

ioLogik E2210 User's Manual

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ioLogik E2210 User's Manual

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The ioLogik E2210 is a stand-alone Active Remote 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**
 - Traditional Remote I/O
 - Active Remote I/O
 - Click&Go
 - Optional Liquid Crystal Display Module (LCM)
- ❑ **Product Features**
- ❑ **Packing List**
- ❑ **Product Specifications**
- ❑ **Physical Dimensions**
- ❑ **Hardware Reference**
 - Panel Guide
 - LED Indicators

Overview



(shown with and without optional LCM)

The ioLogik E2210 is part of the E2000 series of ioLogik Active Remote I/O servers, which are designed for intelligent, pro-active status reporting of attached sensors, transmitters, transducers, and valves over a network. As an Easy View device, the ioLogik E2210 supports an optional hot-pluggable Liquid Crystal Display Module (LCM), as shown above, to view and configure device settings.

Traditional Remote I/O

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

Active Remote I/O

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

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

Click&Go

Moxa developed the Click&Go logic control interface for easy configuration and deployment of Active Remote I/O. Click&Go's intuitive, graphical interface lets administrators use simple IF/THEN statements as rules to determine how the Active Remote I/O server responds to different I/O conditions. For example, the Active Remote I/O server could be programmed to turn on an attached switch as well as send an e-mail or SNMP trap when an attached event counter reaches a certain value. Click&Go makes it easy to define a set of these rules, which will become the basis for your Active Remote I/O system.

Optional Liquid Crystal Display Module (LCM)

As a Moxa Easy View product, the ioLogik E2210 supports an optional hot-pluggable Liquid Crystal Display Module (LCM) for field management and configuration. The LCM can display network and I/O settings such as digital input mode and value. The ioLogik E2210's IP address and netmask may also be configured using the LCM, and one LCM can be used to maintain and configure all your Easy View devices.

Product Features

- Click&Go logic builder for easy configuration of your Active Remote I/O system
- High-speed active I/O messaging
- 12-channels of 24 Vdc digital input (DI) with DI/Event Counter mode and software selectable filtering time
- 8-channels of 24 Vdc digital output (DO) with Pulse Output mode and software selectable pulse width
- 10/100 Mbps Ethernet with Modbus/TCP protocol connecting up 10 hosts
- Bundled Windows utility and quick programming library for VB, VC++, BCB (coming soon)
- Support for SCADA software such as Wonderware InTouch and GE Intellution iFix32
- SNMP for system management and I/O status
- Remote management over the network including firmware updates
- Configurable DO power-on and safe status settings
- Optional hot-pluggable LCM for status display and configuration

Packing List

The ioLogik E2210 is shipped with the following items:

Standard Accessories

- ioLogik E2210 Active Remote I/O Server
- Document & Software CD

Optional Accessories

- LDP1602 ioLogik Liquid Crystal Display Module (LCM)

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

Product Specifications

LAN

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

Serial (reserved)

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

Serial Communication Parameters (reserved)

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

Digital Input

Inputs	12, source type
I/O Mode	DI or Event Counter (input frequency: 100 Hz)
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)
Common type	12 points / 1 COM
Isolation	2 KV rms

Digital Output

Outputs	8, sink type
On-state voltage	24 VDC nominal
Output current rating:	Max. 200 mA per channel
Optical isolation	3K VDC
Protection	Over temperature shutdown: 170°C Over current limit: 750 mA/channel (typical)

Power Requirements

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

Mechanical Specifications

Wiring	I/O cable max. 14 AWG
--------	-----------------------

Environmental

Operating temperature	-10 to 60°C (14 to 140°F), 5 to 95%RH
Storage temperature	-40 to 85°C (-4 to 185°F), 5 to 95%RH
Shock	IEC60068-2-27
Freefall	IEC60068-2-32
Vibration	IEC60068-2-6

Agency Approvals

EMI	FCC Part 15, CISPR (EN55022) Class A
EMS	IEC61000-4-2 (ESD), level 2/3,

Safety

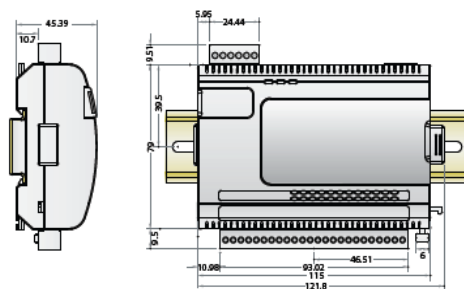
Warranty

IEC61000-4-3 (RS), level 2, IEC61000-4-4 (EFT), level 2,
IEC61000-4-5 (Surge), level 3, IEC61000-4-6 (CS), level 2,
IEC61000-4-8 (PM), level 1, IEC61000-4-11 (Dip)
UL 508 (pending)

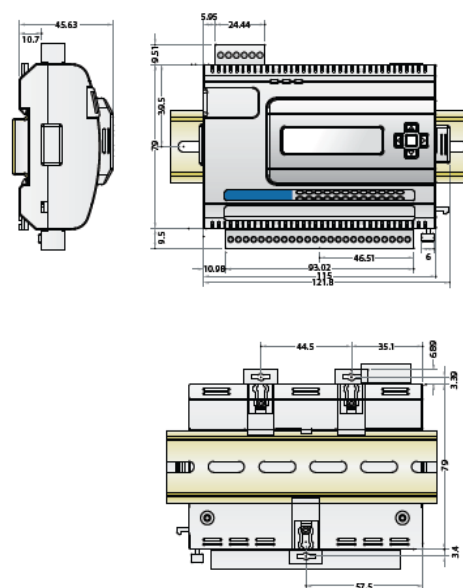
2 years

Physical Dimensions

Without LCD Display Module (unit: mm)

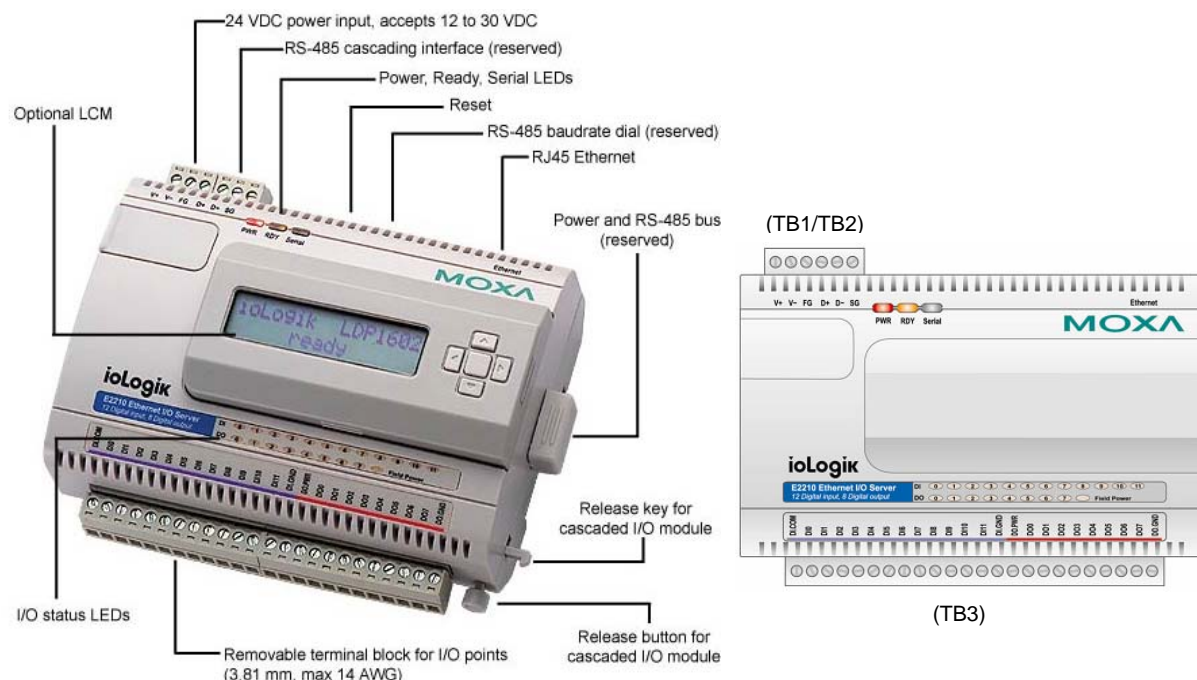


With LCD Display Module (unit: mm)



Hardware Reference

Panel Guide



NOTE – The reset button restarts the server and resets all settings to factory defaults. Use a pointed object such as a straightened paper clip to hold the reset button down for 5 sec. The RDY LED will turn red as you are holding the reset button down. The factory defaults will be loaded once the RDY LED turns green again. You may then release the reset button.

LED Indicators

Ethernet		
Ethernet	orange	Connected to a 10 Mbps Ethernet connection.
	green	Connected to a 100 Mbps Ethernet connection.
	(flashing)	Transmitting or receiving data
System		
PWR	red	Power is on
	off	Power is off
RDY	red	System error
	green (steady)	ioLogik E2210 is functioning normally
	green (flashing)	Click&Go ruleset is active
	green & red (flashing)	ioLogik E2210 is in Safe Status
	off	Power is off or there is a power problem.
Serial	(flashing)	Serial port is receiving/transmitting data
I/O		
DI x12 pins	green	ON status
DO x8 pins	off	OFF status
Field PWR	off	OFF status

2

Initial Setup

This chapter describes how to install the ioLogik E2210.

The following topics are covered:

- ❑ **Hardware Installation**
 - Connecting the Power
 - Grounding the ioLogik E2210
 - Connecting to the Network
 - Setting the RS-485 Baudrate
- ❑ **Software Installation**

Hardware Installation

Connecting the Power

Connect the 12 to 48 VDC power line to the ioLogik E2210's terminal block (TB1). If power is properly supplied, the Power LED will glow a solid red color until the system is ready



ATTENTION

Disconnect the power before installing and wiring

Disconnect the power cord before installing and/or wiring your ioLogik E2210.

Do not exceed the maximum current for the wiring

Determine the maximum possible current for each power wire and common wire. Observe all electrical codes dictating the maximum current allowable for each wire size.

If the current exceeds the maximum rating, the wiring could overheat, causing serious damage to your equipment.

Grounding the ioLogik E2210

The ioLogik E2210 is equipped with two grounding points, one on the wall mount hole and the other on the DIN-rail mount.

Connecting to the Network

1. Connect the ioLogik E2210 to the host PC with an Ethernet cable. For initial setup of the ioLogik E2210, it is recommended that the ioLogik E2210 be configured using a direct connection to a host computer rather than remotely over the network.
2. Configure the host PC's IP address to 192.168.127.xxx. (xxx: from 001 to 253). In Windows, you will need to do this through the Control Panel.

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

3. Use ioAdmin or the web console to detect the ioLogik E2210. Once the ioLogik E2210 has been detected, modify the settings as needed for your network environment, then restart the server.

Setting the RS-485 Baudrate



The RS-485 port on the ioLogik E2210 is reserved to chain another RS-485 I/O server. The RS-485 port can run Modbus/RTU or I/O command sets. The baudrate is set by a physical dial on the back of the ioLogik E2210. The default settings are baudrate = 115200, parity check = N, data bits = 8, and stop bit = 1.

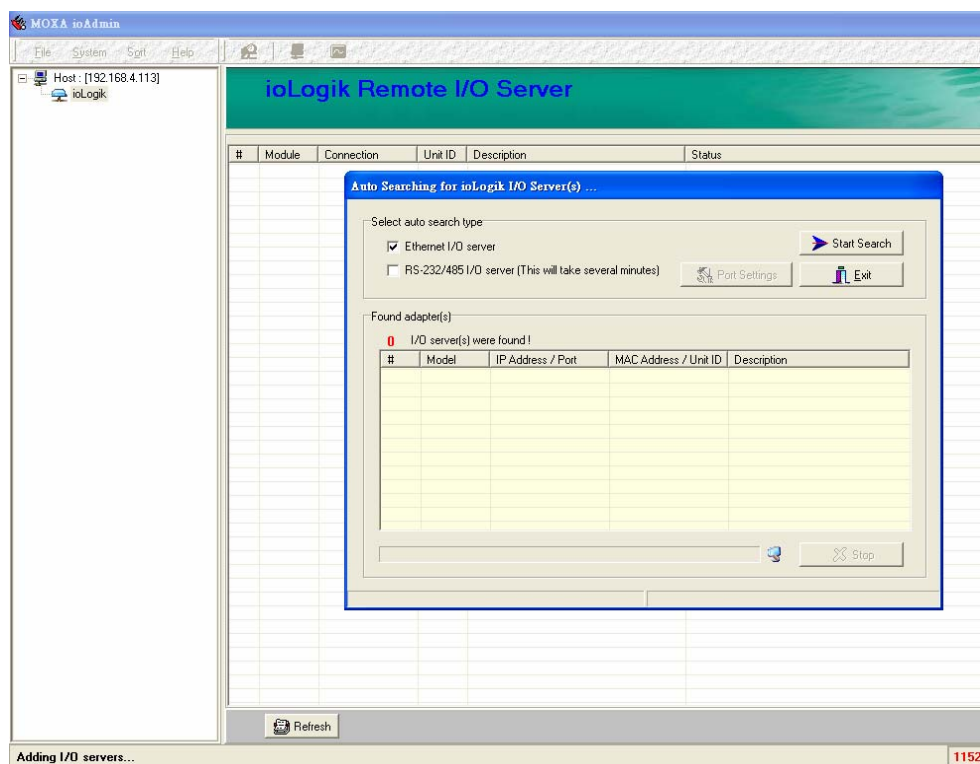
Baudrate for RS-485 (parameters are N, 8, 1)	Dial setting and corresponding baudrate:
	0:115200 1:57600 2:38400 3:19200
	4:9600 5:4800 6:2400 7:1200

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

Software Installation

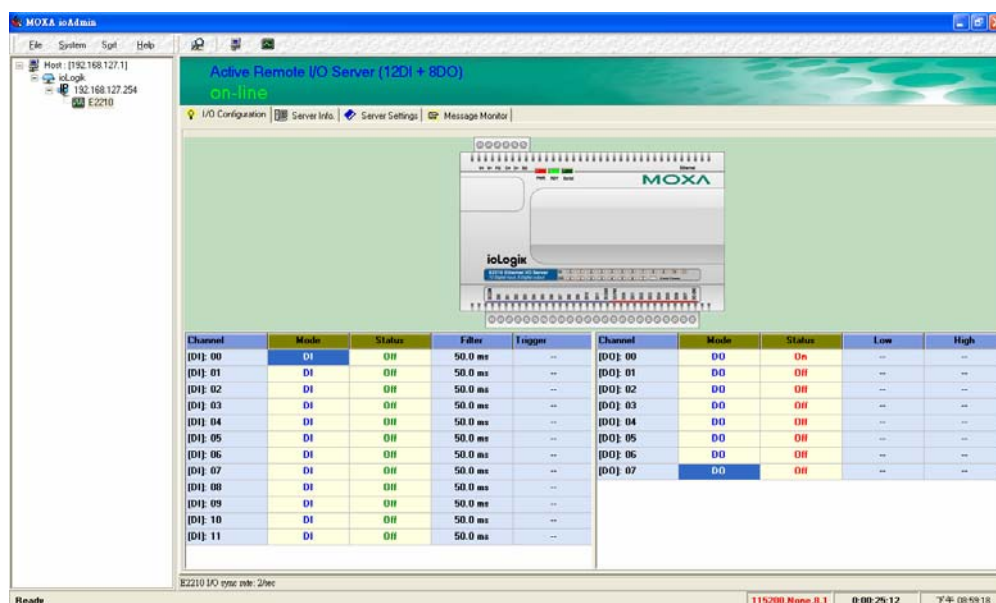
ioAdmin is a Windows utility provided for the configuration and management of the ioLogik E2210 and attached I/O devices. It may be used from anywhere on the network to monitor and configure the ioLogik E2210. You may also configure some of the settings through the web console or optional LCM.

