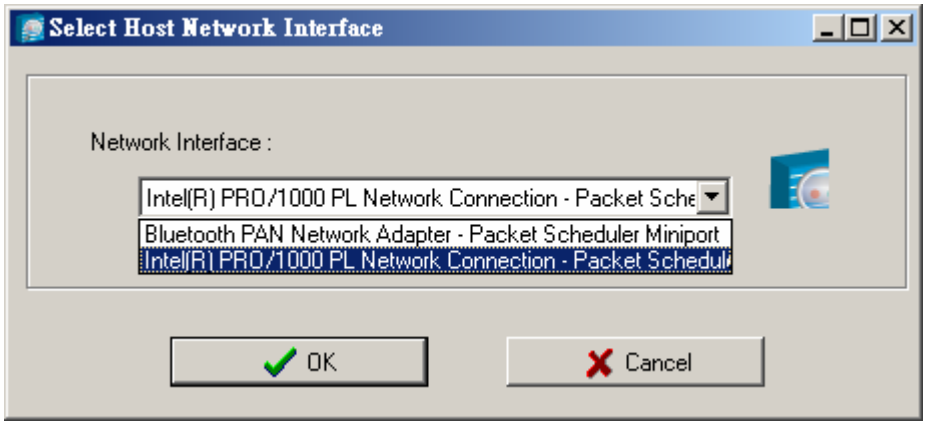
System

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

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

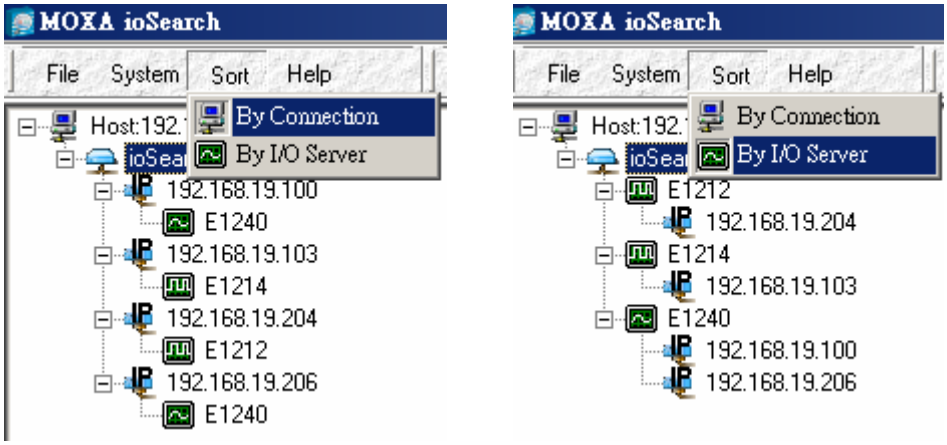


Network Interface allows you to select a network to use, if the PC has multiple network adaptors installed.



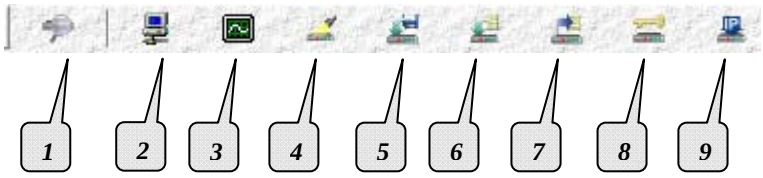
Sort

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



Quick Links

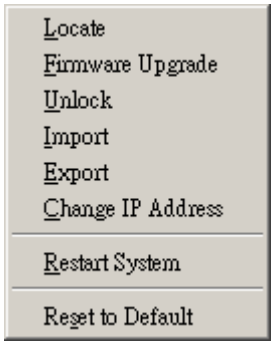
Quick links are provided to search for I/O servers on the network and sort the server list.



1	Automatically search the local network
2	Sort by ioLogik E1200's IP address (connection)
3	Sort by ioLogik E1200 model
4	Locate an ioLogik E1200
5	Upgrade Firmware
6	Import settings
7	Export settings
8	Unlock an ioLogik E1200 which is password protected
9	Change IP Address of an ioLogik E1200

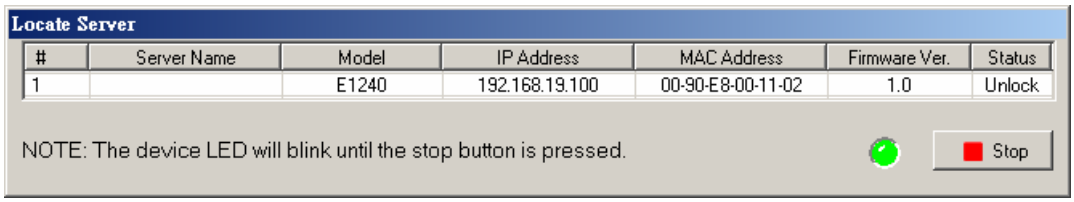
Main Function

Right click on a particular ioLogik E1200 to view the ioSearch function menu.



Locate

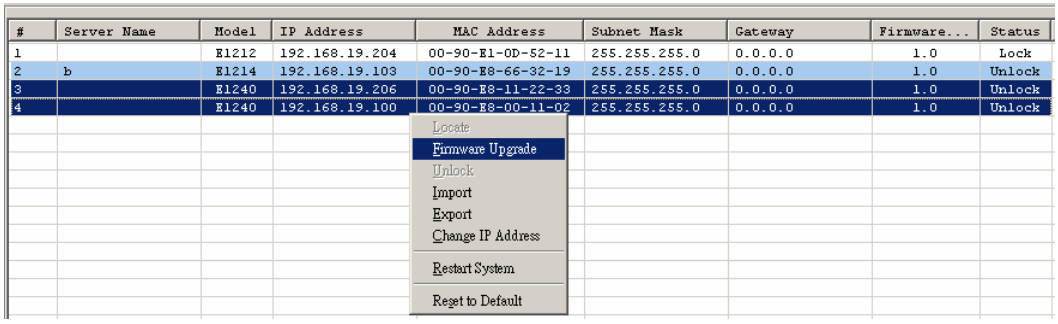
The locate function helps users find a dedicated ioLogik on the network. When this function is triggered, the ready LED on the selected unit will start to blink indicating its location.



Firmware Upgrade

The ioLogik E1200 supports a remote firmware upgrade function. Enter the path to the firmware file or click on the icon to browse for the file. The wizard will lead you through the process until the server is restarted.

Multiple firmware upgrades are allowed for same ioLogik model. Press the "Shift" key, select the ioLogik, and right click to process multiple firmware upgrades.

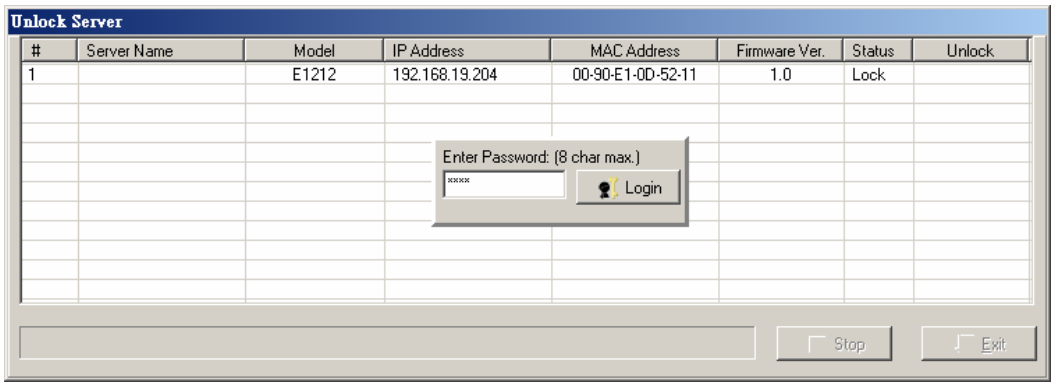


WARNING

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

Unlock

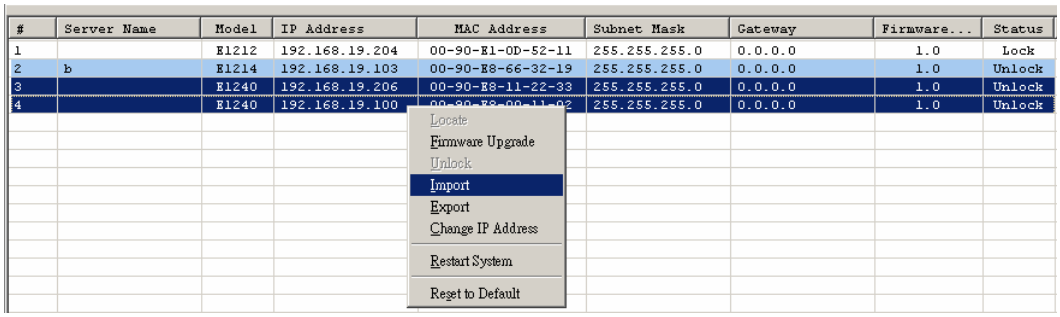
If an ioLogik E1200 is password protected, unlock the ioLogik E1200 by entering the password before using any of the functions.



Import

Select this command to reload a configuration that was exported to a text file.

Importing one configuration file to multiple ioLogik E1200 units (same model) is allowed. To do this, press the "Shift" key, select the ioLogik, and then right click.



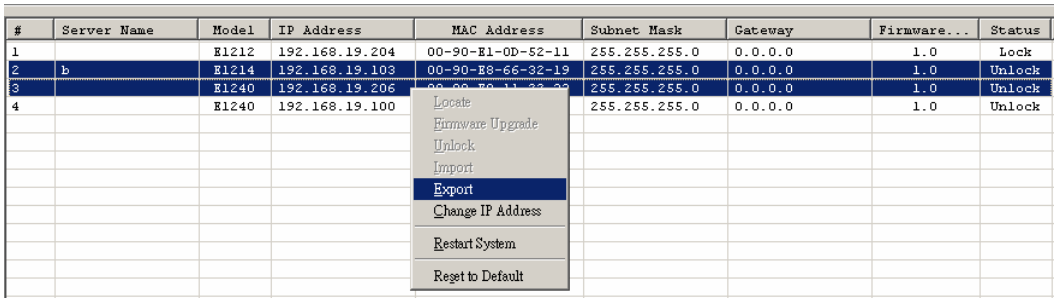
Export

The export function is used to export the current configuration file of an ioLogik E1200. The export file format will be **ik12xx.txt** where "xx" represents the model type of the ioLogik E1200.

Exporting multiple files for different models of ioLogik E1200 is allowed. The file format is **ik12xx_MAC Address.txt**, where the xx represents the model types of the ioLogik E1200.

e.g., ik1214_00-90-E8-66-32-19.txt

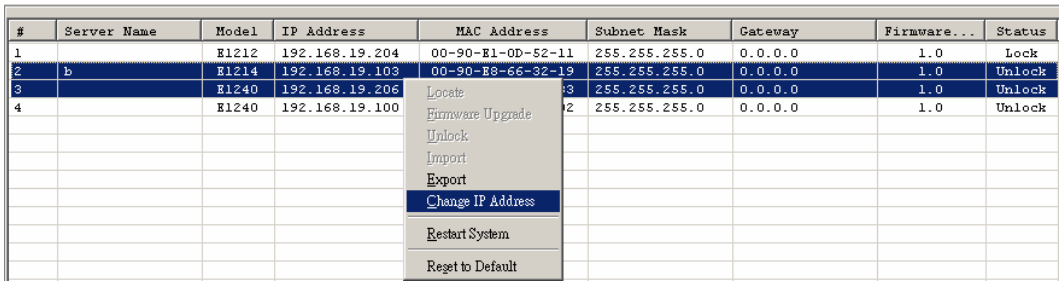
To export multiple configuration files, select the ioLogik and right click to process this function.



