Korenix JetI/O 6510
Industrial Intelligent Ethernet I/O Server

User's Manual

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www.korenix.com

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Index

1 Introduction

Welcome to Korenix *JetI/O 6500* Series Industrial Managed Ethernet I/O Module User Manual. Following topics are covered in this chapter:

1.1 Overview of JetI/O 6500 Series

JetI/O 6500 series is a series of Managed Ethernet I/O modules for distributive monitoring and controls. The JeI/O 6500 series equipped with one Ethernet port and multiple channels Analog Input/Output, Digital Input/Output and temperature measurement connectors. Thus users can easily perform I/O data collecting, status changing, automatically activate events… through the Ethernet network. JetI/O 6500 series provides Windows Utilities, Web and SNMP for configuration. And support Modbus/TCP protocol, OPC Server for Modbus/TCP, thus user can easily monitor and control the remote I/O devices and combine the JetI/O with existed HMI/SCADA package.

Naming Rule: JetI/O 65AB

A: Major Feature

1: Analog Input Series. Includes the RTD input, Thermocouple Input

2: Analog Output Series

3: Digital Input Series

4: Digital Output Series

5: Digital Input and Digital Output Series

B: Sequence Number

JetI/O 6500 Series includes:

JetI/O 6510: Industrial Intelligent 8-CH Analog Input Etherent I/O Server

JetI/O 6511: Industrial Intelligent 8-CH Thermocouple Input Etherent I/O Server

JetI/O 6512: Industrial Intelligent 4-CH RTD Input Etherent I/O Server

JetI/O 6520: Industrial Intelligent 4-CH Analog Output Etherent I/O Server

JetI/O 6550: Industrial Intelligent 14-CH DI and 8-CH DO Etherent I/O Server

The manual apply to above models.

1.2 Package Checklist

Korenix JetI/O 6500 Series products are shipped with following items:

- One Ethernet I/O Module
- One attached DIN-Rail clip
- Terminal Blocks for I/O and Power Input
- Documentation and Software CD
- Quick Installation Guide

If any of the above items are missing or damaged, please contact your local sales representative.

1.3 JetI/O 6510 Introduction

JetI/O 6510 is a Block I/O module equipped with one Etherent port and 8 channels Analog Input connectors. Jet I /O 6510 provides 16 bit resolution and high accuracy for I/O data collecting. The analog input range can support from 150mV to 10V and 20mA. The values are most adopted in the industrial environemnt.

JetI/O 6510 provides Windows Utilities, SNMP and Web for configuration. Industrial Modbus/ TCP protocol and OPC Server driver for integrating JetI/O with existed HMI/SCADA. Robust aluminum case is with good heat dispersing and IP31 protection. With JetI/O users can easily perform status monitoring and control the remote I/O devices.

1.4 JetI/O 6510 Product Specification

System

CPU: 16 bits/100MHZ, RISC-Based

SDRAM: 32K bytes

Flash ROM: 512K bytes

EEPROM: 256 bytes

Watchdog Timer: 1.0 sec H/W

LED:

PWR: Power Input plugged and On (Red)

RDY: System startup ready (Green)

Network Interface

Ethernet: IEEE 802.3 10Base-T

IEEE 802.3u 100Base-TX

Connector: 1 * RJ-45, Auto MDI/MDI-X

Protection: Built-in 1.5 KV magnetic isolation protection

LED:

Upper (LAN Activity): Orange ON & Blinking

Lower (10M/100M): 10M à Green OFF, 100M à Green ON

PWR: Power On (Green)

RDY: System boot up Ready (Red), system booting (No LED)

Network Protocols: IP, TCP, UDP, SNMP, HTTP, Telnet, BOOTP, DHCP

Analog Input

Input Channels: 8 Channels

Resolution: 16 bits

Input Range: Voltage: ±10V, ±5V, ±1V, ±500mV, ±150mV
Current: ±20mA

Accuracy: ±0.05% of FSR ±1LSB

Sampling Rate: 10 samples/sec (total)

Input Impedance: 10M ohm

Calibration: On Board EEPROM

Isolation Voltage: 2500Vrms

Feature

Network Protocols: IP, TCP, UDP, SNMP, HTTP, BOOTP, DHCP, Modbus/TCP, OPC Server

Configuration: Windows Utility, Web browser, SNMP, DHCP Client, TFTP Server for firmware update

