ioLogik E2212 User's Manual

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www.moxa.com/product

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ioLogik E2212 User's Manual

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Table of Contents

1
Introduction

The ioLogik E2212 is a stand-alone Active Ethernet I/O server that can connect sensors and on/off switches for automation applications over Ethernet and IP-based networks.

The following topics are covered in this chapter:

- **Overview**
  - Traditional Remote I/O
  - Active Ethernet I/O
  - Click&Go
  - Optional Liquid Crystal Display Module (LCM)
- **Product Features**
- **Package Checklist**
- **Product Overview**
- **Pin Assignments**
  - System Bus
  - Ethernet Port
  - TB1 (Power Input & RS-485 Connector)
  - TB2 (Digital Input and Output Terminal)
- **LED Indicators**
- **Physical Dimensions**
  - Without LCM
  - With LCM
- **Product Specifications**
  - LAN
  - Serial
  - Serial Communication Parameters
  - Digital Input
  - Digital Output
  - Configurable DI/DO Channels
  - System Power Input
  - Environmental
  - Wiring
  - Certifications
  - Accessories

Overview

The ioLogik E2212 is a member of the E2000 line of ioLogik Active Ethernet I/O servers, which are designed for intelligent, pro-active status reporting of attached sensors, transmitters, transducers, and valves over a network. It includes 2 MB of Flash ROM, 8 MB of SDRAM, and supports an optional hot-pluggable Liquid Crystal Display Module (LCM) 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 Ethernet I/O

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

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

Click&Go

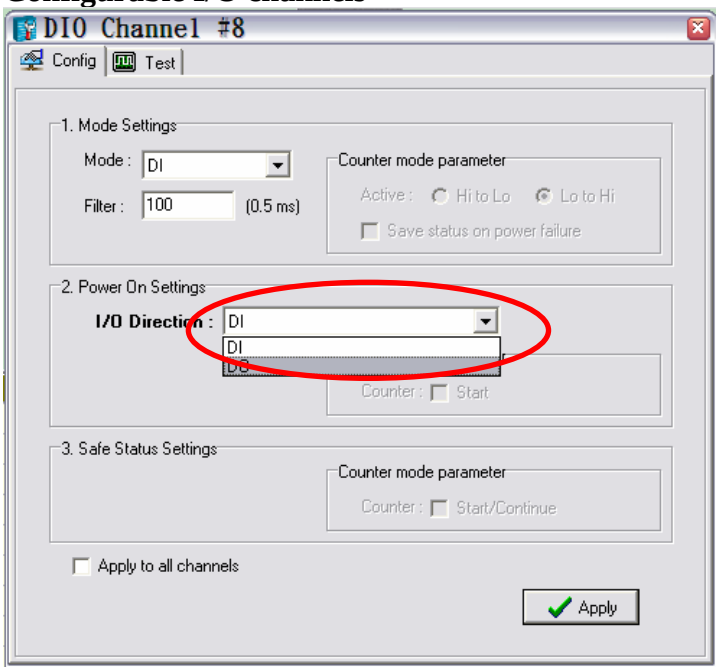
MOXA developed the Click&Go logic control interface for easy configuration and deployment of Active Ethernet I/O. Click&Go's intuitive, graphical interface lets administrators use simple IF/THEN statements as rules to determine how the Active Ethernet I/O server responds to different I/O conditions. For example, the Active Ethernet I/O server could be set 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 Ethernet I/O system.

Optional Liquid Crystal Display Module (LCM)

As a MOXA Easy View product, the ioLogik E2212 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 E2212'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

Configurable I/O channels

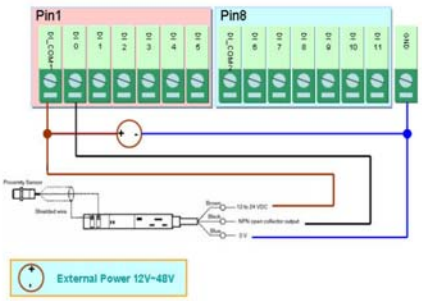


The ioLogik E2212 provides the flexibility to handle almost any field installation, with 8 fixed input channels, 8 fixed output channels, and 4 configurable input/output channels. This enables you to define custom configurations such as 12 inputs and 8 outputs, 8 inputs and 12 outputs, or 10 inputs and 10 outputs.

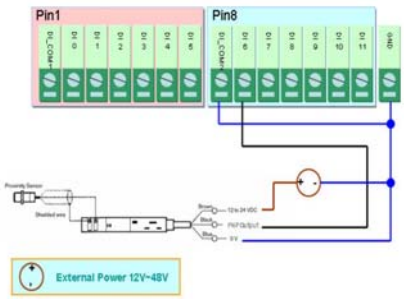
Accepts PNP or NPN sensors

Unlike traditional Ethernet I/O products, the ioLogik E2212 supports dry contact, PNP, and NPN sensors. The sensor type is determined by your wiring approach. Sensors can be wired in two different groups, so both PNP and NPN sensors can be connected to the unit at the same time.

Wet Contact with NPN sensor



Wet Contact with PNP sensor



Patented Click&Go logic for easy local control without programming

On Active Ethernet I/O servers, MOXA's Click&Go logic makes it easy to define a set of rules for local control of attached output devices. For example, you can define a rule that activates an attached switch and sends an e-mail when a sensor event occurs a certain number of times.

Instant event reporting by TCP, UDP, e-mail, or SNMP trap

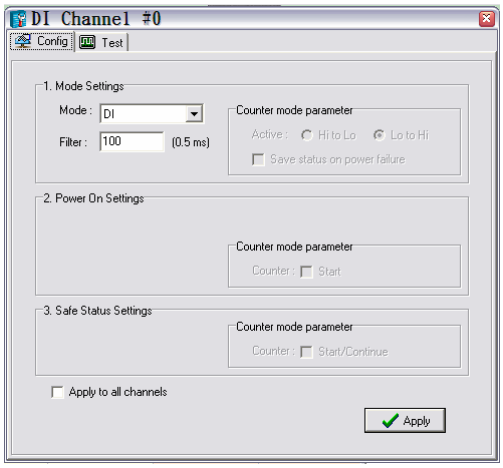
Active Ethernet I/O servers can report I/O events automatically to any network host. Reports are fully customizable and can be sent by TCP, UDP, e-mail, or SNMP trap.

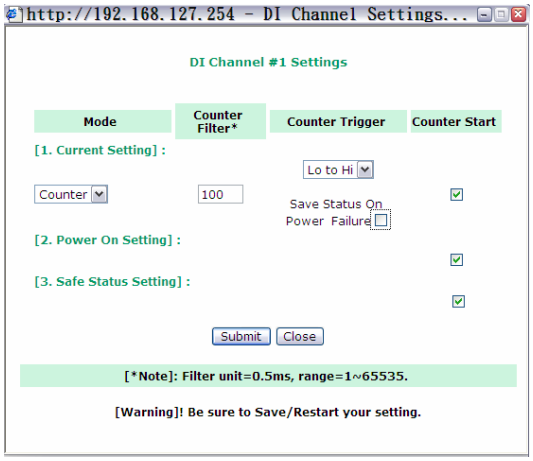
Peer-to-peer I/O for transmission of sensor signals over Ethernet without controller

The ioLogik E2212 supports Peer-to-Peer I/O operation, where sensor signals are transmitted over Ethernet to another ioLogik E2212. For typical 100 Mbps LANs, latency is only 100 ms.

Power fail counter storage memory

The ioLogik E2212 stores event counter values so that they are not lost during a power failure or disconnection.





RoHS compliance

As required by EU regulations, the ioLogik E2212 is fully RoHS-compliant.

Package Checklist

The ioLogik E2212 is shipped with the following items:

Standard Accessories

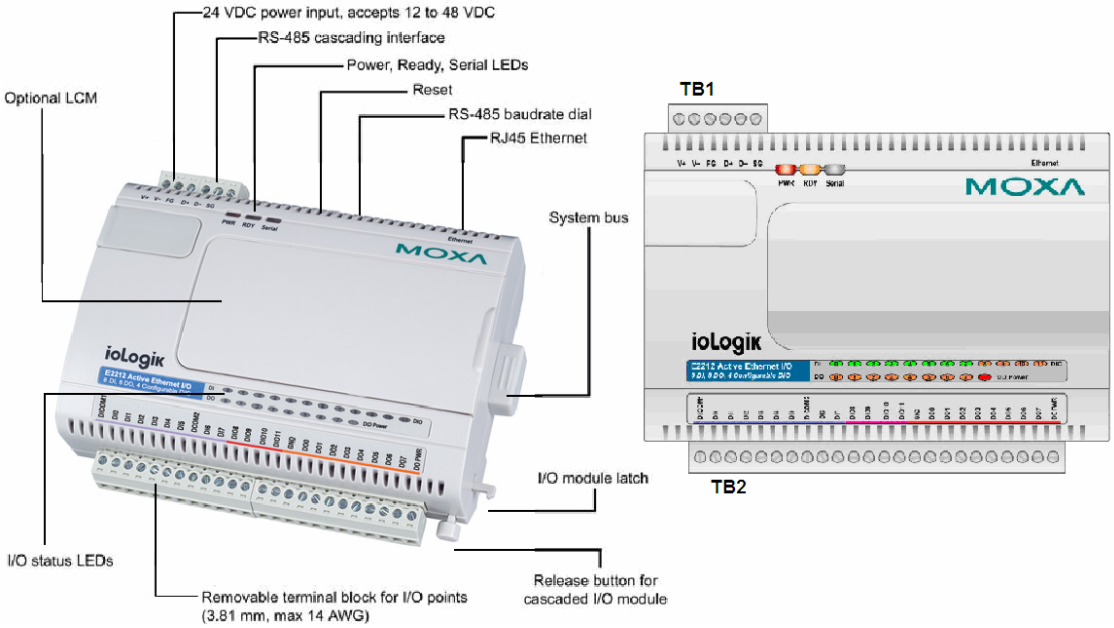
- ioLogik E2212 Active Ethernet I/O server
- Documentation and Software CD

Optional Accessories

- LDP1602 ioLogik LCM (Liquid Crystal Display Module)

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

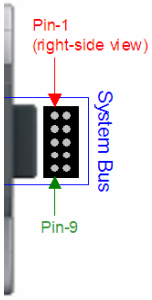
Product Overview



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.

Pin Assignments

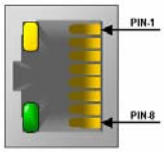
System Bus



Pin	1	2	3	4	5
Signal	V+	V-	V+	V-	NC

Pin	6	7	8	9	10
Signal	NC	Data+	SYNC	Data-	GND

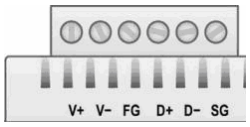
Ethernet Port



Pin	1	2	3	4
Signal	TXD^+	TXD^-	RXD^+	X

Pin	5	6	7	8
Signal	X	RXD^-	X	X

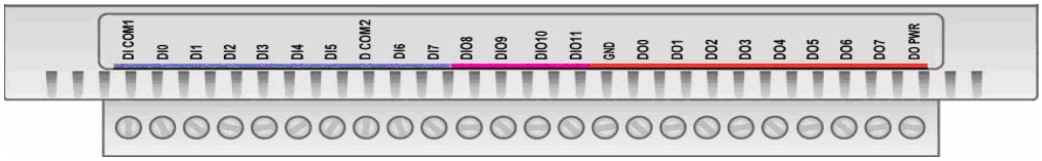
TB1 (Power Input & RS-485 Connector)



Pin	1	2	3	4	5	6
Signal	V+	V-	FG	D+	D-	SG

(V+: 12 to 48V)

TB2 (Digital Input and Output Terminal)



Pin	1	2	3	4	5	6	7	8	9
Signal	DI COM1	DI0	DI1	DI2	DI3	DI4	DI5	DI COM2	DI6

Pin	10	11	12	13	14	15	16	17	18
Signal	DI7	DIO8	DIO9	DIO10	DIO11	GND	DO0	DO1	DO2

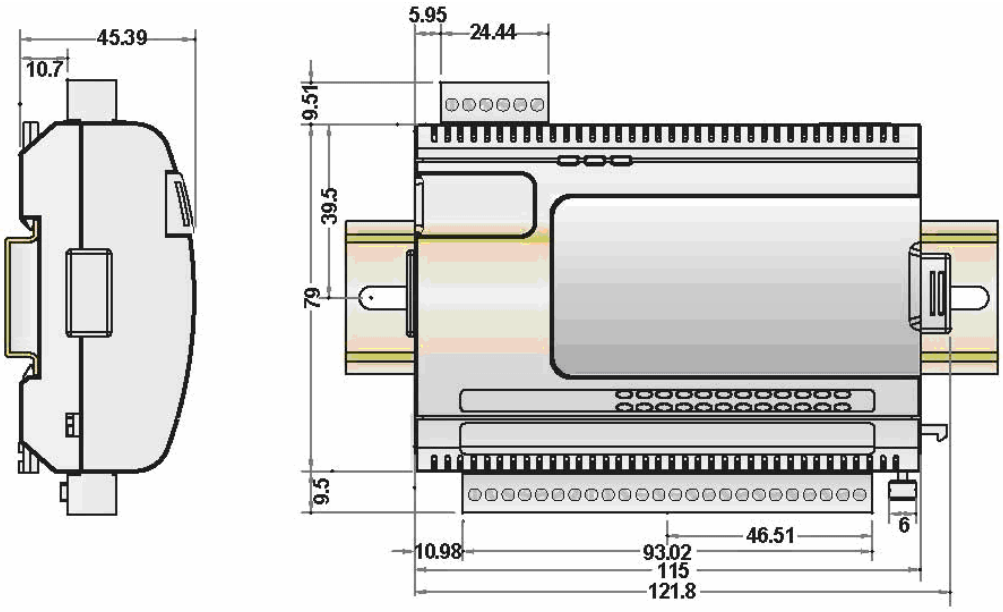
Pin	19	20	21	22	23	24
Signal	DO3	DO4	DO5	DO6	DO7	DO PWR

LED Indicators

Ethernet		
Ethernet	Orange	Live 10Mbps Ethernet connection
	Green	Live 100Mbps Ethernet connection
	Flashing	Transmitting or receiving data
System LEDs		
PWR	Red	Power is on
Ready	Red	System error
	Green (steady)	ioLogik E2212 is functioning normally
	Green (flashing)	Click&Go logic is active
	Green & red (flashing)	ioLogik E2212 is in Safe Status
Serial	(flashing)	Serial port is receiving or transmitting data
I/O LEDs		
DI × 8	Green	Status is ON
	Off	Status is OFF
DO × 8	Orange	Status is ON
	Off	Status is OFF
DIO × 4	Green	Operating as DI channel, status is ON
	Orange	Operating as DO channel, status is ON
	Off	Status is OFF
DO PWR	Red	DO power in

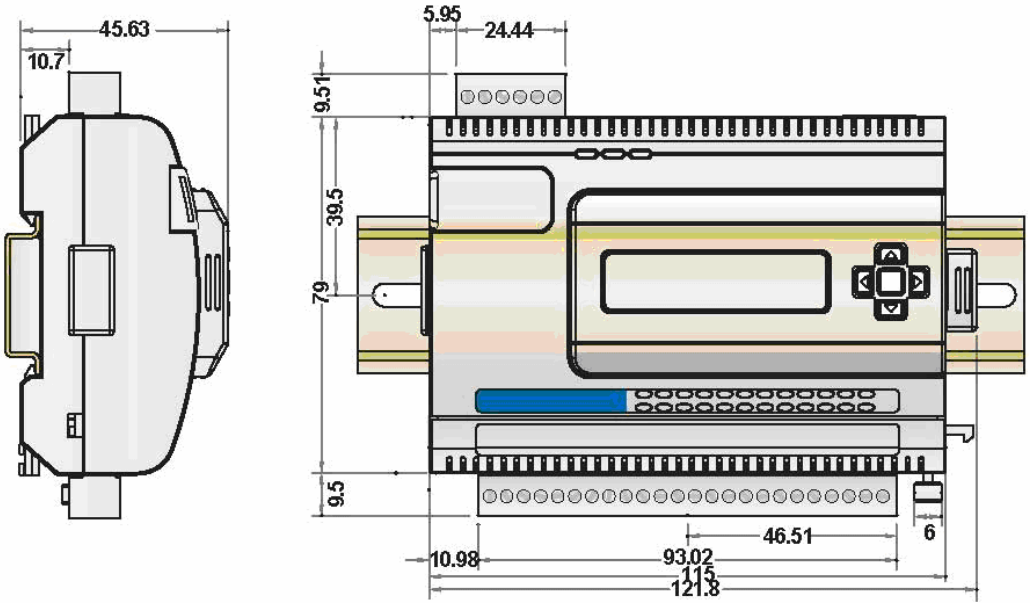
Physical Dimensions

Without LCM



(Unit = mm)

With LCM



(Unit = mm)

Product Specifications

LAN

Interface	10/100BaseTx with MDI/MDIX, RJ45
Protocols	Modbus/TCP, TCP/IP, UDP, DHCP, Bootp, SNMP(MIB for I/O and Network), HTTP, SNTP
Protection	1.5KV magnetic isolation
IP Address	Fixed, dynamic (DHCP) Default: 192.168.127.254

Serial

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

Serial Communication Parameters

Parity	None
Data Bits	8
Stop Bits	1
Flow Control	None
Speed	1200 to 115200 bps
Protocol	Modbus/RTU

Digital Input

Inputs	8 fixed points, two 6-point groups for sink/source type
I/O Mode	DI or event counter (up to 900Hz)
DI COM Power Input	24 VDC nominal, up to 36 VDC
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	6 points /1 COM
Isolation	3 KVDC / 2 KVrms
Protection	Over voltage protection: +36 VDC
Counter Power Off Storage	Yes

Digital Output

Inputs	8 fixed points sink type
I/O Mode	DO or pulse output(up to 100 Hz)
DO Power Input	24 VDC nominal, up to 30V
Output Current Rating	Max. 200 mA per channel
Magnetic Isolation	3 KVDC / 2 KVrms
Protection	Over voltage protection: +36 VDC Over current limit: 600 mA (typical) Over temperature shutdown: 160°C (min.)

Configurable DI/DO Channels

Channels	4
I/O mode	DI or event counter (up to 900Hz) DO or pulse output (up to 100Hz)
Magnetic Isolation	3 KVDC/ 2 KVrms

System Power Input

Power Input	24 VDC nominal, 12VDC (min.) to 48 VDC (max.)
Power Consumption	7.5W @24 VCD
Ground Connection	DIN-rail or panel mounting sockets

Environmental

Operation Temperature	-10 to 60°C (14 to 140°F), 5 to 95% RH
Storage Temperature	-40 to 85°C (-40 to 185°F), 50 to 95% RH

Wiring

I/O Cable	Max. 14 AWG

Certifications

Shock, Freefall, Vibration, CE Class A, Level 3, FCC Part 15, CISPR (EN55022) Class A UL-508 EC 61000-6-2, EC 61000-6-4

Accessories

LCM	Hot-pluggable attachment for IP display, DI/DO status 16x2 character display Backlit screen 5 buttons

2
Initial Setup

This chapter describes how to install the ioLogik E2212 Active Ethernet I/O Server.

The following topics are covered in this chapter:

- **Hardware Installation**
  - Connecting the Power
  - Grounding the Unit
  - Connecting to the Network
  - Connecting Multiple ioLogik E2000 Units
  - Adding More I/O Channels
  - Setting the RS-485 Baudrate
  - Connecting the I/O Device
- **Software Installation**

Hardware Installation

Connecting the Power

Connect the 12 to 48 VDC power line to the ioLogik'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.

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 Unit

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

Connecting to the Network

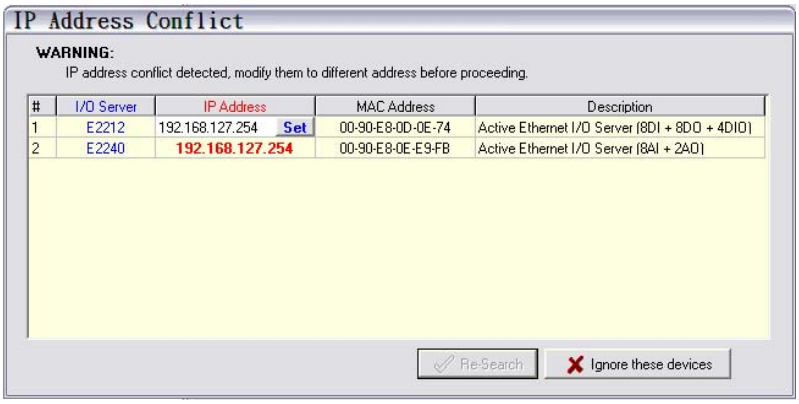
1. Connect the ioLogik to the host PC with an Ethernet cable. For initial configuration, it is recommended that the ioLogik E2212 be configured using a direct connection to a host computer rather than remotely over the network.
2. Set the host PC's IP address to 192.168.127.xxx. (xxx: from 001 to 253). In Windows, you may set this through the Control Panel.

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. Once the ioLogik has been detected, modify the settings as needed for your network environment, then restart the server.

Connecting Multiple ioLogik E2000 Units

When connecting multiple ioLogik E2000 units to the same network, remember that each unit has the same default IP address. You will need to assign a different IP address to each unit to avoid IP conflicts. ioAdmin automatically detects IP conflicts and allows you to modify each unit's IP address.



Adding More I/O Channels

A cost effective way to add more I/O channels to your ioLogik E2000 I/O server is to attach the appropriate ioLogik R2000 I/O server. The two servers can be snapped together using the RS-485 system bus connector, as shown in the following figure. For the ioLogik E2212, additional digital I/O channels are added using the ioLogik R2110. For additional details, please refer to the ioLogik R2110 user's manual.

Setting the RS-485 Baudrate

The RS-485 port on the ioLogik E2212 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. The default settings are baudrate = 115200, parity check = N, data bits = 8, and stop bit = 1. Modbus/RTU only supports N, 8, 1, so E, 7, 1 is not supported. When using the RS-485 cascading interface, the ioLogik E2212 will have an RS-485 Unit ID of 1.

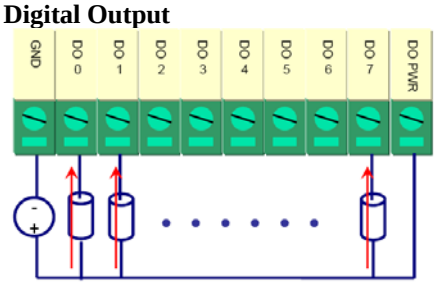
	Baudrate for RS-485 (parameters are N, 8, 1)	Dial setting and corresponding baudrate: 0:115200 1:57600 2:38400 3:19200 4:9600 5:4800 6:2400 7:1200

Remember to restart the ioLogik E2212 after making any changes to the RS-485 baud rate.