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



If ioAdmin is unable to find the ioLogik E2210, there may be a problem with your network settings.

4. **Monitoring I/O status:** Once the ioLogik E2210 is found by ioAdmin, you may view the status of all I/O devices on ioAdmin's main screen.



You may now use ioAdmin to setup or configure your the ioLogik E2210.

This chapter goes over the functions available in ioAdmin, the ioLogik E2210's main configuration and management utility.

The following topics are covered:

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

Introduction to ioAdmin

All ioLogik remote I/O Servers may be managed and configured over the Ethernet by ioAdmin, a Windows 2000/XP utility provided with your ioLogik E2210. ioAdmin's graphical-user interface gives you easy access to all status information and settings.

The ioLogik E2210 also supports configuration by web console and by optional LCM, but full configuration and management is only available through ioAdmin.

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

ioAdmin consists of following software:

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

Features of ioAdmin

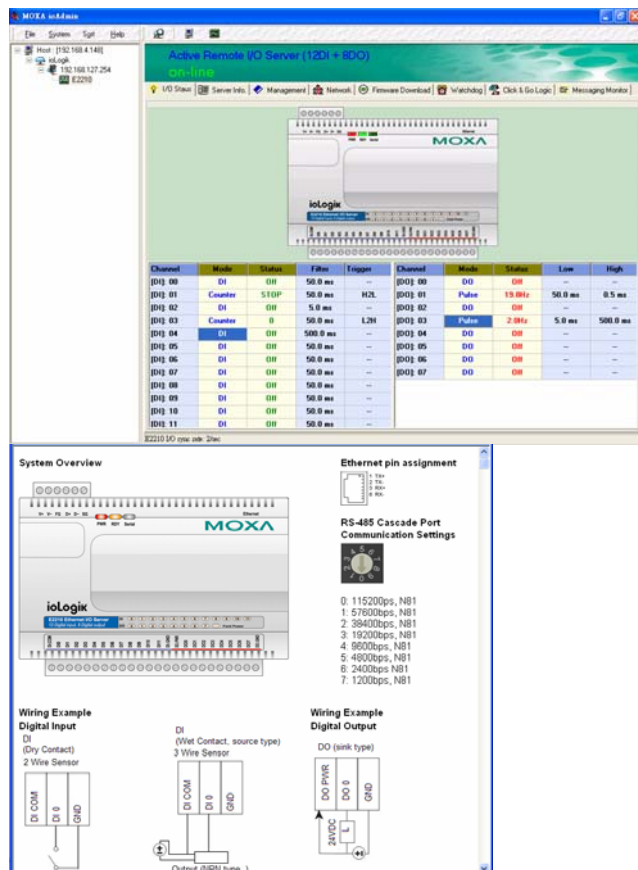
Remote Management

Over the Ethernet network, ioAdmin allows users to

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

On-line Wiring Guide

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



Configuration File

ioAdmin allows the entire configuration of the ioLogik E2210 to be saved as a file. The file is viewable as text and can serve three purposes:

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

```
Time: 9:10:55 AM
[1. Model]
-----
MOD_TYPE=E2210 - Active Remote I/O Server (12DI + 8DO)
MOD_LOC=
MOD_NAME=

[2. I/o configurations]
-----
DI00=0, (DI),          DI00_FILTER=100, (50.00ms)
DI01=0, (DI),          DI01_FILTER=100, (50.00ms)
DI02=0, (DI),          DI02_FILTER=100, (50.00ms)
DI03=0, (DI),          DI03_FILTER=100, (50.00ms)
DI04=0, (DI),          DI04_FILTER=100, (50.00ms)
DI05=0, (DI),          DI05_FILTER=100, (50.00ms)
DI06=0, (DI),          DI06_FILTER=100, (50.00ms)
DI07=0, (DI),          DI07_FILTER=100, (50.00ms)
DI08=0, (DI),          DI08_FILTER=100, (50.00ms)
DI09=0, (DI),          DI09_FILTER=100, (50.00ms)
DI10=0, (DI),          DI10_FILTER=100, (50.00ms)
DI11=0, (DI),          DI11_FILTER=100, (50.00ms)

DO00=0, (DO),          DO00_PWN=0, (OFF),          DO00_SAFE=0, (OFF)
DO01=0, (DO),          DO01_PWN=0, (OFF),          DO01_SAFE=0, (OFF)
DO02=0, (DO),          DO02_PWN=0, (OFF),          DO02_SAFE=0, (OFF)
DO03=0, (DO),          DO03_PWN=0, (OFF),          DO03_SAFE=0, (OFF)
DO04=0, (DO),          DO04_PWN=0, (OFF),          DO04_SAFE=0, (OFF)
DO05=0, (DO),          DO05_PWN=0, (OFF),          DO05_SAFE=0, (OFF)
DO06=0, (DO),          DO06_PWN=0, (OFF),          DO06_SAFE=0, (OFF)
DO07=0, (DO),          DO07_PWN=0, (OFF),          DO07_SAFE=0, (OFF)

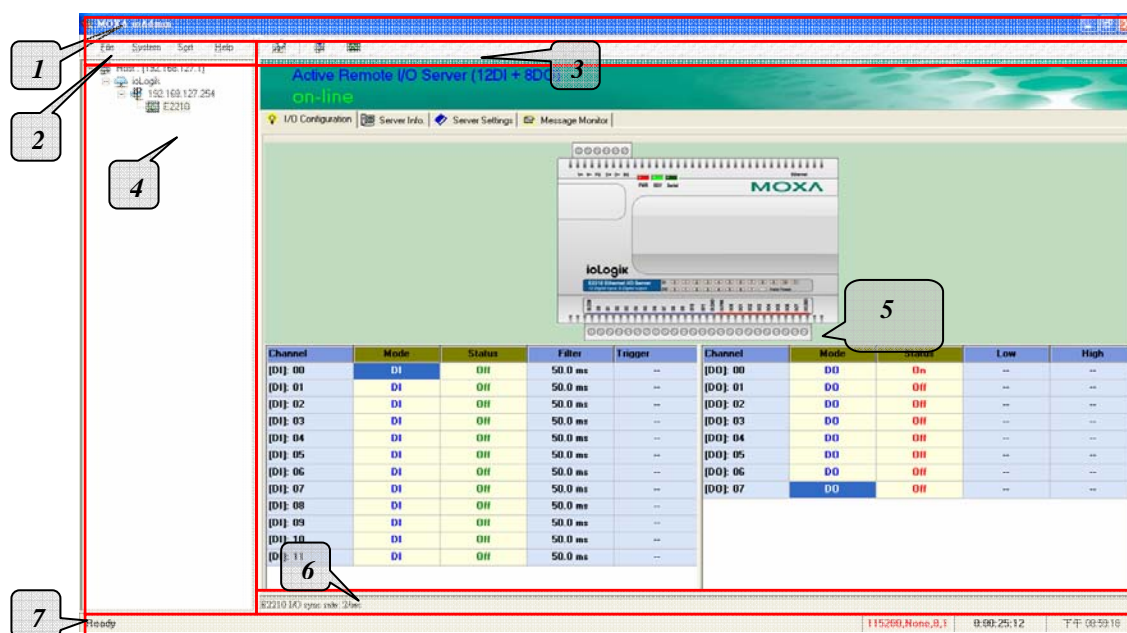
[3. Modbus address table]
-----
```

CHANNEL	I/O TYPE	MODBUS REFERENCE	MODBUS ADDRESS (Dec, Hex)
DI00	Input	10001	0000, 0x0000
DI01	Input	10002	0001, 0x0001
DI02	Input	10003	0002, 0x0002
DI03	Input	10004	0003, 0x0003
DI04	Input	10005	0004, 0x0004
DI05	Input	10006	0005, 0x0005
DI06	Input	10007	0006, 0x0006
DI07	Input	10008	0007, 0x0007
DI08	Input	10009	0008, 0x0008
DI09	Input	10010	0009, 0x0009
DI10	Input	10011	0010, 0x000A

ioAdmin Main Screen

Main Screen Overview

This is ioAdmin's main screen. The main window defaults to the I/O Configuration tab, which displays a figure of the ioLogik E2210 and the status of every I/O channel below it. The other tabs in the main window take you to server and network settings, and further functions are available when you log on as an administrator. Note that configuration options are not available until you log on as an administrator.

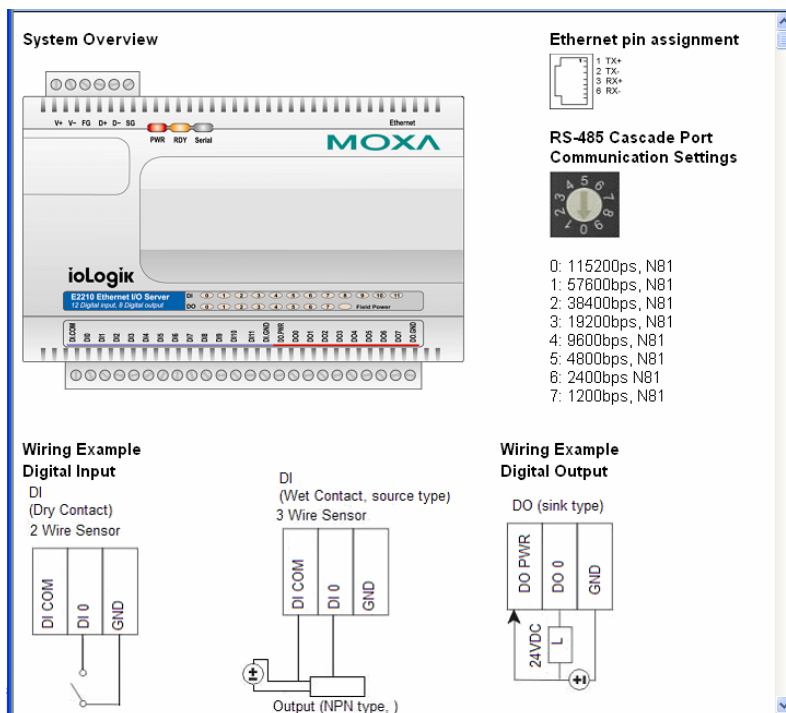


ioAdmin Main Screen

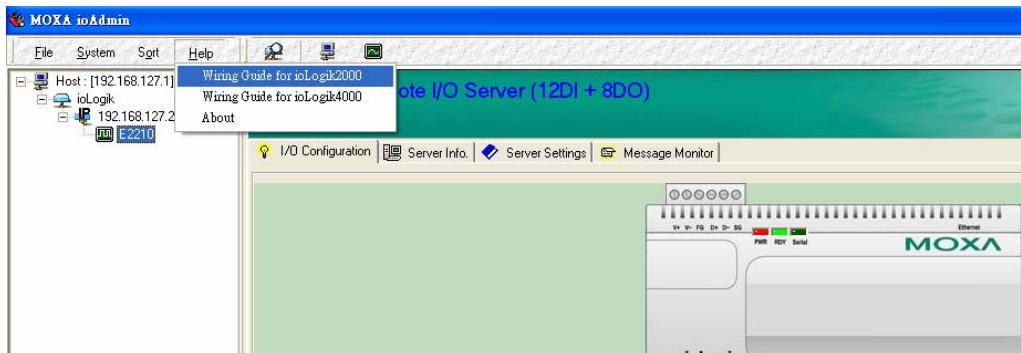
- | | |
|----|-------------------|
| 1. | Title |
| 2. | Menu bar |
| 3. | Quick link |
| 4. | Navigation panel |
| 5. | Main window |
| 6. | Sync. rate status |
| 7. | Status bar |

Wiring Guide

ioAdmin provides a wiring guide to the ioLogik E2210. You may access the wiring guide by right-clicking the figure of the ioLogik E2210 in the I/O Configuration tab. Select “Wiring Guide” in the submenu to open a help file showing the wiring information and electrical characteristics of the ioLogik E2210.



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



I/O Configuration Tab (General)

The I/O Configuration tab shows the status of every I/O channel underneath the ioLogik E2210 figure. This is the default tab when you first open ioAdmin.

The screenshot shows the 'I/O Configuration' tab in the ioAdmin software. At the top, there are tabs for 'I/O Configuration', 'Server Info', 'Server Settings', and 'Message Monitor'. Below the tabs is a diagram of the ioLogik E2210 device with its I/O channels labeled. Below the diagram are two tables showing the configuration for each channel.