Windows Utility: Block I/O Utility, Device Fider Utility

OPC Server Utiltity: OPC Server for Modbus/TCP

SNMP: MIB-II: System, SNMP Trap and Private MIB

SNMP Trap Server: Up to 4 SNMP Trap Server

Logic Condition&Go Rules: Conditions of the DI/Counter values, Actions include DO/Pulse, Counter and Trap

Program: C++ Example code by optional

Power Requirements

System Power: external unregulated +24V (18-32V)

Power Consumption: Max. 3.2W

Mechanical

Dimensions: 120 (H) x 55 (W) x 75 (D)mm

Mounting: Din-Rail

Material: Aluminum

Environmental

Regulatory Approvals: CE, FCC Class A

Operating Temperature: -10 ~ 70°C

Operating Humidity: 20 ~ 90% non-condensing

Storage Temperature: -20 ~ 70°C

Warranty: 3 years

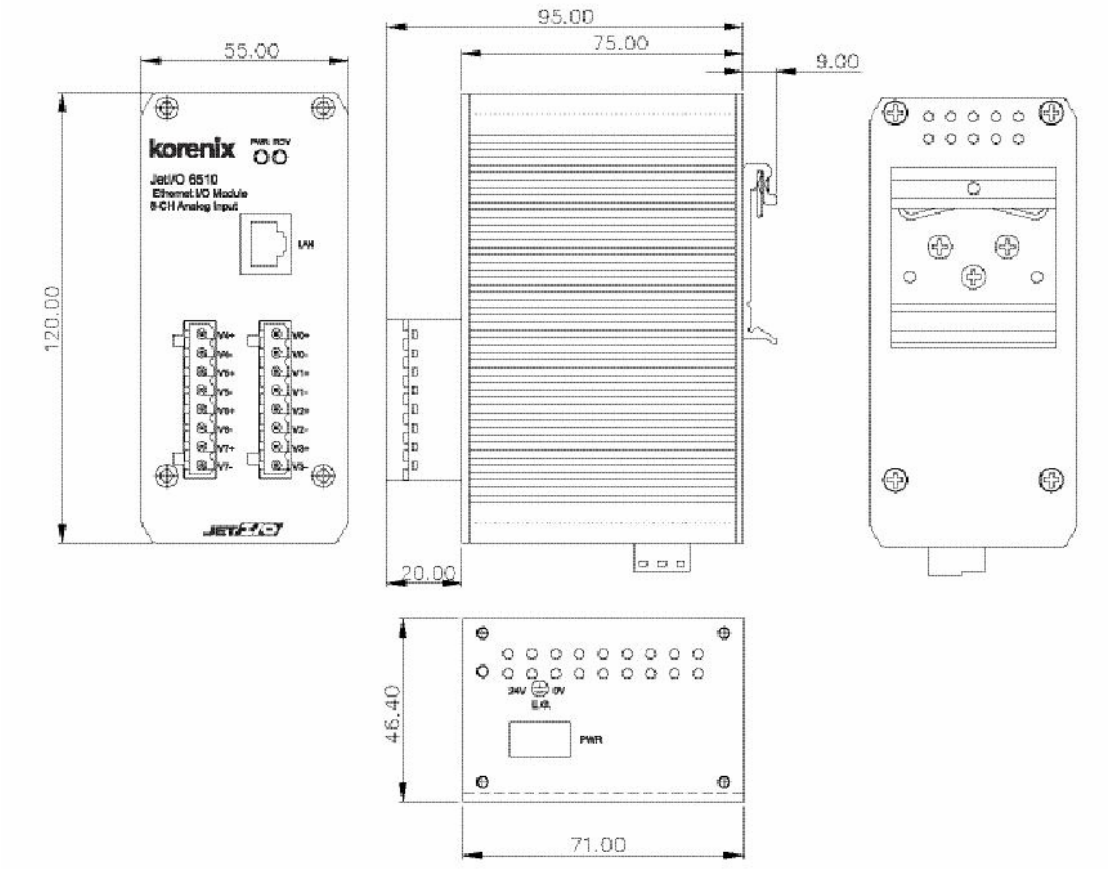
2 Hardware Installation

This chapter includes hardware introduction, installation and configuration information.