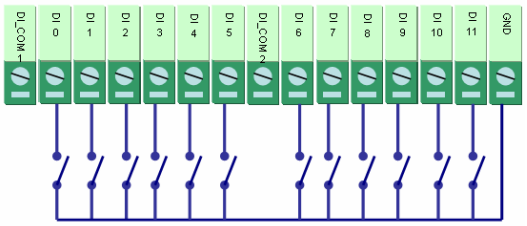
Connecting the I/O Device

With 4 channels that are configurable for digital input or digital output operation, the ioLogik E2212 offers great flexibility in connecting I/O devices. Also, unlike traditional Ethernet I/O products, the ioLogik E2212 can connect to dry contact, PNP, and NPN sensors at the same time. The sensor type determines your wiring approach, as shown in the following examples:

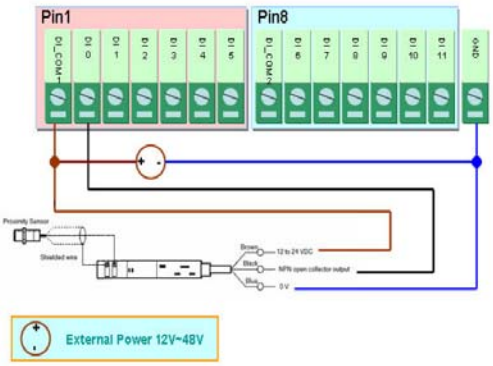
Digital Output



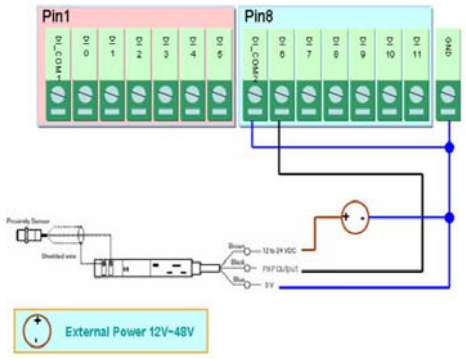
Dry Contact



Wet Contact with NPN sensor



Wet Contact with PNP sensor



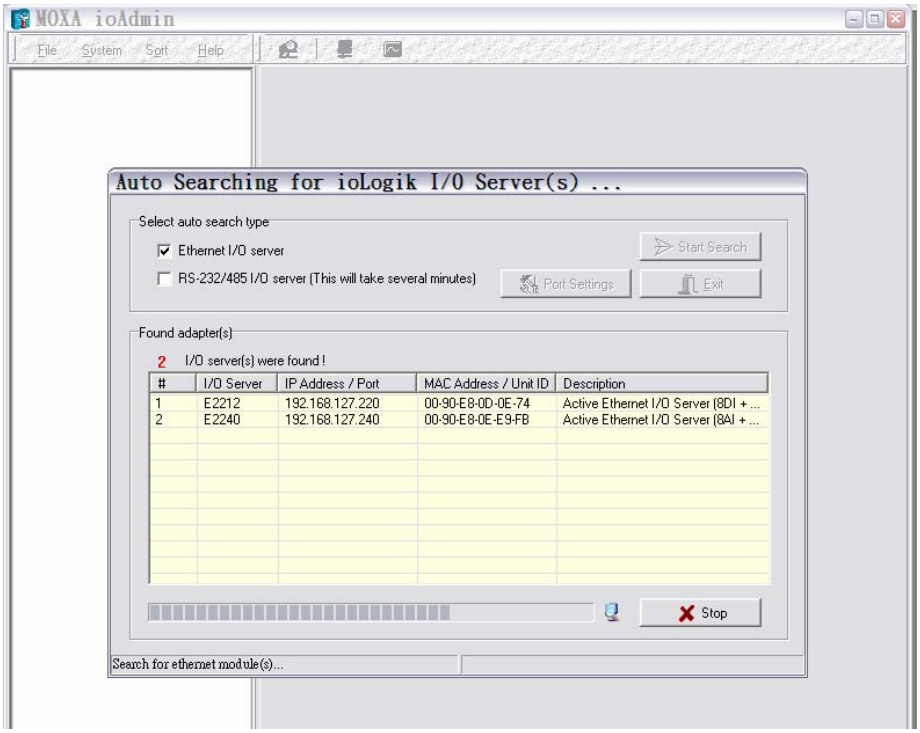
ATTENTION

Sensor types are set in groups, with DI-0 to DI-5 forming one group and DI-6- to DI-11 forming another group (assuming that channels 8 through 11 are configured as digital input channels). If an NPN sensor is connected to DI-0, then only NPN sensors can be connected to the other DI channels in the group (i.e., DI-1 through DI-5). Likewise, if a PNP sensor is connected to DI-6, then only PNP sensors can be connected to the other DI channels in the group (i.e., DI-7 through DI-11).

Software Installation

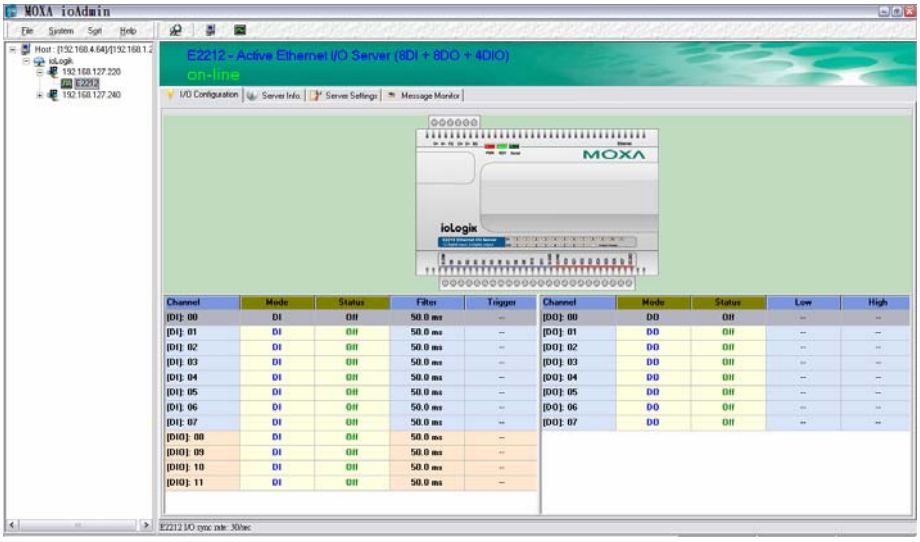
ioAdmin is a Windows utility provided for the configuration and management of the ioLogik E2212 and attached I/O devices. It may be used from anywhere on the network to monitor and configure the ioLogik E2212. You may also configure some of the settings through the web console or optional LCM.

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



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

4. **Monitoring I/O status**: Once your unit has been found by ioAdmin, you may view the status of all attached I/O devices on ioAdmin's main screen.



You may now use ioAdmin to setup or configure your unit. Please refer to Chapter 3 for additional information on using ioAdmin.

3
Using ioAdmin

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

The following topics are covered in this chapter:

Introduction to ioAdmin

ioLogik Ethernet I/O Servers may be managed and configured over the Ethernet with ioAdmin, a Windows utility provided with your ioLogik E2212. ioAdmin's graphical-user interface gives you easy access to all status information and settings.

The ioLogik E2212 also supports configuration by web console and by optional LCM, but full configuration and management is only available through ioAdmin.

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

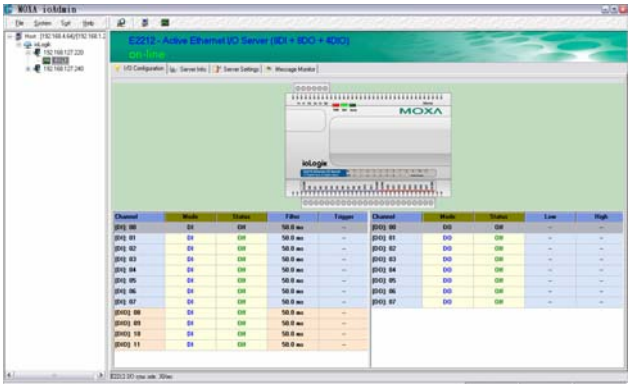
ioAdmin also includes Click&Go logic control for the configuration of your Active Ethernet I/O system.

ioAdmin consists of following software:

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

Features of ioAdmin

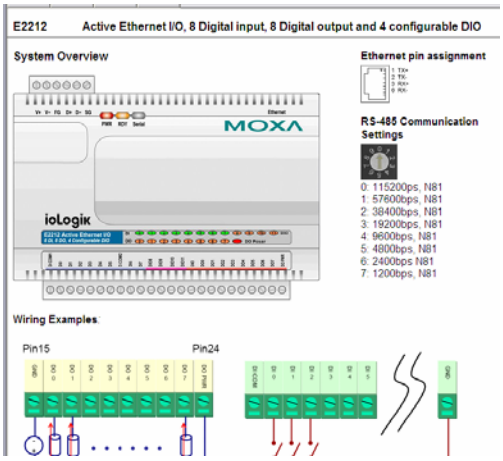
Remote Management



Over the Ethernet network, ioAdmin allows users to

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

On-line Wiring Guide



A 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

```
ioLogik E2212 Network I/O Server Configuration
==============================================
Date: 2007/5/21
Time: PM 04:05:39
Firmware: V1.0 Build07050112

[1. Model]
----------
MOD_TYPE=E2212 - Active Ethernet I/O Server (8DI + 8DO + 4DIO)
MOD_LOC=
MOD_NAME=

[2. I/O Configurations]
-----------------------
DIO00=0,(DI)
DIO01=0,(DI)
DIO02=0,(DI)
DIO03=0,(DI)

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)
```

ioAdmin allows the entire configuration of the ioLogik E2212 to be saved as a file. The file is viewable as text and can serve three purposes:

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

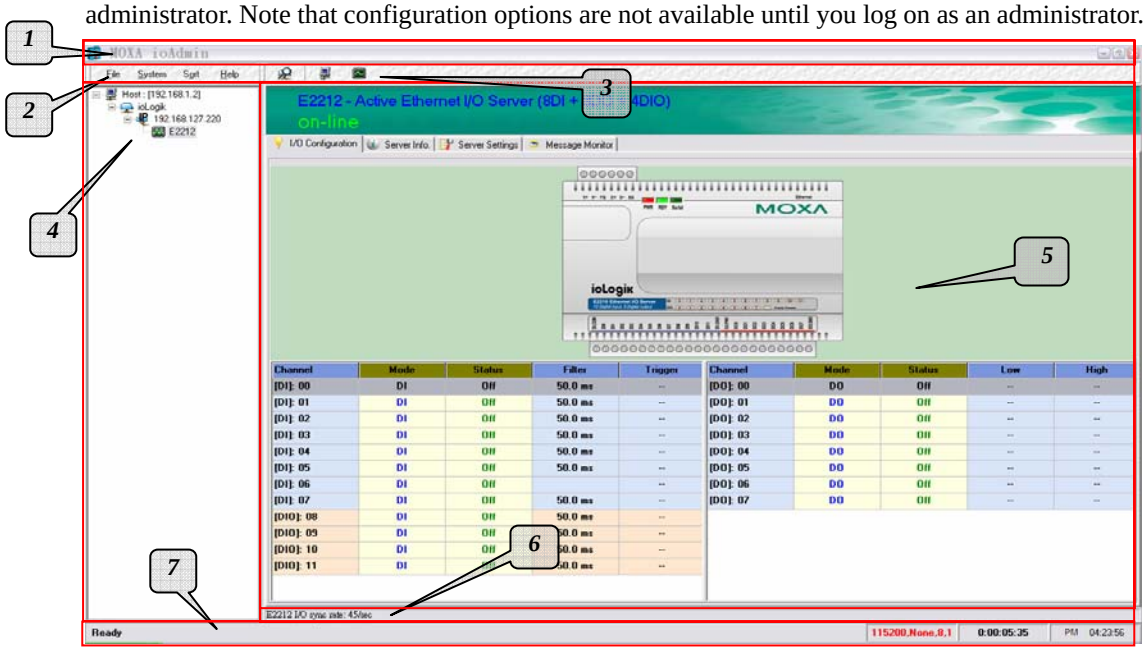
The file includes the following information:

1. file title, date, and time
2. model information
3. Modbus address

ioAdmin Main Screen

Main Screen Overview

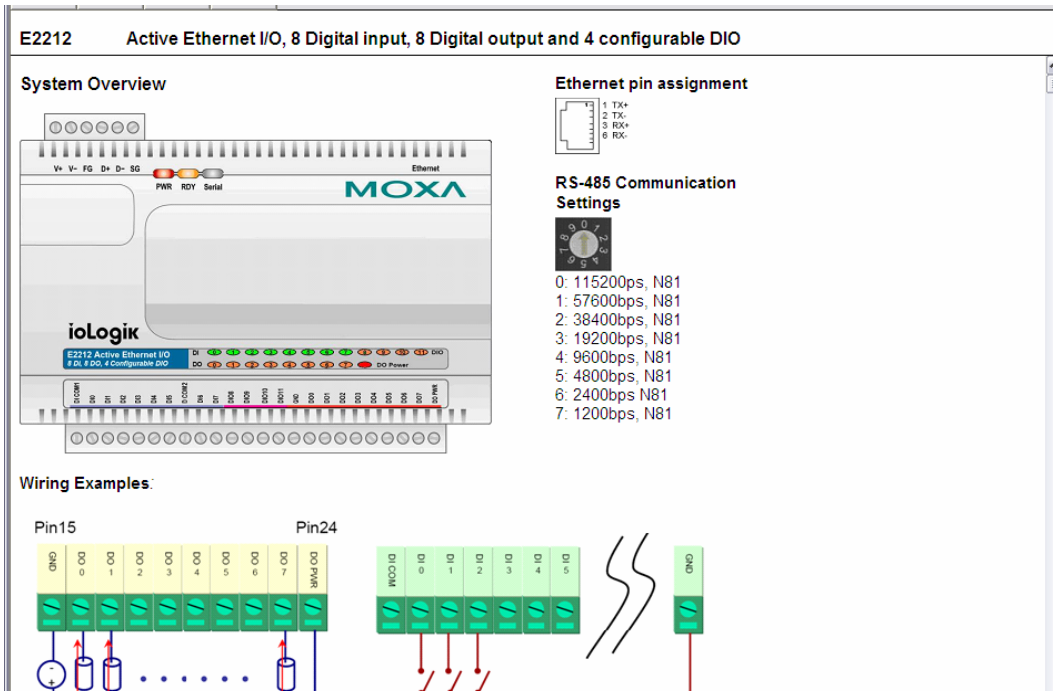
This is ioAdmin's main screen. The main window defaults to the I/O Configuration tab, which displays a figure of your unit with the status of every I/O channel. The other tabs in the main window take you to server and network settings, and further functions are available when you log on as an administrator.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



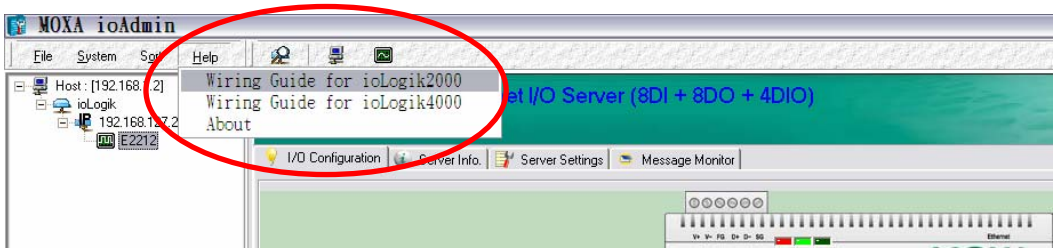
ioAdmin Main Screen
1. Title
2. Menu bar
3. Quick link
4. Navigation panel
5. Main window
6. Sync. rate status
7. Status bar

Wiring Guide

ioAdmin provides a wiring guide for the ioLogik E2212. You may access the wiring guide by right-clicking the ioLogik figure in the I/O Configuration tab. Select "Wiring Guide" in the submenu to open a help file showing the unit's wiring information and electrical characteristics.

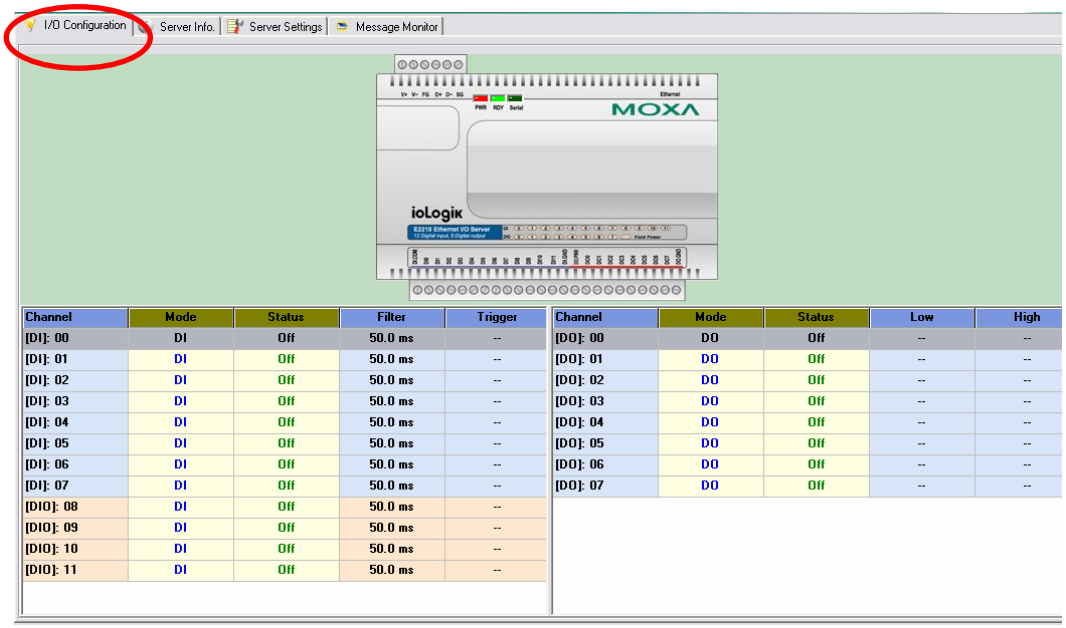


You may also access the On-line Wiring Guide through the Help menu on the menu bar.



I/O Configuration Tab (General)

The I/O Configuration tab shows the status of every I/O channel. This is the default tab when you first open ioAdmin. DI channels are listed on the left and DO channels are listed on the right. The four selectable channels will be listed on the left or the right according to the selected mode.

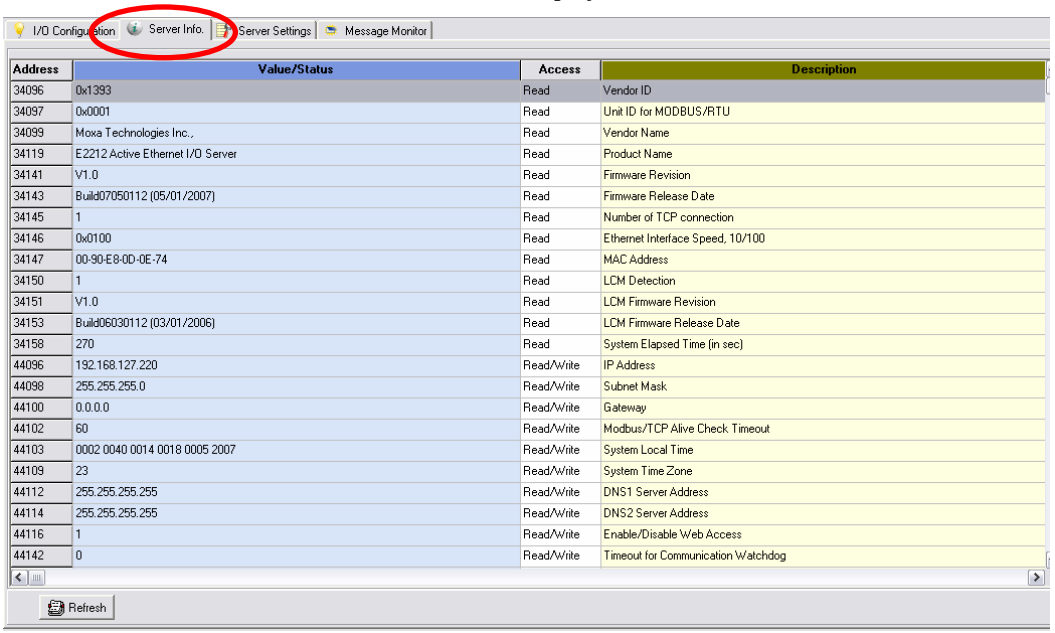


Channel	Mode	Status	Filter	Trigger
[DI]: 00	DI	Off	50.0 ms	--
[DI]: 01	DI	Off	50.0 ms	--
[DI]: 02	DI	Off	50.0 ms	--
[DI]: 03	DI	Off	50.0 ms	--
[DI]: 04	DI	Off	50.0 ms	--
[DI]: 05	DI	Off	50.0 ms	--
[DI]: 06	DI	Off	50.0 ms	--
[DI]: 07	DI	Off	50.0 ms	--
[DIO]: 08	DI	Off	50.0 ms	--
[DIO]: 09	DI	Off	50.0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

Channel	Mode	Status	Low	High
[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	--	--

Server Info Tab

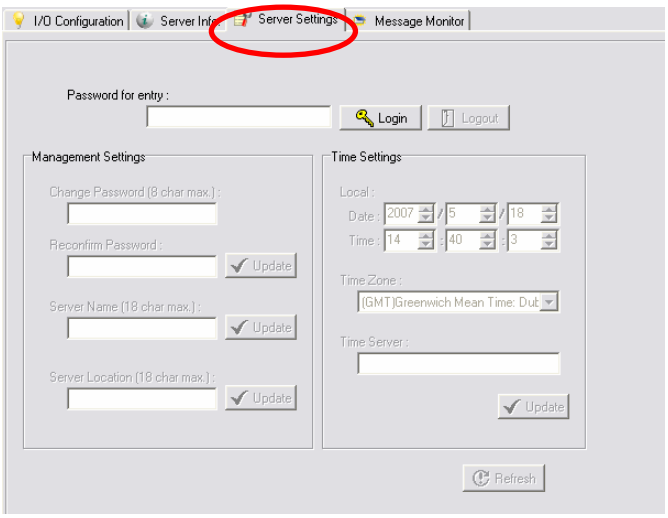
Server information, such as firmware version, is displayed in the Server Info tab.