Channel	Mode	Status	Filter	Trigger
[DI]: 00	DI	Off	50.0 ms	--
[DI]: 01	DI	Off	50.0 ms	--
[DI]: 02	DI	Off	50.0 ms	--
[DI]: 03	DI	Off	50.0 ms	--
[DI]: 04	DI	Off	50.0 ms	--
[DI]: 05	DI	Off	50.0 ms	--
[DI]: 06	DI	Off	50.0 ms	--
[DI]: 07	DI	Off	50.0 ms	--
[DI]: 08	DI	Off	50.0 ms	--
[DI]: 09	DI	Off	50.0 ms	--
[DI]: 10	DI	Off	50.0 ms	--
[DI]: 11	DI	Off	50.0 ms	--

Channel	Mode	Status	Low	High
[DO]: 00	DO	On	--	--
[DO]: 01	DO	Off	--	--
[DO]: 02	DO	Off	--	--
[DO]: 03	DO	Off	--	--
[DO]: 04	DO	Off	--	--
[DO]: 05	DO	Off	--	--
[DO]: 06	DO	Off	--	--
[DO]: 07	DO	Off	--	--

Server Info Tab

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

The screenshot shows the 'Server Info' tab in the ioAdmin software. It displays a table of server parameters with columns for Address, Value/Status, Access, and Description. A 'Refresh' button is located at the bottom left.

Address	Value/Status	Access	Description
34096	0x1393	Read	Vendor ID
34097	0x0001	Read	Unit ID for MODBUS/RTU
34099	Moxa Technologies Inc.,	Read	Vendor Name
34119	E2210 Remote I/O Server	Read	Product Name
34141	1.1.0.0	Read	Firmware Revision
34143	06/30/2006	Read	Firmware Release Date
34145	1	Read	Number of TCP connection
34146	0x0100	Read	Ethernet Interface Speed, 10/100
34147	00:90:E8:0D:64:6B	Read	MAC Address
34150	0	Read	LCM Detection
34151	0.0.0.0	Read	LCM Firmware Revision
34153	00/00/0000	Read	LCM Firmware Release Date
34158	3232	Read	System Elapsed Time (in sec)
34163	0.0.0.0	Read	ADC version
44096	192.168.127.254	Read/Write	IP Address
44098	255.255.255.0	Read/Write	Subnet Mask
44100	0.0.0.0	Read/Write	Gateway
44102	60	Read/Write	Modbus/TCP Alive Check Timeout
44103	0012 0052 0003 0014 0007 2006	Read/Write	System Local Time
44109	50	Read/Write	System Time Zone
44263	0.0.0.0	Read/Write	Time Server Address
44112	0.0.0.0	Read/Write	DNS1 Server Address
44114	0.0.0.0	Read/Write	DNS2 Server Address

Server Settings Tab (General)

The Server Settings tab is where you log in as an administrator. This is required in order to gain access to the ioLogik E2210 configuration options. If no administrator password has been set up, simply click on **Login** and leave the **Password for entry** field blank. Please refer to the *ioAdmin Administrator Functions* section later on in this chapter for more detail.

ioAdmin Server Settings (General) interface showing login and configuration options.

Management Settings:

- Change Password (8 char max.): [Field] [Update]
- Reconfirm Password: [Field] [Update]
- Server Name (18 char max.): [Field] [Update]
- Server Location (18 char max.): [Field] [Update]

Time Settings:

- Local: Date: 2006/7/14 Time: 3:52:12
- Time Zone: (GMT+08:00) Taipei
- Time Server: [Field] [Update]

[Refresh]

Message Monitor Tab

The Message Monitor tab will display any TCP/UDP I/O messages received from the ioLogik E2210. When you install the ioLogik E2210 for the first time, the active I/O messaging ruleset will not have been defined yet, so there will be no messages in the Message Monitor Tab. Please refer to Chapter 5: *Click&Go Logic* for information on how to program the ioLogik E2210's active I/O messaging system. Once the active I/O messaging system has been configured and activated, TCP/UDP messages sent from the ioLogik E2210 will be viewable in the Message Monitor tab.

ioAdmin Message Monitor interface showing a list of messages (currently empty) and a 'Copy' button.

ioAdmin Administrator Functions

For full access to all configuration options, log in as an administrator in the Server Settings tab. This is required whenever you start up ioAdmin or boot up/restart the ioLogik E2210. When you install the ioLogik E2210 for the first time, the password will be blank and you may simply click on **Login**. Additional functions will be available after logging in, including the following new tabs:



When making configuration changes, you will need to click on **Update** or on **Apply** to save the changes. Some changes will require a restart of the ioLogik E2210 in order to take effect, and you will be given the option to restart the computer if necessary.



ATTENTION

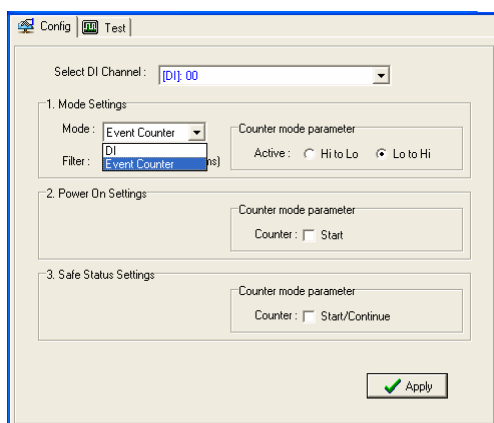
You **MUST** log in to access any administrator function, including Network, Communication Watchdog Timer, and Firmware Update tabs. If you forget the password, you may hold down the Reset button to clear the password and load factory defaults. **This will result in the loss of all configuration settings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

I/O Configuration Tab (Administrator)

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

Configuring Digital Input Channels

E2210 equipped with 12 DI (digital input) channels that can be separately set to “DI” or “Event Counter Mode.” In DI mode, the specification is as follows.



In DI mode, the specifications are as follows:

Type	Logic 0 (OFF)	Logic 1 (ON)
Dry contact	close to GND	open
Wet contact	0-3 V	10-30 V

In Event Counter mode, the ioLogik E2210's DI channel accepts limit or proximity switches and counts events according to the ON/OFF status. You may select from two modes, “Lo to Hi” or “Hi to Lo.” When “Lo to Hi” is selected, the counter value increases while the switch is pushed. When “Hi to Lo” is selected, the counter value increases when the switch is push and released.

To control switch bounces, the ioLogik E2210 provides software filtering. It is configurable in multiples of 0.5 ms. For example, a setting of **2** would mean a 10 ms filter (2 x 0.5 ms). The maximum value allowed by the software filter is 65535.

NOTE: Setting the filter to “0” causes the system to filter all signals.

Configuring Digital Output Channels

The ioLogik E2210 is equipped with 2 DO (digital output or sink) channels that can be set individually to “DO” or “Pulse Output” mode.

In DO mode, the specification is as follows.

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

In Pulse Output mode, the selected digital output channel will generate a square wave as specified in the pulse mode parameters. The low and high level widths are entered in multiples of 0.5ms. To set the low level width for 500 ms, you would enter 1000 (because $1000 \times 0.5 \text{ ms} = 500 \text{ ms}$). If the low width is 5000 and the high width is 5000, the pulse output would be a square wave with a 5-second pulse cycle.

Power On Settings

Use this field to set the initial behavior of the DI/O channel when the ioLogik E2210 is powered on. For DI channels in Event Counter mode, you may configure whether or not counting begins at power up. For DO channels in DO mode, you may configure whether or not the DO is set to OFF or ON at power up. For DO channels in Output Pulse mode, you may configure whether or not the pulse output commences at power up.

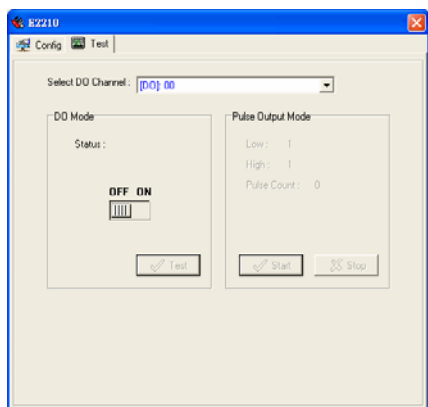
Safe Status Settings

Use this field to specify how the DI/O channel behaves when the network connection is lost. When the network connection is lost for the amount of time specified in the Host Connection Watchdog, the ioLogik E2210 enters Safe Status, and each DI/O channel's Safe Status settings will go into effect. Note that the Host Connection Watchdog is disabled by default. If the Host Connection Watchdog is disabled, the ioLogik E2210 will never enter Safe Status and the Safe Status settings will have no effect.

For DI channels in Event Counter mode, you can configure whether or not counting starts or continues when Safe Status has been activated. For DO channels in DO mode, you can configure whether or not the DO is set to OFF or ON at Safe Status. For DO channels in Output Pulse mode, you can configure whether or not the output pulse commences or continues at Safe Status.

Test I/O

You may test the DI/O channel by using ioAdmin.



DI-DI: depends on the device

DI-Counter: start or stop the counter

DO-DO: set the DO to "ON" or "OFF"

DO-Pulse: activate or stop pulse generation.

Server Settings Tab (Administrator)

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

Password for entry :

Management Settings:

Change Password (8 char max.):

Reconfirm Password:

Server Name (18 char max.):

Server Location (18 char max.):

Time Settings:

Local:

Date: 2006 / 7 / 14

Time: 3 : 52 : 12

Time Zone:

Time Server:

Network Tab

The Network tab is where you configure IP settings, Modbus/TCP Alive Check Timeout settings, DNS settings, Serial settings, SNMP settings, and Web Access settings for the ioLogik E2210.

Number of Modbus/TCP connection(s): 2

IP Settings:

IP Configuration:

IP Address:

Subnet Mask:

Gateway:

MAC:

Serial Settings:

Unit ID:

Baud Rate:

Data Bits:

Stop Bits:

Parity:

Timeout (ms):

Modbus/TCP Alive Check Timeout:

☒ Enable Modbus/TCP idle connection timeout interval:

sec

DNS Settings:

DNS #1:

DNS #2:

SNMP Settings:

☒ Enable SNMP

Read Community:

Write Community:

Contact:

Location:

Web Access Settings:

☒ Enable

IP Settings: You can set up a static or dynamic IP address for the ioLogik E2210, as well as the subnet mask and gateway address. The **Accessible IP** screen can be used to control network access to the ioLogik E2210 and attached sensors. Network requests that originate from sources that are not listed in the accessible IP list will be unable to use Modbus/TCP or ioAdmin to access the ioLogik E2210.

Modbus/TCP Alive Check Timeout Settings: The Modbus/TCP Alive Check Timeout is designed to avoid TCP connection failure. When the host is down, the ioLogik 2210 will continue to wait for a response from the host. This will cause the TCP port to be indefinitely occupied by the host. When the Modbus/TCP idle connection timeout interval is enabled, the ioLogik E2210 will close the TCP connection automatically if there is no TCP activity for the specified time. Please note that Modbus/TCP connections will be blocked when setting up Accessible IP.

DNS Settings: Use this field to specify up the IP addresses of up to 2 DNS servers. These two DNS servers may be used to automatically find available e-mail addresses when configuring for Active Remote I/O e-mail messaging.

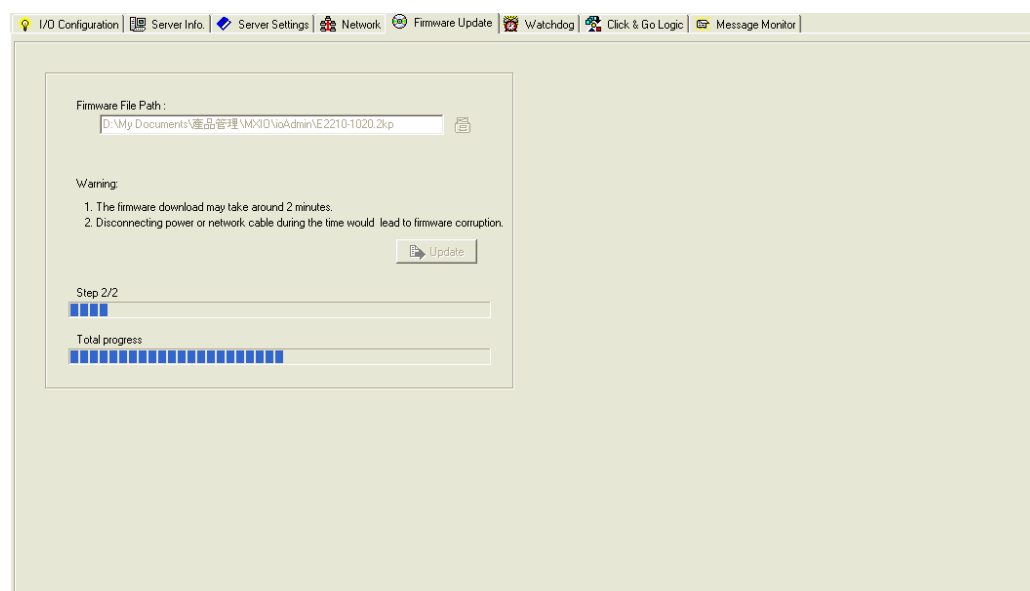
Serial Settings: You may view the reserved RS-485 communication parameters here, and you may set the timeout value for breaks in RS-485 communication. Note that the other serial communication parameters cannot be modified. If you wish to adjust the baudrate, you will need to use the physical dial on the back panel of the ioLogik E2210.

SNMP Settings: The ioLogik E2210 provides SNMP v2 (Simple Network Management Protocol) to allow monitoring of network and I/O devices with SNMP Network Management software. It is useful in building automation and telecom applications. Use these fields to enable SNMP and set the read and write community strings.

Web Access Settings: This field enables and disables the ioLogik E2210's web console. The web console allows the configuration of many settings using a web browser that is directed to the server's IP address. If the web console is not enabled in this field, you will not be able to access the web console.

Firmware Update Tab

The ioLogik E2210 supports remote firmware updates through the Firmware Update tab. Enter the path to the firmware file or click on the icon to browse for the file. Click on **Update** to update the firmware. The wizard will lead you through the process until the server is restarted.