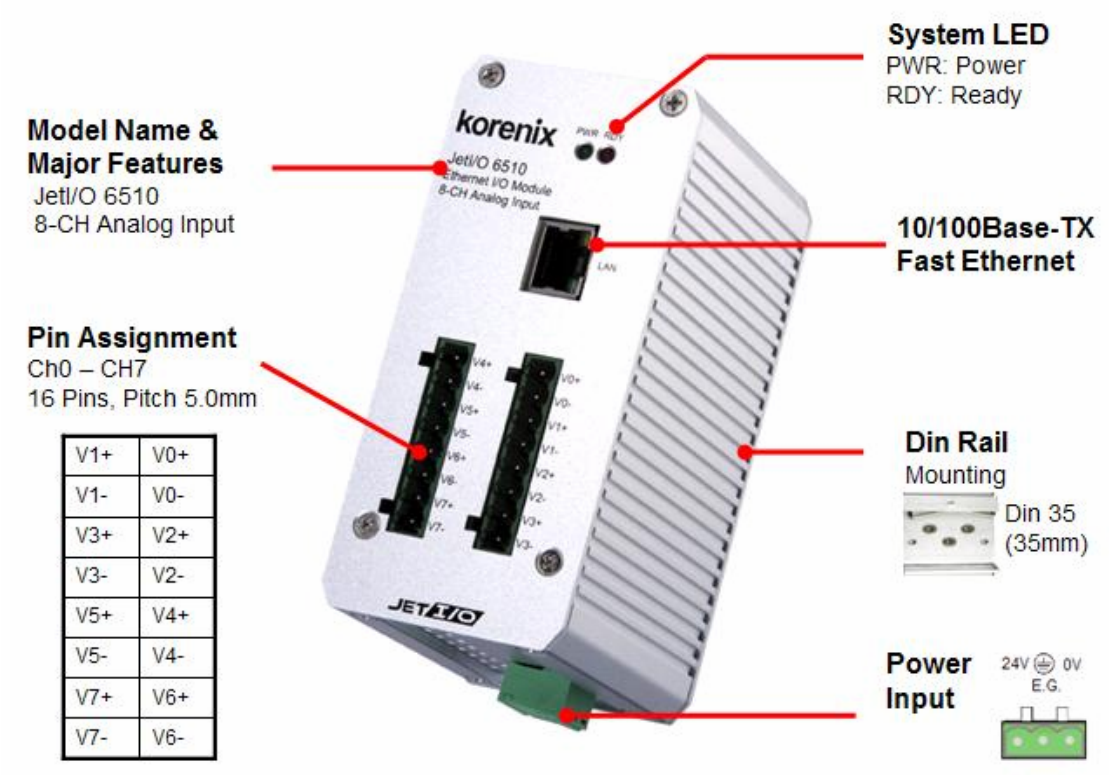
Following topics are covered in this chapter:

2.1 Hardware Introduction

Dimensions: 120 (H) x 55 (W) x 75 (D) mm



JetI/O 6510 Appearance:



V1+	V0+
V1-	V0-
V3+	V2+
V3-	V2-
V5+	V4+
V5-	V4-
V7+	V6+
V7-	V6-

LED Indicators:

System LED	
PWR	Power Input plugged and On (Green)
RDY	System startup ready (Red)
Ethernet LED	
Upper (LAN Activity)	Orange On & Blinking
Lower(10M/100M)	10M (Green Off) /100M(Green ON

2.2 Wiring Power Input

Follow below steps to wire JetI/O DC power inputs.

1. Follow the pin assignment to insert the wires into the contacts on the terminal block connector.
2. Tighten the wire-clamp screws to prevent DC wires from being loosened.
3. Connect to and turn on the power source. The suitable working voltage is 24VDC.
4. When the unit is ready, the PWR LED turns Greed, the RDY LED turns Red.

Note1: It is a good practice to turn off input and load power, and to unplug power terminal block before making wire connections. Otherwise, your screwdriver blade can inadvertently short your terminal connections to the grounded enclosure.

Note 2: The range of the suitable electric wire is from 12 to 24 AWG.