Change IP Address

The Change IP Address function can be used to directly modify the IP Address, especially for first time installation.

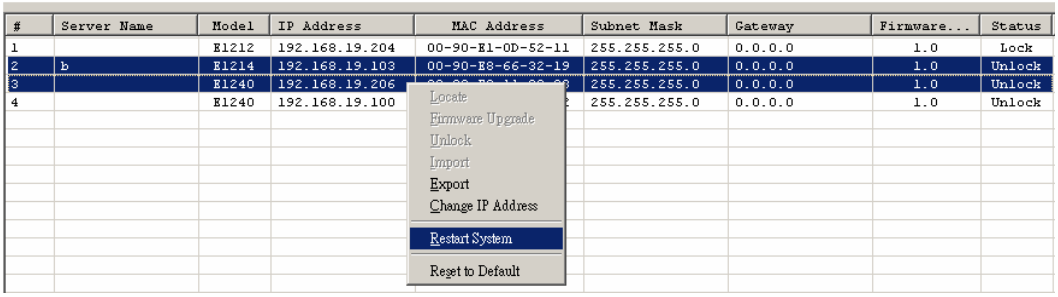
Changing the IP address for multiple ioLogik E1200's is allowed. Select the ioLogik E1200 and then right click to process this function.

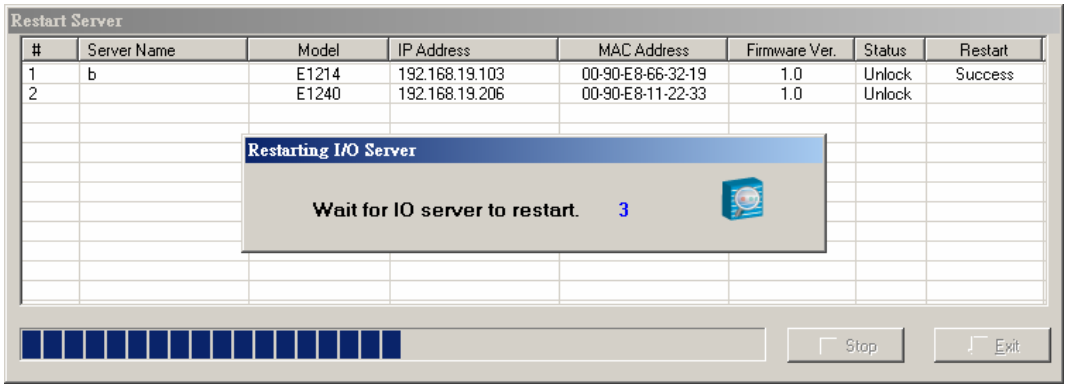


Restart System

Select this command to restart the selected ioLogik E1200.

Restarting multiple ioLogik E1200 units is allowed. Select the ioLogik E1200 and right click to process this function.

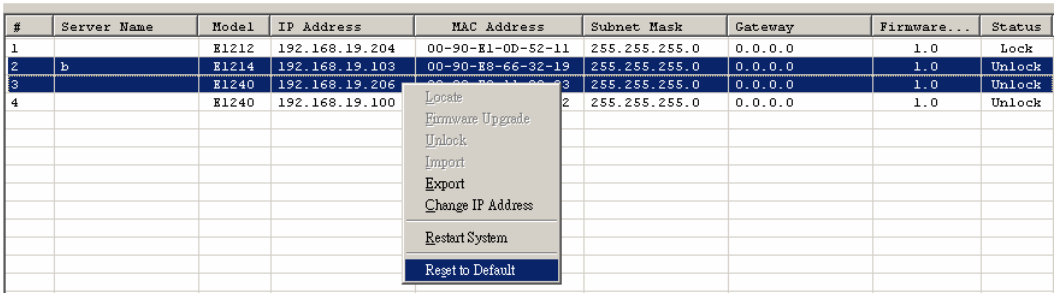




Reset to Default

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

Resetting multiple ioLogik E1200 units to the default configuration is allowed. Select the ioLogik E1200 and right click to process this function.



5
Active OPC Server Lite

In this chapter, we explain how to use the web console of the ioLogik E1200 to connect to the Active OPC Server Lite package.

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**
  - Installing Active OPC Server Lite
  - Installing OPC Core Components
- **Active OPC Server Lite**
- **Menu Items**
  - File
  - System
  - Sort
  - Quick Links
- **Tag Generation**
- **Heartbeat Interval**
  - **Read/Write Privilege**
- **OPC Test Client**

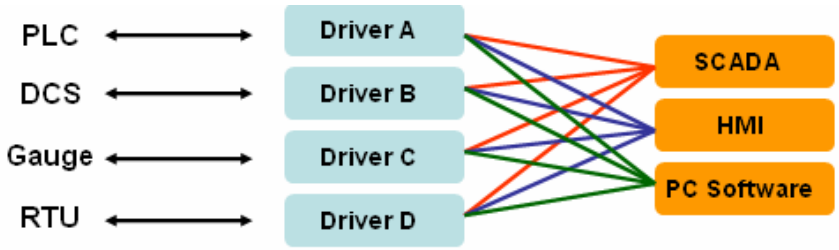
OLE for Process Control

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.

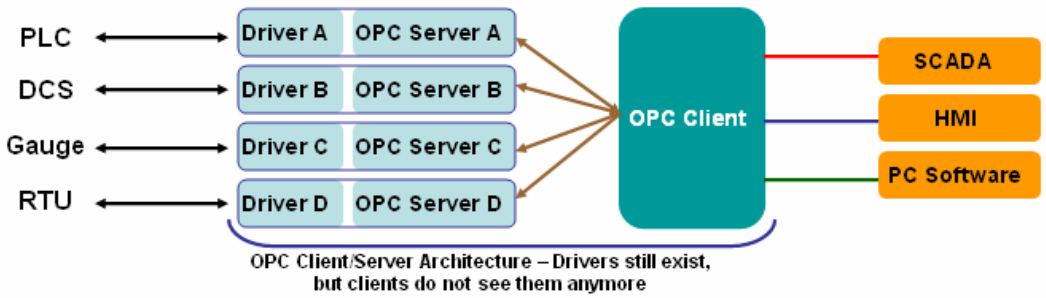
The OPC Specification is a non-proprietary technical specification that defines a set of standard interfaces based upon Microsoft's OLE/COM/DCOM platform and .NET technology. The application of the OPC standard interface makes possible interoperability between automation/control applications, field systems/devices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

Previously: Drivers must be installed several times to connect to different devices



With OPC: OPC Client/Server creates a common interface for connecting to different devices



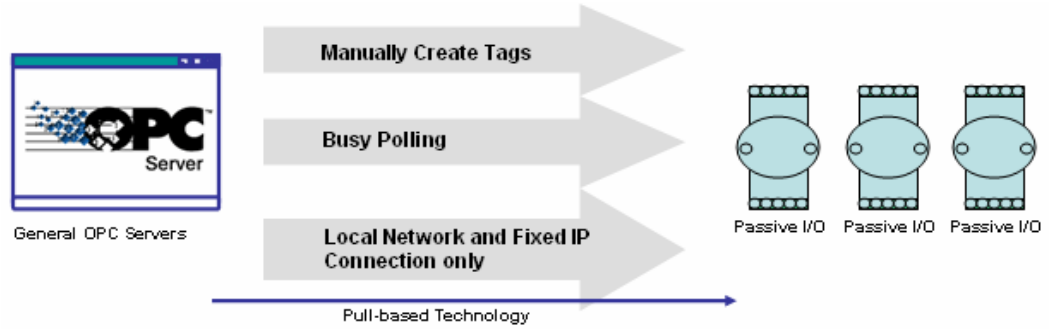
Introduction to Active OPC Server Lite

Moxa's Active OPC Server Lite is a software package operated as an OPC driver of an HMI or SCADA system. It offers a seamless connection from Moxa's ioLogik series products to SCADA systems, including 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.

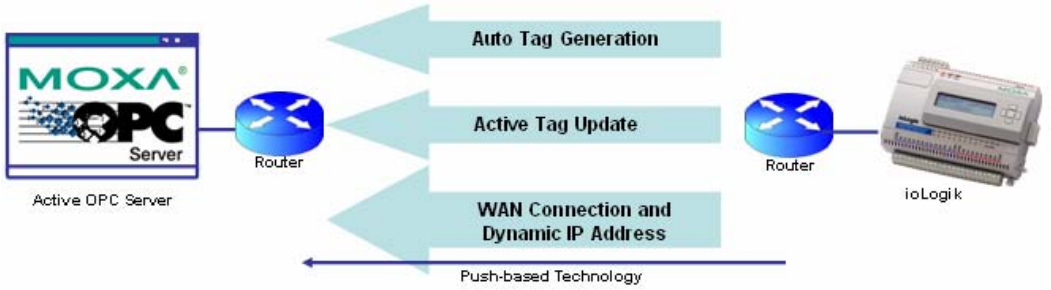
Active OPC Server Lite—From Pull to Push

When first looking up the I/O devices' Modbus table, creating one tag requires 19 or more steps, including specifying the IP address, selection of the protocols, and definition of the data type. The procedure is repeated over and over until all the devices and tags have been 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? Using more tags will result in a higher CPU loading.