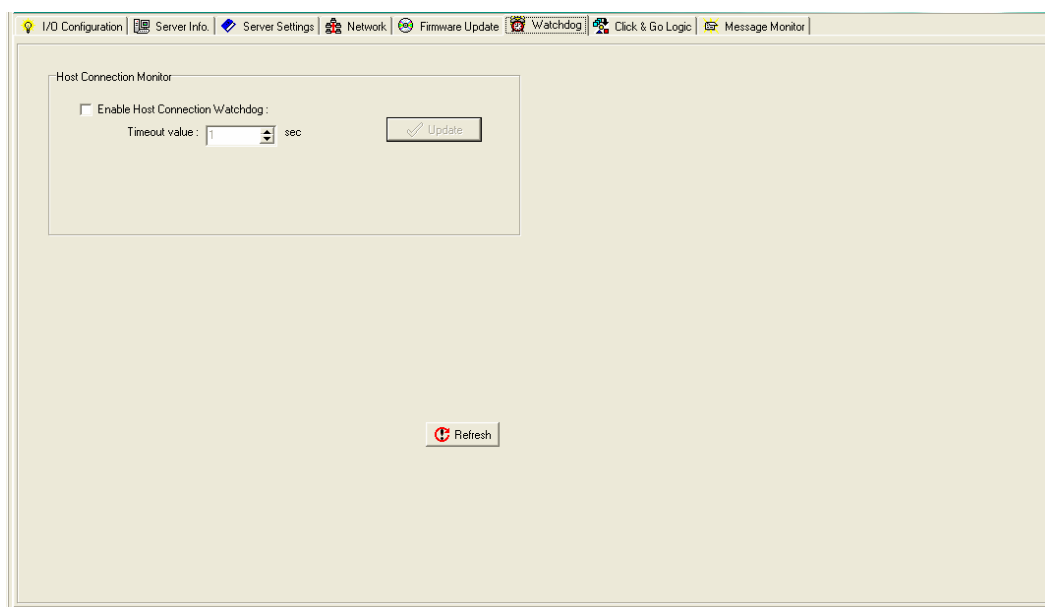
**WARNING**

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

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

Watchdog Tab

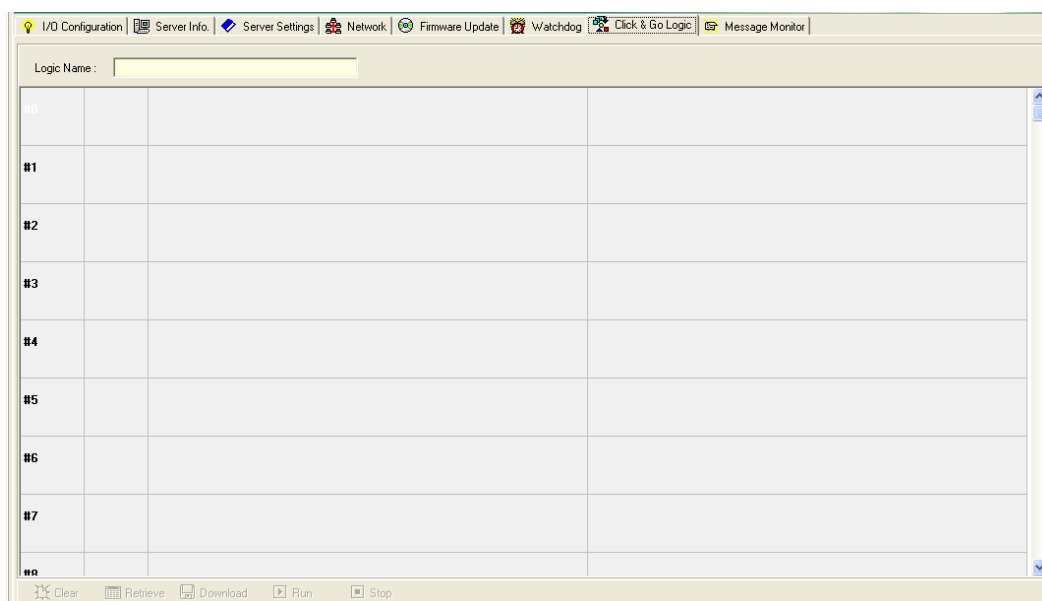
The Watchdog tab is where you configure the Host Connection Watchdog, which is used with the Safe Status settings to define each DI/O channel's response to a lost network connection. When the ioLogik E2210 loses its network connection for the amount of time specified in the timeout, the Host Connection Watchdog will switch the ioLogik E2210 to Safe Status and the DI/O channels will reset to their Safe Status settings. By default, the Watchdog is disabled. To enable the Watchdog, make sure **Enable Host Connection Watchdog** is checked, set the Timeout value, then click the **Update** button.



After the Watchdog is enabled, the ioLogik E2210 will enter safe status if the network connection is lost. Once the connection has been restored, you will need to return to the Watchdog Tab in order to exit safe status. There will be a message saying "Host Connection Lost", indicating that the server is in safe status. Click **Clear Alarm** to exit safe status and return to normal operation.

Click&Go Logic Tab

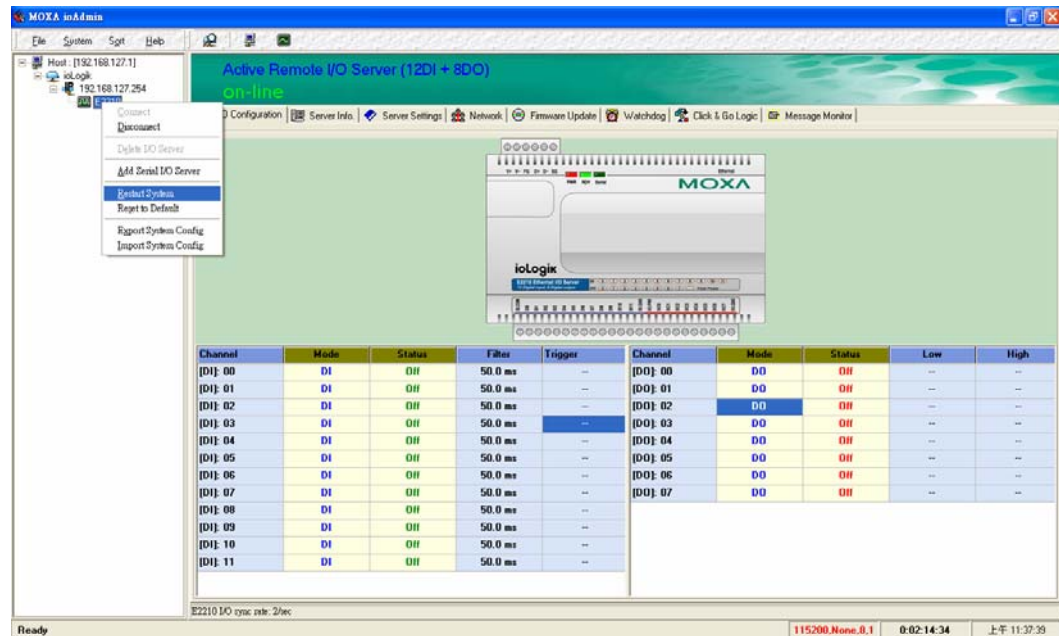
The Click&Go Logic tab is where administrators set up the ioLogik E2210's active I/O messaging program. Instead of the server reacting passively to repeated polling request from a host for I/O data, the ioLogik E2210 is able to actively send I/O information to the host when an I/O channel satisfies conditions that you specify. Click&Go Logic was developed by Moxa to provide a powerful and easy-to-use tool for defining the conditions under which I/O information will be sent over the network. Please refer to Chapter 5: *Click&Go Logic* for more detailed information.



Changes made in the Click&Go Logic tab are not effective until the ioLogik E2210 is restarted, just like changes made in other tabs. Note that when Click&Go Logic is being used, the range and units of I/O channel being used in Click&Go Logic may not be modified.

Server Context Menu

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



Connect

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

Disconnect

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

Delete I/O Server

Select this command to have ioAdmin remove the selected server.

Add Serial I/O Server

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

Restart System

Select this command to restart your ioLogik E2210 from a remote site

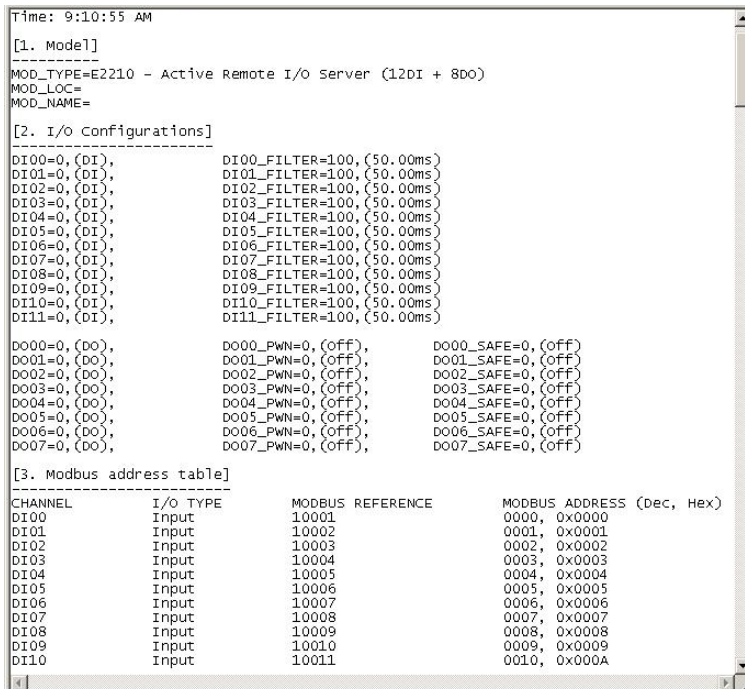
Reset to Default

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

Export System Config

Select this command to export the configuration of the ioLogik E2210 to a text file. It is strongly recommended you use this method to back up your configuration after you have finished configuring the ioLogik E2210 for your application.

Below is an example of the exported configuration file



```
Time: 9:10:55 AM
[1. Model]
-----
MOD_TYPE=E2210 - Active Remote I/O Server (12DI + 8DO)
MOD_LOC=
MOD_NAME=

[2. I/o Configurations]
-----
DI00=0, (DI),          DI00_FILTER=100, (50.00ms)
DI01=0, (DI),          DI01_FILTER=100, (50.00ms)
DI02=0, (DI),          DI02_FILTER=100, (50.00ms)
DI03=0, (DI),          DI03_FILTER=100, (50.00ms)
DI04=0, (DI),          DI04_FILTER=100, (50.00ms)
DI05=0, (DI),          DI05_FILTER=100, (50.00ms)
DI06=0, (DI),          DI06_FILTER=100, (50.00ms)
DI07=0, (DI),          DI07_FILTER=100, (50.00ms)
DI08=0, (DI),          DI08_FILTER=100, (50.00ms)
DI09=0, (DI),          DI09_FILTER=100, (50.00ms)
DI10=0, (DI),          DI10_FILTER=100, (50.00ms)
DI11=0, (DI),          DI11_FILTER=100, (50.00ms)

DO00=0, (DO),          DO00_PWN=0, (off),      DO00_SAFE=0, (off)
DO01=0, (DO),          DO01_PWN=0, (off),      DO01_SAFE=0, (off)
DO02=0, (DO),          DO02_PWN=0, (off),      DO02_SAFE=0, (off)
DO03=0, (DO),          DO03_PWN=0, (off),      DO03_SAFE=0, (off)
DO04=0, (DO),          DO04_PWN=0, (off),      DO04_SAFE=0, (off)
DO05=0, (DO),          DO05_PWN=0, (off),      DO05_SAFE=0, (off)
DO06=0, (DO),          DO06_PWN=0, (off),      DO06_SAFE=0, (off)
DO07=0, (DO),          DO07_PWN=0, (off),      DO07_SAFE=0, (off)

[3. Modbus address table]
-----
CHANNEL      I/O TYPE      MODBUS REFERENCE      MODBUS ADDRESS (Dec, Hex)
DI00          Input          10001                  0000, 0x0000
DI01          Input          10002                  0001, 0x0001
DI02          Input          10003                  0002, 0x0002
DI03          Input          10004                  0003, 0x0003
DI04          Input          10005                  0004, 0x0004
DI05          Input          10006                  0005, 0x0005
DI06          Input          10007                  0006, 0x0006
DI07          Input          10008                  0007, 0x0007
DI08          Input          10009                  0008, 0x0008
DI09          Input          10010                  0009, 0x0009
DI10          Input          10011                  0010, 0x000A
```

Import System Config

Select this command to reload a configuration that was exported to a text file. You will need to restart the ioLogik E2210 in order for the new configuration to take effect. This command may be used to restore a configuration after loading the factory defaults, or to duplicate a configuration to multiple ioLogik E2210's.

Using the Web Console

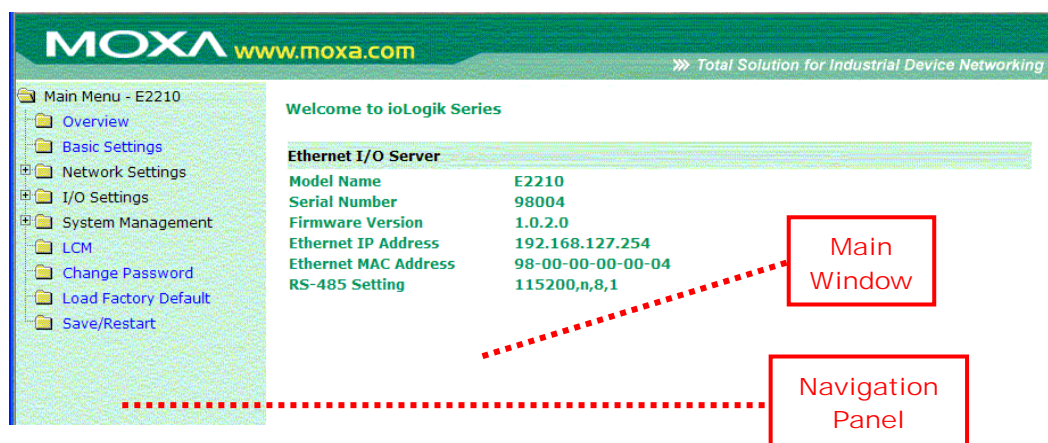
You may use the ioLogik E2210's built in web console to configure many options.