2.3 Wiring I/O Connectors

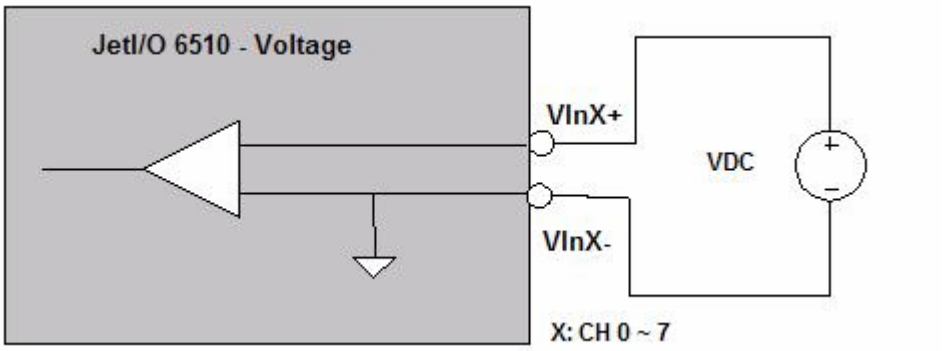
Follow the pin assignment to insert the wires into the front contacts on the terminal block connector. Tighten the wire-clamp screws to prevent the I/O wires from being loosened.

The wiring diagram of the JetI/O 6510 is as below:

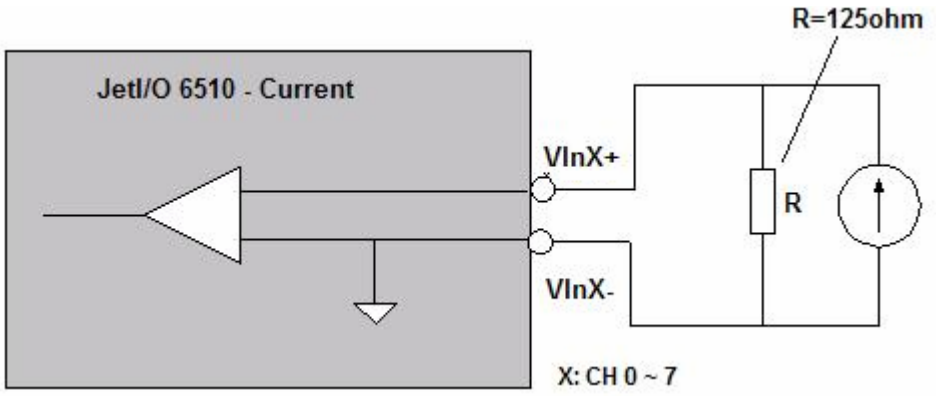
Pin No	Description	Pin No	Description
1(Vin1+)	Differential input CH1+	9(Vin0+)	Differential input CH0+
2(Vin1-)	Differential input CH1-	10(Vin0-)	Differential input CH0-
3(Vin3+)	Differential input CH3+	11(Vin2+)	Differential input CH2+
4(Vin3-)	Differential input CH3-	12(Vin2-)	Differential input CH2-
5(Vin5+)	Differential input CH5+	13(Vin4+)	Differential input CH4+
6(Vin5-)	Differential input CH5-	14(Vin4-)	Differential input CH4-
7(Vin7+)	Differential input CH7+	15(Vin6+)	Differential input CH6+
8(Vin7-)	Differential input CH7-	16(Vin6-)	Differential input CH6-

2.4 JetI/O 6510 Wiring Example

2.4.1 JetI/O 6510 analog voltage input wiring example



2.4.2 JetI/O 6510 analog current input wiring example



2.5 Wiring Earth Ground

To ensure the system will not be damaged by noise or any electrical shock, we suggest you to make exact connection with JetI/O products with Earth Ground.

On the bottom side of JetI/O 6500 Series, there is one power earth ground pin in the Power Input terminal block.

Pin No	Description
1(+24V)	DC+24V Power Input
2(FGND)	Power Earth Ground
3(0V)	Referenced Ground for Power Input

2.6 Wiring Fast Ethernet Ports

JetI/O 6500 series includes 1 RJ45 Fast Ethernet ports. The fast Ethernet ports support 10Base-T and 100Base-TX, full or half duplex modes. The fast Ethernet port will auto-detect the signal from connected devices to negotiate the link speed and duplex mode. Auto MDI/MDIX allows users to connect another switch, hub or workstation without changing straight through or crossover cables.

Connect one side of an Ethernet cable into the Ethernet port and connect the other side to the attached switch or host. The link LED will light up when the cable is correctly connected. Refer to the **LED Indicators** section for descriptions of each LED indicator. Always make sure that the cables length between the 2 ends is less than 100 meters (328 feet).