Address	Value/Status	Access	Description
34096	0x1393	Read	Vendor ID
34097	0x0001	Read	Unit ID for MODBUS/RTU
34099	Moxa Technologies Inc.,	Read	Vendor Name
34119	E2212 Active Ethernet I/O Server	Read	Product Name
34141	V1.0	Read	Firmware Revision
34143	Build07050112 (05/01/2007)	Read	Firmware Release Date
34145	1	Read	Number of TCP connection
34146	0x0100	Read	Ethernet Interface Speed, 10/100
34147	00-90-E8-0D-0E-74	Read	MAC Address
34150	1	Read	LCM Detection
34151	V1.0	Read	LCM Firmware Revision
34153	Build06030112 (03/01/2006)	Read	LCM Firmware Release Date
34158	270	Read	System Elapsed Time (in sec)
44096	192.168.127.220	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	0002 0040 0014 0018 0005 2007	Read/Write	System Local Time
44109	23	Read/Write	System Time Zone
44112	255.255.255.255	Read/Write	DNS1 Server Address
44114	255.255.255.255	Read/Write	DNS2 Server Address
44116	1	Read/Write	Enable/Disable Web Access
44142	0	Read/Write	Timeout for Communication Watchdog

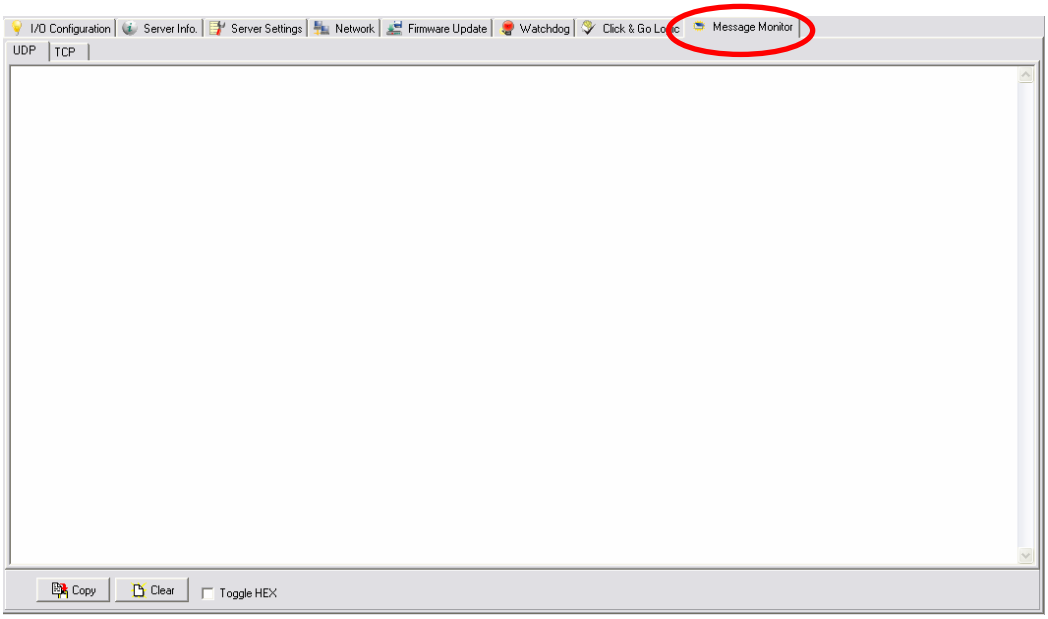
Server Settings Tab (General)

The Server Settings tab is where you log in as an administrator. This is required in order to gain access to the ioLogik E2212 configuration options. If no administrator password has been set up, simply click **Login** and leave the **Password** for entry field blank. Please refer to the ioAdmin Administrator Functions section later on in this chapter for more detail.



Message Monitor Tab

The Message Monitor tab will display any TCP/UDP messages received from the ioLogik E2212. When you install the unit for the first time, the ruleset will not have been defined yet, so there will be no messages in the Message Monitor Tab. When a ruleset has been defined and activated, any TCP/UDP messages that have been triggered by sensor events will be shown in the Message Monitor tab. Please refer to Chapter 5: Click&Go Logic for information on how to define rules for active I/O messaging.



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

ioAdmin Administrator Functions

For full access to all configuration options, log in as an administrator in the Server Settings tab. This is required whenever you start up ioAdmin or boot up/restart the ioLogik. When you install the ioLogik E2212 for the first time, the password will be blank and you may simply click **Login**. Additional functions will available after logging in, including the following new tabs:

When making configuration changes, you will need to click **Update** or **Apply** to save the changes. Some changes will require that the unit be restarted in order to take effect.

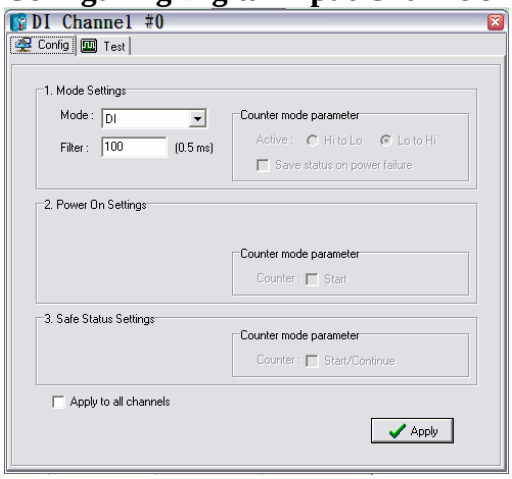
ATTENTION

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. A window will open with configuration options for that channel. After the channel has been configured as desired, click **Apply** to implement the new settings.

Configuring Digital Input Channels



The ioLogik E2212 provides up to 12 digital input (DI) channels, with 8 fixed DI channels (DI-0 to DI-7) and 4 channels that can be configured as DI or DO channels (DIO-8 to DIO-11). Software filtering is used to control switch bounces. The filter is configurable in multiples of 0.5 ms and accepts values between 1 and 65535. For example, a setting of **2** would mean a 1 ms filter (2 × 0.5 ms).

A DI channel can be set to "DI" or "Event Counter" mode. In DI mode, the specifications are as follows:

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

In Event Counter mode, the channel accepts limit or proximity switches and counts events according to the ON/OFF status. When "Lo to Hi" is selected, the counter value increases when the attached switch is pushed. When "Hi to Lo" is selected, the counter value increases when the switch is pushed and released.

By default, the Event Counter value will be reset to zero if power is disconnected. If you select **Save status on power failure**, the Event Counter value will be saved when power is disconnected. When power is reconnected, the value will be as you left it. You can set **Power On Settings** to have counting resume immediately.

The Event Counter starts counting events when specified by a Modbus command or a Click&Go Logic rule. You can also specify counting to begin automatically when the ioLogik is powered on. To activate this function, select **Start** under **Counter mode parameter** in the **Power On Settings**.

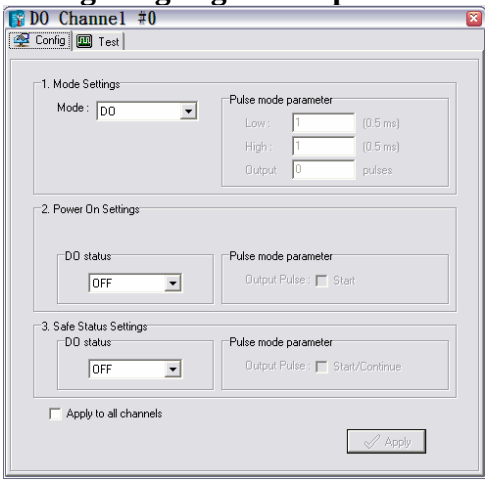
You can control how an Event Counter channel behaves during a network disconnection with the **Safe Status Settings** and the Host Connection Watchdog. When the Host Connection Watchdog is enabled, a network disconnection will activate the Safe Status Settings. The Event Counter channel can be configured to continue counting by selecting **Start/Continue** under **Counter mode parameter**. If **Start/Continue** is not selected, the Event Counter channel will suspend counting. If the Host Connection Watchdog is not enabled, then the Safe Status Settings will be ignored and the Event Counter channel will continue counting during a network disconnection.

ATTENTION

The Host Connection Watchdog is disabled by default and must be enabled for Safe Status Settings to take effect.

The **Apply to all channels** option applies all settings to DI channels, including DIO channels that are operating as DI channels.

Configuring Digital Output Channels



The ioLogik E2212 provides up to 12 digital output (DO) channels with 8 fixed DO channels (DO-0 to DO-7) and 4 channels that can be configured as DI or DO channels (DIO-8 to DIO-11).

A DO channel can be set to "DO" or "Pulse Output" mode. In DO mode, the specifications are as follows.

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

In Pulse Output mode, the selected digital output channel will generate a square wave as specified in the pulse mode parameters. The low and high level widths are specified in multiples of 0.5ms, with a maximum setting of 65,535 (32,767 ms).For example, you would enter 1000 for a width of 500 ms,. If the low width value is 5000 and the high width value is 5000, the pulse output would be a square wave with a 5-second pulse cycle. For the number of pulses, you can specify between 1 and 4,294,967,295 pulses or enter "0" for continuous pulse output.

When the ioLogik is first powered on, the status for each DO channel will be set to "OFF" by default. This behavior can be modified using the **Power On Settings**. You can set a DO channel to turn "ON" when the ioLogik is powered on, or to commence pulse output.

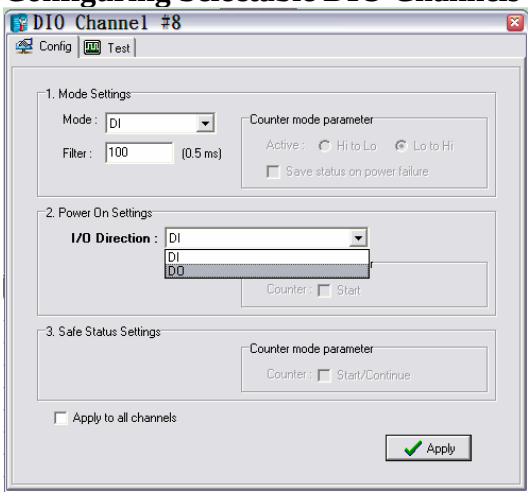
You can control how a DO channel acts when the network is disconnected by using the **Safe Status Settings** and the Host Connection Watchdog. When the Host Connection Watchdog is enabled, a network disconnection will activate the Safe Status Settings. The DO channel can be configured to turn on, turn off, or commence pulse output. If the Host Connection Watchdog is not enabled, then the DO channel status will remain unchanged during a network disconnection.

ATTENTION

The Host Connection Watchdog is disabled by default and must be enabled for Safe Status Settings to take effect.

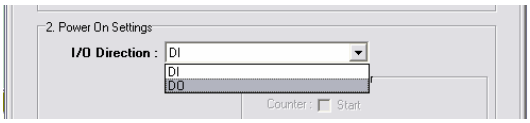
The **Apply to all channels** option applies all settings to DO channels, including DIO channels that are operating as DO channels.

Configuring Selectable DIO Channels



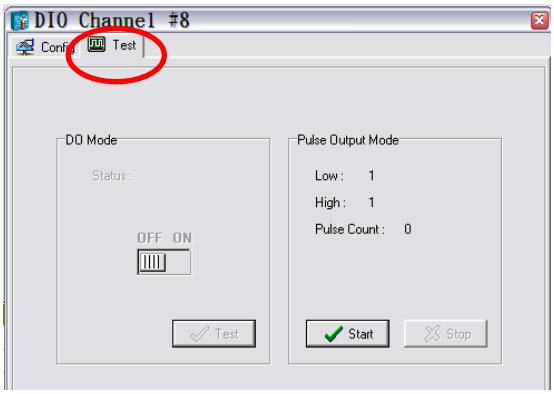
Channels DIO-8 to DIO-11 support both DI and DO channel operation. When the ioLogik E2212 is powered on, each DIO channel will be configured to act as either a DI or DO channel, according to the **Power On Settings**. When acting as a DI channel, configuration is the same as for fixed DI channels. When acting as a DO channel, configuration is the same as for fixed DO channels.

To switch to between DI and DO channel operation, select the desired mode in the **I/O Direction** field under **Power On Settings**. After clicking **Apply**, you will need to restart the ioLogik E2212 for the new setting to take effect.



Testing DI and DO Channels

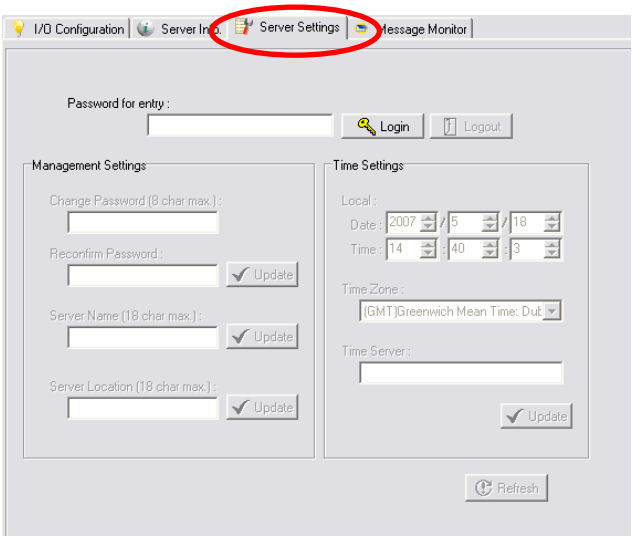
You can test each channel by opening the channel's configuration window and selecting the Test tab.



In the Test tab, you can see how a channel's status affects or is affected by the attached device. For DO channels, you can set the on/off status or start and stop pulse output. For DI channels, you can monitor the attached device's on/off status, or count switch press events.

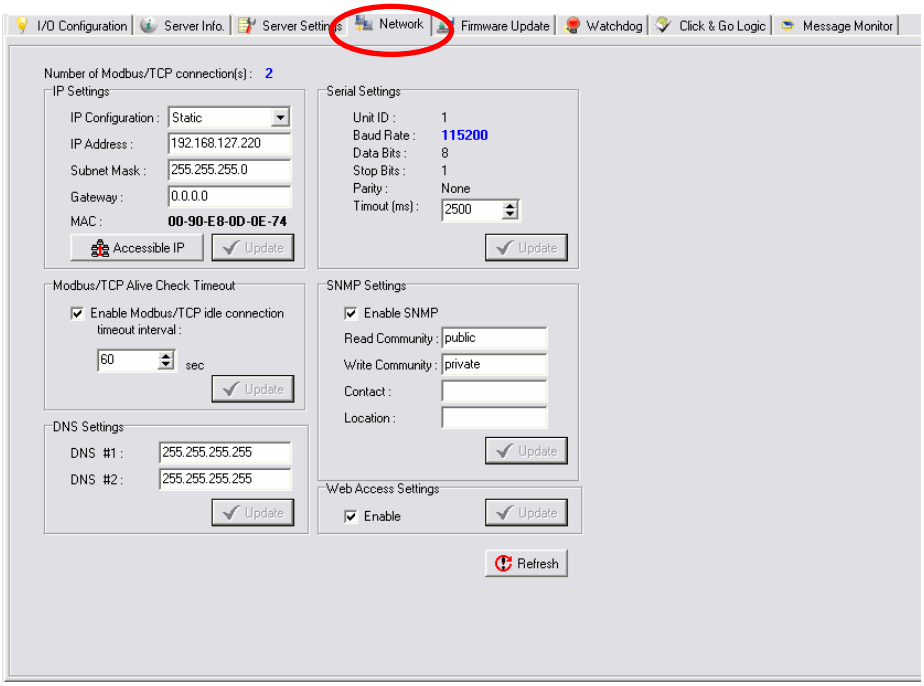
Server Settings Tab (Administrator)

After logging in as an administrator, you may set up a password, server name, location, date, time zone, and time server in the Server Settings tab.



Network Tab

The Network tab is available after you log in as an administrator. You may configure IP settings, Modbus/TCP Alive Check Timeout settings, DNS settings, Serial settings, SNMP settings, and Web Access settings for the ioLogik.



IP Settings

You can set up a static or dynamic IP address for the ioLogik, as well as the subnet mask and gateway address. Click **Accessible IP** if you wish to allow only certain IP addresses to have network access to the ioLogik and attached sensors. Access will be granted only to the IP addresses that you

list in the Accessible IP screen. Any requests from sources that are not on the accessible IP list will be unable to use Modbus/TCP or ioAdmin to access the ioLogik.

Modbus/TCP Alive Check Timeout Settings

The Modbus/TCP Alive Check Timeout is designed to avoid TCP connection failure. If the network host is unable to respond due to hardware failure or a network problem, the ioLogik will continue to wait for a response from the host. This will cause the TCP port to be occupied indefinitely by the host. When **Modbus/TCP idle connection timeout interval** is enabled, the ioLogik will automatically close the TCP connection when there is no TCP activity for the specified time.

DNS Settings

Use this field to specify up the IP addresses of one or to two DNS servers. DNS servers may be used to find available e-mail addresses when setting up Click & Go rules.

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.

SNMP Settings

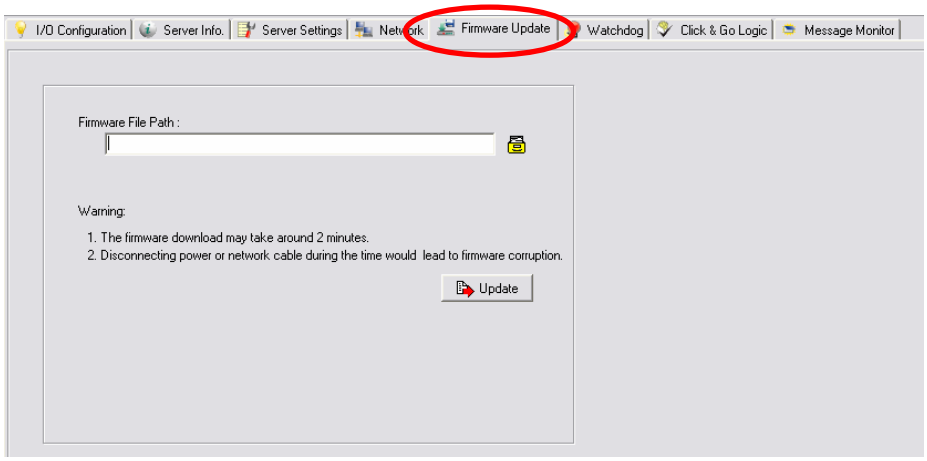
The ioLogik E2212 provides SNMP v2 (Simple Network Management Protocol) to allow monitoring of network and I/O devices with SNMP Network Management software. It is useful for building automation and telecom applications. Use these fields to enable SNMP and set the read and write community strings.

Web Access Settings

This field enables and disables the web console, which allows the ioLogik to be configured from a web browser. If this field is not enabled, you will not be able to open the web console.

Firmware Update Tab

The Firmware Update tab is available after you log in as an administrator. Enter the path to the firmware file or click on the icon to browse for the file. Click **Update** to update the ioLogik firmware. The wizard will lead you through the process until the ioLogik is restarted.



ATTENTION

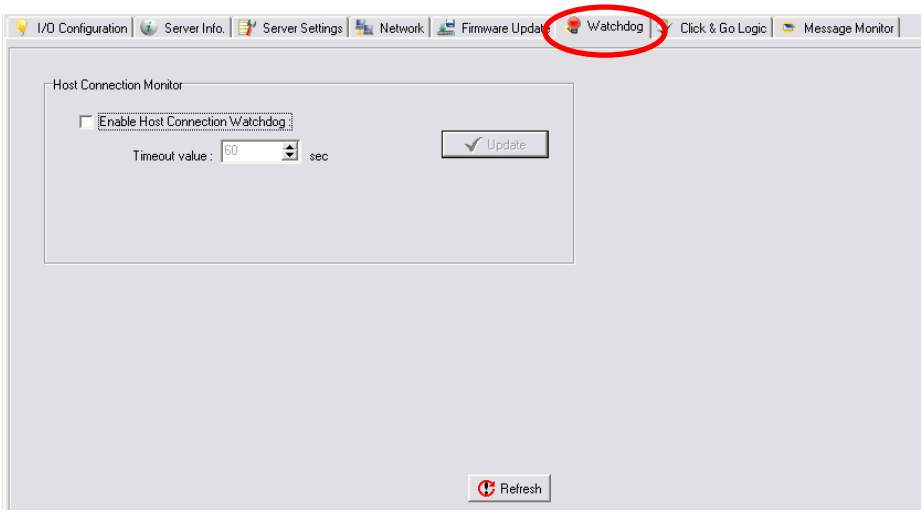
Do not interrupt the firmware update process! An interruption in the process may result in your device becoming unrecoverable.

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

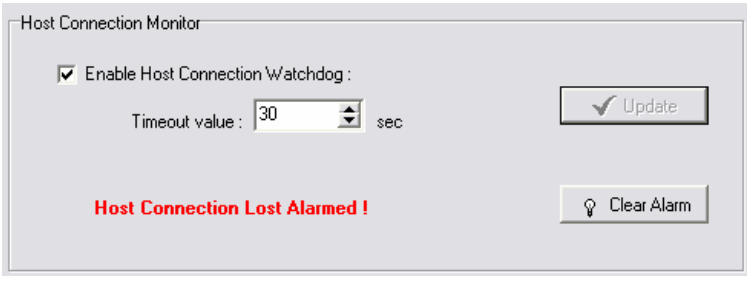
The firmware on any attached I/O expansion module, such as an ioLogik R2000 server, must be updated over the RS-485 bus. Firmware on cascaded modules cannot be updated over Ethernet.

Watchdog Tab

The Watchdog tab is available after you log in as an administrator. When enabled, the **Host Connection Watchdog** monitors the network connection. If the connection is lost for the specified **Timeout value**, the Watchdog will display a warning and activate the Safe Status settings for each DO channel and Event Counter channel. By default, the Watchdog is disabled. To enable the Watchdog, make sure that **Enable Host Connection Watchdog** is checked, set the **Timeout value**, and click **Update**.



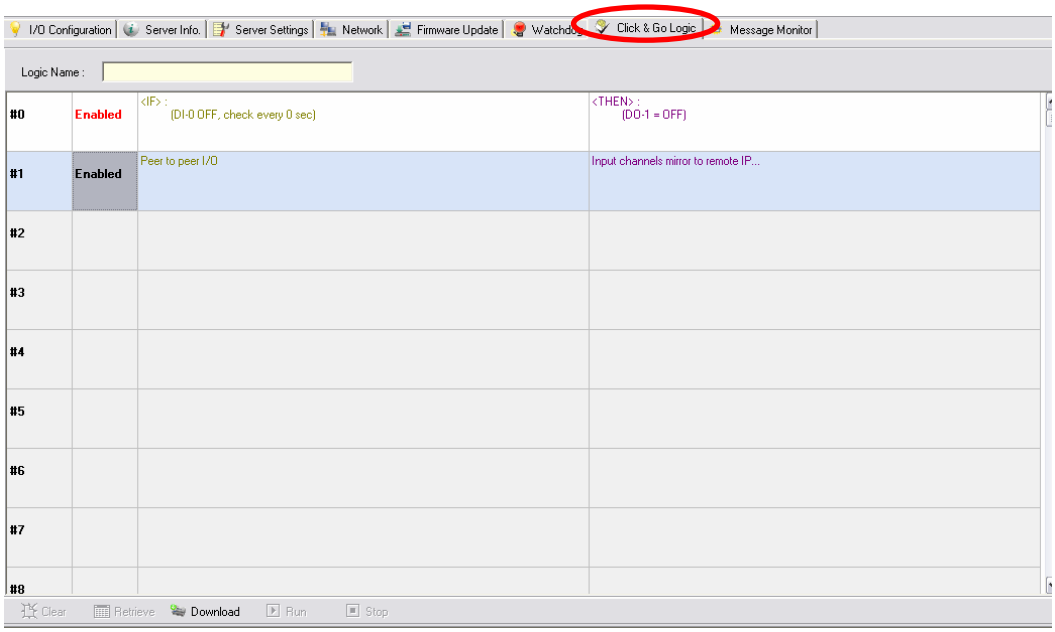
After the Watchdog is enabled, a warning will be displayed on the Watchdog tab if the network connection is lost.