The following topics are covered:

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

Introduction to the Web Console

The ioLogik E2210 web console is a browser-based configuration utility. When the ioLogik E2210 is connected to your network, you may enter the server's IP address in your web browser to access the web console. Note that although most configuration options are available in the web console, some settings are only available through ioAdmin. Furthermore, the web console can be disabled under Web Access Settings in ioAdmin. If you are unable to access the web console, check the Web Access Settings in ioAdmin.



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

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

Submitted changes will not take effect until they are saved and the ioLogik E2210 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 E2210 without saving your configuration, the ioLogik E2210 will discard all submitted changes.

Basic Settings

On the Basic Settings page, you may set the ioLogik E2210's system time or provide the IP address of a time server for time synchronization.

The screenshot shows the 'Basic Settings' page of the Moxa ioLogik E2210 web console. The left sidebar contains a 'Main Menu - E2210' with options: Overview, Basic Settings (selected), Network Settings, I/O Settings, System Management, LCM, Change Password, Load Factory Default, and Save/Restart. The main content area is titled 'Basic Settings' and includes a 'Time Settings' section. This section has fields for 'Time zone (24 hour)' (set to '(GMT+08:00)Taipei'), 'Local time' (displaying '2006 / 07 / 10 10 : 34 : 46' with a '[Modify]' link), 'System Elapsed Time' (displaying '0:13:10'), 'Time server' (an empty text box), and 'Web console' (with 'Enable' selected and 'Disable' as an option). A 'Submit' button is at the bottom.

Network Settings

General Settings

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

The screenshot shows the 'General Settings' page of the Moxa ioLogik E2210 web console. The left sidebar is identical to the previous screenshot, with 'General Settings' selected under 'Network Settings'. The main content area is titled 'General Settings' and includes an 'I/O Server Settings' section. This section has fields for 'Server Name', 'Server Location', 'DNS Server 1' (set to '0.0.0.0'), and 'DNS Server 2' (set to '0.0.0.0'). There is a checkbox for 'Enable communication watchdog' (currently unchecked) and a text box for the timeout value (set to '0' with 'sec' as a unit). A 'Submit' button is at the bottom.

The Host Connection Watchdog activates Safe Status when the ioLogik E2210 loses its network connection for the specified amount of time. By default, the Watchdog is disabled. When the Watchdog is enabled and a timeout occurs, the ioLogik E2210 will enter Safe Status. You may use ioAdmin to configure how each DO channel responds in that channel's Safe Status settings.

To enable the Watchdog, check off **Enable connection watchdog**, set the timeout value, and restart the server. With Watchdog enabled, the ioLogik E2210 will enter Safe Status after there is disruption in communication that exceeds the time specified.

Ethernet Configuration

On the Ethernet Configuration page, you may set up a static or dynamic IP address for the ioLogik E2210, as well as the subnet mask and gateway address.

The screenshot displays the Moxa web console interface. The top header features the Moxa logo and website address, along with the tagline 'Total Solution for Industrial Device Networking'. A left-hand navigation menu lists various system settings, with 'Ethernet Configurations' highlighted. The main content area is titled 'Ethernet Configurations' and contains a section for 'Ethernet Parameters'. This section includes fields for 'IP Configuration' (set to Static), 'IP Address' (192.168.127.254), 'Subnet Mask' (255.255.255.0), and 'Gateway' (0.0.0.0). A 'Submit' button is located at the bottom of this section.

Ethernet Parameters	
IP Configuration	Static
IP Address	192.168.127.254
Subnet Mask	255.255.255.0
Gateway	0.0.0.0

RS-485 Settings

On the RS-485 Settings page, you may view the serial communication parameters, but no configuration changes are allowed. The baudrate may only be configured by the physical dial on the back of the ioLogik E2210. This is a reserved function.

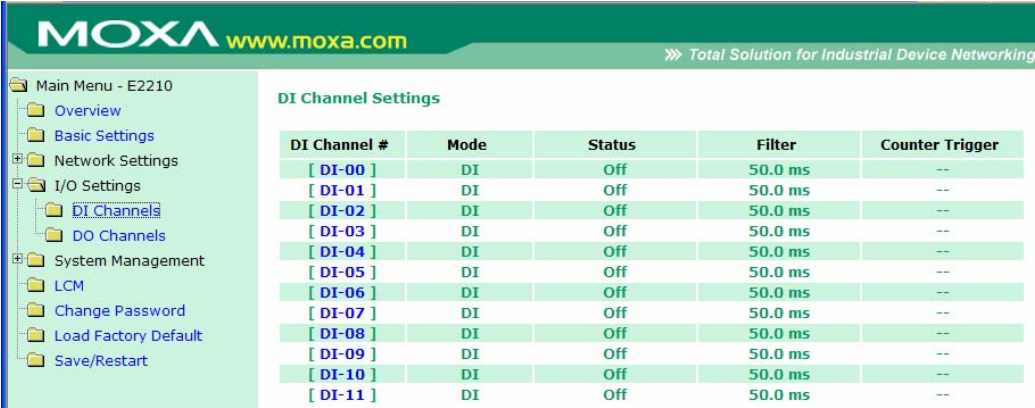
The screenshot displays the Moxa web console interface for the RS-485 Settings page. The top header is identical to the previous screenshot. The left-hand navigation menu shows 'RS-485 Settings' highlighted. The main content area is titled 'RS-485 Settings' and contains a section for 'Serial Parameters'. This section lists several parameters: 'Unit ID' (0x01), 'Baud Rate' (115200), 'Data Bits' (8), 'Stop Bits' (1), and 'Parity' (None). These parameters are displayed in a read-only format.

Serial Parameters	
Unit ID	0x01
Baud Rate	115200
Data Bits	8
Stop Bits	1
Parity	None

I/O Settings

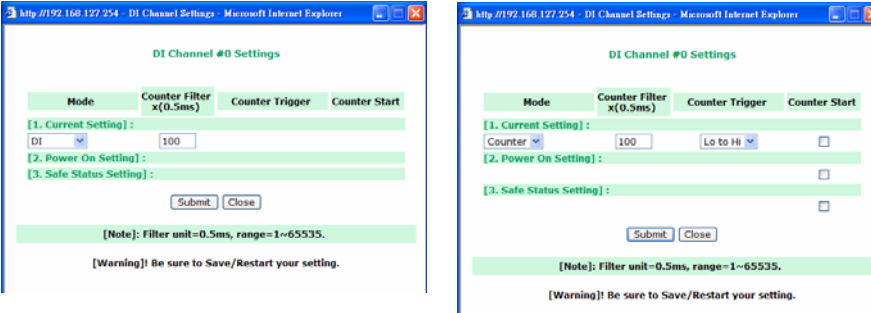
DI Channels

On the DI Channels page, you may view the status of each DI (digital input) channel.



DI Channel #	Mode	Status	Filter	Counter Trigger
[DI-00]	DI	Off	50.0 ms	--
[DI-01]	DI	Off	50.0 ms	--
[DI-02]	DI	Off	50.0 ms	--
[DI-03]	DI	Off	50.0 ms	--
[DI-04]	DI	Off	50.0 ms	--
[DI-05]	DI	Off	50.0 ms	--
[DI-06]	DI	Off	50.0 ms	--
[DI-07]	DI	Off	50.0 ms	--
[DI-08]	DI	Off	50.0 ms	--
[DI-09]	DI	Off	50.0 ms	--
[DI-10]	DI	Off	50.0 ms	--
[DI-11]	DI	Off	50.0 ms	--

You may 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.



DI Channel #0 Settings

Mode	Counter Filter x(0.5ms)	Counter Trigger	Counter Start
[1. Current Setting]: DI	100		
[2. Power On Setting]:			
[3. Safe Status Setting]:			

[Note]: Filter unit=0.5ms, range=1~65535.
[Warning]! Be sure to Save/Restart your setting.

For DI mode, the maximum value of the filter is 65535.

For Event Counter mode, you may 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. You may use the **Power On Setting** field to specify the channel's setting when the ioLogik E2210 is powered on, and the **Safe Status Setting** field to specify channel's setting when the ioLogik E2210 enters Safe Status. Note that Safe Status is controlled by the Host Connection Watchdog, which is disabled by default. If the Host Connection Watchdog is disabled, the ioLogik E2210 will never enter Safe Status and your Safe Status settings will have no effect.

DO Channels

On the DO Channels page, you may 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.

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Main Menu - E2210

- Overview
- Basic Settings
- Network Settings
- I/O Settings
 - DI Channels
 - DO Channels**
- System Management
 - LCM
 - Change Password
 - Load Factory Default
 - Save/Restart

DO Channel Settings

DO Channel #	Mode	Status	Low Width	High Width
[DO-00]	DO	Off	--	--
[DO-01]	DO	Off	--	--
[DO-02]	DO	Off	--	--
[DO-03]	DO	Off	--	--
[DO-04]	DO	Off	--	--
[DO-05]	DO	Off	--	--
[DO-06]	DO	Off	--	--
[DO-07]	DO	Off	--	--

DO Channel #0 Settings

Mode: DO States: Pulse Low (0.5ms): Pulse High (0.5ms): Pulse Count: Pulse Start:

[1. Current Setting]: DO

[2. Power On Setting]: Off

[3. Safe Status Setting]: Off

[Note]: Signal width unit=0.5ms, range=1~2000.

[Warning]: Be sure to Save/Restart your setting.

You may use the **Power On Setting** field to specify the channel's setting when the ioLogik E2210 is powered on, and the **Safe Status Setting** field to specify channel's setting when the ioLogik E2210 enters Safe Status. Note that Safe Status is controlled by the Host Connection Watchdog, which is disabled by default. If the Host Connection Watchdog is disabled, the ioLogik E2210 will never enter Safe Status and your Safe Status settings will have no effect.

System Management

Accessible IP Settings

On the Accessible IP Settings page, you may control network access to the ioLogik E2210 by allowing only specified IP addresses. When the accessible IP list is enabled, a host's IP address must be listed in order to have access to the ioLogik E2210.

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Main Menu - E2210

- Overview
- Basic Settings
- Network Settings
- I/O Settings
 - DI Channels
 - DO Channels
- System Management
 - LCM
 - Change Password
 - Load Factory Default
 - Save/Restart

Accessible IP Settings

☐ Enable the accessible IP list ("Disable" will not allow all IP's connection request.)

No.	Active	IP Address	Netmask
1	<input type="checkbox"/>		
2	<input type="checkbox"/>		
3	<input type="checkbox"/>		
4	<input type="checkbox"/>		
5	<input type="checkbox"/>		
6	<input type="checkbox"/>		
7	<input type="checkbox"/>		
8	<input type="checkbox"/>		
9	<input type="checkbox"/>		
10	<input type="checkbox"/>		

Submit

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

To allow access to a specific IP address

Enter the IP address in the corresponding field; enter **255.255.255.255** for the netmask.

To allow access to hosts on a specific subnet

For both the IP address and netmask, use **0** for the last digit (e.g., **192.168.1.0** and **255.255.255.0**).

To allow unrestricted access

Deselect the **Enable the accessible IP list** option.

Refer to the following table for additional configuration examples.

Allowed Hosts	IP address/Netmask
Any host	Disable
192.168.1.120	192.168.1.120 / 255.255.255.255
192.168.1.1 to 192.168.1.254	192.168.1.0 / 255.255.255.0
192.168.0.1 to 192.168.255.254	192.168.0.0 / 255.255.0.0
192.168.1.1 to 192.168.1.126	192.168.1.0 / 255.255.255.128
192.168.1.129 to 192.168.1.254	192.168.1.128 / 255.255.255.128

SNMP Agent

On the SNMP Agent page, you may enable SNMP and set the read and write community strings. The ioLogik E2210 provides SNMP v2 (Simple Network Management Protocol) to allow monitoring of network and I/O devices with SNMP Network Management software. It is useful in building automation and telecom applications.

Network Connection

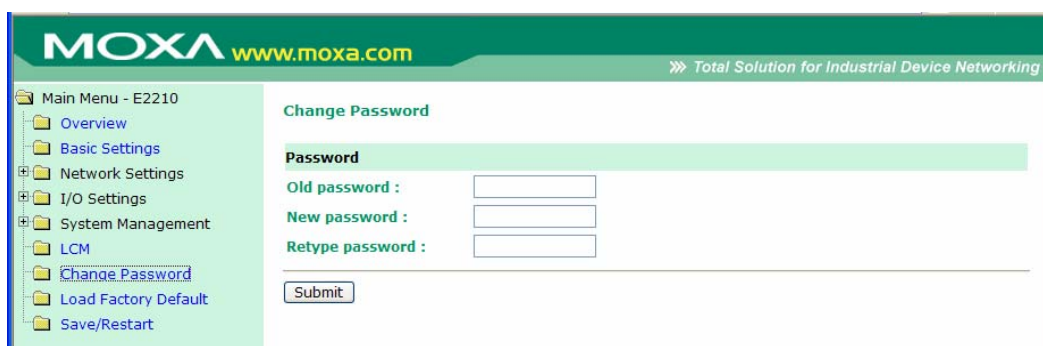
On the Network Connection page, you may view the TCP connections from other hosts. This may assist you in the management of your devices.

LCM

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



Change Password



For all changes to the ioLogik E2210'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 E2210 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 E2210. Your configuration can then be easily imported back into the ioLogik E2210 if you need to reset the ioLogik E2210 due to a forgotten password or for other reasons.

Load Factory Default

This function will reset all of the ioLogik E2210'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.

Click&Go Logic was developed by Moxa to provide an easy way to program your ioLogik E2210 for active I/O messaging. In the chapter, we will show you how Click&Go Logic works and how to use it to develop your active I/O messaging program.

The following topics are covered in this chapter:

- ❑ **Overview**
- ❑ **Features**
- ❑ **Click&Go Logic Basics**
- ❑ **Working with Click&Go Rules**
 - IF conditions
 - THEN actions
- ❑ **Working with Click&Go Rulesets**
 - Activating the Ruleset
 - Ruleset Management Bar
 - Ruleset Import/Export
- ❑ **Click&Go Logic Demo**
 - Scenario 1
 - Scenario 2

Overview

The ioLogik E2210's Active Remote I/O system eliminates the need for host computers to continually poll I/O devices for status. Instead, the server itself is able to monitor the status of each I/O device and take the appropriate action when the I/O status satisfies a user-defined condition. For example, the ioLogik E2210 could be configured to send a TCP/UDP message only when the temperature sensor attached to DI(0) exceeds a certain level. This structure results in a much improved response time and a much reduced load on the host computer's CPU and on network bandwidth.