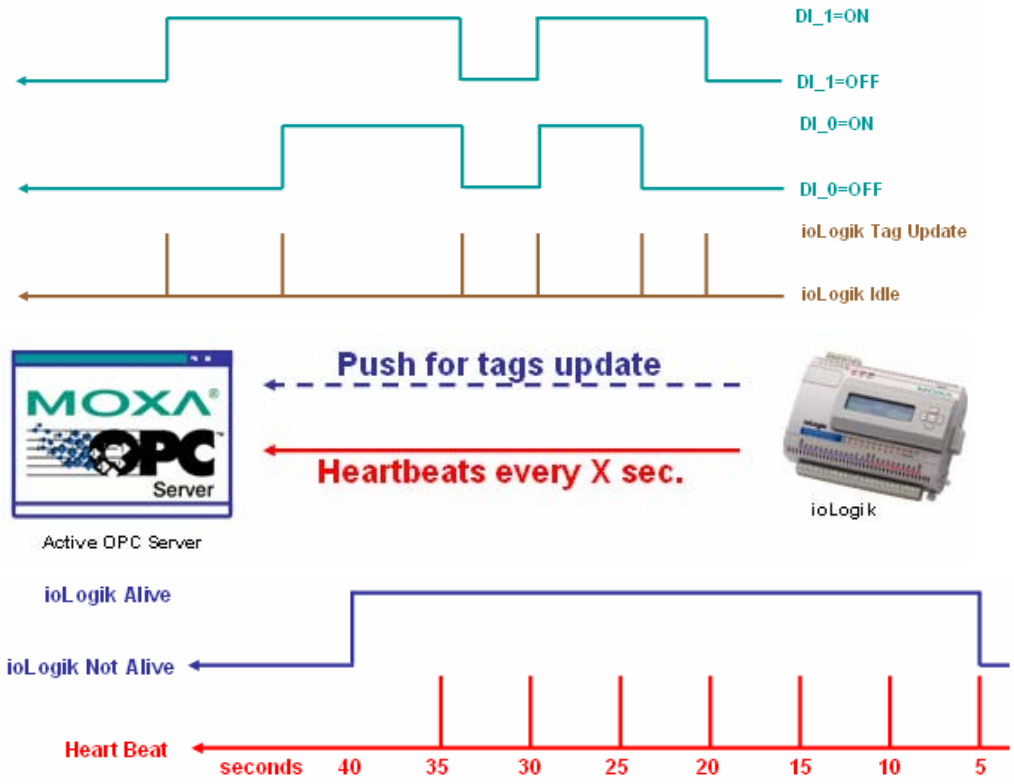
A general OPC requires connected I/O devices to use fixed IP addresses, if applications are running on a public network, which usually involves dynamic IPs, or portable measurements are being taken, there is no way to connect to an I/O device using OPC. This architecture is also called "pull" technology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



Moxa's ioLogik series products provide I/O status reports by TCP/UDP messages, e-mail, or SNMP traps. These benefits have now expanded to OPC technology. Without needing additional information (even the IP address is not needed), tag settings are automatically created by the ioLogik itself to determine which tag should be created. Users only need to launch the Active OPC Server program, and those I/O channels selected by a user will be "pushed" from an ioLogik to the Active OPC Server.



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



Features of Active OPC Server Lite

Automatic tag generation

Active OPC Server Lite creates the tags for the target ioLogik automatically without needing to specify IP addresses, I/O channels, and data formats one by one or editing and importing any configuration text files, After selecting the channels to be updated to Active OPC Server Lite, tags will be generated, without asking for additional input. For ioLogik users, learning OPC technology, looking up Modbus addresses, configuring data formats, assigning target IPs, and other tasks of this nautre 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%, and increases the response time of the I/O channels by a factor of 7. The SCADA PC can now also be load balanced for its CPU time because it simply waits for updates instead of continuously polling the I/O channel.

Dynamic IP Address Support

Active OPC Server also delivers the flexibility of connecting to a remote ioLogik, even if the ioLogik's IP is dynamic.. However, I/O devices used with traditional data acquisition applications cannot use this approach. The flexibility of connections through firewall is also available.

Active OPC Server Lite Specifications

Hardware Requirements	
CPU	Intel Pentium (Pentium 4 and above)
RAM	512 MB (1024 MB recommended)
Network Interface	10/100 Mb 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 Models	ioLogik E1210, E1211, E1212, E1214,E1240 ioLogik E2210, E2212, E2214, E2240, E2242, E2260, E2262 ioLogik E4200 ioLogik W5340

Installing Active OPC Server Lite

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

1. **Installing from CD**: Insert the Document and Software CD into the host computer. In the Software\AOPCLite\ActiveOPCSetup directory of the CD, locate and run Install.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.**

Installing OPC Core Components

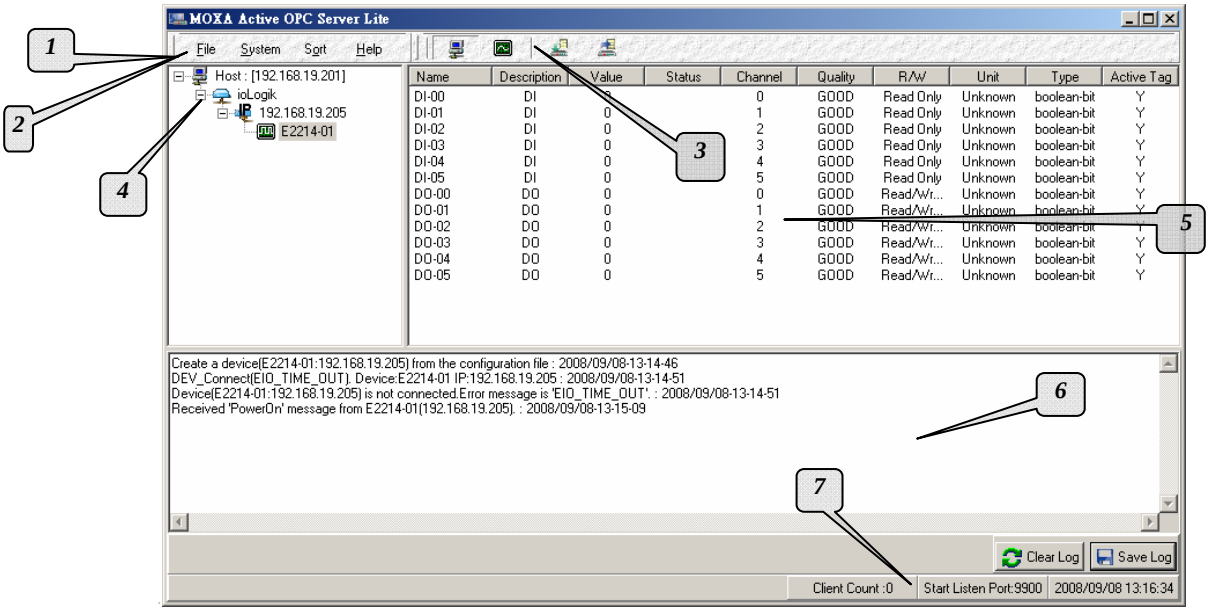
OPC Core Components provides the connection library needed by Active OPC Server Lite. This package must be installed on the Active OPC Server Lite computer.

For first time installation, a pop-up message will appear asking if you would like to install the OPC Core Components. You may skip this step if the package has already been installed.

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 the ioLogik creates the tags.



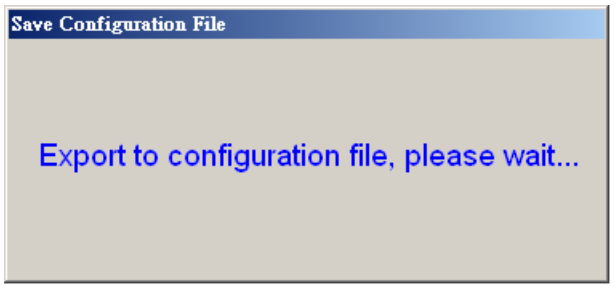
Active OPC Server Lite Main Screen
1. Title
2. Menu bar
3. Quick link
4. Navigation panel
5. Tag Window
6. Log Monitor
7. Status bar

Menu Items

File

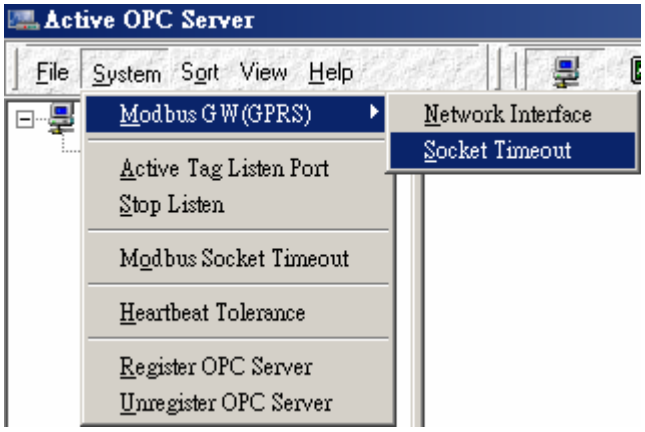
From the **File** menu, you can export the list ioLogik units that are currently displayed in the navigation panel. You also can import a list into Active OPC Server Lite.

The file will have the **.mdb** extension, and can be opened using Microsoft Office Access. The server list includes the current tag information of the mapped ioLogik. We recommend saving the configuration when exiting the Active OPC Server.



System

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



Modbus GW(GPRS) allows users to select a network interface on this Active OPC Server to connect to an ioLogik W5340 GPRS I/O, if the PC has multiple network adaptors installed. Users can also define the socket timeout for a GPRS connection.

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

Stop Listen allows users to stop receiving tag generation messages and I/O status updates.

Modbus Socket Timeout allows user to define the timeout value for a remote ioLogik.

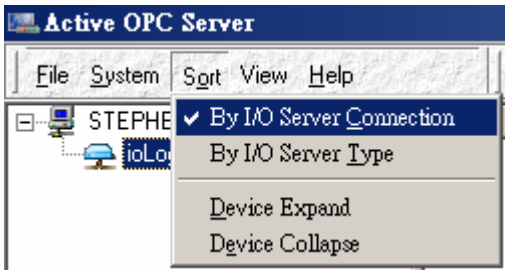
Heartbeat Tolerance allows users to define the timeout to wait for a heartbeat signal from a remote ioLogik.

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

Tag configuration of an ioLogik E1200 is specified by its web console. Open the browser and go to the **Active OPC Server Settings** page.

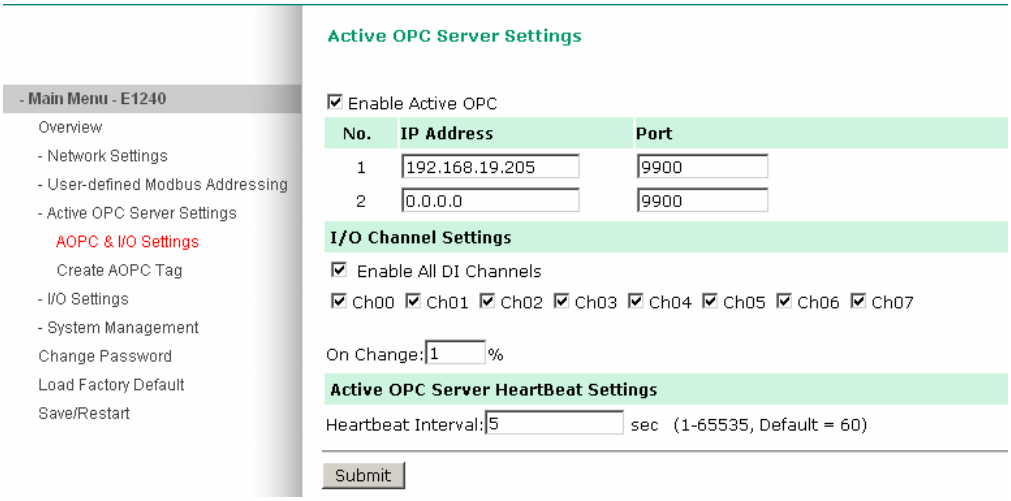
Follow these steps to create the tag from the ioLogik E1200 to Active OPC Server Lite:

1. In the AOPC & I/O Settings page,

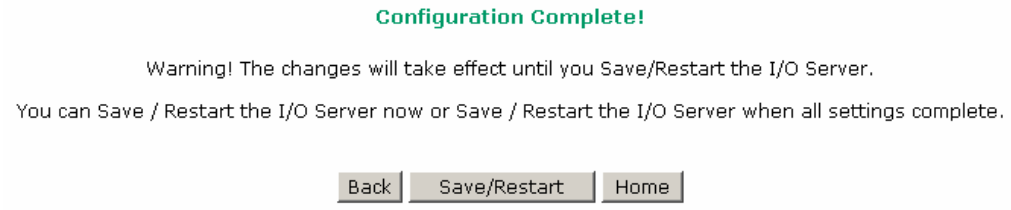
   a. Check the "Enable Active OPC" box and specify the IP address where the Active OPC Server Lite is installed.

   b. Select the I/O channels that need to be created in the Active OPC Server Lite.