After you restore the network connection, click **Clear Alarm** to reset the Watchdog and return to normal operation.

Click&Go Logic Tab

The Click&Go Logic tab is available after logging in as an administrator. This is where the ioLogik's Active Ethernet I/O system is configured. With a set of rules (known as a ruleset) defined through Click&Go, the ioLogik can report I/O status to a host as soon as user-defined I/O conditions have been met. Please refer to Chapter 5: Click&Go Logic for more detailed information.

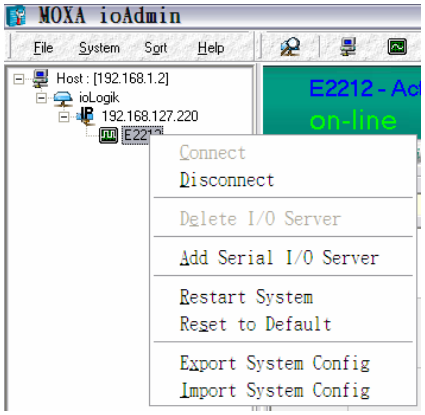


Changes in the Click&Go Logic tab are not effective until the ioLogik E2212 is restarted, just like changes made in other tabs. After logging back in as an administrator and returning to the Click&Go Logic tab, click **Download** to view the current ruleset. Click **Run** to activate the ruleset and **Stop** to deactivate it.

When a DI or DO channel is used in a Click&Go Logic rules, the channel's range and units will become fixed and 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 try connecting over the network to the selected ioLogik.

Disconnect

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

Delete I/O Server

Select this command to remove the selected ioLogik.

Add Serial I/O Server

Select this command to add an ioLogik I/O server by specifying its Unit ID.

Restart System

Select this command to restart the selected ioLogik. You will need to be logged in as an administrator to use this command.

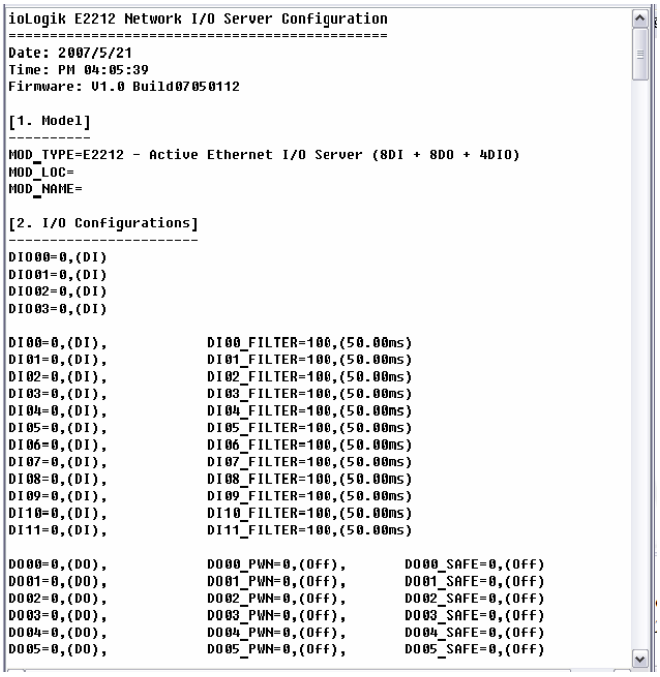
Reset to Default

Select this command to reset all settings on the selected ioLogik, including console password, to factory default values. You will need to be logged in as an administrator to use this command.

Export System Config

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

The following is a sample configuration file:



```
ioLogik E2212 Network I/O Server Configuration
==============================================
Date: 2007/5/21
Time: PM 04:05:39
Firmware: V1.0 Build07050112

[1. Model]
----------
MOD_TYPE=E2212 - Active Ethernet I/O Server (8DI + 8DO + 4DIO)
MOD_LOC=
MOD_NAME=

[2. I/O Configurations]
-----------------------
DIO00=0,(DI)
DIO01=0,(DI)
DIO02=0,(DI)
DIO03=0,(DI)

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)
```

Import System Config

Select this command to load a configuration for the selected ioLogik from a configuration text file. You will need to be logged in as an administrator to use this command. The new configuration will not take effect until the ioLogik has been restarted. This command may be used to restore a configuration after loading the factory defaults, or to duplicate a configuration to multiple ioLogik units.

Using TFTP to Import/Export Configuration

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

The following is an example using Windows TFTP:

Enter "**TFTP <host IP> GET ik2212.txt**" in the command line or the **Run**… dialog to obtain the configuration file from the ioLogik E2212. Enter "**TFTP <host IP> PUT ik2212.txt**" to copy the configuration file to the ioLogik E2212.

```
Transfers files to and from a remote computer running the TFTP service.

TFTP [-i] host [GET | PUT] source [destination]

  -i             Specifies binary image transfer mode (also called
                 octet). In binary image mode the file is moved
                 literally, byte by byte. Use this mode when
                 transferring binary files.
  host           Specifies the local or remote host.
  GET            Transfers the file destination on the remote host to
                 the file source on the local host.
  PUT            Transfers the file source on the local host to
                 the file destination on the remote host.
  source         Specifies the file to transfer.
  destination    Specifies where to transfer the file.
```

You must use "**ik2212.txt**" as the destination filename when copying a configuration file to the ioLogik E2000 unit. Otherwise, you will receive an error message as shown below:

```
Error on server : ioServer - Fail to write file !!cess Protocol
pcmail-srv      158/tcp                         #PCMail Server
snmp            161/udp                         #SNMP
snmptrap        162/udp    snmp-trap            #SNMP trap
print-srv       170/tcp                         #Network PostScript
bgp             179/tcp                         #Border Gateway Protocol
irc             194/tcp                         #Internet Relay Chat Protoco
l
ipx             213/udp                         #IPX over IP
ldap            389/tcp                         #Lightweight Directory Acces
s Protocol
https           443/tcp    MCom
https           443/udp    MCo
https           443/tcp    MCom
https           443/udp    MCo?
```

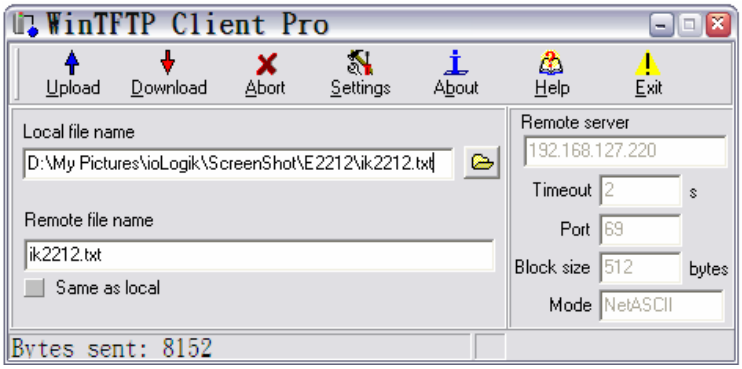
You can use TFTP in a batch file to transfer configuration files for different units. For example, you might have two configuration files that need to be copied to two different servers: **ik2212_1.txt** for 192.168.127.253, and **ik2212_2.txt** for 192.168.127.254. A batch file could be written as follows:

tftp 192.168.127.253 put ik2212_1.txt ik2212.txt

tftp 192.168.127.254 put ik2212_2.txt ik2212.txt

ATTENTION

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



4
Web Console Configuration

The ioLogik E2212's built in web console can be used to configure many of the ioLogik's settings. The following topics are covered:

- **Introduction to the Web Console**
- **Basic Settings**
- **Network Settings**
  - General Settings
  - Ethernet Configurations
  - 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 web console is a browser-based configuration utility. When the ioLogik 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.

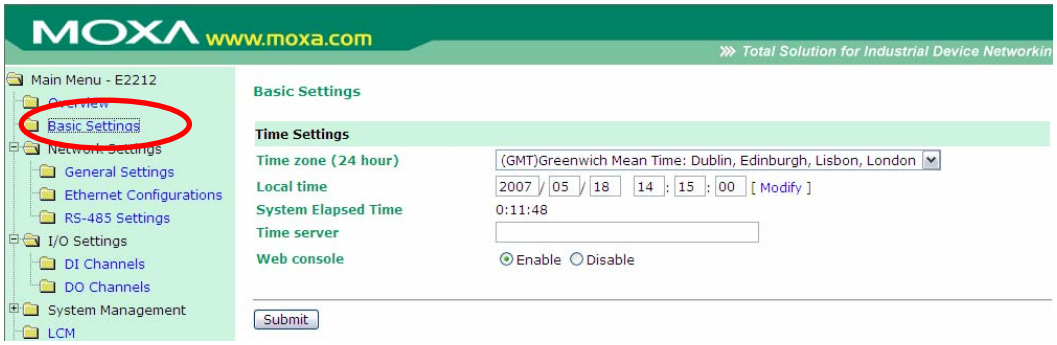
The left panel is the navigation panel and contains an expandable menu tree for navigating among the various settings and categories. When you click on a menu item in the navigation panel, the main window will display the corresponding options for that item. Configuration changes can then be made in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

You must click **Submit** 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 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 without saving your configuration, the ioLogik will discard all submitted changes.

Basic Settings

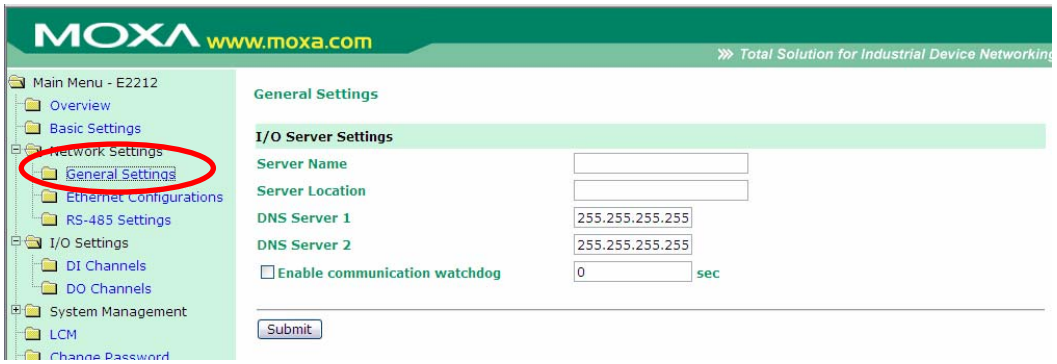
On the Basic Settings page, you may set the ioLogik's system time or provide the IP address of a time server for time synchronization.



Network Settings

General Settings

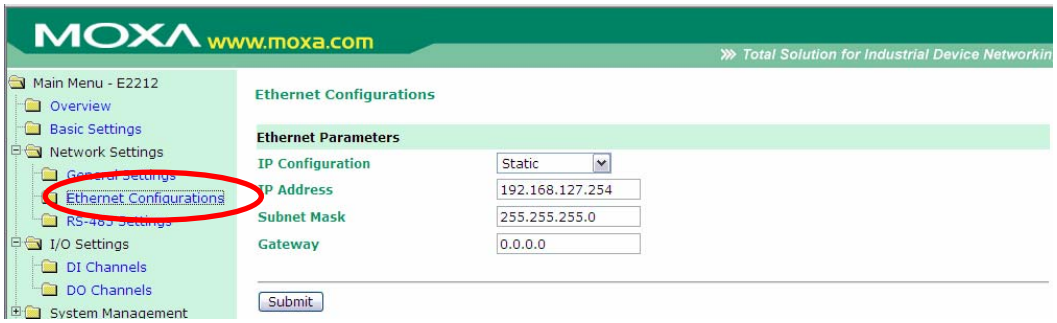
On the General Settings page, you may assign a server name and location to assist you in differentiating between different I/O servers. You may also enable the Host Communication Watchdog and define the timeout value.



When enabled, the **communication watchdog** monitors the network connection. If the connection is lost for the specified number of seconds, the watchdog will activate the Safe Status settings for each DO channel and Event Counter channel. By default, the watchdog is disabled. To enable the Watchdog, select **Enable communication watchdog** and set the timeout value.

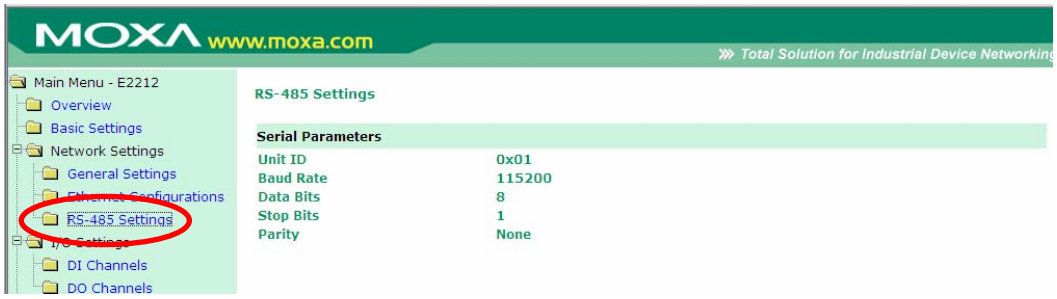
Ethernet Configurations

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



RS-485 Settings

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

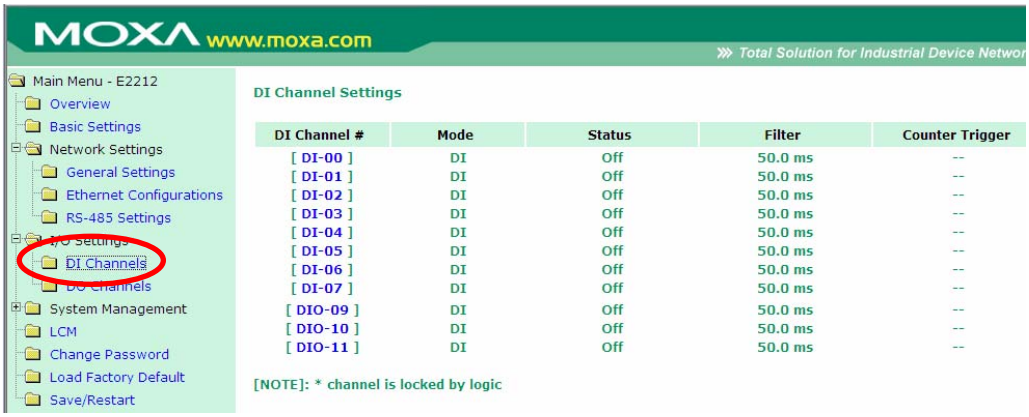


I/O Settings

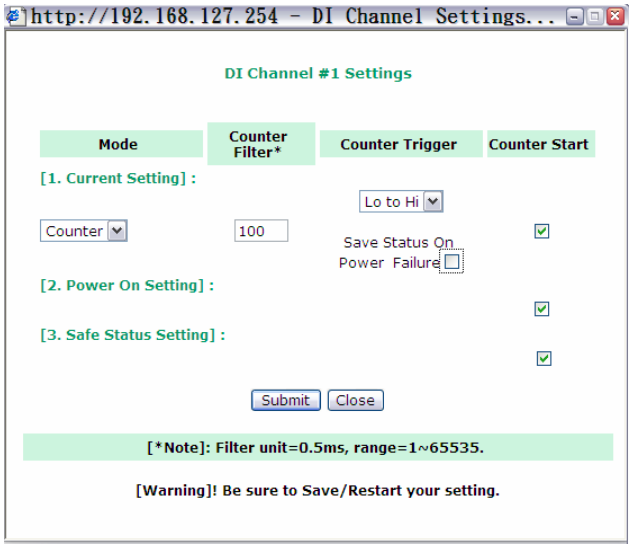
You can view the settings for DI and DO channels in the web console. DIO channels will be listed according to the configured channel type (DI or DO). The DIO channel type can only be changed using ioAdmin and cannot be changed from within the web console. Please refer to Chapter 3 for additional information on using ioAdmin.

DI Channels

On the DI Channels page, you may view the status of each DI (digital input) channel. Both fixed DI channels and DIO channels that are acting as DI channels will be displayed.



You may click on a channel for that channel's configuration options. DI channels can operate in DI mode or Event Counter mode. Software filtering is used to control switch bounces. The filter is configurable in multiples of 0.5 ms and accepts values between 1 and 65535. For example, a setting of **2** would mean a 1 ms filter (2 × 0.5 ms). For Event Counter channels, make sure that the filter is not set to 0, otherwise the counter will never be activated.



A DI channel can be set to "DI" or "Event Counter" mode. In DI mode, the specifications are as follows:

Type	Logic 0 (OFF)	Logic 1 (ON)
Dry contact	close to GND	open

Type	Logic 0 (OFF)	Logic 1 (ON)
Wet contact	0 to 3 V	10 to 30 V

In Event Counter mode, the channel accepts limit or proximity switches and counts events according to the ON/OFF status. When "Lo to Hi" is selected, the counter value increases when the attached switch is pushed. When "Hi to Lo" is selected, the counter value increases when the switch is pushed and released.

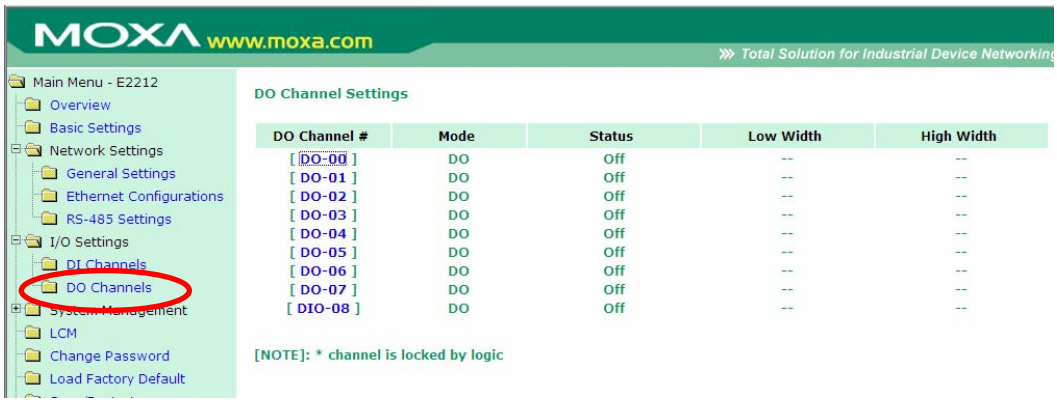
By default, the Event Counter value will be reset to zero if power is disconnected. If you select **Save Status on Power Failure**, the Event Counter value will be saved when power is disconnected. When power is reconnected, the value will be as you left it. You can set **Power On Setting** to have counting resume immediately.

DI channels that are in Event Counter mode can begin counting automatically when the ioLogik is powered on. To activate this function, enable **Power On Setting.** If **Power On Setting** is not enabled, the channel will only start counting events when specified by a Modbus command or Click&Go Logic rule.

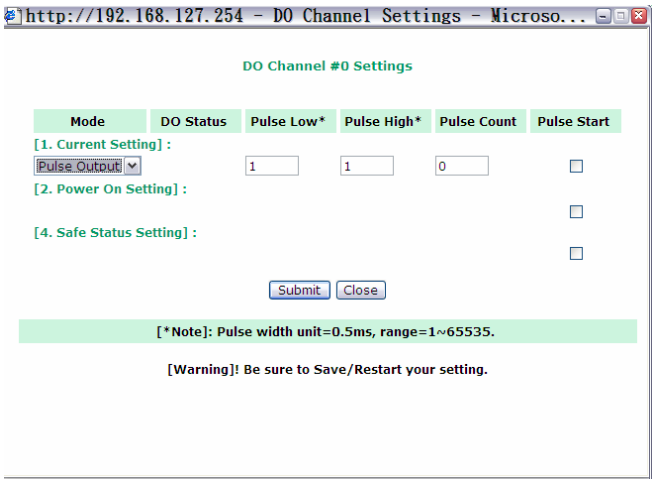
You can control how an Event Counter channel behaves during a network disconnection with the **Safe Status Setting** and the Host Connection Watchdog. With the Watchdog disabled, the Event Counter continues counting events even when there is a network disconnection. With the Watchdog enabled, the **Safe Status Setting** specifies whether the Event Counter continues or suspends counting when there is a network disconnection. Counting will continue if **Safe Status Setting** is enabled; counting will be suspended if **Safe Status Setting** is not enabled.

DO Channels

On the DO Channels page, you may view the status of each DO (digital output) channel. Both fixed DO channels and DIO channels that are acting as DO channels will be displayed.



You may click on a channel for that channel's configuration options. 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.



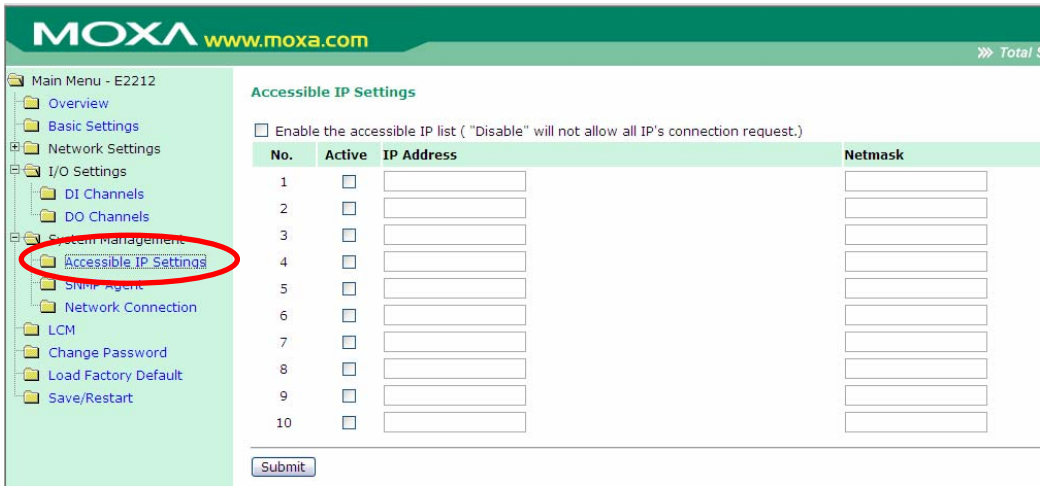
By default, DO and Pulse Output channels are set to "off" when the ioLogik is powered on. You can set a channel to automatically turn on or begin pulse output when the ioLogik is powered on, by enabling **Power On Setting.**

You can control how a DO or Pulse Output channel behaves during a network disconnection with the **Safe Status Setting** and the Host Connection Watchdog. With the Watchdog disabled, there is no change to the channel's status when there is a network disconnection. With the Watchdog enabled, the **Safe Status Setting** determines whether the channel will turn off, on, or begin pulse output when there is a network disconnection. The channel will turn on or begin pulse output if **Safe Status Setting** is enabled; the channel will turn off if **Safe Status Setting** is not enabled.