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

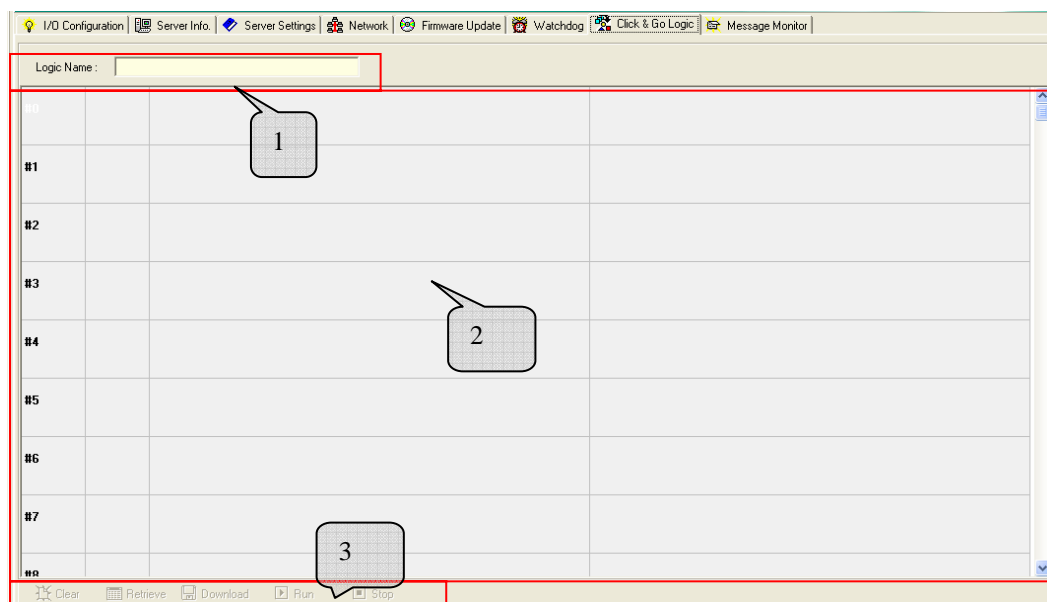
Features

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

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

Click&Go Logic Basics

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

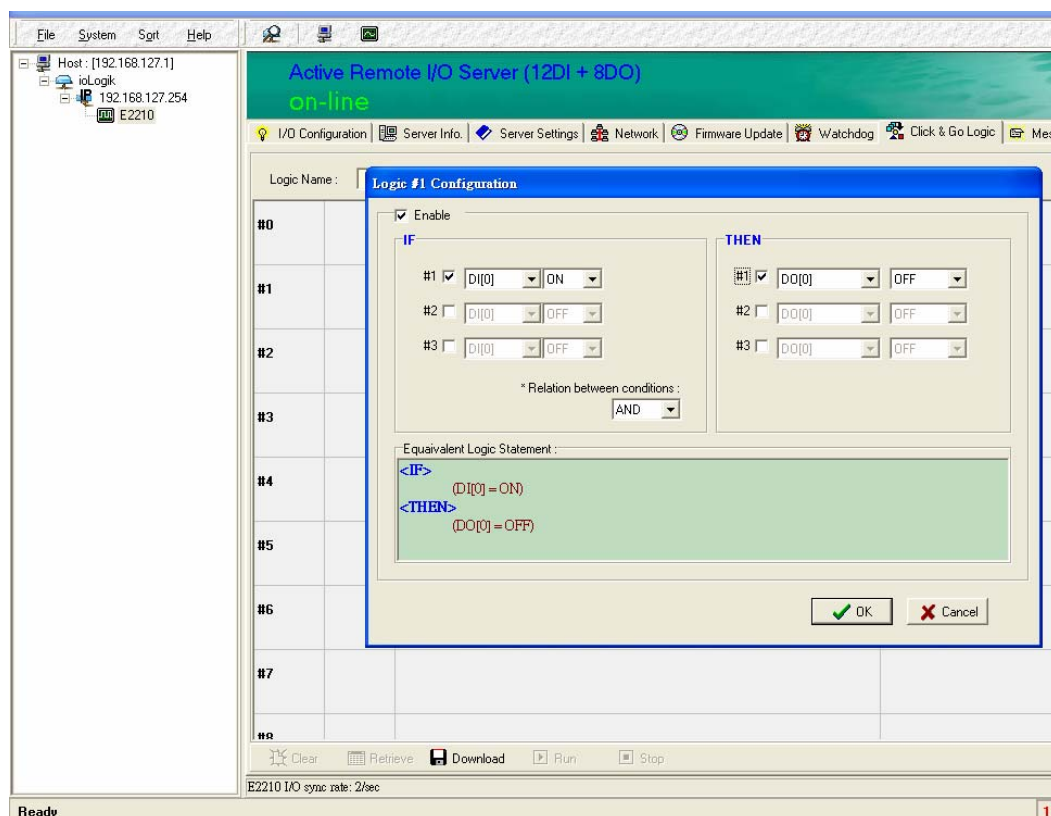


Click&Go Logic Tab

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

Working with Click&Go Rules

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



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



ATTENTION


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

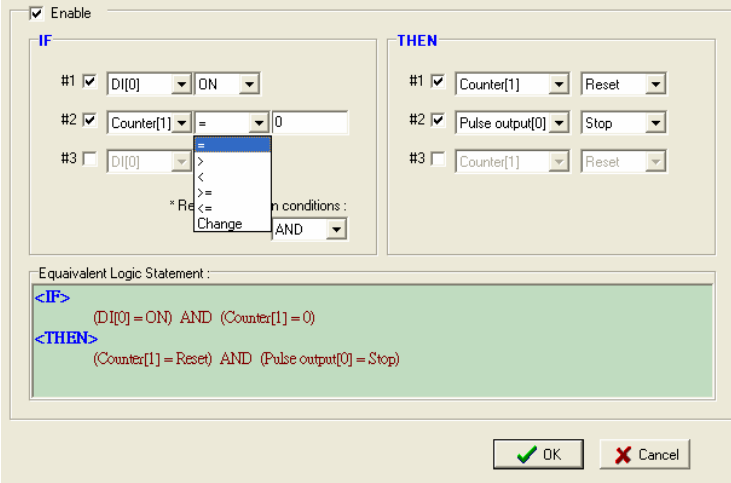
IF conditions

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

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

THEN actions

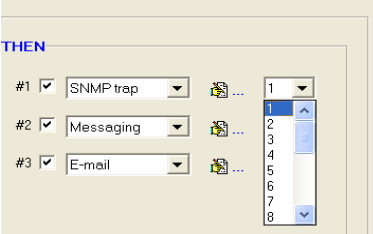
Under the **THEN** column, you may set up to 3 actions that will be performed if the conditions under the **IF** column are satisfied. The 3 actions may be any combination of DI/O setting, SNMP trap, Messaging (by TCP/UDP), or Email. Additional parameters may be configured for SNMP trap, Messaging, and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



The screenshot shows the Click&Go Logic configuration window. It has an "Enable" checkbox checked. The "IF" section contains three conditions: #1 DI[0] ON, #2 Counter[1] = 0, and #3 DI[0] >. The "THEN" section contains three actions: #1 Counter[1] Reset, #2 Pulse output[0] Stop, and #3 Counter[1] Reset. Below these sections is a text area labeled "Equivalent Logic Statement:" containing the following code:

```
<IF>
  (DI[0] = ON) AND (Counter[1] = 0)
<THEN>
  (Counter[1] = Reset) AND (Pulse output[0] = Stop)
```

At the bottom are "OK" and "Cancel" buttons.



This screenshot shows a close-up of the "THEN" section. It lists three actions: #1 SNMP trap, #2 Messaging, and #3 E-mail. Each action has a memo icon to its right. To the right of the actions is a list box containing numbers 1 through 8, with "1" selected.

Counter(x)

Select **Counter(x)** to have the corresponding DI channel reset the counter.

Pulse output(x)

Select **Pulse output(x)** to have the corresponding DO channel either start or stop output pulsing.

DO(x)

Select **DO(x)** to have the corresponding DO channel either turn on or off.

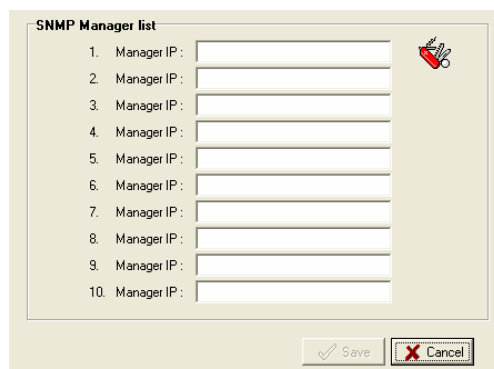
Active I/O Messaging

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

SNMP trap

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

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



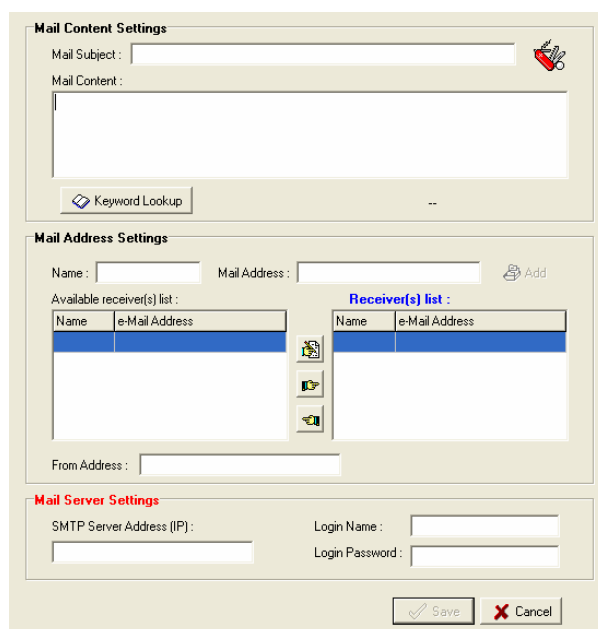
The 'SNMP Manager list' form contains ten numbered input fields for 'Manager IP'. To the right of these fields is a red icon of a hand with a pencil. At the bottom of the form are 'Save' and 'Cancel' buttons.

Email

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

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

Under **Mail Server Settings**, you must configure the IP address of the SMTP server with your username and password. Since the ioLogik E2210 supports DNS, you may enter the domain name of the SMTP server.



The 'Mail Content Settings' section includes a 'Mail Subject' field, a 'Mail Content' text area, and a 'Keyword Lookup' button. The 'Mail Address Settings' section includes a 'Name' field, a 'Mail Address' field, and an 'Add' button. Below these are two tables: 'Available receiver(s) list' and 'Receiver(s) list', both with 'Name' and 'e-Mail Address' columns. Between the tables are three finger icons for moving entries. Below the tables is a 'From Address' field. The 'Mail Server Settings' section includes 'SMTP Server Address (IP)', 'Login Name', and 'Login Password' fields. At the bottom are 'Save' and 'Cancel' buttons.

Working with Click&Go Rulesets

Activating the Ruleset

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

In order to start working as an Active Remote I/O server rather than a passive remote I/O server, the ioLogik E2210 will need to download the ruleset into its memory, reboot, and activate the ruleset.

1. The ruleset must first be downloaded from ioAdmin onto the ioLogik E2210. You may do so by clicking on **Download** in the Ruleset Management bar.
2. Now that the ruleset has been downloaded, you must restart the ioLogik E2210 in order for the new ruleset to be made effective. You may do this by right clicking on the server name in the navigation panel in ioAdmin and selecting **Restart**. Do not use the reset button, as that will load all factory defaults and erase your ruleset from memory.
3. After the ioLogik E2210 has restarted, the active I/O message system will be ready for activation with the new ruleset in place. First, you will need to log in as an administrator again in ioAdmin's Server Setting tab. Once you have logged in, click **Run** in the Ruleset Management bar on the Click&Go Logic tab. This will activate the ruleset and the ioLogik E2210 will begin working as an Active Remote I/O server. Note that the ioLogik E2210 can run the ruleset independently of the host computer and network connection.

Ruleset Management Bar

- **Clear:** The Clear command erases the ruleset in both ioAdmin and in the ioLogik E2210.
- **Retrieve:** The Retrieve command copies the ruleset from the ioLogik E2210 into ioAdmin.
- **Download:** The Download command copies the ruleset from ioAdmin onto the ioLogik E2210.
- **Run:** The Run command starts the active I/O messaging system using the ruleset that the ioLogik E2210 booted up with.
- **Stop:** The Stop command stops the active I/O messaging system.

Ruleset Import/Export

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

Click&Go Logic Demo

Scenario 1

In this scenario, we have two switches, one attached to DI(0) and one attached to DO(0). Very simply, we want DO(0) to automatically mirror DI(0)'s setting. Once the ruleset is downloaded onto the ioLogik E2210 and activated, the server handles all processing locally and there is no usage of network or host resources.

Rule 0: IF DI(0)=ON, THEN DO(0)=ON

Rule 1: IF DI(0)=OFF, THEN DO(0)=OFF.

1. In ioAdmin, make sure that you have logged in on the **Server Settings** tab. Go to the **Click&Go Logic** tab.
2. Double click on **#0** in the **Rules List**. The rule configuration window will appear.
3. Make sure that **Enable Click&Go Logic** in the upper left hand corner is checked.
4. Select **DI(0)** as your condition in the first **IF field**, and set its value to **ON**.
5. Select **DO(0)** as your action in the first **THEN field**, and set its value **ON**.
6. Click on **OK**.
7. Double click on **#1** in the **Rules List**.
8. Make sure that **Enable Click&Go Logic** in the upper left hand corner is checked.
9. Select **DI(0)** as your condition in the first **IF field**, and set its value to **OFF**.
10. Select **DO(0)** as your action in the first **THEN field**, and set its value **OFF**.
11. Click on **OK**.
12. Click on **Download** on the **Ruleset Management Bar**.
13. Select **Yes** when asked to restart and wait until the server has restarted and is back on-line.
14. Log in on the **Server Settings** tab, then go to the **Click&Go Logic** tab.
15. Click on **Run** on the **Ruleset Management Bar**. The RDY LED will be flashing green, showing that the server is now operating as an Active Remote I/O server, using the ruleset that was just defined.