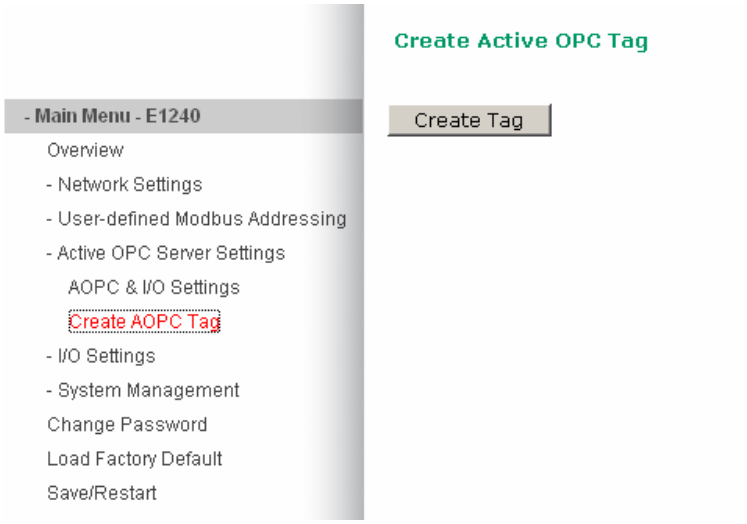
   c. Configure the Heartbeat Interval, if necessary.



   d. Click the "Submit" button and click the Save/Restart button on the next page.



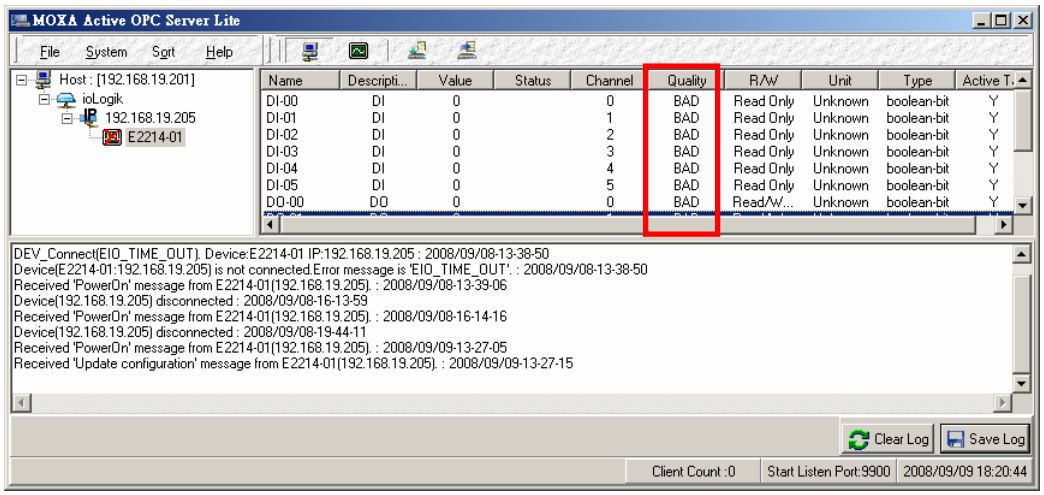
2. On the Create AOPC Tag page, click on the **Create Tags** button to push the tag configuration to Active OPC Server Lite.



3. Launch the Active OPC Server Lite program; tags will be automatically created.
4. Save the configuration of the Active OPC Server Ltie when exiting the program.

Heartbeat Interval

Tags are event-driven and updated only when the status of an I/O channel changes. When the status remains unchanged, the Active OPC Server Lite will not receive updates. To ensure that 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. The maximum interval is 65,535 seconds.



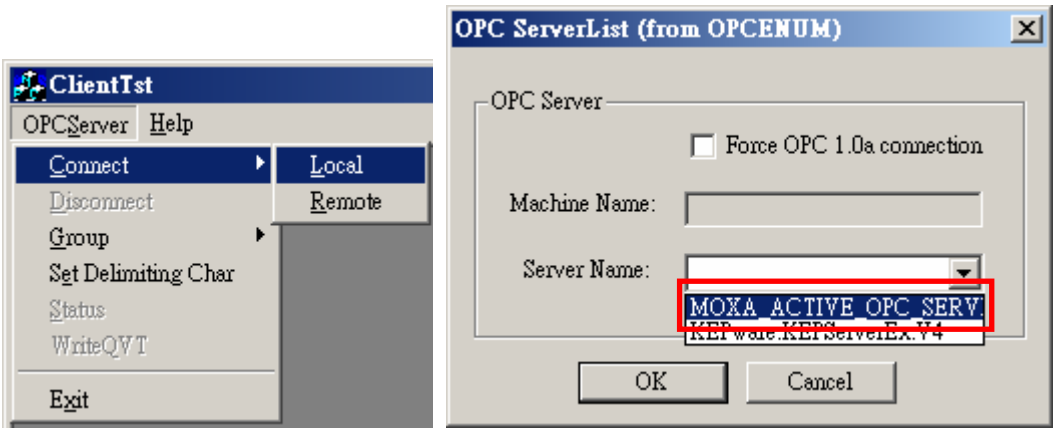
Read/Write Privilege

An input channel can only be read while an output channel shows "read/write acceptable" on the Active OPC Server Lite.

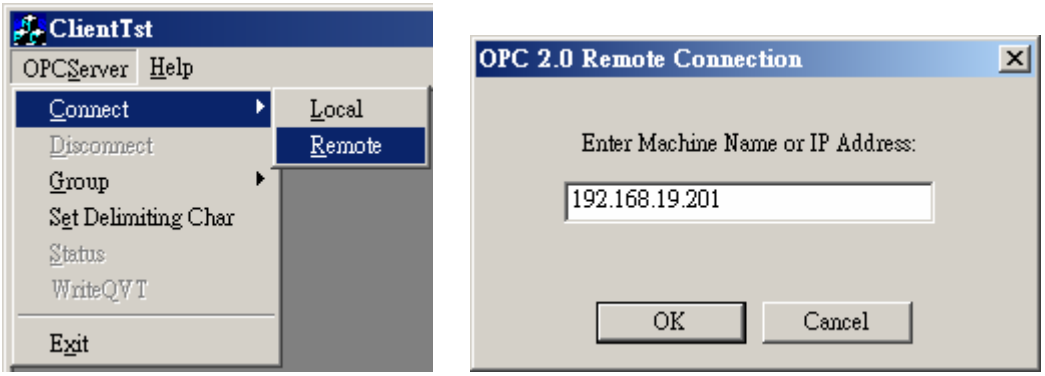
OPC Test Client

An OPC client software is embedded in 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**.

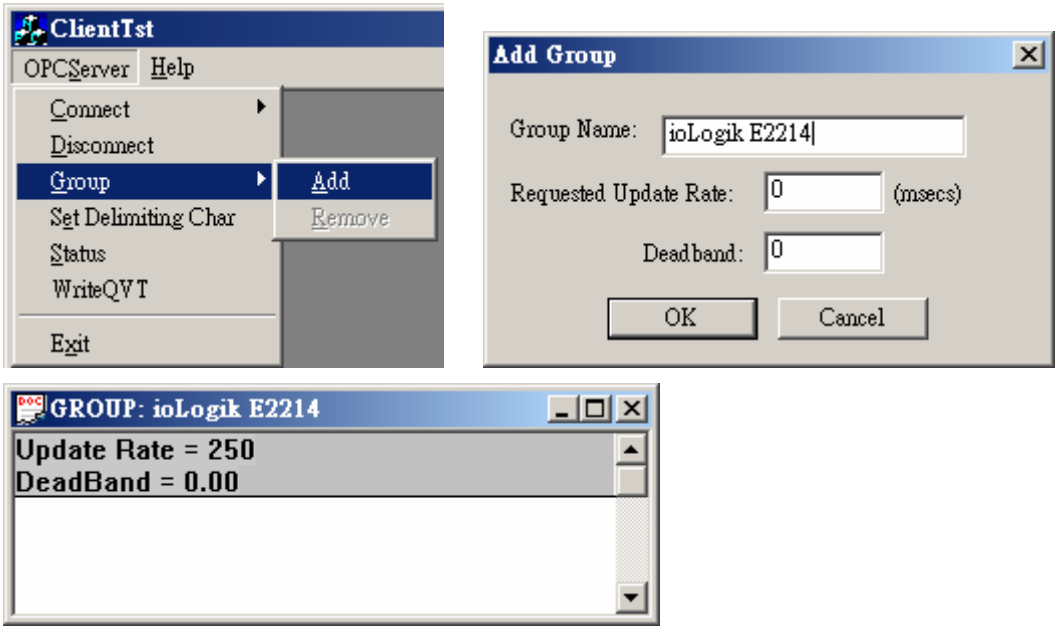
If Active OPC Server Lite is installed locally on the same PC, select **Connect → Local** from the menu bar. Specify the **MOXA ACTIVE OPC SERVER** in the **Server Name** column.



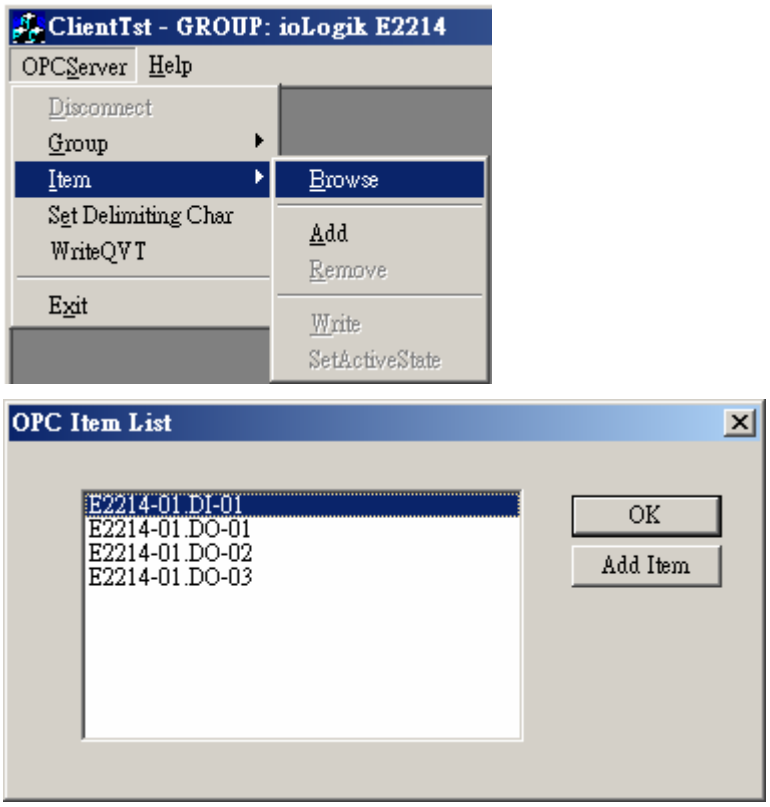
If the Active OPC Server Lite is installed on a remote PC, select **Connect → Remote** from the menu bar. Input the host name (i.e. Moxa_Client) or IP address and specify **MOXA ACTIVE OPC SERVER** in the **Server Name** column.