System Management

Accessible IP Settings

On the Accessible IP Settings page, you may control network access to the ioLogik 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.



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

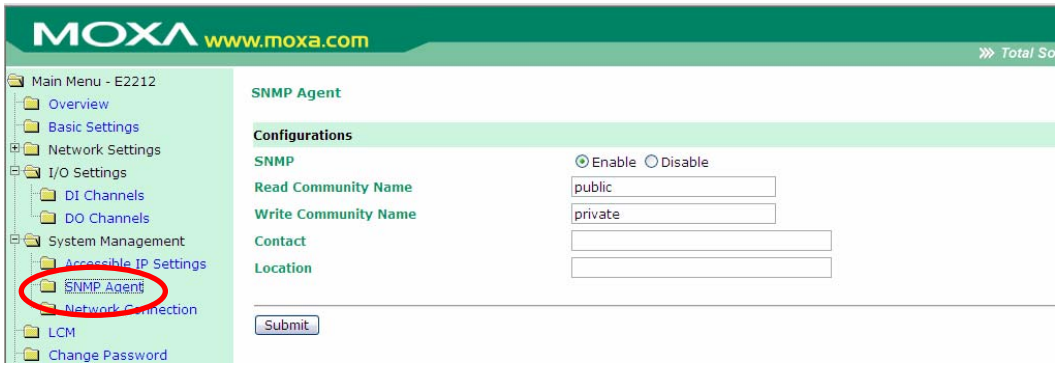
- **To allow access to a specific IP address**
  Enter the IP address in the corresponding field; enter **255.255.255.255** for the netmask
- **To allow access to hosts on a specific subnet**
  For both the IP address and netmask, use **0** for the last digit (e.g., **192.168.1.0** and **255.255.255.0**).
- **To allow unrestricted access**
  Deselect the Enable the accessible IP list option.

The following table shows additional configuration examples.

Allowed Hosts	IP address	Netmask
Any host	Disable	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

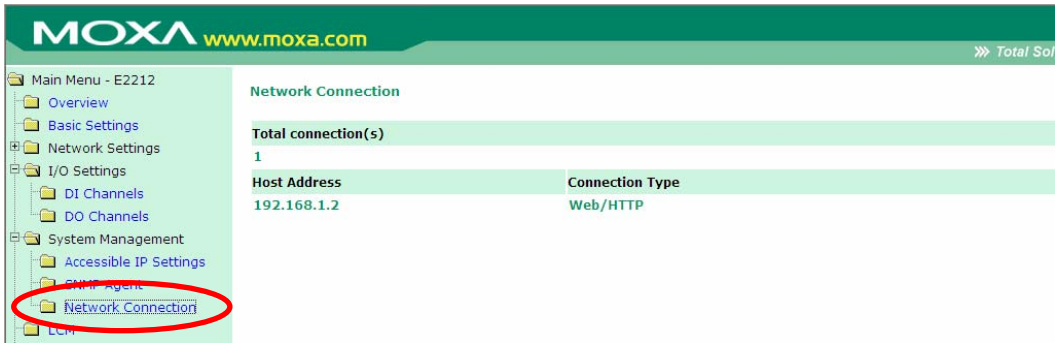
SNMP Agent

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



Network Connection

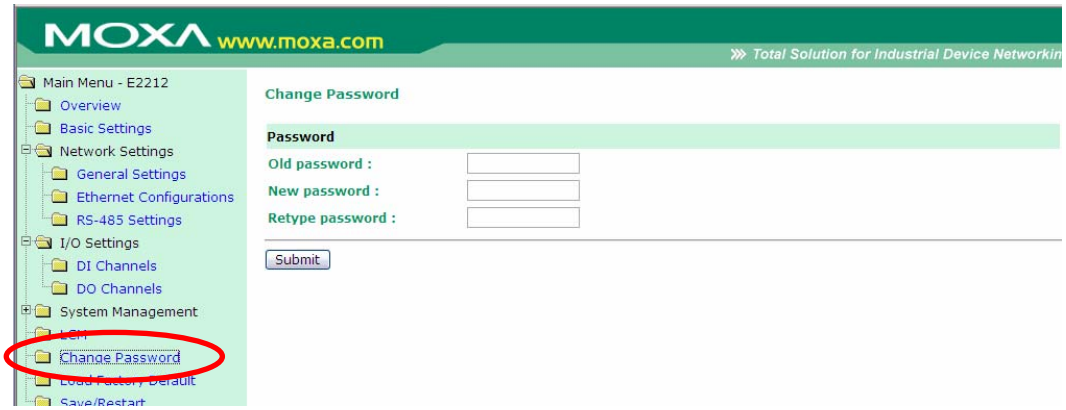
On the Network Connection page, you may view the TCP connections from other hosts. This may assist you in the management of your devices.



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 E2212'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 **New password** and **Confirm password** blank.

ATTENTION

If you forget the password, the ONLY way to configure the **ioLogik** is by using the reset button to load the factory defaults.

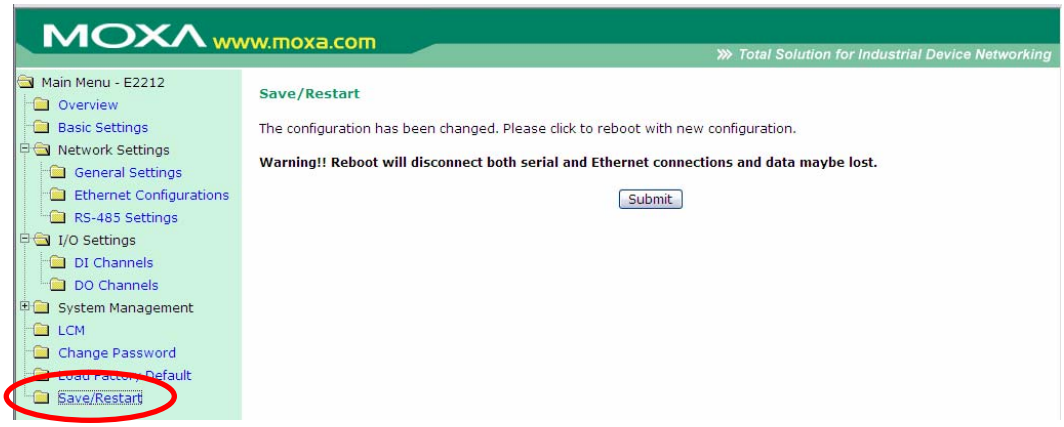
Before you set a password for the first time, it is a good idea to export the configuration to a file when you have finished setting up your ioLogik. Your configuration can then be easily imported back into the ioLogik. This will be useful if the ioLogik has been reset to factory defaults due to a forgotten password or for other reasons.

Load Factory Default

This function will reset the ioLogik to factory default settings. All previous settings including the console password will be lost.

Save/Restart

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



5
Click&Go Logic

Click&Go Logic was developed by MOXA to provide an easy way to program your ioLogik E2212 for Active Ethernet I/O operation. In the chapter, we will show you how Click&Go Logic works and how to use it to develop your Active Ethernet I/O system.

The following topics are covered in this chapter:

Overview

The ioLogik E2212's Active Ethernet I/O system eliminates the need for host computers to continually poll I/O devices for status. Instead, the server itself is able to monitors the status of each I/O device and take the appropriate action when the I/O status satisfies a user-defined condition. For example, the ioLogik E2212 could be configured to send a TCP/UDP message only when the switch attached to DI-0 is turned on. This structure results in a much improved response time and a much reduced load on the host computer's CPU and on network bandwidth.

The Active Ethernet I/O system is easily configured using MOXA's Click&Go Logic. With Click&Go Logic, you can easily and intuitively configure when and how I/O information is transmitted over the network. Simple If – Then statements are used to specify conditions that are required for certain actions to take place. Up to three conditions and three actions can be combined in any one rule, and you may define up to 16 rules. Supported actions include sending SNMP traps or TCP/UDP messages to up to 10 hosts at a time.

Click&Go can also be used to map an input channel on one ioLogik E2212 to an output channel on another ioLogik E2212, for peer-to-peer I/O communication. Up to five different IP addresses can be entered as the output destination. Peer-to-peer I/O provides a very flexible and easy way to extend I/O signals or connect remote on/off switches. It can be used, for example, to replace or extend the wiring of PLC or DCS systems over Ethernet.

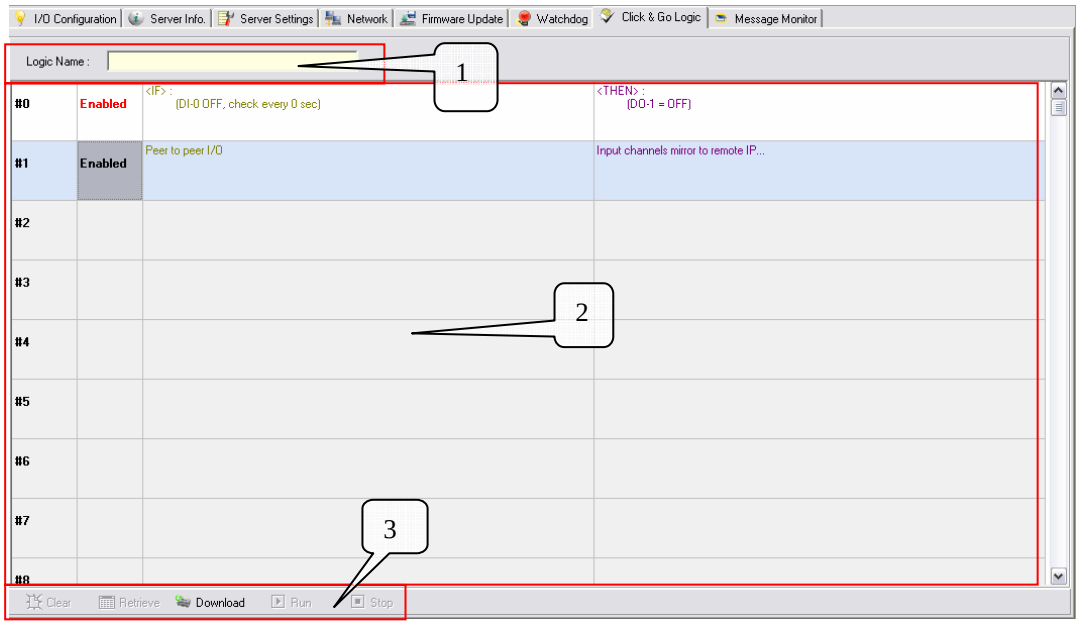
Features

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
- Up to 10 simultaneous IP destinations for TCP/UDP messaging
- Up to 5 simultaneous IP destinations for peer-to-peer I/O
- Configurable interval for time-triggered events

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:

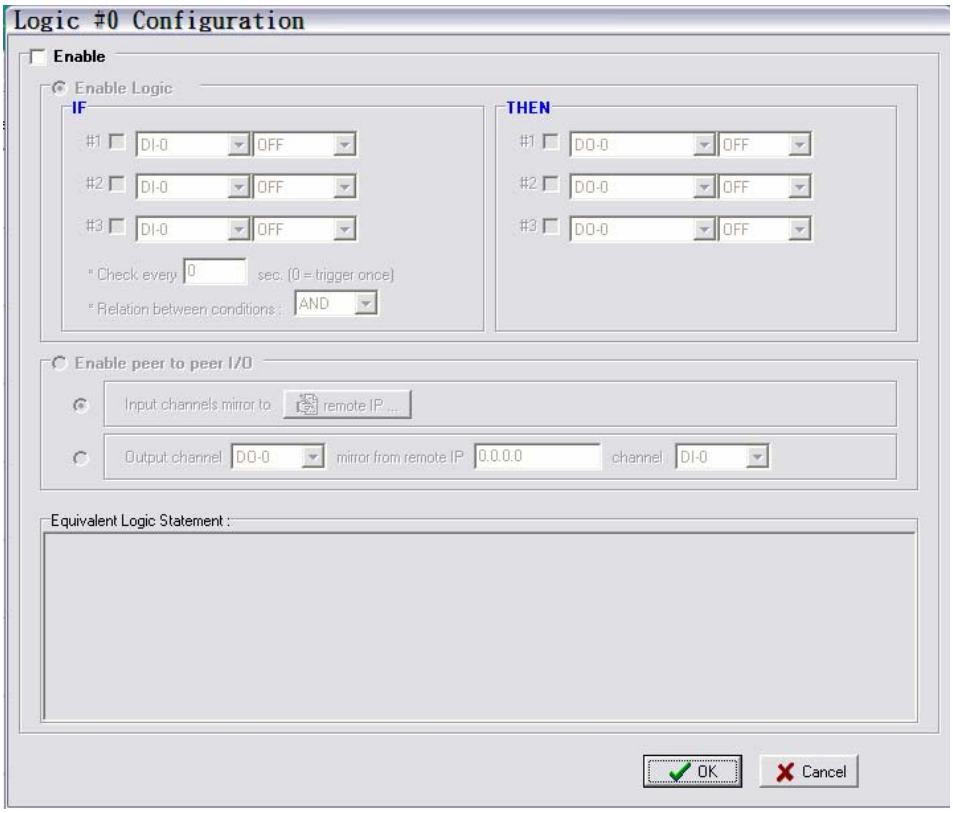


Click&Go Logic Tab
1. **Logic Name**: In this field, you may assign a name for the set of rules.
2. **Rules List**: In this area, each rule's conditions, actions, and status are displayed.
3. **Ruleset Management Bar**: In this area, you manage the ruleset.

Working with Rules

Rules are the building blocks of your Active Ethernet I/O system. With rules, you define the exact trigger conditions for transmission of I/O information as well as the content and destination of that information. DO operation can also be automated through DI trigger conditions or mapped directly to a remote DI channel on another ioLogik E2212.

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 configuration window is where the rule is defined. There are two types of rules that can be defined: Logic rules and peer-to-peer I/O rules. Logic rules are used for DI event-based triggers, whereas peer-to-peer I/O rules are used for mapping I/O channels between two ioLogik E2212 units.

The **Equivalent Logic Statement** at the bottom shows a real-time text-based summary of the rule that you are defining. 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.

Defining Logic Rules

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. As soon as the IF conditions are satisfied, the specified THEN action is performed. For example, an alarm can be activated when a door is opened. Use the pull downs to specify the conditions and units of measurement (e.g. DI-0=OFF). The available operators are =, <, >, <=, and >=.

Edge detection can be used to refine the conditions. For example, the condition **DI-0=OFF** is satisfied for as long as DI-0 remains off. The condition **DI-0=ON to OFF**, however, is only satisfied only at the instant that DI-0 turns off.

You may want an action to be repeated for as long as the conditions remain satisfied. For example, instead of turning on an alarm, you may wish to send an alert message every five minutes for as long as the door is open. You can set a repeating interval in the **Check every ___ sec** field. The THEN action will be repeated at the specified interval, as long as the set of IF conditions is satisfied. Note that if edge detection is used in the IF conditions, the **Check every ___ sec** field will be of no use, because edge-detection conditions can only satisfied for an instant rather than over a sustained period of time. More information is provided below.

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

You may wish to set up a heartbeat status message or action that repeats at regular intervals as long as the I/O server is operational. In this case, you can set up a **Time Trigger** rule as the first IF condition. For example, you can set a 3600 second interval so that a TCP status message is sent every hour. When using Time Trigger with pulse output, make sure that trigger interval is at least one second greater than the output pulse cycle.

IF Conditions	Operators	Remark
DI-*x*	ON, OFF, ON to OFF, OFF to ON	Depends on DI type
Counter-*x*	=,>,<,>=,<=,Change	Max value 4,294,967,295
Time Trigger (Condition #1 only)	N/A	Max value 4,294,967,295 for time interval

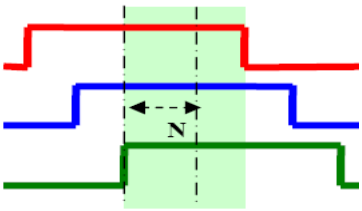
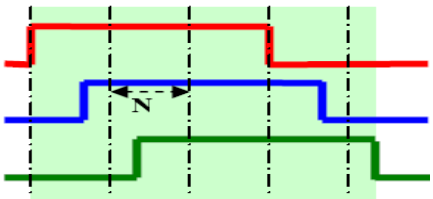
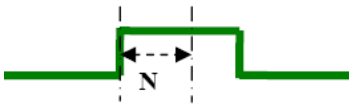
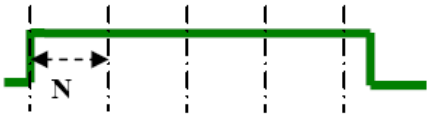
More Info on Repeat Interval vs. Edge Detection

The **Check every ___ sec** field is designed to allow THEN actions to be repeated when the specified conditions are sustained. However, if a condition is based on edge detection (i.e., **ON to OFF** or **OFF to ON**), it cannot be sustained, and the **Check every ___ sec** field will have no effect.

The following scenarios illustrate how edge detection affects the **Check every ___ sec** field. In each diagram, the statuses of three sensors are shown over a period of time, with a high signal corresponding to a "true" condition. The green shaded area shows the duration of time that the IF conditions have been met.

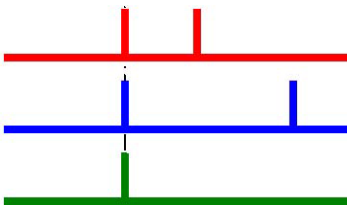
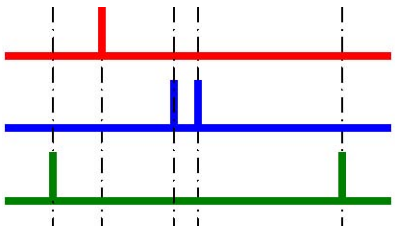
No Edge Detection

In this scenario, the rule checks each sensor for "on" status, so edge detection is not involved. As long as the sensors remain on, the required conditions are satisfied, and the THEN actions will repeat at interval *N*.

DI-0 = ON DI-1 = ON DI-2 = ON		
Relation between conditions	AND	OR
"IF" conditions satisfied		
Repeat interval	"Check every *N* sec"	"Check every *N* sec"
"THEN" action triggered		

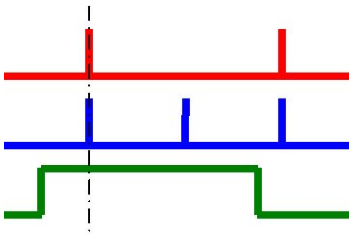
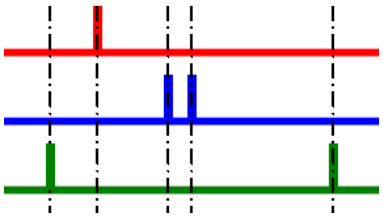
Edge Detection for All Conditions

In this scenario, the rule checks each sensor for a change from "off" to "on" status, meaning only edge detection conditions are used. As soon as a sensor changes from "off" to "on", the condition is satisfied, but only for that instant. Right after that instant, the condition is no longer satisfied because it is no longer changing from "off" to "on". The repeat interval will have no effect, since edge conditions cannot be sustained over a period of time.

DI-0 = OFF to ON DI-1 = OFF to ON DI-2 = OFF to ON		
Relation between conditions	AND	OR
"IF" conditions satisfied		
Repeat interval	N/A	N/A
"THEN" action triggered		

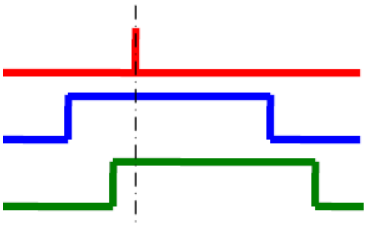
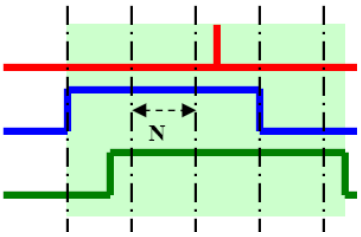
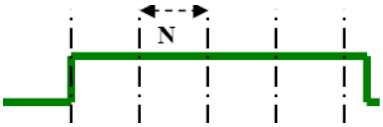
Edge Detection for Two Conditions

In this scenario, the rule checks DI-0 and DI-1 for a change in status and DI-2 for status only. The repeat interval will not have an effect if the AND relationship is used, because the two edge conditions can never be sustained over a length of time. With the OR relationship, the IF conditions will be satisfied as long as DI-2 is "on", and the THEN actions will be triggered over interval *N*.

DI-0 = OFF to ON DI-1 = OFF to ON DI-2 = ON		
Relation between conditions	AND	OR
"IF" conditions satisfied		
Repeat interval	N/A	"Check every *N* sec"
"THEN" action triggered		

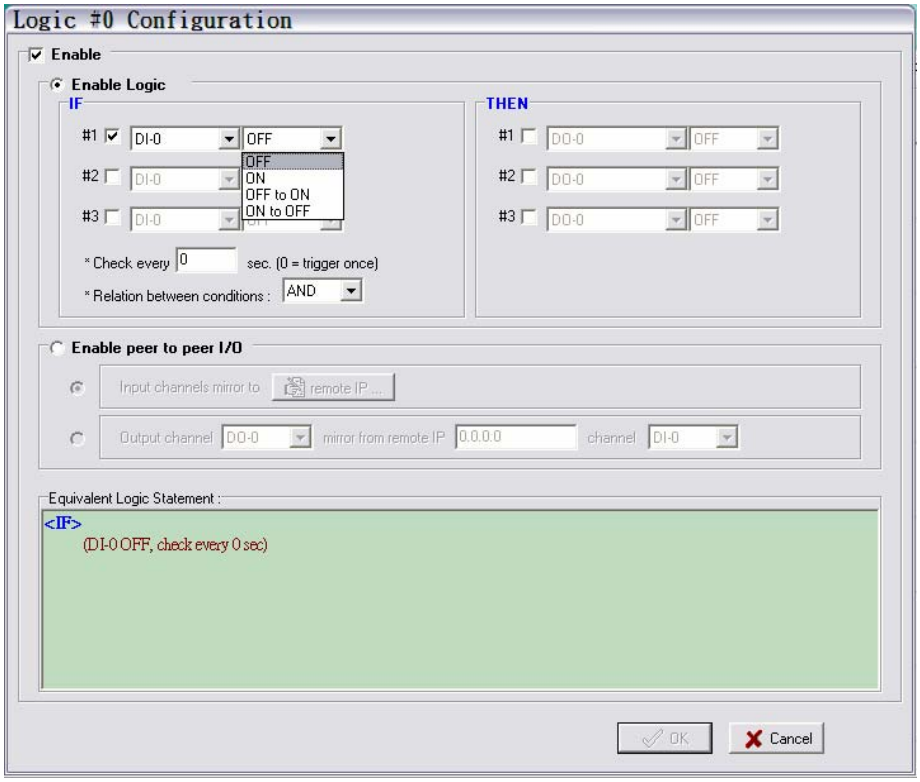
Edge Detection for One Condition

In this scenario, the rule checks DI-0 for a change in status and DI-1 and DI-2 for status only. The repeat interval will not have an effect if the AND relationship is used, because the edge condition for DI-0 can never be sustained over a length of time. With the OR relationship, the IF conditions will be satisfied as long as DI-1 or DI-2 is "on", and the THEN actions will be triggered over interval *N*.