Scenario 2

In this scenario, we have a switch attached to DI(0). We want the server to send a TCP message that indicates the exact time that the switch is turned on.

Rule 0: IF DI(0)=ON, THEN Message

1. In ioAdmin, make sure that you have logged in on the **Server Settings** tab. Go to the **Click&Go Logic** tab.
2. Double click on **#0** in the **Rules List**. The rule configuration window will appear.
3. Make sure that **Enable Click&Go Logic** in the upper left hand corner is checked.
4. Select **DI(0)** as your condition in the first **IF field**, and set its value to **ON**.
5. Select **Message** as your action in the first **THEN field**.
6. Click the memo button. The Message parameters window will appear.
7. Click on **Keyword Lookup**. In the dialog box that pops up, click on **<time>**.

8. Click on **Save**.
9. Click on **Download** on the **Ruleset Management Bar**.
10. Select **Yes** when asked to restart and wait until the server has restarted and is back on-line.
11. Log in on the **Server Settings** tab, then go to the **Click&Go Logic** tab.
12. Click on **Run** on the **Ruleset Management Bar**. The RDY LED will be flashing green, showing that the server is now operating as an Active Remote I/O server, using the ruleset that was just defined.

Liquid Crystal Display Module (LCM)

As an *Easy View* device, the ioLogik E2210 supports an optional detachable Liquid Crystal Display Module (LCM) for easier field maintenance. The LCM is hot-pluggable and can be used to configure the network settings or display other settings. When plugged in, the LCM displays the ioLogik E2210 “home page,” and pressing any button takes you into the settings and configuration.

LCM Controls

The up and down buttons navigate between the current options. The right and left buttons enter and exit the submenus. On the ioLogik E2210, the center button is used only when restarting the server.

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

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

LCM Options

Display	Explanation / Actions
<ioLogik E2210>	This is the default “home page” showing the IP address. Press the down button to view the submenus.
<ioLogik E2210> server	Enter this submenu to display information about the specific server you are viewing: <ul style="list-style-type: none">● serial number● name● location● E2210 f/w ver● lcm f/w ver● model name

Display	Explanation / Actions
<ioLogik E2210> network	Enter this submenu to display information and settings for the network: <ul style="list-style-type: none"> • Ethernet link • MAC address • IP mode • IP address • netmask • gateway • DNS server-1 • DNS server-2
<ioLogik E2210> click&go	Enter this submenu to display information about the ruleset being used by the active I/O system. <ul style="list-style-type: none"> • name • status
<ioLogik E2210> serial port	Enter this submenu to display the RS-485 cascade port settings.
<ioLogik E2210> i/o setting	Enter this submenu to access I/O channel status. Here are examples of settings that you might see: <ul style="list-style-type: none"> • DI-00 [di]=off • DO-00 [pulse]=stop Press up or down to navigate through the different I/O channels without having to go back to the previous menu.
<ioLogik E2210> console	Enter this submenu to see if the web console is enabled or disabled.
<ioLogik E2210> ping	Select this option to enter an IP address to ping. If you get a "timeout" error, it indicates that the E2210 cannot reach that IP address. Otherwise, the display will show the response time.
<ioLogik E2210> save/restart	Enter this submenu, then enter the restart now submenu to display the restart option. You may press the center button at that point in order to reboot the ioLogik E2210. For this device, no other options are currently available for this set of submenus.

**WARNING**

Any configuration changes that are made through the LCM will not take effect until the ioLogik E2210 is restarted.

Modbus/TCP Address Mappings

E2210 Modbus Mapping

0xxxx Read/Write Coils (Support 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	CH0 DO Power-On Value 0: Off 1: On
00010	0x0009	1 bit	CH1 DO Power-On Value 0: Off 1: On
00011	0x000A	1 bit	CH2 DO Power-On Value 0: Off 1: On
00012	0x000B	1 bit	CH3 DO Power-On Value 0: Off 1: On
00013	0x000C	1 bit	CH4 DO Power-On Value 0: Off 1: On
00014	0x000D	1 bit	CH5 DO Power-On Value 0: Off 1: On
00015	0x000E	1 bit	CH6 DO Power-On Value 0: Off 1: On
00016	0x000F	1 bit	CH7 DO Power-On Value 0: Off 1: On
00017	0x0010	1 bit	CH0 DO Safe Value 0: Off 1: On
00018	0x0011	1 bit	CH1 DO Safe Value 0: Off 1: On
00019	0x0012	1 bit	CH2 DO Safe Value 0: Off 1: On
00020	0x0013	1 bit	CH3 DO Safe Value 0: Off 1: On
00021	0x0014	1 bit	CH4 DO Safe Value 0: Off 1: On
00022	0x0015	1 bit	CH5 DO Safe Value 0: Off 1: On
00023	0x0016	1 bit	CH6 DO Safe Value 0: Off 1: On
00024	0x0017	1 bit	CH7 DO Safe Value 0: Off 1: On
00025	0x0018	1 bit	CH0 DO Pulse Operate Status 0: Off 1: On
00026	0x0019	1 bit	CH1 DO Pulse Operate Status 0: Off 1: On
00027	0x001A	1 bit	CH2 DO Pulse Operate Status 0: Off 1: On
00028	0x001B	1 bit	CH3 DO Pulse Operate Status 0: Off 1: On
00029	0x001C	1 bit	CH4 DO Pulse Operate Status 0: Off 1: On

Reference	Address	Data Type	Description
00030	0x001D	1 bit	CH5 DO Pulse Operate Status 0: Off 1: On
00031	0x001E	1 bit	CH6 DO Pulse Operate Status 0: Off 1: On
00032	0x001F	1 bit	CH7 DO Pulse Operate Status 0: Off 1: On
00033	0x0020	1 bit	CH0 DO Power-On Pulse Operate Status 0: Off 1: On
00034	0x0021	1 bit	CH1 DO Power-On Pulse Operate Status 0: Off 1: On
00035	0x0022	1 bit	CH2 DO Power-On Pulse Operate Status 0: Off 1: On
00036	0x0023	1 bit	CH3 DO Power-On Pulse Operate Status 0: Off 1: On
00037	0x0024	1 bit	CH4 DO Power-On Pulse Operate Status 0: Off 1: On
00038	0x0025	1 bit	CH5 DO Power-On Pulse Operate Status 0: Off 1: On
00039	0x0026	1 bit	CH6 DO Power-On Pulse Operate Status 0: Off 1: On
00040	0x0027	1 bit	CH7 DO Power-On Pulse Operate Status 0: Off 1: On
00041	0x0028	1 bit	CH0 DO Safe Pulse Operate Status 0: Off 1: On
00042	0x0029	1 bit	CH1 DO Safe Pulse Operate Status 0: Off 1: On
00043	0x002A	1 bit	CH2 DO Safe Pulse Operate Status 0: Off 1: On
00044	0x002B	1 bit	CH3 DO Safe Pulse Operate Status 0: Off 1: On
00045	0x002C	1 bit	CH4 DO Safe Pulse Operate Status 0: Off 1: On
00046	0x002D	1 bit	CH5 DO Safe Pulse Operate Status 0: Off 1: On
00047	0x002E	1 bit	CH6 DO Safe Pulse Operate Status 0: Off 1: On
00048	0x002F	1 bit	CH7 DO Safe Pulse Operate Status 0: Off 1: On
00049	0x0030	1 bit	CH0 DI Counter Status 0: Off 1: On
00050	0x0031	1 bit	CH1 DI Counter Status 0: Off 1: On
00051	0x0032	1 bit	CH2 DI Counter Status 0: Off 1: On
00052	0x0033	1 bit	CH3 DI Counter Status 0: Off 1: On
00053	0x0034	1 bit	CH4 DI Counter Status 0: Off 1: On
00054	0x0035	1 bit	CH5 DI Counter Status 0: Off 1: On
00055	0x0036	1 bit	CH6 DI Counter Status 0: Off 1: On
00056	0x0037	1 bit	CH7 DI Counter Status 0: Off 1: On
00057	0x0038	1 bit	CH8 DI Counter Status 0: Off 1: On
00058	0x0039	1 bit	CH9 DI Counter Status 0: Off 1: On
00059	0x003A	1 bit	CH10 DI Counter Status 0: Off 1: On
00060	0x003B	1 bit	CH11 DI Counter Status 0: Off 1: On
00061	0x003C	1 bit	CH0 DI Clear Counter Value read always: 0 Write: 1: Clear counter value 0: return Illegal Data Value
00062	0x003D	1 bit	CH1 DI Clear Counter Value read always: 0 Write: 1: Clear counter value 0: return Illegal Data Value
00063	0x003E	1 bit	CH2 DI Clear Counter Value read always: 0 Write: 1: Clear counter value 0: return Illegal Data Value
00064	0x003F	1 bit	CH3 DI Clear Counter Value read always: 0 Write: 1: Clear counter value 0: return Illegal Data Value

Reference	Address	Data Type	Description
00065	0x0040	1 bit	CH4 DI Clear Counter Value read always: 0 Write: 1: Clear counter value 0: return Illegal Data Value
00066	0x0041	1 bit	CH5 DI Clear Counter Value read always: 0 Write: 1: Clear counter value 0: return Illegal Data Value
00067	0x0042	1 bit	CH6 DI Clear Counter Value read always: 0 Write: 1: Clear counter value 0: return Illegal Data Value
00068	0x0043	1 bit	CH7 DI Clear Counter Value read always: 0 Write: 1: Clear counter value 0: return Illegal Data Value
00069	0x0044	1 bit	CH8 DI Clear Counter Value read always: 0 Write: 1: Clear counter value 0: return Illegal Data Value
00070	0x0045	1 bit	CH9 DI Clear Counter Value read always: 0 Write: 1: Clear counter value 0: return Illegal Data Value
00071	0x0046	1 bit	CH10 DI Clear Counter Value read always: 0 Write: 1: Clear counter value 0: return Illegal Data Value
00072	0x0047	1 bit	CH11 DI Clear Counter Value read always: 0 Write: 1: Clear counter value 0: return Illegal Data Value
00073	0x0048	1 bit	CH0 DI Counter Overflow Status Read: 0: Normal 1: Overflow Write: 0: clear overflow status 1: return Illegal Data Value
00074	0x0049	1 bit	CH1 DI Counter Overflow Status Read: 0: Normal 1: Overflow Write: 0: clear overflow status 1 : return Illegal Data Value
00075	0x004A	1 bit	CH2 DI Counter Overflow Status Read: 0: Normal 1: Overflow Write: 0: clear overflow status 1: return Illegal Data Value
00076	0x004B	1 bit	CH3 DI Counter Overflow Status Read: 0: Normal 1: Overflow Write: 0 : clear overflow status 1: return Illegal Data Value

Reference	Address	Data Type	Description
00077	0x004C	1 bit	CH4 DI Counter Overflow Status Read: 0: Normal 1: Overflow Write: 0: clear overflow status 1: return Illegal Data Value
00078	0x004D	1 bit	CH5 DI Counter Overflow Status Read: 0: Normal 1: Overflow Write: 0: clear overflow status 1: return Illegal Data Value
00079	0x004E	1 bit	CH6 DI Counter Overflow Status Read: 0: Normal 1: Overflow Write: 0: clear overflow status 1: return Illegal Data Value
00080	0x004F	1 bit	CH7 DI Counter Overflow Status Read: 0: Normal 1: Overflow Write: 0: clear overflow status 1: return Illegal Data Value
00081	0x0050	1 bit	CH8 DI Counter Overflow Status Read: 0: Normal 1: Overflow Write: 0: clear overflow status 1: return Illegal Data Value
00082	0x0051	1 bit	CH9 DI Counter Overflow Status Read: 0: Normal 1: Overflow Write: 0: clear overflow status 1: return Illegal Data Value
00083	0x0052	1 bit	CH10 DI Counter Overflow Status Read: 0: Normal 1: Overflow Write: 0: clear overflow status 1: return Illegal Data Value
00084	0x0053	1 bit	CH11 DI Counter Overflow Status Read: 0: Normal 1: Overflow Write: 0: clear overflow status 1: return Illegal Data Value
00085	0x0054	1 bit	CH0 DI Counter Trigger : 0=Low to High, 1=High to Low
00086	0x0055	1 bit	CH1 DI Counter Trigger : 0=Low to High, 1=High to Low
00087	0x0056	1 bit	CH2 DI Counter Trigger : 0=Low to High, 1=High to Low
00088	0x0057	1 bit	CH3 DI Counter Trigger : 0=Low to High, 1=High to Low