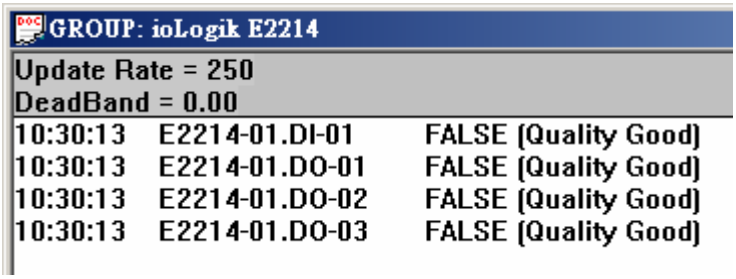


Click on **Group → Add** and specify the **Group Name** (user-defined). A blank tag monitoring screen will open.

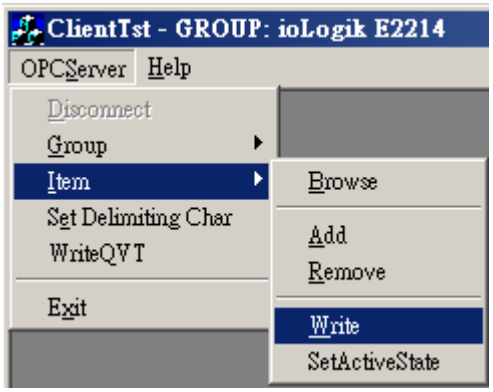


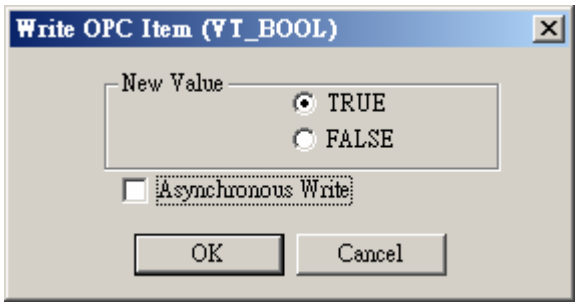
Click **Item → Browse** and select the channel that needs to be monitored.





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





A

Modbus/TCP Address Mappings

E1210 Modbus Mapping

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

Reference	Address	Data Type	Description
00257	0x0100	1 bit	CH0 DI Counter Operate Status 0: Stop 1: Start(R/W)
00258	0x0101	1 bit	CH1 DI Counter Operate Status 0: Stop 1: Start(R/W)
00259	0x0102	1 bit	CH2 DI Counter Operate Status 0: Stop 1: Start(R/W)
00260	0x0103	1 bit	CH3 DI Counter Operate Status 0: Stop 1: Start(R/W)
00261	0x0104	1 bit	CH4 DI Counter Operate Status 0: Stop 1: Start(R/W)
00262	0x0105	1 bit	CH5 DI Counter Operate Status 0: Stop 1: Start(R/W)
00263	0x0106	1 bit	CH6 DI Counter Operate Status 0: Stop 1: Start(R/W)
00264	0x0107	1 bit	CH7 DI Counter Operate Status 0: Stop 1: Start(R/W)
00265	0x0108	1 bit	CH8 DI Counter Operate Status 0: Stop 1: Start(R/W)
00266	0x0109	1 bit	CH9 DI Counter Operate Status 0: Stop 1: Start(R/W)
00267	0x010A	1 bit	CH10 DI Counter Operate Status 0: Stop 1: Start(R/W)
00268	0x010B	1 bit	CH11 DI Counter Operate Status 0: Stop 1: Start(R/W)
00269	0x010C	1 bit	CH12 DI Counter Operate Status 0: Stop 1: Start(R/W)
00270	0x010D	1 bit	CH13 DI Counter Operate Status 0: Stop 1: Start(R/W)
00271	0x010E	1 bit	CH14 DI Counter Operate Status 0: Stop 1: Start(R/W)
00272	0x010F	1 bit	CH15 DI Counter Operate Status 0: Stop 1: Start(R/W)
00273	0x0110	1 bit	CH0 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00274	0x0111	1 bit	CH1 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00275	0x0112	1 bit	CH2 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00276	0x0113	1 bit	CH3 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00277	0x0114	1 bit	CH4 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value

			0 : Return illegal data value(0x03)
00278	0x0115	1 bit	CH5 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00279	0x0116	1 bit	CH6 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00280	0x0117	1 bit	CH7 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00281	0x0118	1 bit	CH8 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00282	0x0119	1 bit	CH9 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00283	0x011A	1 bit	CH10 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00284	0x011B	1 bit	CH11 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00285	0x011C	1 bit	CH12 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00286	0x011D	1 bit	CH13 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00287	0x011E	1 bit	CH14 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00288	0x011F	1 bit	CH15 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)

1xxxx Read Only Coils (Function 2)

Reference	Address	Data Type	Description
10001	0x0000	1 bit	CH0 DI Value，0=OFF，1=ON (Read only)
10002	0x0001	1 bit	CH1 DI Value，0=OFF，1=ON (Read only)
10003	0x0002	1 bit	CH2 DI Value，0=OFF，1=ON (Read only)
10004	0x0003	1 bit	CH3 DI Value，0=OFF，1=ON (Read only)
10005	0x0004	1 bit	CH4 DI Value，0=OFF，1=ON (Read only)
10006	0x0005	1 bit	CH5 DI Value，0=OFF，1=ON (Read only)
10007	0x0006	1 bit	CH6 DI Value，0=OFF，1=ON (Read only)
10008	0x0007	1 bit	CH7 DI Value，0=OFF，1=ON (Read only)
10009	0x0008	1 bit	CH8 DI Value，0=OFF，1=ON (Read only)
10010	0x0009	1 bit	CH9 DI Value，0=OFF，1=ON (Read only)
10011	0x000A	1 bit	CH10 DI Value，0=OFF，1=ON (Read only)
10012	0x000B	1 bit	CH11 DI Value，0=OFF，1=ON (Read only)
10013	0x000C	1 bit	CH12 DI Value，0=OFF，1=ON (Read only)
10014	0x000D	1 bit	CH13 DI Value，0=OFF，1=ON (Read only)
10015	0x000E	1 bit	CH14 DI Value，0=OFF，1=ON (Read only)
10016	0x000F	1 bit	CH15 DI Value，0=OFF，1=ON (Read only)

3xxxx Read Only Registers (Function 4)

Reference	Address	Data Type	Description
30001	0x0000	1 word	CH0 DI WordValue，0=OFF，1=ON (Read only)
30002	0x0001	1 word	CH1 DI WordValue，0=OFF，1=ON (Read only)
30003	0x0002	1 word	CH2 DI WordValue，0=OFF，1=ON (Read only)
30004	0x0003	1 word	CH3 DI WordValue，0=OFF，1=ON (Read only)
30005	0x0004	1 word	CH4 DI WordValue，0=OFF，1=ON (Read only)
30006	0x0005	1 word	CH5 DI WordValue，0=OFF，1=ON (Read only)
30007	0x0006	1 word	CH6 DI WordValue，0=OFF，1=ON (Read only)
30008	0x0007	1 word	CH7 DI WordValue，0=OFF，1=ON (Read only)
30009	0x0008	1 word	CH8 DI WordValue，0=OFF，1=ON (Read only)
30010	0x0009	1 word	CH9 DI WordValue，0=OFF，1=ON (Read only)
30011	0x000A	1 word	CH10 DI WordValue，0=OFF，1=ON (Read only)
30012	0x000B	1 word	CH11 DI WordValue，0=OFF，1=ON (Read only)
30013	0x000C	1 word	CH12 DI WordValue，0=OFF，1=ON (Read only)
30014	0x000D	1 word	CH13 DI WordValue，0=OFF，1=ON (Read only)
30015	0x000E	1 word	CH14 DI WordValue，0=OFF，1=ON (Read only)
30016	0x000F	1 word	CH15 DI WordValue，0=OFF，1=ON (Read only)
30017	0x0010	1 word	CH0 DI Counter Value Hi- Word (Read only)
30018	0x0011	1 word	CH0 DI Counter Value Lo- Word (Read only)
30019	0x0012	1 word	CH1 DI Counter Value Hi- Word (Read only)
30020	0x0013	1 word	CH1 DI Counter Value Lo- Word (Read only)
30021	0x0014	1 word	CH2 DI Counter Value Hi- Word (Read only)

30022	0x0015	1 word	CH2 DI Counter Value Lo- Word (Read only)
30023	0x0016	1 word	CH3 DI Counter Value Hi- Word (Read only)
30024	0x0017	1 word	CH3 DI Counter Value Lo- Word (Read only)
30025	0x0018	1 word	CH4 DI Counter Value Hi- Word (Read only)
30026	0x0019	1 word	CH4 DI Counter Value Lo- Word (Read only)
30027	0x001A	1 word	CH5 DI Counter Value Hi- Word (Read only)
30028	0x001B	1 word	CH5 DI Counter Value Lo- Word (Read only)
30029	0x001C	1 word	CH6 DI Counter Value Hi- Word (Read only)
30030	0x001D	1 word	CH6 DI Counter Value Lo- Word (Read only)
30031	0x001E	1 word	CH7 DI Counter Value Hi- Word (Read only)
30032	0x001F	1 word	CH7 DI Counter Value Lo- Word (Read only)
30033	0x0020	1 word	CH8 DI Counter Value Hi- Word (Read only)
30034	0x0021	1 word	CH8 DI Counter Value Lo- Word (Read only)
30035	0x0022	1 word	CH9 DI Counter Value Hi- Word (Read only)
30036	0x0023	1 word	CH9 DI Counter Value Lo- Word (Read only)
30037	0x0024	1 word	CH10 DI Counter Value Hi- Word (Read only)
30038	0x0025	1 word	CH10 DI Counter Value Lo- Word (Read only)
30039	0x0026	1 word	CH11 DI Counter Value Hi- Word (Read only)
30040	0x0027	1 word	CH11 DI Counter Value Lo- Word (Read only)
30041	0x0028	1 word	CH12 DI Counter Value Hi- Word (Read only)
30042	0x0029	1 word	CH12 DI Counter Value Lo- Word (Read only)
30043	0x002A	1 word	CH13 DI Counter Value Hi- Word (Read only)
30044	0x002B	1 word	CH13 DI Counter Value Lo- Word (Read only)
30045	0x002C	1 word	CH14 DI Counter Value Hi- Word (Read only)
30046	0x002D	1 word	CH14 DI Counter Value Lo- Word (Read only)
30047	0x002E	1 word	CH15 DI Counter Value Hi- Word (Read only)
30048	0x002F	1 word	CH15 DI Counter Value Lo- Word (Read only)
30049	0x0030	1 word	DI Value (Ch0~15) Bit0 = Ch0 DI Value (0=OFF, 1=ON) …… Bit15 = Ch15 DI Value (0=OFF, 1=ON)