DI-0 = OFF to ON DI-1 = ON DI-2 = ON		
Relation between conditions	AND	OR
"IF" conditions satisfied		
Repeat interval	N/A	"Check every *N* sec"
"THEN" action triggered		

THEN Actions

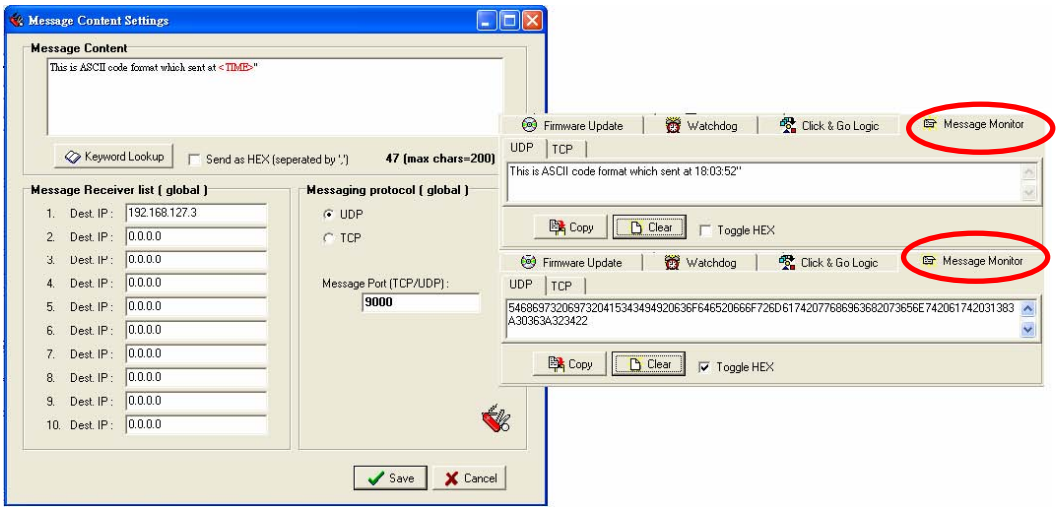
Under the **THEN** column, you may specify up to 3 actions that will be performed when the conditions under the **IF** column are satisfied. Possible actions include changing the status of a DO channel, starting or stopping an Event Counter, or sending a message by SNMP trap, TCP, UDP, or e-mail. For message transmission, click the memo icon (···) to configure additional message parameters.



THEN Actions	Operators	Remark
Counter-*x*	Reset	Depends on DI type
DO-*x*	ON/OFF	Depends on DO type
Pulse Output-*x*	Start/Stop	Depends on DO type
SNMP Trap	1 to 20	Details below
Active Message	N/A	Details below
Email	N/A	Details below

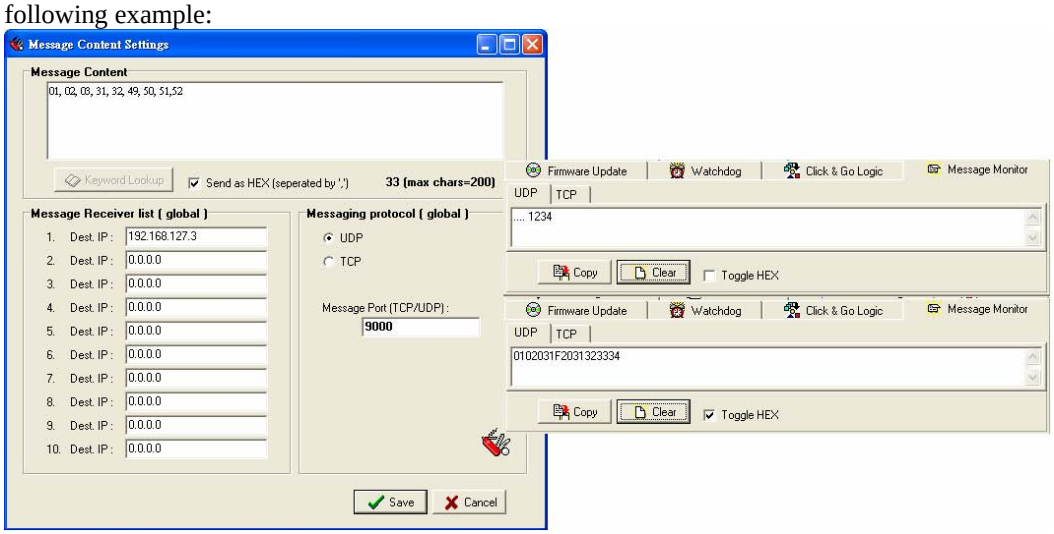
Active Message

The **Active Message** option sends a customized message to one or more IP destinations by TCP or UDP. Click the memo icon to configure the message and parameters. When a message has been triggered, you may view the outgoing message in the Message Monitor tab. In the Message Monitor tab, you may view messages in HEX by selecting **Toggle HEX**.



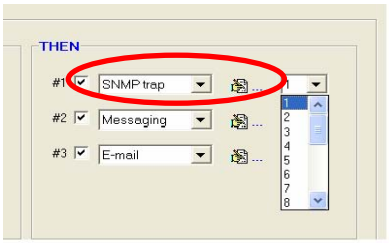
After clicking the memo icon, enter your desired message in the **Message Content** window. You may select TCP or UDP as the messaging protocol, but you must use the same protocol for all Click&Go Logic rules. Dynamic fields such as time, date, IP address, and I/O status may be inserted in your message by clicking **Keyword Lookup**. Up to 10 recipients can be specified in the **Message Receiver list**. The **Message Port** is set to 9000 by default and can be modified as necessary to work with your firewall. Messages are sent in ASCII by default, but can be sent in HEX by selecting **Send as HEX**.

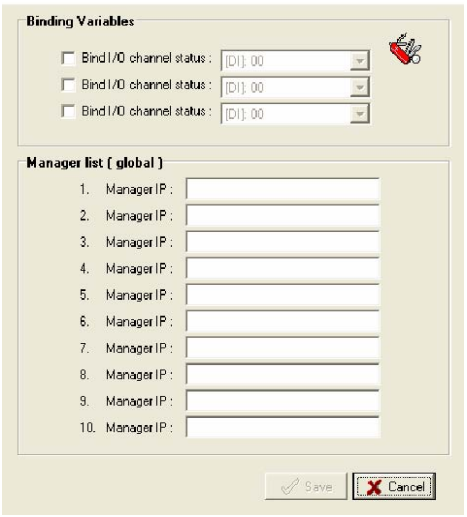
When sending a message in HEX, each HEX value must be delimited by commas. Note that certain numbers are control characters that will not show up in the Message Monitor, as shown in the following example:



SNMP trap

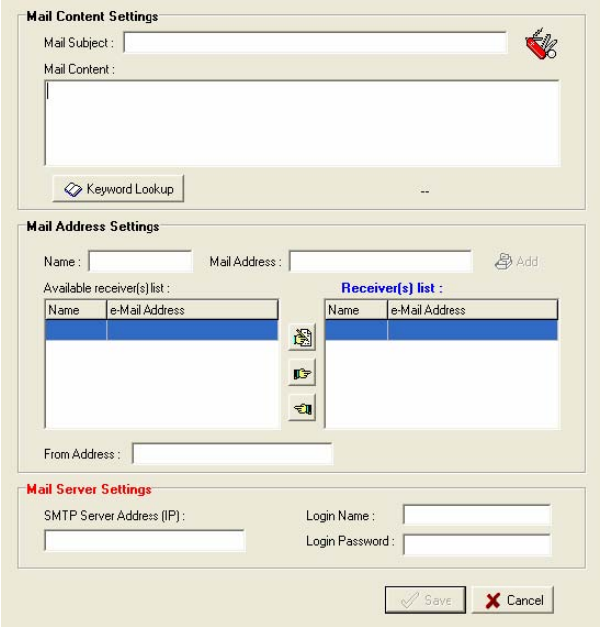
The **SNMP trap** option sends an SNMP trap to one or more IP destinations. You may select a trap number between 1 and 20. (You may need to consult with your network administrator to determine how trap numbers will be used and defined in your network.) Click the memo icon to specify up to 10 recipients for the SNMP trap. You can also bind the status of up to three I/O channels within each trap.





E-mail

The **E-mail** option sends a customizable e-mail to one or more e-mail addresses. Click the memo icon to configure the message and parameters.



Enter the message content in the **Mail Content** area. Dynamic fields such as time, date, IP address, and I/O status may be inserted in your message by clicking **Keyword Lookup**.

If you provided SMTP server information, the **Available receiver(s) list** should contain a list of available e-mail addresses for your network environment. Specify the recipients of the e-mail message by using the finger icons to move addresses to and from the **Receiver(s) list**. The e-mail message will be sent to all addresses listed in the **Receiver(s) list**. You may modify an e-mail address by clicking the memo icon.

To manually add e-mail addresses to the **Available receiver(s) list**, enter the **Name** and **Mail Address** and click **Add**. Once the address has been added to the **Available receiver(s) list**, use the finger icons to move it to or from the **Receiver(s) list**.

In the **From Address**, enter the e-mail address that recipients will see in the e-mail's From field.

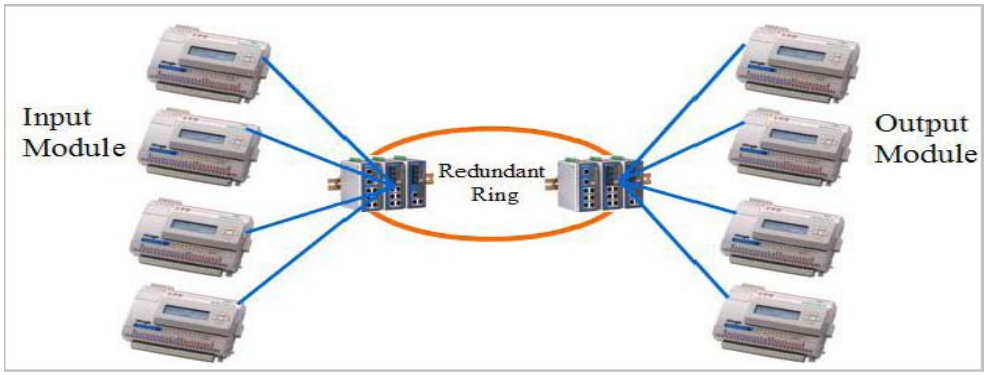
Under Mail Server Settings, you must configure the IP address of the SMTP server with your username and password.

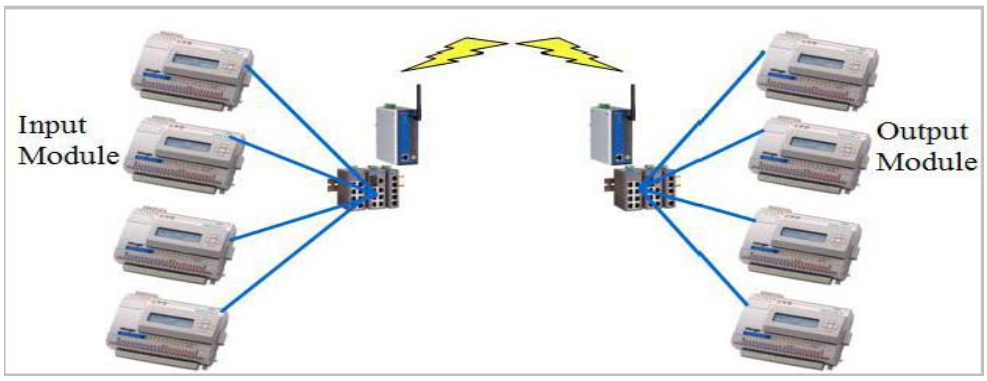
Defining Peer-to-Peer I/O Rules

A basic use of digital input and output is to connect a pushbutton to an LED. The pushbutton is the digital input, with on/off status controlled by a user, and the LED is the digital output, with on/off status controlled by the button. With peer-to-peer I/O on the ioLogik E2212, this operation is mapped over Ethernet from a DI channel on one ioLogik E2212 to the DO channel on another ioLogik E2212. Peer-to-peer I/O makes it easy for a pushbutton to have direct control of an LED in another room, building, or even city.

The ioLogik supports peer-to-peer I/O for simple one-to-one mapping as well as one-to-many and many-to-many mapping. A single DI channel can be mapped to up to five remote DO channels.

Existing Ethernet

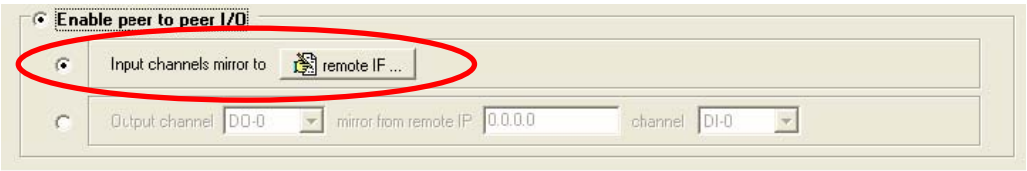


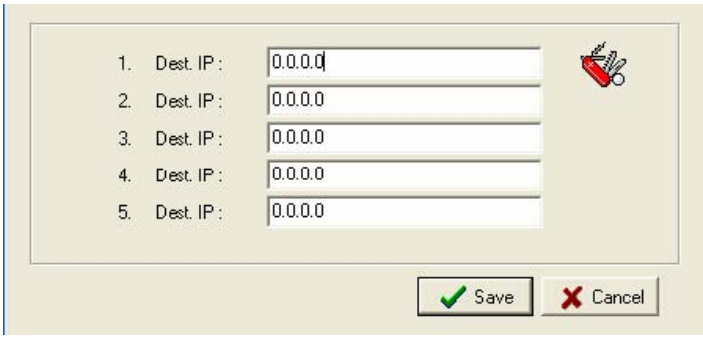


Peer-to-peer I/O is configured in two steps. On the input module, a Click&Go Logic rule is defined to stream a DI channel's signals to one or more output modules. On the output module, a Click&Go Logic rule is defined to receive an input module's DI channel signals and mirror them on a DO channel.

Configuring Input Module

The peer-to-peer I/O input module is configured using a single Click&Go rule. In the Click&Go tab, start a new rule, select **Enable peer-to-peer I/O**, and then select **Input channels mirror to**. Click **remote IP…** and enter up to five IP addresses as destinations. Each IP address should belong to an ioLogik E2212 unit that will act as an output module for peer-to-peer I/O operation. If you wish, you may set up additional peer-to-peer I/O rules in order to mirror input channels to more than five destinations. If all 16 rules are used for peer-to-peer I/O, a total of 80 destination IP addresses can be entered.



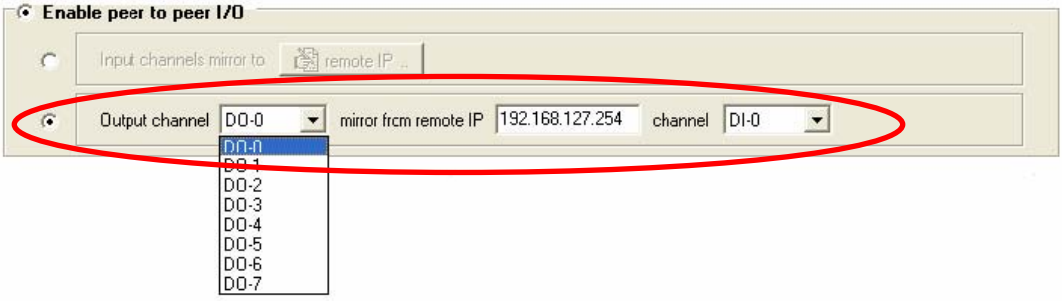


Only DI channels that are set to DI mode can be mirrored on the output module. Peer-to-peer I/O will not function with Event Counter channels.

The ioLogik E2212 can simultaneously act as both an input module and an output module. Input module operation would be configured in one rule, and another rule would be used to configure output module operation.

Configuring Output Module

The peer-to-peer I/O output module is configured using one Click&Go rule for each DO channel that is mirroring a remote DI channel. In the Click&Go tab, start a new rule, select **Enable peer-to-peer I/O**, and then select **Output channel**. Specify the DO channel that will mirror the remote input channel, the IP address of the input module, and the DI channel on the input module whose signals will be mirrored. The input module must have specified the output module's IP address as a destination IP.



When properly configured, the specified DO channel will mirror the signals received by the specified remote DI channel, as if the channels were physically connected. If the remote DI channel's status changes to "on", the specified DO channel's status will change to "on". If the remote DI channel's status changes to "off", the DO channel's status will change to "off".

Only DO channels that are set to DO mode can mirror remote DI channels. Pulse Mode channels cannot be used for peer-to-peer I/O operation.

Once both the input and output modules have been configured, start peer-to-peer I/O operation by activating the rulesets on both units and providing a valid network connection to each unit.

Working with Click&Go Rulesets

Activating the Ruleset

The rules that are displayed in the Click&Go Logic tab comprise the current ruleset, which acts as the brain of your Active Ethernet I/O system. The ruleset must be activated for the ioLogik to commence Active Ethernet I/O operation, as follows:

1. The ruleset must first be downloaded from ioAdmin onto the ioLogik E2212. You may do so by clicking **Download** in the Ruleset Management bar.
2. After the ruleset has been downloaded, you must restart the ioLogik E2212. 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 E2212 has restarted, the ruleset must be activated. After logging into ioAdmin as an administrator, go to the Click&Go Logic tab and click **Run** in the Ruleset Management bar. The rules in the ruleset will now be active.

When the ruleset has been activated, it will remain active even when the ioLogik is disconnected from the host computer or from the network. If the ioLogik is turned off, Active Ethernet I/O operation will resume when it is turned back on. This allows you to use the ioLogik E2212 for PC-independent automation.

Ruleset Management Bar

- **Clear:** This erases the ruleset in both ioAdmin and the ioLogik E2212.
- **Retrieve:** This copies the ruleset from the ioLogik E2212 into ioAdmin.
- **Download:** The copies the ruleset from ioAdmin onto the ioLogik E2212.
- **Run:** This activates the ruleset that the ioLogik booted up with.
- **Stop:** This de-activates the Click&Go ruleset and returns the ioLogik to normal, passive operation.

Ruleset Import/Export

The ioLogik's system configuration may be imported and exported. This configuration includes the current ruleset. As you make changes to a ruleset, you may export the system configuration in order to save that ruleset.

Application Examples

Local I/O Control

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 E2212 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 **#0** in the **Rules List**. The rule configuration window will appear.
3. Make sure that **Enable** in the upper left hand corner is checked.

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

Active I/O Messages

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.

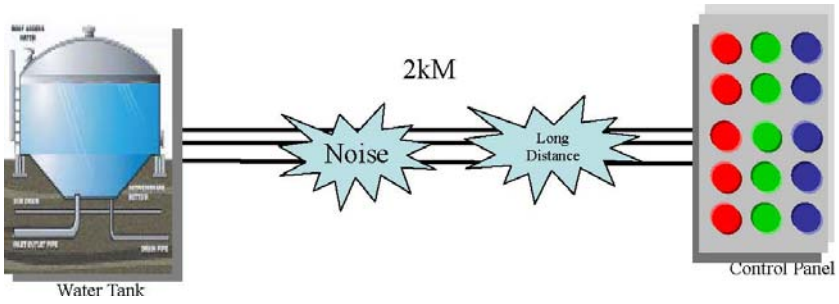
Rule 0: IF DI-0=ON, THEN Message

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 **#0** in the **Rules List**. The rule configuration window will appear.
3. Make sure that **Enable** in the upper left hand corner is checked.
4. Select **Enable Logic**.
5. Select **DI-0** as your condition in the first **IF field**, and set its value to **ON**.
6. Select **Active Message** as your action in the first **THEN field**.
7. Click the memo button. The Message parameters window will appear.
8. Click **Keyword Lookup**. In the Variable List that pops up, click <**Server_time**>.
9. Click **Save**.
10. Click **Download** on the **Ruleset Management Bar**.
11. Select **Yes** when asked to restart and wait until the server has restarted and is back on-line.
12. Log in on the **Server Settings** tab, then go to the **Click&Go Logic** tab.
13. Click **Run** on the Ruleset Management Bar. The RDY LED will be flashing green, showing that the ioLogik is now operating as an Active Ethernet I/O server, using the ruleset that was just defined.

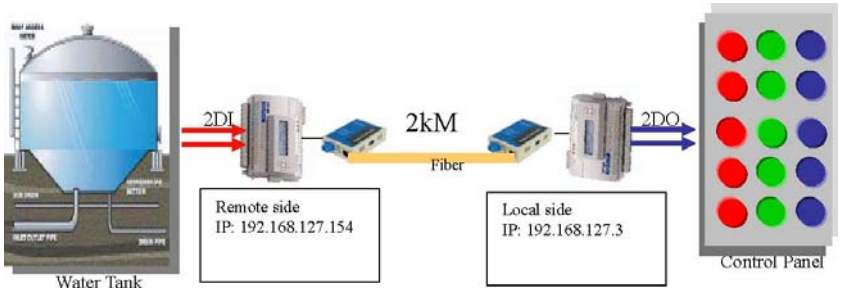
Peer-to-Peer I/O

In this scenario, we are using peer-to-peer I/O to replace 2 km of I/O wiring between a control panel and a water tank.

Before



After



Input Module (192.168.127.154)

Rule 0: Send I/O status to 192.168.127.3

1. In ioAdmin, make sure that you have searched for and selected the correct ioLogik E2212 server, at IP address 192.168.127.154. Also, make sure you are logged in on the **Server Settings** tab. Go to the **Click&Go Logic** tab.
2. Double click **#0** in the **Rules List**. The rule configuration window will appear.
3. Make sure that **Enable** in the upper left hand corner is checked.
4. Select **Enable peer-to-peer I/O**.
5. Select **Input channels mirror to** and click **remote IP…**
6. In the **1. Dest. IP:** field, enter **192.168.127.3** and click **OK** to save this setting.
7. Click **OK** to finish configuring the rule.
8. Click **Download** on the Ruleset Management Bar.
9. Select **Yes** when asked to restart and wait until the server has restarted and is back on-line.
10. Log in on the **Server Settings** tab, then go to the **Click&Go Logic** tab.
11. Click **Run** on the Ruleset Management Bar. The RDY LED will be flashing green, showing that the ioLogik is now operating as an Active Ethernet I/O server, using the ruleset that was just defined.