Reference	Address	Data Type	Description
00089	0x0058	1 bit	CH4 DI Counter Trigger : 0=Low to High, 1=High to Low
00090	0x0059	1 bit	CH5 DI Counter Trigger : 0=Low to High, 1=High to Low
00091	0x005A	1 bit	CH6 DI Counter Trigger : 0=Low to High, 1=High to Low
00092	0x005B	1 bit	CH7 DI Counter Trigger : 0=Low to High, 1=High to Low
00093	0x005C	1 bit	CH8 DI Counter Trigger : 0=Low to High, 1=High to Low
00094	0x005D	1 bit	CH9 DI Counter Trigger : 0=Low to High, 1=High to Low
00095	0x005E	1 bit	CH10 DI Counter Trigger : 0=Low to High, 1=High to Low
00096	0x005F	1 bit	CH11 DI Counter Trigger : 0=Low to High, 1=High to Low
00097	0x0060	1 bit	CH0 DI Counter Power-On Status 0: Off 1: On
00098	0x0061	1 bit	CH1 DI Counter Power-On Status 0: Off 1: On
00099	0x0062	1 bit	CH2 DI Counter Power-On Status 0: Off 1: On
00100	0x0063	1 bit	CH3 DI Counter Power-On Status 0: Off 1: On
00101	0x0064	1 bit	CH4 DI Counter Power-On Status 0: Off 1: On
00102	0x0065	1 bit	CH5 DI Counter Power-On Status 0: Off 1: On
00103	0x0066	1 bit	CH6 DI Counter Power-On Status 0: Off 1: On
00104	0x0067	1 bit	CH7 DI Counter Power-On Status 0: Off 1: On
00105	0x0068	1 bit	CH8 DI Counter Power-On Status 0: Off 1: On
00106	0x0069	1 bit	CH9 DI Counter Power-On Status 0: Off 1: On
00107	0x006A	1 bit	CH10 DI Counter Power-On Status 0: Off 1: On
00108	0x006B	1 bit	CH11 DI Counter Power-On Status 0: Off 1: On
00109	0x006C	1 bit	CH0 DI Counter Safe Status 0: Off 1: On
00110	0x006D	1 bit	CH1 DI Counter Safe Status 0: Off 1: On
00111	0x006E	1 bit	CH2 DI Counter Safe Status 0: Off 1: On
00112	0x006F	1 bit	CH3 DI Counter Safe Status 0: Off 1: On
00113	0x0070	1 bit	CH4 DI Counter Safe Status 0: Off 1: On
00114	0x0071	1 bit	CH5 DI Counter Safe Status 0: Off 1: On
00115	0x0072	1 bit	CH6 DI Counter Safe Status 0: Off 1: On
00116	0x0073	1 bit	CH7 DI Counter Safe Status 0: Off 1: On
00117	0x0074	1 bit	CH8 DI Counter Safe Status 0: Off 1: On
00118	0x0075	1 bit	CH9 DI Counter Safe Status 0: Off 1: On
00119	0x0076	1 bit	CH10 DI Counter Safe Status 0: Off 1: On
00120	0x0077	1 bit	CH11 DI Counter Safe Status 0: Off 1: On

1xxxx Read Only Coils (Support Function 2)

Reference	Address	Data Type	Description
10001	0x0000	1 bit	CH0 DI Value
10002	0x0001	1 bit	CH1 DI Value
10003	0x0002	1 bit	CH2 DI Value
10004	0x0003	1 bit	CH3 DI Value
10005	0x0004	1 bit	CH4 DI Value
10006	0x0005	1 bit	CH5 DI Value
10007	0x0006	1 bit	CH6 DI Value
10008	0x0007	1 bit	CH7 DI Value

Reference	Address	Data Type	Description
10009	0x0008	1 bit	CH8 DI Value
10010	0x0009	1 bit	CH9 DI Value
10011	0x000A	1 bit	CH10 DI Value
10012	0x000B	1 bit	CH11 DI Value

3xxxx Read Only Registers (Support Function 4)

Reference	Address	Data Type	Description
30001	0x0000	word	CH0 DI Counter Value Hi-Word
30002	0x0001	word	CH0 DI Counter Value Lo-Word
30003	0x0002	word	CH1 DI Counter Value Hi-Word
30004	0x0003	word	CH1 DI Counter Value Lo-Word
30005	0x0004	word	CH2 DI Counter Value Hi-Word
30006	0x0005	word	CH2 DI Counter Value Lo-Word
30007	0x0006	word	CH3 DI Counter Value Hi-Word
30008	0x0007	word	CH3 DI Counter Value Lo-Word
30009	0x0008	word	CH4 DI Counter Value Hi-Word
30010	0x0009	word	CH4 DI Counter Value Lo-Word
30011	0x000A	word	CH5 DI Counter Value Hi-Word
30012	0x000B	word	CH5 DI Counter Value Lo-Word
30013	0x000C	word	CH6 DI Counter Value Hi-Word
30014	0x000D	word	CH6 DI Counter Value Lo-Word
30015	0x000E	word	CH7 DI Counter Value Hi-Word
30016	0x000F	word	CH7 DI Counter Value Lo-Word
30017	0x0010	word	CH8 DI Counter Value Hi-Word
30018	0x0011	word	CH8 DI Counter Value Lo-Word
30019	0x0012	word	CH9 DI Counter Value Hi-Word
30020	0x0013	word	CH9 DI Counter Value Lo-Word
30021	0x0014	word	CH10 DI Counter Value Hi-Word
30022	0x0015	word	CH10 DI Counter Value Lo-Word
30023	0x0016	word	CH11 DI Counter Value Hi-Word
30024	0x0017	word	CH11 DI Counter Value Lo-Word

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

Reference	Address	Data Type	Description
40001	0x0000	word	CH0 DO Pulse Output Count Value Hi-Word
40002	0x0001	word	CH0 DO Pulse Output Count Value Lo-Word
40003	0x0002	word	CH1 DO Pulse Output Count Value Hi-Word
40004	0x0003	word	CH1 DO Pulse Output Count Value Lo-Word
40005	0x0004	word	CH2 DO Pulse Output Count Value Hi-Word
40006	0x0005	word	CH2 DO Pulse Output Count Value Lo-Word
40007	0x0006	word	CH3 DO Pulse Output Count Value Hi-Word
40008	0x0007	word	CH3 DO Pulse Output Count Value Lo-Word
40009	0x0008	word	CH4 DO Pulse Output Count Value Hi-Word

Reference	Address	Data Type	Description
40010	0x0009	word	CH4 DO Pulse Output Count Value Lo-Word
40011	0x000A	word	CH5 DO Pulse Output Count Value Hi-Word
40012	0x000B	word	CH5 DO Pulse Output Count Value Lo-Word
40013	0x000C	word	CH6 DO Pulse Output Count Value Hi-Word
40014	0x000D	word	CH6 DO Pulse Output Count Value Lo-Word
40015	0x000E	word	CH7 DO Pulse Output Count Value Hi-Word
40016	0x000F	word	CH7 DO Pulse Output Count Value Lo-Word
40017	0x0010	word	CH0 DO Pulse Low Signal Width
40018	0x0011	word	CH1 DO Pulse Low Signal Width
40019	0x0012	word	CH2 DO Pulse Low Signal Width
40020	0x0013	word	CH3 DO Pulse Low Signal Width
40021	0x0014	word	CH4 DO Pulse Low Signal Width
40022	0x0015	word	CH5 DO Pulse Low Signal Width
40023	0x0016	word	CH6 DO Pulse Low Signal Width
40024	0x0017	word	CH7 DO Pulse Low Signal Width
40025	0x0018	word	CH0 DO Pulse High Signal Width
40026	0x0019	word	CH1 DO Pulse High Signal Width
40027	0x001A	word	CH2 DO Pulse High Signal Width
40028	0x001B	word	CH3 DO Pulse High Signal Width
40029	0x001C	word	CH4 DO Pulse High Signal Width
40030	0x001D	word	CH5 DO Pulse High Signal Width
40031	0x001E	word	CH6 DO Pulse High Signal Width
40032	0x001F	word	CH7 DO Pulse High Signal Width
40033	0x0020	word	CH0 DO Mode 0: DO 1: Pulse
40034	0x0021	word	CH1 DO Mode 0: DO 1: Pulse
40035	0x0022	word	CH2 DO Mode 0: DO 1: Pulse
40036	0x0023	word	CH3 DO Mode 0: DO 1: Pulse
40037	0x0024	word	CH4 DO Mode 0: DO 1: Pulse
40038	0x0025	word	CH5 DO Mode 0: DO 1: Pulse
40039	0x0026	word	CH6 DO Mode 0: DO 1: Pulse
40040	0x0027	word	CH7 DO Mode 0: DO 1: Pulse
40041	0x0028	word	CH0 DI / Counter Filter
40042	0x0029	word	CH1 DI / Counter Filter
40043	0x002A	word	CH2 DI / Counter Filter
40044	0x002B	word	CH3 DI / Counter Filter

Reference	Address	Data Type	Description
40045	0x002C	word	CH4 DI / Counter Filter
40046	0x002D	word	CH5 DI / Counter Filter
40047	0x002E	word	CH6 DI / Counter Filter
40048	0x002F	word	CH7 DI / Counter Filter
40049	0x0030	word	CH8 DI / Counter Filter
40050	0x0031	word	CH9 DI / Counter Filter
40051	0x0032	word	CH10 DI / Counter Filter
40052	0x0033	word	CH11 DI / Counter Filter
40053	0x0034	word	CH0 DI Mode 0: DI 1: Counter Others: return Illegal Data Value
40054	0x0035	word	CH1 DI Mode 0: DI 1: Counter Others: return Illegal Data Value
40055	0x0036	word	CH2 DI Mode 0: DI 1: Counter Others: return Illegal Data Value
40056	0x0037	word	CH3 DI Mode 0: DI 1: Counter Others: return Illegal Data Value
40057	0x0038	word	CH4 DI Mode 0: DI 1: Counter Others: return Illegal Data Value
40058	0x0039	word	CH5 DI Mode 0: DI 1: Counter Others: return Illegal Data Value
40059	0x003A	word	CH6 DI Mode 0: DI 1: Counter Others: return Illegal Data Value
40060	0x003B	word	CH7 DI Mode 0: DI 1: Counter Others: return Illegal Data Value
40061	0x003C	word	CH8 DI Mode 0: DI 1: Counter Others: return Illegal Data Value
40062	0x003D	word	CH9 DI Mode 0: DI 1: Counter Others: return Illegal Data Value
40063	0x003E	word	CH10 DI Mode 0: DI 1: Counter Others: return Illegal Data Value
40064	0x003F	word	CH11 DI Mode 0: DI 1: Counter Others: return Illegal Data Value

Function 8

Sub-function	Data Field (Request)	Data Field (Response)	Description
0x0001	0x0000	Echo Request Data	Reboot
0x0001	0xFF00	Echo Request Data	Reset to Factory defaults

Used Network Port Numbers

E2210/E2210 Network Port Usage

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

SNMP Agents with MIB II & RS-232 like groups

RFC1213 MIB II Supported SNMP Variables

The ioLogik E2210 has built-in SNMP (Simple Network Management Protocol) agent software that supports RFC1317 RS-232 like groups and RFC 1213 MIB-II, I/O status MIB.

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

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

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

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

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

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

Factory Default Settings

The ioLogik E2210 is configured with the following factory defaults:

Default IP address:	192.168.127.254
Default Netmask:	255.255.255.0
Default Gateway:	0.0.0.0
Communication watchdog:	Disable
Modbus TCP alive check Timeout:	60 secs

DI Mode:	DI
Filter time:	100 × 0.5 ms
Trigger for counter:	Lo to Hi
Counter status:	Stop

DO Mode:	DO
DO Safe Status:	Off
Power on status:	Off
Low width for pulse:	1 × 0.5 ms
Hi width for pulse:	1 × 0.5 ms
Output pulses:	0 (continuous)

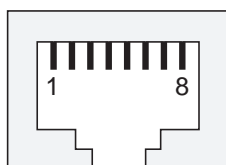
Password:	NONE
Module Name:	NONE
Module Location:	NONE
SNMP:	Enable
Community:	Public
Contact:	NONE
Location:	NONE

Click&Go	NONE
---------------------	-------------

Pinouts and Cable Wiring

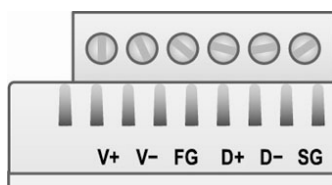
Ethernet Port Pinouts

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



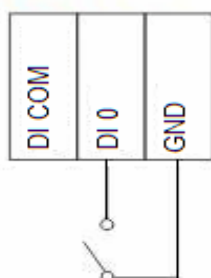
Serial Port Pinouts

E2210 RS-485 Network Adapter Pin Assignment

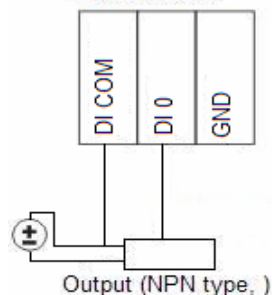


I/O Device Wiring

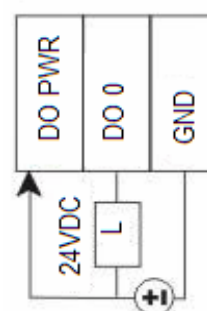
DI
(Dry Contact)
2 Wire Sensor



DI
(Wet Contact, source type)
3 Wire Sensor



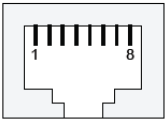
DO (sink type)



* DO PWR is for powering up the *field Power* LED.

Pin Assignment of Terminal Blocks

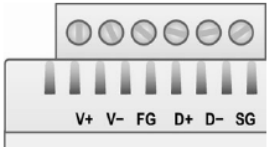
Ethernet



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

Power / RS-485

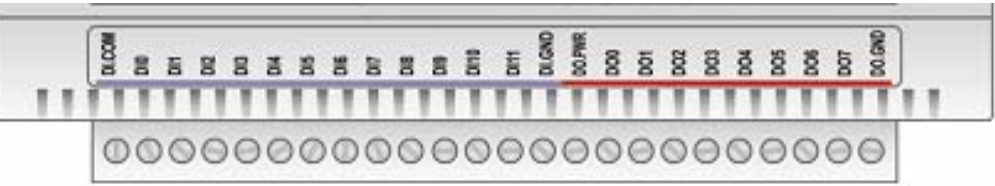
(TB1 / TB2)



I/O (left to right)

(TB3)

Pin	1	2	3	4	5	6	7	8	9	10	11	12
Signal	DI.COM	DI0	DI1	DI2	DI3	DI4	DI5	DI6	DI7	DI8	DI9	DI10
Pin	13	14	15	16	17	18	19	20	21	22	23	24
Signal	DI11	DI.GND	DO.PWR	DO0	DO1	DO2	DO3	DO4	DO5	DO6	DO7	DO.GND



G

Service Information

This appendix shows you how to contact MOXA for information about the ioLogik E2210, and other products, and how to report problems.

In this appendix, we cover the following topics.

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

MOXA Internet Services

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

The following services are provided

Technical Support E-mail Address

support@moxa.com

Website for Product Information

<http://www.moxa.com>

Problem Report Form

MOXA ioLogik E2210 Active Remote I/O Server

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

MOXA Product: ioLogik E2210

Serial Number: _____

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

Product Return Procedure

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

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