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

Reference	Address	Data Type	Description
40257	0x0100	1 word	CH0 DI Counter Operate Status 0: Stop 1: Start(R/W)
40258	0x0101	1 word	CH1 DI Counter Operate Status 0: Stop 1: Start(R/W)
40259	0x0102	1 word	CH2 DI Counter Operate Status 0: Stop 1: Start(R/W)
40260	0x0103	1 word	CH3 DI Counter Operate Status 0: Stop 1: Start(R/W)
40261	0x0104	1 word	CH4 DI Counter Operate Status 0: Stop 1: Start(R/W)
40262	0x0105	1 word	CH5 DI Counter Operate Status 0: Stop 1: Start(R/W)
40263	0x0106	1 word	CH6 DI Counter Operate Status 0: Stop 1: Start(R/W)
40264	0x0107	1 word	CH7 DI Counter Operate Status 0: Stop 1: Start(R/W)
40265	0x0108	1 word	CH8 DI Counter Operate Status 0: Stop 1: Start(R/W)
40266	0x0109	1 word	CH9 DI Counter Operate Status 0: Stop 1: Start(R/W)
40267	0x010A	1 word	CH10 DI Counter Operate Status 0: Stop 1: Start(R/W)
40268	0x010B	1 word	CH11 DI Counter Operate Status 0: Stop 1: Start(R/W)
40269	0x010C	1 word	CH12 DI Counter Operate Status 0: Stop 1: Start(R/W)
40270	0x010D	1 word	CH13 DI Counter Operate Status 0: Stop 1: Start(R/W)
40271	0x010E	1 word	CH14 DI Counter Operate Status 0: Stop 1: Start(R/W)
40272	0x010F	1 word	CH15 DI Counter Operate Status 0: Stop 1: Start(R/W)
40273	0x0110	1 word	CH0 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40274	0x0111	1 word	CH1 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40275	0x0112	1 word	CH2 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40276	0x0113	1 word	CH3 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40277	0x0114	1 word	CH4 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40278	0x0115	1 word	CH5 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40279	0x0116	1 word	CH6 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40280	0x0117	1 word	CH7 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)

40281	0x0118	1 word	CH8 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40282	0x0119	1 word	CH9 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40283	0x011A	1 word	CH10 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40284	0x011B	1 word	CH11 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40285	0x011C	1 word	CH12 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40286	0x011D	1 word	CH13 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40287	0x011E	1 word	CH14 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40288	0x011F	1 word	CH15 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)

E1211 Modbus Mapping

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

Reference	Address	Data Type	Description
00001	0x0000	1 bit	CH0 DO Value 0: Off 1: On
00002	0x0001	1 bit	CH1 DO Value 0: Off 1: On
00003	0x0002	1 bit	CH2 DO Value 0: Off 1: On
00004	0x0003	1 bit	CH3 DO Value 0: Off 1: On
00005	0x0004	1 bit	CH4 DO Value 0: Off 1: On
00006	0x0005	1 bit	CH5 DO Value 0: Off 1: On
00007	0x0006	1 bit	CH6 DO Value 0: Off 1: On
00008	0x0007	1 bit	CH7 DO Value 0: Off 1: On
00009	0x0008	1 bit	CH8 DO Value 0: Off 1: On
00010	0x0009	1 bit	CH9 DO Value 0: Off 1: On
00011	0x000A	1 bit	CH10 DO Value 0: Off 1: On
00012	0x000B	1 bit	CH11 DO Value 0: Off 1: On
00013	0x000C	1 bit	CH12 DO Value 0: Off 1: On
00014	0x000D	1 bit	CH13 DO Value 0: Off 1: On
00015	0x000E	1 bit	CH14 DO Value 0: Off 1: On
00016	0x000F	1 bit	CH15 DO Value 0: Off 1: On
00017	0x0010	1 bit	CH0 DO Pulse Operate Status 0: Off 1: On
00018	0x0011	1 bit	CH1 DO Pulse Operate Status 0: Off 1: On
00019	0x0012	1 bit	CH2 DO Pulse Operate Status 0: Off 1: On
00020	0x0013	1 bit	CH3 DO Pulse Operate Status 0: Off 1: On
00021	0x0014	1 bit	CH4 DO Pulse Operate Status 0: Off 1: On
00022	0x0015	1 bit	CH5 DO Pulse Operate Status 0: Off 1: On
00023	0x0016	1 bit	CH6 DO Pulse Operate Status 0: Off 1: On
00024	0x0017	1 bit	CH7 DO Pulse Operate Status 0: Off 1: On
00025	0x0018	1 bit	CH8 DO Pulse Operate Status 0: Off 1: On
00026	0x0019	1 bit	CH9 DO Pulse Operate Status 0: Off 1: On
00027	0x001A	1 bit	CH10 DO Pulse Operate Status 0: Off 1: On
00028	0x001B	1 bit	CH11 DO Pulse Operate Status 0: Off 1: On
00029	0x001C	1 bit	CH12 DO Pulse Operate Status 0: Off 1: On
00030	0x001D	1 bit	CH13 DO Pulse Operate Status 0: Off 1: On
00031	0x001E	1 bit	CH14 DO Pulse Operate Status 0: Off 1: On
00032	0x001F	1 bit	CH15 DO Pulse Operate Status 0: Off 1: On

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

Reference	Address	Data Type	Description
40001	0x0000	1 word	CH0 DO Value 0: Off 1: On
40002	0x0001	1 word	CH1 DO Value 0: Off 1: On
40003	0x0002	1 word	CH2 DO Value 0: Off 1: On
40004	0x0003	1 word	CH3 DO Value 0: Off 1: On
40005	0x0004	1 word	CH4 DO Value 0: Off 1: On
40006	0x0005	1 word	CH5 DO Value 0: Off 1: On
40007	0x0006	1 word	CH6 DO Value 0: Off 1: On
40008	0x0007	1 word	CH7 DO Value 0: Off 1: On
40009	0x0008	1 word	CH8 DO Value 0: Off 1: On
40010	0x0009	1 word	CH9 DO Value 0: Off 1: On
40011	0x000A	1 word	CH10 DO Value 0: Off 1: On
40012	0x000B	1 word	CH11 DO Value 0: Off 1: On
40013	0x000C	1 word	CH12 DO Value 0: Off 1: On
40014	0x000D	1 word	CH13 DO Value 0: Off 1: On
40015	0x000E	1 word	CH14 DO Value 0: Off 1: On
40016	0x000F	1 word	CH15 DO Value 0: Off 1: On
40017	0x0010	1 word	CH0 DO Pulse Operate Status 0: Off 1: On
40018	0x0011	1 word	CH1 DO Pulse Operate Status 0: Off 1: On
40019	0x0012	1 word	CH2 DO Pulse Operate Status 0: Off 1: On
40020	0x0013	1 word	CH3 DO Pulse Operate Status 0: Off 1: On
40021	0x0014	1 word	CH4 DO Pulse Operate Status 0: Off 1: On
40022	0x0015	1 word	CH5 DO Pulse Operate Status 0: Off 1: On
40023	0x0016	1 word	CH6 DO Pulse Operate Status 0: Off 1: On
40024	0x0017	1 word	CH7 DO Pulse Operate Status 0: Off 1: On
40025	0x0018	1 word	CH8 DO Pulse Operate Status 0: Off 1: On
40026	0x0019	1 word	CH9 DO Pulse Operate Status 0: Off 1: On
40027	0x001A	1 word	CH0 DO Pulse Operate Status 0: Off 1: On
40028	0x001B	1 word	CH1 DO Pulse Operate Status 0: Off 1: On
40029	0x001C	1 word	CH2 DO Pulse Operate Status 0: Off 1: On
40030	0x001D	1 word	CH3 DO Pulse Operate Status 0: Off 1: On
40031	0x001E	1 word	CH4 DO Pulse Operate Status 0: Off 1: On
40032	0x001F	1 word	CH5 DO Pulse Operate Status 0: Off 1: On
40033	0x0020	1 word	DO all Value (Ch0~15) Bit0 = Ch0 DO Value (0=OFF, 1=ON) …… Bit15 = Ch15 DO Value (0=OFF, 1=ON)

E1212 Modbus Mapping

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

Reference	Address	Data Type	Description
DO Channel			
00001	0x0000	1 bit	CH0 DO Value 0: Off 1: On
00002	0x0001	1 bit	CH1 DO Value 0: Off 1: On
00003	0x0002	1 bit	CH2 DO Value 0: Off 1: On
00004	0x0003	1 bit	CH3 DO Value 0: Off 1: On
00005	0x0004	1 bit	CH4 DO Value 0: Off 1: On
00006	0x0005	1 bit	CH5 DO Value 0: Off 1: On
00007	0x0006	1 bit	CH6 DO Value 0: Off 1: On
00008	0x0007	1 bit	CH7 DO Value 0: Off 1: On
00017	0x0010	1 bit	CH0 DO Pulse Operate Status 0: Off 1: On
00018	0x0011	1 bit	CH1 DO Pulse Operate Status 0: Off 1: On
00019	0x0012	1 bit	CH2 DO Pulse Operate Status 0: Off 1: On
00020	0x0013	1 bit	CH3 DO Pulse Operate Status 0: Off 1: On
00021	0x0014	1 bit	CH4 DO Pulse Operate Status 0: Off 1: On
00022	0x0015	1 bit	CH5 DO Pulse Operate Status 0: Off 1: On
00023	0x0016	1 bit	CH6 DO Pulse Operate Status 0: Off 1: On
00024	0x0017	1 bit	CH7 DO Pulse Operate Status 0: Off 1: On
DI Channel			
00257	0x0100	1 bit	CH0 DI Counter Operate Status 0: Stop 1: Start(R/W)
00258	0x0101	1 bit	CH1 DI Counter Operate Status 0: Stop 1: Start(R/W)
00259	0x0102	1 bit	CH2 DI Counter Operate Status 0: Stop 1: Start(R/W)
00260	0x0103	1 bit	CH3 DI Counter Operate Status 0: Stop 1: Start(R/W)
00261	0x0104	1 bit	CH4 DI Counter Operate Status 0: Stop 1: Start(R/W)
00262	0x0105	1 bit	CH5 DI Counter Operate Status 0: Stop 1: Start(R/W)
00263	0x0106	1 bit	CH6 DI Counter Operate Status 0: Stop 1: Start(R/W)
00264	0x0107	1 bit	CH7 DI Counter Operate Status 0: Stop 1: Start(R/W)
00265	0x0108	1 bit	CH8 DI Counter Operate Status 0: Stop 1: Start(R/W)
00266	0x0109	1 bit	CH9 DI Counter Operate Status 0: Stop 1: Start(R/W)
00267	0x010A	1 bit	CH10 DI Counter Operate Status 0: Stop 1: Start(R/W)
00268	0x010B	1 bit	CH11 DI Counter Operate Status 0: Stop 1: Start(R/W)
00269	0x010C	1 bit	CH12 DI Counter Operate Status 0: Stop 1: Start(R/W)
00270	0x010D	1 bit	CH13 DI Counter Operate Status 0: Stop 1: Start(R/W)
00271	0x010E	1 bit	CH14 DI Counter Operate Status 0: Stop 1: Start(R/W)
00272	0x010F	1 bit	CH15 DI Counter Operate Status 0: Stop 1: Start(R/W)
00273	0x0110	1 bit	CH0 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00274	0x0111	1 bit	CH1 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00275	0x0112	1 bit	CH2 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value