Output Module (192.168.127.3)

Rule 0: DI-0 at 192.168.127.154 mapped to DO-0

Rule 1: DI-1 at 192.168.127.154 mapped to DO-1

1. In ioAdmin, make sure that you have searched for and selected the correct ioLogik E2212 server, at IP address 192.168.127.3. Also, make sure you are logged in on the **Server Settings** tab. Go to the **Click&Go Logic** tab.
2. Double click **#0** in the **Rules List**. The rule configuration window will appear.
3. Make sure that **Enable** in the upper left hand corner is checked.
4. Select **Enable peer-to-peer I/O**.
5. Select **Output channel**, then select **DO-0** for the first field, enter **192.168.127.154** for the second field, and select **DI-0** for the third field.
6. Click **OK** to finish configuring the rule.
7. Double click **#1** in the **Rules List**. The rule configuration window will appear.
8. Make sure that **Enable** in the upper left hand corner is checked.
9. Select **Enable peer-to-peer I/O**.
10. Select **Output channel**, then select **DO-1** for the first field, enter **192.168.127.154** for the second field, and select **DI-1** for the third field.
11. Click **OK** to finish configuring the rule.
12. Click **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 **Run** on the Ruleset Management Bar. The RDY LED will be flashing green, showing that the ioLogik is now operating as an Active Ethernet I/O server, using the ruleset that was just defined.

Sensors at the water tank will connect to digital input channels at 192.168.127.154, and the digital output channels at 192.168.127.3 will connect to the control panel. As long as both ioLogik E2212's are on and connected to the network, the status of digital output channels 0 and 1 at 192.168.127.3 will be a "mirror" of input channels 0 and 1 at 192.168.127.154. Status will be updated once every 100 ms.

A
Liquid Crystal Display Module (LCM)

The ioLogik E2212 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 "home page," and pressing any button takes you into the settings and configuration.

LCM Controls

The up and down buttons navigate between the current options. The right and left buttons enter and exit the submenus. The center button is used when modifying settings or restarting the server.

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

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

LCM Options

Display	Explanation / Actions
<ioLogik E2212>	This is the default "home page" showing the IP address. Press the down button to view the submenus.
<ioLogik E2212> server	Enter this submenu to display information about the specific server you are viewing: ● serial number ● name ● location ● e2212 f/w ver ● lcm f/w ver ● model name

Display	Explanation / Actions
<ioLogik E2212> network	Enter this submenu to display information and settings for the network: ● ethernet link ● mac address ● ip mode ● ip address ● netmask ● gateway ● dns server-1 ● dns server-2
<ioLogik E2212> click&go	Enter this submenu to display information about the Click&Go Logic ruleset currently loaded on the ioLogik: ● name ● status
<ioLogik E2212> serial port	Enter this submenu to display the RS-485 cascade port settings.
<ioLogik E2212> i/o setting	Enter this submenu to access I/O channel status. Here are examples of settings that you might see: ● 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 E2212> console	Enter this submenu to see if the web console is enabled or disabled.
<ioLogik E2212> ping	Select this option to enter an IP address to ping. If you get a "timeout" error, it indicates that the ioLogik cannot reach that IP address. Otherwise, the display will show the response time.
<ioLogik E2212> save/restart	Enter this submenu to display the restart now submenu. Enter the restart now submenu to display the restart option. Press the center button to modify this option, then select "enable" to save changes and reboot the I/O server. The disable option has no effect.

ATTENTION

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

B
Modbus/TCP Address Mappings

E2212 Modbus Mapping

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

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

Reference	Address	Data Type	Description
00030	0x001D	1 bit	CH5 DO Safe Value 0: Off 1: On
00031	0x001E	1 bit	CH6 DO Safe Value 0: Off 1: On
00032	0x001F	1 bit	CH7 DO Safe Value 0: Off 1: On
00033	0x0020	1 bit	CH8 DO Safe Value 0: Off 1: On
00034	0x0021	1 bit	CH9 DO Safe Value 0: Off 1: On
00035	0x0022	1 bit	CH10 DO Safe Value 0: Off 1: On
00036	0x0023	1 bit	CH11 DO Safe Value 0: Off 1: On
00037	0x0024	1 bit	CH0 DO Pulse Operate Status 0: Off 1: On
00038	0x0025	1 bit	CH1 DO Pulse Operate Status 0: Off 1: On
00039	0x0026	1 bit	CH2 DO Pulse Operate Status 0: Off 1: On
00040	0x0027	1 bit	CH3 DO Pulse Operate Status 0: Off 1: On
00041	0x0028	1 bit	CH4 DO Pulse Operate Status 0: Off 1: On
00042	0x0029	1 bit	CH5 DO Pulse Operate Status 0: Off 1: On
00043	0x002A	1 bit	CH6 DO Pulse Operate Status 0: Off 1: On
00044	0x002B	1 bit	CH7 DO Pulse Operate Status 0: Off 1: On
00045	0x002C	1 bit	CH8 DO Pulse Operate Status 0: Off 1: On
00046	0x002D	1 bit	CH9 DO Pulse Operate Status 0: Off 1: On
00047	0x002E	1 bit	CH10 DO Pulse Operate Status 0: Off 1: On
00048	0x002F	1 bit	CH11 DO Pulse Operate Status 0: Off 1: On
00049	0x0030	1 bit	CH0 DO PowerOn Pulse Operate Status 0: Off 1: On
00050	0x0031	1 bit	CH1 DO PowerOn Pulse Operate Status 0: Off 1: On
00051	0x0032	1 bit	CH2 DO PowerOn Pulse Operate Status 0: Off 1: On
00052	0x0033	1 bit	CH3 DO PowerOn Pulse Operate Status 0: Off 1: On
00053	0x0034	1 bit	CH4 DO PowerOn Pulse Operate Status 0: Off 1: On
00054	0x0035	1 bit	CH5 DO PowerOn Pulse Operate Status 0: Off 1: On
00055	0x0036	1 bit	CH6 DO PowerOn Pulse Operate Status 0: Off 1: On
00056	0x0037	1 bit	CH7 DO PowerOn Pulse Operate Status 0: Off 1: On
00057	0x0038	1 bit	CH8 DO PowerOn Pulse Operate Status 0: Off 1: On
00058	0x0039	1 bit	CH9 DO PowerOn Pulse Operate Status 0: Off 1: On
00059	0x003A	1 bit	CH10 DO PowerOn Pulse Operate Status 0: Off 1: On
00060	0x003B	1 bit	CH11 DO PowerOn Pulse Operate Status 0: Off 1: On
00061	0x003C	1 bit	CH0 DO Safe Pulse Operate Status 0: Off 1: On
00062	0x003D	1 bit	CH1 DO Safe Pulse Operate Status 0: Off 1: On
00063	0x003E	1 bit	CH2 DO Safe Pulse Operate Status 0: Off 1: On
00064	0x003F	1 bit	CH3 DO Safe Pulse Operate Status 0: Off 1: On
00065	0x0040	1 bit	CH4 DO Safe Pulse Operate Status 0: Off 1: On
00066	0x0041	1 bit	CH5 DO Safe Pulse Operate Status 0: Off 1: On
00067	0x0042	1 bit	CH6 DO Safe Pulse Operate Status 0: Off 1: On
00068	0x0043	1 bit	CH7 DO Safe Pulse Operate Status 0: Off 1: On
00069	0x0044	1 bit	CH8 DO Safe Pulse Operate Status 0: Off 1: On
00070	0x0045	1 bit	CH9 DO Safe Pulse Operate Status 0: Off 1: On

Reference	Address	Data Type	Description
00071	0x0046	1 bit	CH10 DO Safe Pulse Operate Status 0: Off 1: On
00072	0x0047	1 bit	CH11 DO Safe Pulse Operate Status 0: Off 1: On
00073	0x0048	1 bit	CH0 DI Counter Status 0: Off 1: On
00074	0x0049	1 bit	CH1 DI Counter Status 0: Off 1: On
00075	0x004A	1 bit	CH2 DI Counter Status 0: Off 1: On
00076	0x004B	1 bit	CH3 DI Counter Status 0: Off 1: On
00077	0x004C	1 bit	CH4 DI Counter Status 0: Off 1: On
00078	0x004D	1 bit	CH5 DI Counter Status 0: Off 1: On
00079	0x004E	1 bit	CH6 DI Counter Status 0: Off 1: On
00080	0x004F	1 bit	CH7 DI Counter Status 0: Off 1: On
00081	0x0050	1 bit	CH8 DI Counter Status 0: Off 1: On
00082	0x0051	1 bit	CH9 DI Counter Status 0: Off 1: On
00083	0x0052	1 bit	CH10 DI Counter Status 0: Off 1: On
00084	0x0053	1 bit	CH11 DI Counter Status 0: Off 1: On
00085	0x0054	1 bit	CH0 DI Clear Count Value Read Always: 0 Write: 1: Clear counter value 0: Return Illegal Data Value
00086	0x0055	1 bit	CH1 DI Clear Count Value Read Always: 0 Write: 1: Clear counter value 0: Return Illegal Data Value
00087	0x0056	1 bit	CH2 DI Clear Count Value Read Always: 0 Write: 1: Clear counter value 0: Return Illegal Data Value
00088	0x0057	1 bit	CH3 DI Clear Count Value Read Always: 0 Write: 1: Clear counter value 0: Return Illegal Data Value
00089	0x0058	1 bit	CH4 DI Clear Count Value Read Always: 0 Write: 1: Clear counter value 0: Return Illegal Data Value
00090	0x0059	1 bit	CH5 DI Clear Count Value Read Always: 0 Write: 1: Clear counter value 0: Return Illegal Data Value
00091	0x005A	1 bit	CH6 DI Clear Count Value Read Always: 0 Write: 1: Clear counter value 0: Return Illegal Data Value

Reference	Address	Data Type	Description
00092	0x005B	1 bit	CH7 DI Clear Count Value Read Always: 0 Write: 1: Clear counter value 0: Return Illegal Data Value
00093	0x005C	1 bit	CH8 DI Clear Count Value Read Always: 0 Write: 1: Clear counter value 0: Return Illegal Data Value
00094	0x005D	1 bit	CH9 DI Clear Count Value Read Always: 0 Write: 1: Clear counter value 0: Return Illegal Data Value
00095	0x005E	1 bit	CH10 DI Clear Count Value Read Always: 0 Write: 1: Clear counter value 0: Return Illegal Data Value
00096	0x005F	1 bit	CH11 DI Clear Count Value Read Always: 0 Write: 1: Clear counter value 0: Return Illegal Data Value
00097	0x0060	1 bit	CH0 DI OverFlow Status Read: 0: Normal 1: Overflow Write: 0: Clear overflow status 1: Return Illegal Data Value
00098	0x0061	1 bit	CH1 DI OverFlow Status Read: 0: Normal 1: Overflow Write: 0: Clear overflow status 1: Return Illegal Data Value
00099	0x0062	1 bit	CH2 DI OverFlow Status Read: 0: Normal 1: Overflow Write: 0: Clear overflow status 1: Return Illegal Data Value
00100	0x0063	1 bit	CH3 DI OverFlow Status Read: 0: Normal 1: Overflow Write: 0: Clear overflow status 1: Return Illegal Data Value

Reference	Address	Data Type	Description
00101	0x0064	1 bit	CH4 DI OverFlow Status Read: 0: Normal 1: Overflow Write: 0: Clear overflow status 1: Return Illegal Data Value
00102	0x0065	1 bit	CH5 DI OverFlow Status Read: 0: Normal 1: Overflow Write: 0: Clear overflow status 1: Return Illegal Data Value
00103	0x0066	1 bit	CH6 DI OverFlow Status Read: 0: Normal 1: Overflow Write: 0: Clear overflow status 1: Return Illegal Data Value
00104	0x0067	1 bit	CH7 DI OverFlow Status Read: 0: Normal 1: Overflow Write: 0: Clear overflow status 1: Return Illegal Data Value
00105	0x0068	1 bit	CH8 DI OverFlow Status Read: 0: Normal 1: Overflow Write: 0: Clear overflow status 1: Return Illegal Data Value
00106	0x0069	1 bit	CH9 DI OverFlow Status Read: 0: Normal 1: Overflow Write: 0: Clear overflow status 1: Return Illegal Data Value
00107	0x006A	1 bit	CH10 DI OverFlow Status Read: 0: Normal 1: Overflow Write: 0: Clear overflow status 1: Return Illegal Data Value
00108	0x006B	1 bit	CH11 DI OverFlow Status Read: 0: Normal 1: Overflow Write: 0: Clear overflow status 1: Return Illegal Data Value
00109	0x006C	1 bit	CH0 DI Count Trigger
00110	0x006D	1 bit	CH1 DI Count Trigger
00111	0x006E	1 bit	CH2 DI Count Trigger

Reference	Address	Data Type	Description
00112	0x006F	1 bit	CH3 DI Count Trigger
00113	0x0070	1 bit	CH4 DI Count Trigger
00114	0x0071	1 bit	CH5 DI Count Trigger
00115	0x0072	1 bit	CH6 DI Count Trigger
00116	0x0073	1 bit	CH7 DI Count Trigger
00117	0x0074	1 bit	CH8 DI Count Trigger
00118	0x0075	1 bit	CH9 DI Count Trigger
00119	0x0076	1 bit	CH10 DI Count Trigger
00120	0x0077	1 bit	CH11 DI Count Trigger
00121	0x0078	1 bit	CH0 DI PowerOn Status 0: Off 1: On
00122	0x0079	1 bit	CH1 DI PowerOn Status 0: Off 1: On
00123	0x007A	1 bit	CH2 DI PowerOn Status 0: Off 1: On
00124	0x007B	1 bit	CH3 DI PowerOn Status 0: Off 1: On
00125	0x007C	1 bit	CH4 DI PowerOn Status 0: Off 1: On
00126	0x007D	1 bit	CH5 DI PowerOn Status 0: Off 1: On
00127	0x007E	1 bit	CH6 DI PowerOn Status 0: Off 1: On
00128	0x007F	1 bit	CH7 DI PowerOn Status 0: Off 1: On
00129	0x0080	1 bit	CH8 DI PowerOn Status 0: Off 1: On
00130	0x0081	1 bit	CH9 DI PowerOn Status 0: Off 1: On
00131	0x0082	1 bit	CH10 DI PowerOn Status 0: Off 1: On
00132	0x0083	1 bit	CH11 DI PowerOn Status 0: Off 1: On
00133	0x0084	1 bit	CH0 DI Safe Pulse Operate Status 0: Off 1: On
00134	0x0085	1 bit	CH1 DI Safe Pulse Operate Status 0: Off 1: On
00135	0x0086	1 bit	CH2 DI Safe Pulse Operate Status 0: Off 1: On
00136	0x0087	1 bit	CH3 DI Safe Pulse Operate Status 0: Off 1: On
00137	0x0088	1 bit	CH4 DI Safe Pulse Operate Status 0: Off 1: On
00138	0x0089	1 bit	CH5 DI Safe Pulse Operate Status 0: Off 1: On
00139	0x008A	1 bit	CH6 DI Safe Pulse Operate Status 0: Off 1: On
00140	0x008B	1 bit	CH7 DI Safe Pulse Operate Status 0: Off 1: On
00141	0x008C	1 bit	CH8 DI Safe Pulse Operate Status 0: Off 1: On
00142	0x008D	1 bit	CH9 DI Safe Pulse Operate Status 0: Off 1: On
00143	0x008E	1 bit	CH10 DI Safe Pulse Operate Status 0: Off 1: On
00144	0x008F	1 bit	CH11 DI Safe Pulse Operate Status 0: Off 1: On
00145	0x0090	1 bit	CH0 DI set channel Power-off storage enable ON/OFF 1: ON 0: OFF
00146	0x0091	1 bit	CH1 DI set channel Power-off storage enable ON/OFF 1: ON 0: OFF

Reference	Address	Data Type	Description
00147	0x0092	1 bit	CH2 DI set channel Power-off storage enable ON/OFF 1: ON 0: OFF
00148	0x0093	1 bit	CH3 DI set channel Power-off storage enable ON/OFF 1: ON 0: OFF
00149	0x0094	1 bit	CH4 DI set channel Power-off storage enable ON/OFF 1: ON 0: OFF
00150	0x0095	1 bit	CH5 DI set channel Power-off storage enable ON/OFF 1: ON 0: OFF
00151	0x0096	1 bit	CH6 DI set channel Power-off storage enable ON/OFF 1: ON 0: OFF
00152	0x0097	1 bit	CH7 DI set channel Power-off storage enable ON/OFF 1: ON 0: OFF
00153	0x0098	1 bit	CH8 DI set channel Power-off storage enable ON/OFF 1: ON 0: OFF
00154	0x0099	1 bit	CH9 DI set channel Power-off storage enable ON/OFF 1: ON 0: OFF
00155	0x009A	1 bit	CH10 DI set channel Power-off storage enable ON/OFF 1: ON 0: OFF
00156	0x009B	1 bit	CH11 DI set channel Power-off storage enable ON/OFF 1: ON 0: OFF
00157	0x009C	1 bit	DIO 0 1: OUTPUT 0: INPUT

Reference	Address	Data Type	Description
00158	0x009D	1 bit	DIO 1 1: OUTPUT 0: INPUT
00159	0x009E	1 bit	DIO 2 1: OUTPUT 0: INPUT
00160	0x009F	1 bit	DIO 3 1: OUTPUT 0: INPUT

1xxxx Read Only Coils (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
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
10013	0x000C	1 bit	Non-active
10014	0x000D	1 bit	Non-active
10015	0x000E	1 bit	Non-active
10016	0x000F	1 bit	Non-active

3xxxx Read Only Registers (Function 4)

Reference	Address	Data Type	Description
30001	0x0000	1 word	CH0 DI Count Value Hi-Byte
30002	0x0001	1 word	CH0 DI Count Value Lo-Byte
30003	0x0002	1 word	CH1 DI Count Value Hi-Byte
30004	0x0003	1 word	CH1 DI Count Value Lo-Byte
30005	0x0004	1 word	CH2 DI Count Value Hi-Byte
30006	0x0005	1 word	CH2 DI Count Value Lo-Byte
30007	0x0006	1 word	CH3 DI Count Value Hi-Byte
30008	0x0007	1 word	CH3 DI Count Value Lo-Byte
30009	0x0008	1 word	CH4 DI Count Value Hi-Byte
30010	0x0009	1 word	CH4 DI Count Value Lo-Byte
30011	0x000A	1 word	CH5 DI Count Value Hi-Byte
30012	0x000B	1 word	CH5 DI Count Value Lo-Byte

Reference	Address	Data Type	Description
30013	0x000C	1 word	CH6 DI Count Value Hi-Byte
30014	0x000D	1 word	CH6 DI Count Value Lo-Byte
30015	0x000E	1 word	CH7 DI Count Value Hi-Byte
30016	0x000F	1 word	CH7 DI Count Value Lo-Byte
30017	0x0010	1 word	CH8 DI Count Value Hi-Byte
30018	0x0011	1 word	CH8 DI Count Value Lo-Byte
30019	0x0012	1 word	CH9 DI Count Value Hi-Byte
30020	0x0013	1 word	CH9 DI Count Value Lo-Byte
30021	0x0014	1 word	CH10 DI Count Value Hi-Byte
30022	0x0015	1 word	CH10 DI Count Value Lo-Byte
30023	0x0016	1 word	CH11 DI Count Value Hi-Byte
30024	0x0017	1 word	CH11 DI Count Value Lo-Byte

4xxxx Read/Write Registers (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
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	CH8 DO Pulse Output Count Value Hi- Word
40018	0x0011	word	CH8 DO Pulse Output Count Value Lo- Word
40019	0x0012	word	CH9 DO Pulse Output Count Value Hi- Word
40020	0x0013	word	CH9 DO Pulse Output Count Value Lo- Word
40021	0x0014	word	CH10 DO Pulse Output Count Value Hi- Word
40022	0x0015	word	CH10 DO Pulse Output Count Value Lo- Word
40023	0x0016	word	CH11 DO Pulse Output Count Value Hi- Word
40024	0x0017	word	CH11 DO Pulse Output Count Value Lo- Word
40025	0x0018	word	CH0 DO Pulse Low Signal Width
40026	0x0019	word	CH1 DO Pulse Low Signal Width
40027	0x001A	word	CH2 DO Pulse Low Signal Width

Reference	Address	Data Type	Description
40028	0x001B	word	CH3 DO Pulse Low Signal Width
40029	0x001C	word	CH4 DO Pulse Low Signal Width
40030	0x001D	word	CH5 DO Pulse Low Signal Width
40031	0x001E	word	CH6 DO Pulse Low Signal Width
40032	0x001F	word	CH7 DO Pulse Low Signal Width
40033	0x0020	word	CH8 DO Pulse Low Signal Width
40034	0x0021	word	CH9 DO Pulse Low Signal Width
40035	0x0022	word	CH10 DO Pulse Low Signal Width
40036	0x0023	word	CH11 DO Pulse Low Signal Width
40037	0x0024	word	CH0 DO Pulse High Signal Width
40038	0x0025	word	CH1 DO Pulse High Signal Width
40039	0x0026	word	CH2 DO Pulse High Signal Width
40040	0x0027	word	CH3 DO Pulse High Signal Width
40041	0x0028	word	CH4 DO Pulse High Signal Width
40042	0x0029	word	CH5 DO Pulse High Signal Width
40043	0x002A	word	CH6 DO Pulse High Signal Width
40044	0x002B	word	CH7 DO Pulse High Signal Width
40045	0x002C	word	CH8 DO Pulse High Signal Width
40046	0x002D	word	CH9 DO Pulse High Signal Width
40047	0x002E	word	CH10 DO Pulse High Signal Width
40048	0x002F	word	CH11 DO Pulse High Signal Width
40049	0x0030	word	CH0 DO Mode 0: DO 1: Pulse
40050	0x0031	word	CH1 DO Mode 0: DO 1: Pulse
40051	0x0032	word	CH2 DO Mode 0: DO 1: Pulse
40052	0x0033	word	CH3 DO Mode 0: DO 1: Pulse
40053	0x0034	word	CH4 DO Mode 0: DO 1: Pulse
40054	0x0035	word	CH5 DO Mode 0: DO 1: Pulse
40055	0x0036	word	CH6 DO Mode 0: DO 1: Pulse
40056	0x0037	word	CH7 DO Mode 0: DO 1: Pulse
40057	0x0038	word	CH8 DO Mode 0: DO 1: Pulse
40058	0x0039	word	CH9 DO Mode 0: DO 1: Pulse
40059	0x003A	word	CH10 DO Mode 0: DO 1: Pulse
40060	0x003B	word	CH11 DO Mode 0: DO 1: Pulse
40061	0x003C	word	CH0 DI Count Filter
40062	0x003D	word	CH1 DI Count Filter
40063	0x003E	word	CH2 DI Count Filter
40064	0x003F	word	CH3 DI Count Filter
40065	0x0040	word	CH4 DI Count Filter
40066	0x0041	word	CH5 DI Count Filter
40067	0x0042	word	CH6 DI Count Filter
40068	0x0043	word	CH7 DI Count Filter

Reference	Address	Data Type	Description
40069	0x0044	word	CH8 DI Count Filter
40070	0x0045	word	CH9 DI Count Filter
40071	0x0046	word	CH10 DI Count Filter
40072	0x0047	word	CH11 DI Count Filter
40073	0x0048	word	CH0 DI Mode 0: DI 1: Count Others: Return Illegal Data Value
40074	0x0049	word	CH1 DI Mode 0: DI 1: Count Others: Return Illegal Data Value
40075	0x004A	word	CH2 DI Mode 0: DI 1: Count Others: Return Illegal Data Value
40076	0x004B	word	CH3 DI Mode 0: DI 1: Count Others: Return Illegal Data Value
40077	0x004C	word	CH4 DI Mode 0: DI 1: Count Others: Return Illegal Data Value
40078	0x004D	word	CH5 DI Mode 0: DI 1: Count Others: Return Illegal Data Value
40079	0x004E	word	CH6 DI Mode 0: DI 1: Count Others: Return Illegal Data Value
40080	0x004F	word	CH7 DI Mode 0: DI 1: Count Others: Return Illegal Data Value
40081	0x0050	word	CH8 DI Mode 0: DI 1: Count Others: Return Illegal Data Value
40082	0x0051	word	CH9 DI Mode 0: DI

Reference	Address	Data Type	Description
			1: Count Others: Return Illegal Data Value
40083	0x0052	word	CH10 DI Mode 0: DI 1: Count Others: Return Illegal Data Value
40084	0x0053	word	CH11 DI Mode 0: DI 1: Count Others: Return Illegal Data Value

Function 8

Sub-function	Data Field (Request)	Data Field (Response)	Description
0x0001	0xFF00	Echo Request Data	Reboot
0x0001	0x55AA	Echo Request Data	Reset with Factory defaults
0x000A	0x0000	Echo Request Data	Clear Counters and Diagnostic Register

C
Used Network Port Numbers

E2212 Network Port Usage

Port	Type	Usage
68	UDP	BOOTPC
68	UDP	DHCP
69	UDP	Export/import file
80	TCP	Web Server
161	TCP	SNMP
502	TCP	Modbus Communication
4800	UDP	Auto search
9020	TCP	Peer-to-Peer function
9000	TCP	Active Message (Default)
9000	UDP	Active Message (Default)

D

SNMP Agents with MIB II, RS-232-like Groups

RFC1213 MIB II Supported SNMP Variables

Moxa provides you with an SNMP to I/O solution that allows you to monitor I/O status using SNMP software. You can find the MIB file on the CDROM.

System MIB

SysDescr
SysObjectID
SysUpTime
SysContact
SysName
SysLocation
SysServices

Interfaces MIB

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

IP MIB

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

ICMP MIB

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

UDP MIB

UdpInDatagrams
UdpNoPorts
UdpInErrors
UdpOutDatagrams
UdpLocalAddress
UdpLocalPort

Address Translation MIB

AtIfIndex
AtPhysAddress
AtNetAddress
AtNetAddress

TCP MIB

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

SNMP MIB

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

Moxa IO MIB

totalChannelNumber
serverModel
systemTime
firmwareVersion
DI00-Index
DI00-Type
DI00-Mode
DI00-Status
DI00-Filter
DI00-Tigger
DI01-Index
DI01-Type
DI01-Mode
DI01-Status
DI01-Filter
DI01-Tigger
DI02-Index
DI02-Type
DI02-Mode
DI02-Status
DI02-Filter
DI02-Tigger
DI03-Index
DI03-Type
DI03-Mode
DI03-Status
DI03-Filter
DI03-Tigger
DI04-Index
DI04-Type
DI04-Mode
DI04-Status
DI04-Filter
DI04-Tigger
DI05-Index
DI05-Type
DI05-Mode
DI05-Status
DI05-Filter
DI05-Tigger
DI06-Index
DI06-Type
DI06-Mode
DI06-Status
DI06-Filter
DI06-Tigger
DI07-Index
DI07-Type
DI07-Mode
DI07-Status
DI07-Filter
DI07-Tigger
DO00-Index
DO00-Type
DO00-Mode
DO00-Status
DO00-LowWidth
DO00-HighWidth
DO00-PulseStart
DO01-Index
DO01-Type
DO01-Mode
DO01-Status
DO01-LowWidth
DO01-HighWidth
DO01-PulseStart
DO02-Index
DO02-Type
DO02-Mode
DO02-Status
DO02-LowWidth
DO02-HighWidth
DO02-PulseStart
DO03-Index
DO03-Type
DO03-Mode
DO03-Status
DO03-LowWidth
DO03-HighWidth
DO03-PulseStart
DO04-Index
DO04-Type
DO04-Mode
DO04-Status
DO04-LowWidth
DO04-HighWidth
DO04-PulseStart
DO05-Index
DO05-Type
DO05-Mode
DO05-Status
DO05-LowWidth
DO05-HighWidth
DO05-PulseStart
DO06-Index
DO06-Type
DO06-Mode
DO06-Status
DO06-LowWidth
DO06-HighWidth
DO06-PulseStart
DO07-Index
DO07-Type
DO07-Mode
DO07-Status
DO07-LowWidth
DO07-HighWidth
DO07-PulseStart
DIO08-Index
DIO08-Type
DIO08-Mode
DIO08-Status
DIO08-Filter
DIO08-Tigger
DIO08-LowWidth
DIO08-HighWidth
DIO08-PulseStart
DIO09-Index
DIO09-Type
DIO09-Mode
DIO09-Status
DIO09-Filter
DIO09-Tigger
DIO09-LowWidth
DIO09-HighWidth
DIO09-PulseStart
DIO10-Index
DIO10-Type
DIO10-Mode
DIO10-Status
DIO10-Filter
DIO10-Tigger
DIO10-LowWidth
DIO10-HighWidth
DIO10-PulseStart
DIO11-Index
DIO11-Type
DIO11-Mode
DIO11-Status
DIO11-Filter
DIO11-Tigger
DIO11-LowWidth
DIO11-HighWidth
DIO11-PulseStart

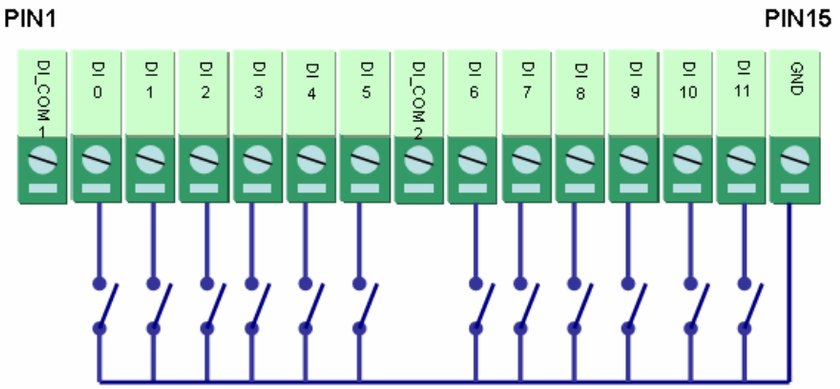
E
Factory Default Settings

The factory default settings for the ioLogik E2212 are as follows:

IP address:	192.168.127.254
Netmask:	255.255.0.0
Gateway:	None
Communication Watchdog:	Disable
DI Mode:	DI
DI Safe Status:	Off
Filter Time for Counter:	10 × 0.5mS
Counter Trigger Type:	Lo to Hi
Counter Status:	Stop
DO Mode:	DO
DO Safe Status:	Off
Pulse Low Width:	1
Pulse Hi Width:	1
No. of Pulses:	0 (continuous)
DIOChannel Type:	DI
DI Safe Status:	Off
Filter Time for Counter:	10 × 0.5mS
Counter Trigger Type:	Lo to Hi
Counter Status:	Stop
Counter status:	Stop
Password:	“empty”
Module Name:	“empty”
Module Location:	“empty:
SNMP:	Enable
Community:	Public
Contact:	“empty”
Location:	“empty”

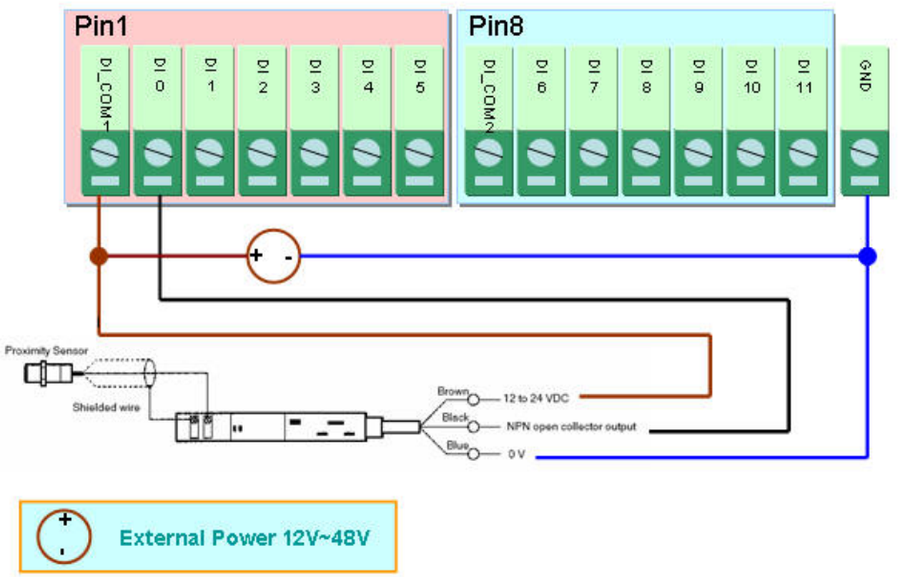
Device Wiring Diagrams

Digital Input Dry Contact

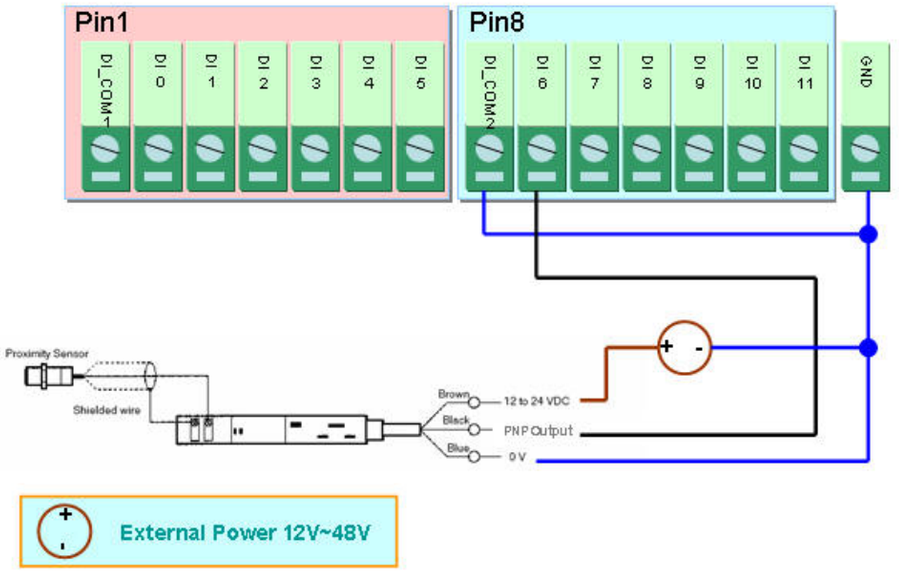


Digital Input Wet Contact

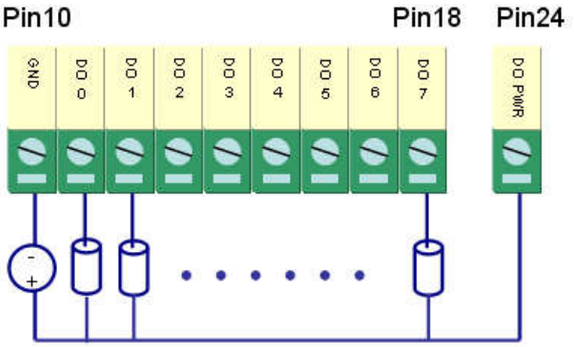
NPN Type Sensors Connection



PNP Type Sensors Connection



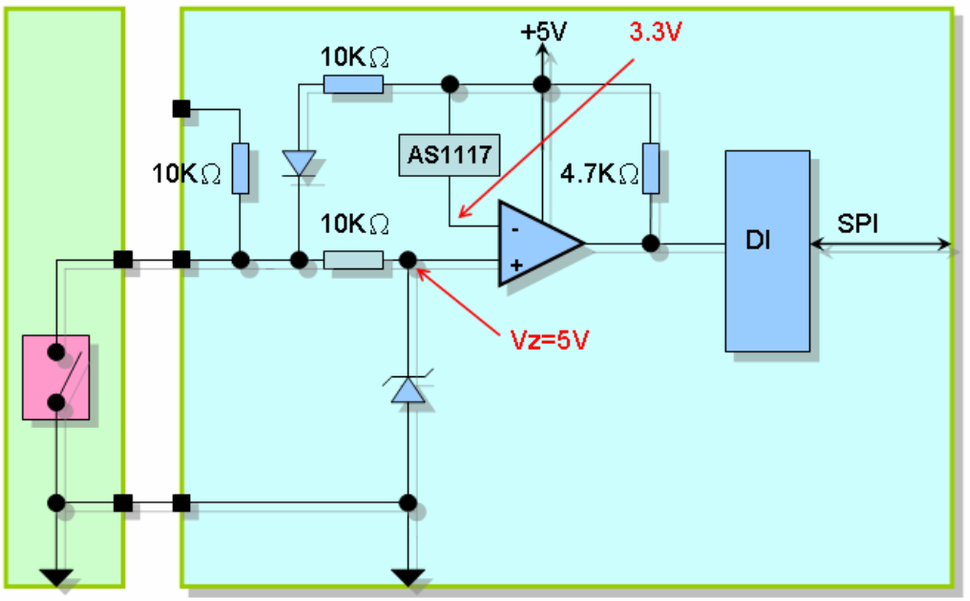
Digital Output Sink Mode



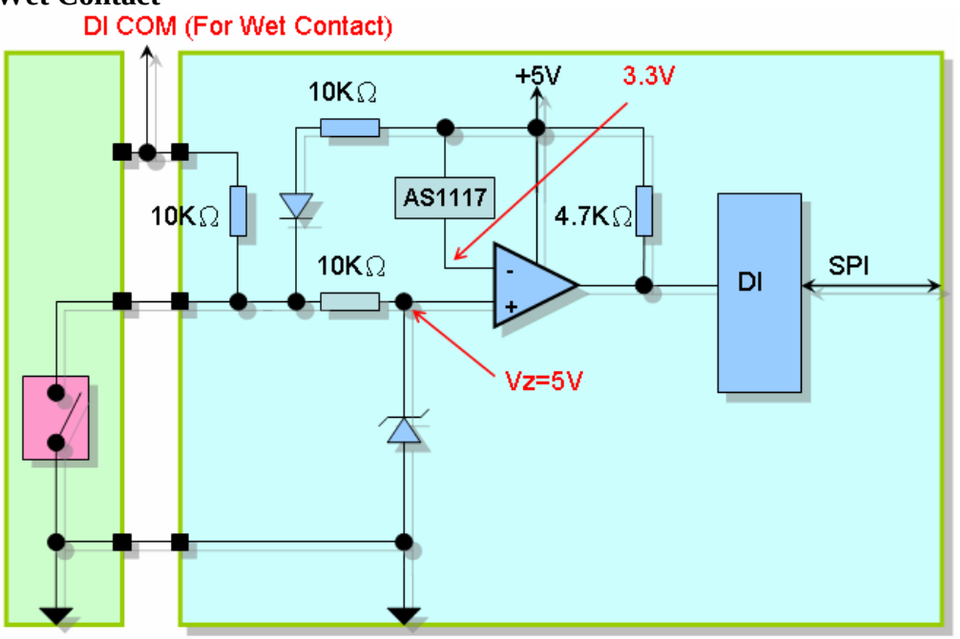
Circuit Diagrams

Digital Input Channel

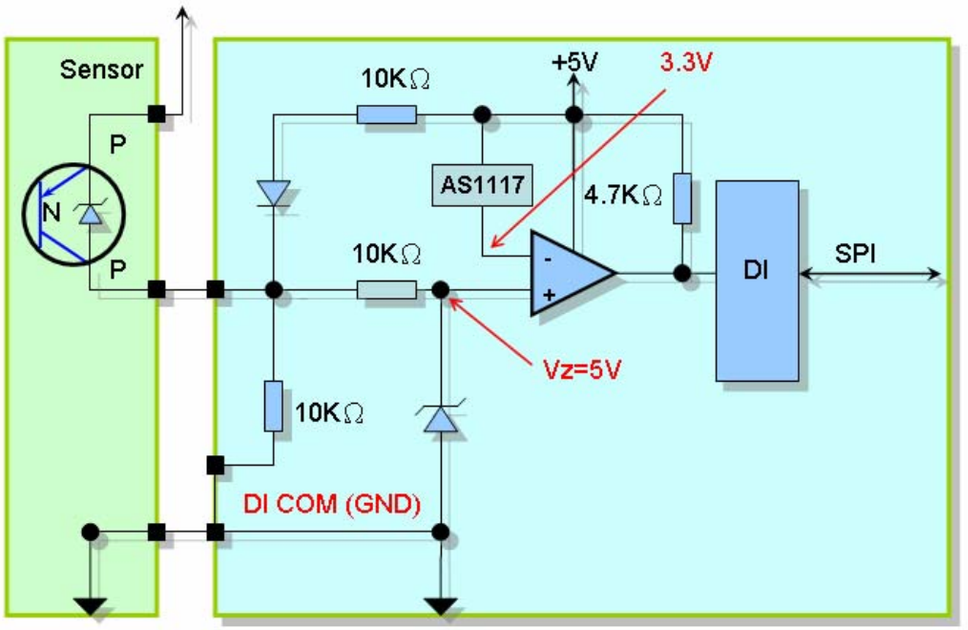
Dry Contact



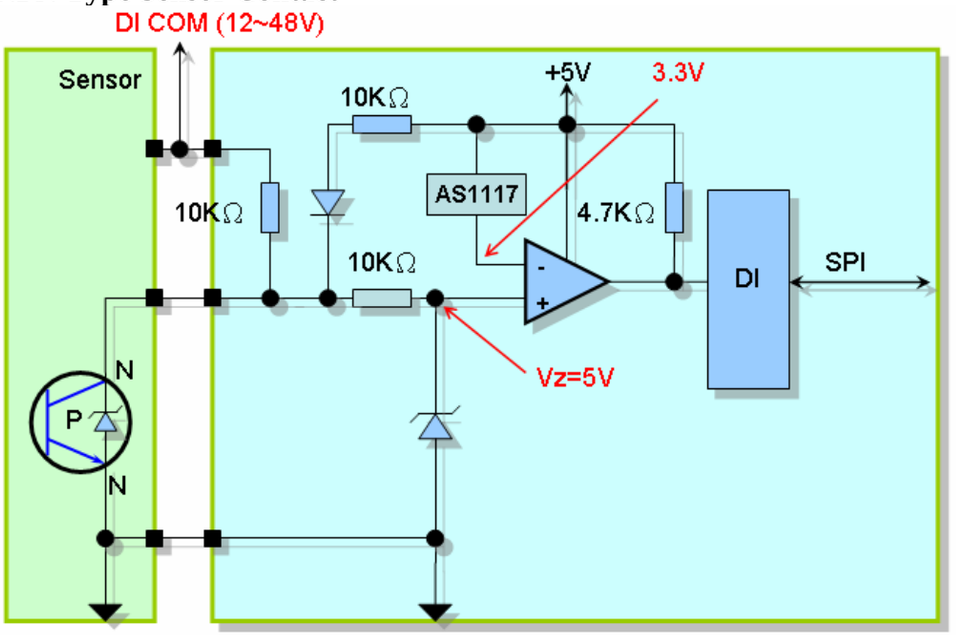
Wet Contact



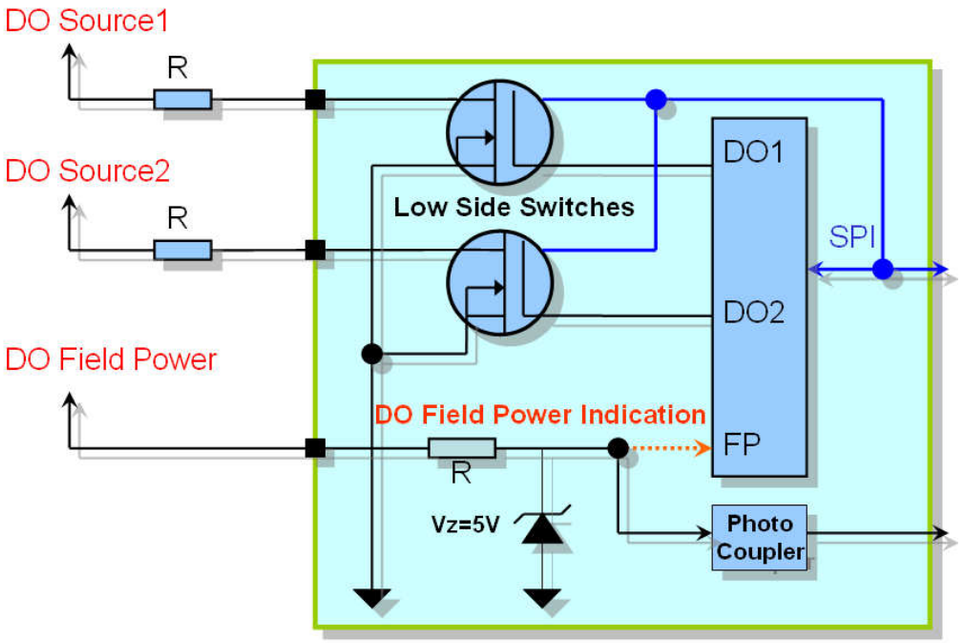
PNP Type Sensor Contact



NPN Type Sensor Contact



Digital Output Channel



The DO Field Power Indication is a channel for driving the DO field power LED.

Configurable DIO Channel