			0 : Return illegal data value(0x03)
00276	0x0113	1 bit	CH3 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00277	0x0114	1 bit	CH4 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00278	0x0115	1 bit	CH5 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00279	0x0116	1 bit	CH6 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00280	0x0117	1 bit	CH7 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00281	0x0118	1 bit	CH8 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00282	0x0119	1 bit	CH9 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00283	0x011A	1 bit	CH10 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00284	0x011B	1 bit	CH11 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00285	0x011C	1 bit	CH12 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00286	0x011D	1 bit	CH13 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00287	0x011E	1 bit	CH14 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00288	0x011F	1 bit	CH15 DI Clear Count Value Read Always return:0

			Write: 1 : Clear counter value 0 : Return illegal data value(0x03)

1xxxx Read Only Coils (Function 2)

Reference	Address	Data Type	Description
10001	0x0000	1 bit	CH0 DI Value，0=OFF，1=ON (Read only)
10002	0x0001	1 bit	CH1 DI Value，0=OFF，1=ON (Read only)
10003	0x0002	1 bit	CH2 DI Value，0=OFF，1=ON (Read only)
10004	0x0003	1 bit	CH3 DI Value，0=OFF，1=ON (Read only)
10005	0x0004	1 bit	CH4 DI Value，0=OFF，1=ON (Read only)
10006	0x0005	1 bit	CH5 DI Value，0=OFF，1=ON (Read only)
10007	0x0006	1 bit	CH6 DI Value，0=OFF，1=ON (Read only)
10008	0x0007	1 bit	CH7 DI Value，0=OFF，1=ON (Read only)
10009	0x0008	1 bit	CH8 DI Value，0=OFF，1=ON (Read only)
10010	0x0009	1 bit	CH9 DI Value，0=OFF，1=ON (Read only)
10011	0x000A	1 bit	CH10 DI Value，0=OFF，1=ON (Read only)
10012	0x000B	1 bit	CH11 DI Value，0=OFF，1=ON (Read only)
10013	0x000C	1 bit	CH12 DI Value，0=OFF，1=ON (Read only)
10014	0x000D	1 bit	CH13 DI Value，0=OFF，1=ON (Read only)
10015	0x000E	1 bit	CH14 DI Value，0=OFF，1=ON (Read only)
10016	0x000F	1 bit	CH15 DI Value，0=OFF，1=ON (Read only)

3xxxx Read Only Registers (Function 4)

Reference	Address	Data Type	Description
30001	0x0000	1 word	CH0 DI WordValue，0=OFF，1=ON (Read only)
30002	0x0001	1 word	CH1 DI WordValue，0=OFF，1=ON (Read only)
30003	0x0002	1 word	CH2 DI WordValue，0=OFF，1=ON (Read only)
30004	0x0003	1 word	CH3 DI WordValue，0=OFF，1=ON (Read only)
30005	0x0004	1 word	CH4 DI WordValue，0=OFF，1=ON (Read only)
30006	0x0005	1 word	CH5 DI WordValue，0=OFF，1=ON (Read only)
30007	0x0006	1 word	CH6 DI WordValue，0=OFF，1=ON (Read only)
30008	0x0007	1 word	CH7 DI WordValue，0=OFF，1=ON (Read only)
30009	0x0008	1 word	CH8 DI WordValue，0=OFF，1=ON (Read only)
30010	0x0009	1 word	CH9 DI WordValue，0=OFF，1=ON (Read only)
30011	0x000A	1 word	CH10 DI WordValue，0=OFF，1=ON (Read only)
30012	0x000B	1 word	CH11 DI WordValue，0=OFF，1=ON (Read only)
30013	0x000C	1 word	CH12 DI WordValue，0=OFF，1=ON (Read only)

30014	0x000D	1 word	CH13 DI WordValue，0=OFF，1=ON (Read only)
30015	0x000E	1 word	CH14 DI WordValue，0=OFF，1=ON (Read only)
30016	0x000F	1 word	CH15 DI WordValue，0=OFF，1=ON (Read only)
30017	0x0010	1 word	CH0 DI Counter Value Hi- Word (Read only)
30018	0x0011	1 word	CH0 DI Counter Value Lo- Word (Read only)
30019	0x0012	1 word	CH1 DI Counter Value Hi- Word (Read only)
30020	0x0013	1 word	CH1 DI Counter Value Lo- Word (Read only)
30021	0x0014	1 word	CH2 DI Counter Value Hi- Word (Read only)
30022	0x0015	1 word	CH2 DI Counter Value Lo- Word (Read only)
30023	0x0016	1 word	CH3 DI Counter Value Hi- Word (Read only)
30024	0x0017	1 word	CH3 DI Counter Value Lo- Word (Read only)
30025	0x0018	1 word	CH4 DI Counter Value Hi- Word (Read only)
30026	0x0019	1 word	CH4 DI Counter Value Lo- Word (Read only)
30027	0x001A	1 word	CH5 DI Counter Value Hi- Word (Read only)
30028	0x001B	1 word	CH5 DI Counter Value Lo- Word (Read only)
30029	0x001C	1 word	CH6 DI Counter Value Hi- Word (Read only)
30030	0x001D	1 word	CH6 DI Counter Value Lo- Word (Read only)
30031	0x001E	1 word	CH7 DI Counter Value Hi- Word (Read only)
30032	0x001F	1 word	CH7 DI Counter Value Lo- Word (Read only)
30033	0x0020	1 word	CH8 DI Counter Value Hi- Word (Read only)
30034	0x0021	1 word	CH8 DI Counter Value Lo- Word (Read only)
30035	0x0022	1 word	CH9 DI Counter Value Hi- Word (Read only)
30036	0x0023	1 word	CH9 DI Counter Value Lo- Word (Read only)
30037	0x0024	1 word	CH10 DI Counter Value Hi- Word (Read only)
30038	0x0025	1 word	CH10 DI Counter Value Lo- Word (Read only)
30039	0x0026	1 word	CH11 DI Counter Value Hi- Word (Read only)
30040	0x0027	1 word	CH11 DI Counter Value Lo- Word (Read only)
30041	0x0028	1 word	CH12 DI Counter Value Hi- Word (Read only)
30042	0x0029	1 word	CH12 DI Counter Value Lo- Word (Read only)
30043	0x002A	1 word	CH13 DI Counter Value Hi- Word (Read only)
30044	0x002B	1 word	CH13 DI Counter Value Lo- Word (Read only)
30045	0x002C	1 word	CH14 DI Counter Value Hi- Word (Read only)
30046	0x002D	1 word	CH14 DI Counter Value Lo- Word (Read only)
30047	0x002E	1 word	CH15 DI Counter Value Hi- Word (Read only)
30048	0x002F	1 word	CH15 DI Counter Value Lo- Word (Read only)
30049	0x0030	1 word	DI Value (Ch0~15) Bit0 = Ch0 DI Value (0=OFF, 1=ON) …… Bit15 = Ch15 DI Value (0=OFF, 1=ON)

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

Reference	Address	Data Type	Description
DO Channel			
40001	0x0000	1 word	CH0 DO Value 0: Off 1: On
40002	0x0001	1 word	CH1 DO Value 0: Off 1: On
40003	0x0002	1 word	CH2 DO Value 0: Off 1: On
40004	0x0003	1 word	CH3 DO Value 0: Off 1: On
40005	0x0004	1 word	CH4 DO Value 0: Off 1: On
40006	0x0005	1 word	CH5 DO Value 0: Off 1: On
40007	0x0006	1 word	CH6 DO Value 0: Off 1: On
40008	0x0007	1 word	CH7 DO Value 0: Off 1: On
40017	0x0010	1 word	CH0 DO Pulse Operate Status 0: Off 1: On
40018	0x0011	1 word	CH1 DO Pulse Operate Status 0: Off 1: On
40019	0x0012	1 word	CH2 DO Pulse Operate Status 0: Off 1: On
40020	0x0013	1 word	CH3 DO Pulse Operate Status 0: Off 1: On
40021	0x0014	1 word	CH4 DO Pulse Operate Status 0: Off 1: On
40022	0x0015	1 word	CH5 DO Pulse Operate Status 0: Off 1: On
40023	0x0016	1 word	CH6 DO Pulse Operate Status 0: Off 1: On
40024	0x0017	1 word	CH7 DO Pulse Operate Status 0: Off 1: On
40033	0x0020	1 word	DO all Value (Ch0~15) Bit0 = Ch0 DO Value (0=OFF, 1=ON) …… Bit15 = Ch15 DO Value (0=OFF, 1=ON)
DI Channel			
40257	0x0100	1 word	CH0 DI Counter Operate Status 0: Stop 1: Start(R/W)
40258	0x0101	1 word	CH1 DI Counter Operate Status 0: Stop 1: Start(R/W)
40259	0x0102	1 word	CH2 DI Counter Operate Status 0: Stop 1: Start(R/W)
40260	0x0103	1 word	CH3 DI Counter Operate Status 0: Stop 1: Start(R/W)
40261	0x0104	1 word	CH4 DI Counter Operate Status 0: Stop 1: Start(R/W)
40262	0x0105	1 word	CH5 DI Counter Operate Status 0: Stop 1: Start(R/W)
40263	0x0106	1 word	CH6 DI Counter Operate Status 0: Stop 1: Start(R/W)
40264	0x0107	1 word	CH7 DI Counter Operate Status 0: Stop 1: Start(R/W)
40265	0x0108	1 word	CH8 DI Counter Operate Status 0: Stop 1: Start(R/W)
40266	0x0109	1 word	CH9 DI Counter Operate Status 0: Stop 1: Start(R/W)
40267	0x010A	1 word	CH10 DI Counter Operate Status 0: Stop 1: Start(R/W)
40268	0x010B	1 word	CH11 DI Counter Operate Status 0: Stop 1: Start(R/W)
40269	0x010C	1 word	CH12 DI Counter Operate Status 0: Stop 1: Start(R/W)
40270	0x010D	1 word	CH13 DI Counter Operate Status 0: Stop 1: Start(R/W)
40271	0x010E	1 word	CH14 DI Counter Operate Status 0: Stop 1: Start(R/W)
40272	0x010F	1 word	CH15 DI Counter Operate Status 0: Stop 1: Start(R/W)
40273	0x0110	1 word	CH0 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40274	0x0111	1 word	CH1 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40275	0x0112	1 word	CH2 DI Clear Count Value

			Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40276	0x0113	1 word	CH3 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40277	0x0114	1 word	CH4 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40278	0x0115	1 word	CH5 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40279	0x0116	1 word	CH6 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40280	0x0117	1 word	CH7 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40281	0x0118	1 word	CH8 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40282	0x0119	1 word	CH9 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40283	0x011A	1 word	CH10 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40284	0x011B	1 word	CH11 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40285	0x011C	1 word	CH12 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40286	0x011D	1 word	CH13 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40287	0x011E	1 word	CH14 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)

40288	0x011F	1 word	CH15 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)

E1214 Modbus Mapping

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

Reference	Address	Data Type	Description
DO Channel			
00001	0x0000	1 bit	CH0 DO Value 0: Off 1: On
00002	0x0001	1 bit	CH1 DO Value 0: Off 1: On
00003	0x0002	1 bit	CH2 DO Value 0: Off 1: On
00004	0x0003	1 bit	CH3 DO Value 0: Off 1: On
00005	0x0004	1 bit	CH4 DO Value 0: Off 1: On
00006	0x0005	1 bit	CH5 DO Value 0: Off 1: On
00017	0x0010	1 bit	CH0 DO Pulse Operate Status 0: Off 1: On
00018	0x0011	1 bit	CH1 DO Pulse Operate Status 0: Off 1: On
00019	0x0012	1 bit	CH2 DO Pulse Operate Status 0: Off 1: On
00020	0x0013	1 bit	CH3 DO Pulse Operate Status 0: Off 1: On
00021	0x0014	1 bit	CH4 DO Pulse Operate Status 0: Off 1: On
00022	0x0015	1 bit	CH5 DO Pulse Operate Status 0: Off 1: On
DI Channel			
00257	0x0100	1 bit	CH0 DI Counter Operate Status 0: Stop 1: Start(R/W)
00258	0x0101	1 bit	CH1 DI Counter Operate Status 0: Stop 1: Start(R/W)
00259	0x0102	1 bit	CH2 DI Counter Operate Status 0: Stop 1: Start(R/W)
00260	0x0103	1 bit	CH3 DI Counter Operate Status 0: Stop 1: Start(R/W)
00261	0x0104	1 bit	CH4 DI Counter Operate Status 0: Stop 1: Start(R/W)
00262	0x0105	1 bit	CH5 DI Counter Operate Status 0: Stop 1: Start(R/W)
00273	0x0110	1 bit	CH0 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00274	0x0111	1 bit	CH1 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00275	0x0112	1 bit	CH2 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00276	0x0113	1 bit	CH3 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00277	0x0114	1 bit	CH4 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
00278	0x0115	1 bit	CH5 DI Clear Count Value

			Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)

1xxxx Read Only Coils (Function 2)

Reference	Address	Data Type	Description
10001	0x0000	1 bit	CH0 DI Value，0=OFF，1=ON (Read only)
10002	0x0001	1 bit	CH1 DI Value，0=OFF，1=ON (Read only)
10003	0x0002	1 bit	CH2 DI Value，0=OFF，1=ON (Read only)
10004	0x0003	1 bit	CH3 DI Value，0=OFF，1=ON (Read only)
10005	0x0004	1 bit	CH4 DI Value，0=OFF，1=ON (Read only)
10006	0x0005	1 bit	CH5 DI Value，0=OFF，1=ON (Read only)

3xxxx Read Only Registers (Function 4)

Reference	Address	Data Type	Description
30001	0x0000	1 word	CH0 DI WordValue，0=OFF，1=ON (Read only)
30002	0x0001	1 word	CH1 DI WordValue，0=OFF，1=ON (Read only)
30003	0x0002	1 word	CH2 DI WordValue，0=OFF，1=ON (Read only)
30004	0x0003	1 word	CH3 DI WordValue，0=OFF，1=ON (Read only)
30005	0x0004	1 word	CH4 DI WordValue，0=OFF，1=ON (Read only)
30006	0x0005	1 word	CH5 DI WordValue，0=OFF，1=ON (Read only)
30017	0x0010	1 word	CH0 DI Counter Value Hi- Word (Read only)
30018	0x0011	1 word	CH0 DI Counter Value Lo- Word (Read only)
30019	0x0012	1 word	CH1 DI Counter Value Hi- Word (Read only)
30020	0x0013	1 word	CH1 DI Counter Value Lo- Word (Read only)
30021	0x0014	1 word	CH2 DI Counter Value Hi- Word (Read only)
30022	0x0015	1 word	CH2 DI Counter Value Lo- Word (Read only)
30023	0x0016	1 word	CH3 DI Counter Value Hi- Word (Read only)
30024	0x0017	1 word	CH3 DI Counter Value Lo- Word (Read only)
30025	0x0018	1 word	CH4 DI Counter Value Hi- Word (Read only)
30026	0x0019	1 word	CH4 DI Counter Value Lo- Word (Read only)
30027	0x001A	1 word	CH5 DI Counter Value Hi- Word (Read only)
30028	0x001B	1 word	CH5 DI Counter Value Lo- Word (Read only)
30049	0x0030	1 word	DI Value (Ch0~5) Bit0 = Ch0 DI Value (0=OFF, 1=ON) …… Bit5 = Ch5 DI Value (0=OFF, 1=ON)

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

Reference	Address	Data Type	Description
DO channels			
40001	0x0000	1 word	CH0 DO Value 0: Off 1: On
40002	0x0001	1 word	CH1 DO Value 0: Off 1: On
40003	0x0002	1 word	CH2 DO Value 0: Off 1: On
40004	0x0003	1 word	CH3 DO Value 0: Off 1: On
40005	0x0004	1 word	CH4 DO Value 0: Off 1: On
40006	0x0005	1 word	CH5 DO Value 0: Off 1: On
40017	0x0010	1 word	CH0 DO Pulse Operate Status 0: Off 1: On
40018	0x0011	1 word	CH1 DO Pulse Operate Status 0: Off 1: On
40019	0x0012	1 word	CH2 DO Pulse Operate Status 0: Off 1: On
40020	0x0013	1 word	CH3 DO Pulse Operate Status 0: Off 1: On
40021	0x0014	1 word	CH4 DO Pulse Operate Status 0: Off 1: On
40022	0x0015	1 word	CH5 DO Pulse Operate Status 0: Off 1: On
40033	0x0020	1 word	DO all Value (Ch0~5) Bit0 = Ch0 DO Value (0=OFF, 1=ON) …… Bit5 = Ch5 DO Value (0=OFF, 1=ON)
DI Channel			
40257	0x0100	1 word	CH0 DI Counter Operate Status 0: Stop 1: Start(R/W)
40258	0x0101	1 word	CH1 DI Counter Operate Status 0: Stop 1: Start(R/W)
40259	0x0102	1 word	CH2 DI Counter Operate Status 0: Stop 1: Start(R/W)
40260	0x0103	1 word	CH3 DI Counter Operate Status 0: Stop 1: Start(R/W)
40261	0x0104	1 word	CH4 DI Counter Operate Status 0: Stop 1: Start(R/W)
40262	0x0105	1 word	CH5 DI Counter Operate Status 0: Stop 1: Start(R/W)
40273	0x0110	1 word	CH0 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40274	0x0111	1 word	CH1 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40275	0x0112	1 word	CH2 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40276	0x0113	1 word	CH3 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40277	0x0114	1 word	CH4 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)
40278	0x0115	1 word	CH5 DI Clear Count Value Read Always return:0 Write: 1 : Clear counter value 0 : Return illegal data value(0x03)

E1240 Modbus Mapping

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 Scaling Value Hi (float)
30010	0x0009	1 word	CH0 Read AI Scaling Value Low (float)
30011	0x000A	1 word	CH1 Read AI Scaling Value Hi (float)
30012	0x000B	1 word	CH1 Read AI Scaling Value Low (float)
30013	0x000C	1 word	CH2 Read AI Scaling Value Hi (float)
30014	0x000D	1 word	CH2 Read AI Scaling Value Low (float)
30015	0x000E	1 word	CH3 Read AI Scaling Value Hi (float)
30016	0x000F	1 word	CH3 Read AI Scaling Value Low (float)
30017	0x0010	1 word	CH4 Read AI Scaling Value Hi (float)
30018	0x0011	1 word	CH4 Read AI Scaling Value Low (float)
30019	0x0012	1 word	CH5 Read AI Scaling Value Hi (float)
30020	0x0013	1 word	CH5 Read AI Scaling Value Low (float)
30021	0x0014	1 word	CH6 Read AI Scaling Value Hi (float)
30022	0x0015	1 word	CH6 Read AI Scaling Value Low (float)
30023	0x0016	1 word	CH7 Read AI Scaling Value Hi (float)
30024	0x0017	1 word	CH7 Read AI Scaling Value Low (float)
34097	0x1000	1 word	CH0 AI Mode 1: current(mA) , 0: Voltage(mV) (R)
34098	0x1001	1 word	CH1 AI Mode 1: current(mA) , 0: Voltage(mV) (R)
34099	0x1002	1 word	CH2 AI Mode 1: current(mA) , 0: Voltage(mV) (R)
34100	0x1003	1 word	CH3 AI Mode 1: current(mA) , 0: Voltage(mV) (R)
34101	0x1004	1 word	CH4 AI Mode 1: current(mA) , 0: Voltage(mV) (R)
34102	0x1005	1 word	CH5 AI Mode 1: current(mA) , 0: Voltage(mV) (R)
34103	0x1006	1 word	CH6 AI Mode 1: current(mA) , 0: Voltage(mV) (R)
34104	0x1007	1 word	CH7 AI Mode 1: current(mA) , 0: Voltage(mV) (R)
34105	0x1008	1 word	CH0 Read AI Min Value
34106	0x1009	1 word	CH1 Read AI Min Value
34107	0x100A	1 word	CH2 Read AI Min Value
34108	0x100B	1 word	CH3 Read AI Min Value
34109	0x100C	1 word	CH4 Read AI Min Value

34110	0x100D	1 word	CH5 Read AI Min Value
34111	0x100E	1 word	CH6 Read AI Min Value
34112	0x100F	1 word	CH7 Read AI Min Value
34113	0x1010	1 word	CH0 Read AI Max Value
34114	0x1011	1 word	CH1 Read AI Max Value
34115	0x1012	1 word	CH2 Read AI Max Value
34116	0x1013	1 word	CH3 Read AI Max Value
34117	0x1014	1 word	CH4 Read AI Max Value
34118	0x1015	1 word	CH5 Read AI Max Value
34119	0x1016	1 word	CH6 Read AI Max Value
34120	0x1017	1 word	CH7 Read AI Max Value

B

Used Network Port Numbers

ioLogik E1200 Network Port Usage

Port	Type	Usage
80	TCP	Web console service
502	TCP	Modbus/TCP communication
68	UDP	BOOTP/DHCP
4800	UDP	Auto search
69	UDP	Export/import configuration file
9900	TCP	Active OPC Server Lite
9950	TCP	Active OPC Server Lite

C
Factory Defaults

The ioLogik E1200 series products are 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 sec**
DI Mode:	**DI**
Filter time:	**100 ms**
Trigger for counter:	**Lo to Hi**
Counter status:	**Stop**
DO Mode:	**DO**
DO Safe Status:	**Disable**
Power on status:	**Disable**
Low width for pulse:	**1 ms**
Hi width for pulse:	**1 ms**
Output pulses:	**0 (continuous)**
DIO Mode:	**DO**
AI Mode:	**Voltage**
Scaling and Slop-Intercept	**Disable**
Password:	**N/A**
Server Name:	**N/A**
Server Location:	**N/A**
Click&Go	**NONE**

Pin Assignment of Terminal Blocks

ioLogik E1210 (top to bottom)

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

ioLogik E1211 (top to bottom)

1	
2	DO0
3	DO1
4	DO2
5	DO3
6	GND
7	DO4
8	DO5
9	DO6
10	DO7
11	
12	DO8
13	DO9
14	DO10
15	DO11
16	GND
17	DO12
18	DO13
19	DO14
20	DO15

ioLogik E1212 (top to bottom)

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

ioLogik E1214 (top to bottom)

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

ioLogik E1240 (top to bottom)

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

E

Federal Communication Commission Interference Statement

FCC Warning!

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

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

F

European Community (CE)

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