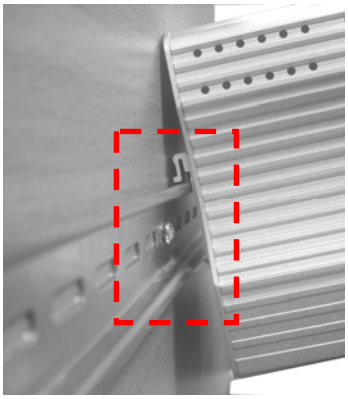
The wiring cable types are as below.

10Base-T: 2-pair UTP/STP Cat. 3, 4, 5 cable, EIA/TIA-568 100-ohm (100m)
100 Base-TX: 2-pair UTP/STP Cat. 5 cable, EIA/TIA-568 100-ohm (100m)
1000 Base-TX: 4-pair UTP/STP Cat. 5 cable, EIA/TIA-568 100-ohm (100m)

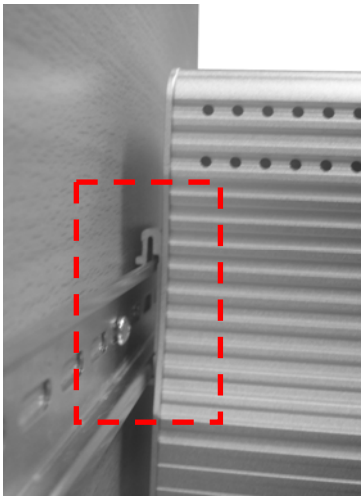
2.7 Din-Rail Mounting Installation

The DIN-Rail clip is already attached to the JetI/O 6500 Series when packaged. If the DIN-Rail clip is not screwed on the JetI/O, follow the instructions and the figure below to attach DIN-Rail clip to JetI/O.

a. Insert the upper end of DIN-Rail clip into the back of DIN-Rail track from its upper side.



b. Lightly push the bottom of DIN-Rail clip into the track.



c. Check if DIN-Rail clip is tightly attached on the track.
d. To remove JetI/O 6500 from the track, reverse the steps above.

3 Preparation for Management

Before you start to configure the JetI/O, you need to know the system architecture of the JetI/O products, configure the device's IP address, and then you can remotely manage the Ethernet I/O via the network. This chapter introduces the basic knowledge of the related technologies.

Following topics are covered in this chapter:

3.1 Understand the Ethernet I/O Server Architecture

The Figure 1 shows the JetI/O Intelligent Ethernet I/O Server Architecrure. In the top level shows the typical applications run in the remote I/O environment. The middle level is the Etherent infrasture. The low level, gray block include the software agent, signal types of the JetI/O 6500 series intelligent Etherent I/O Server.

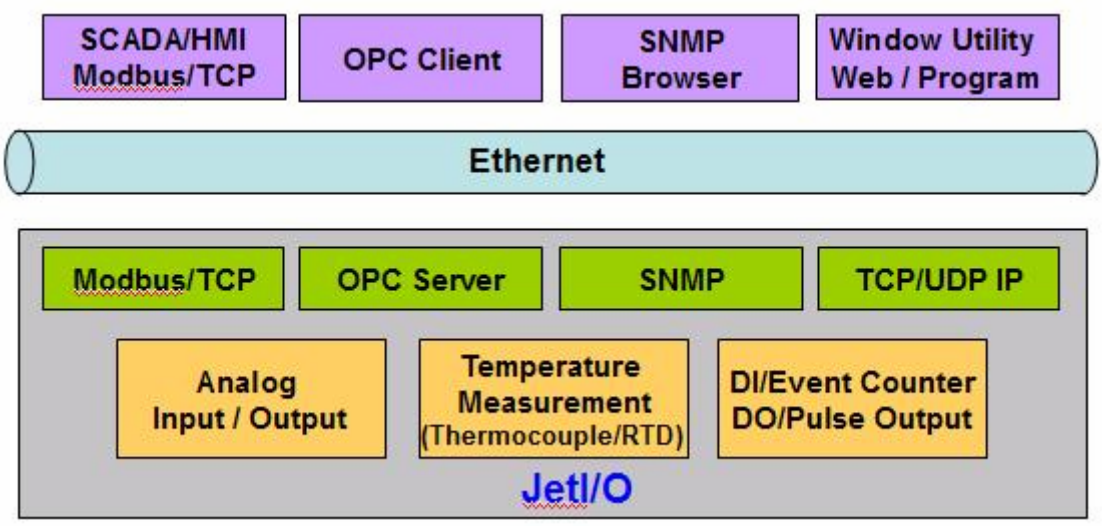


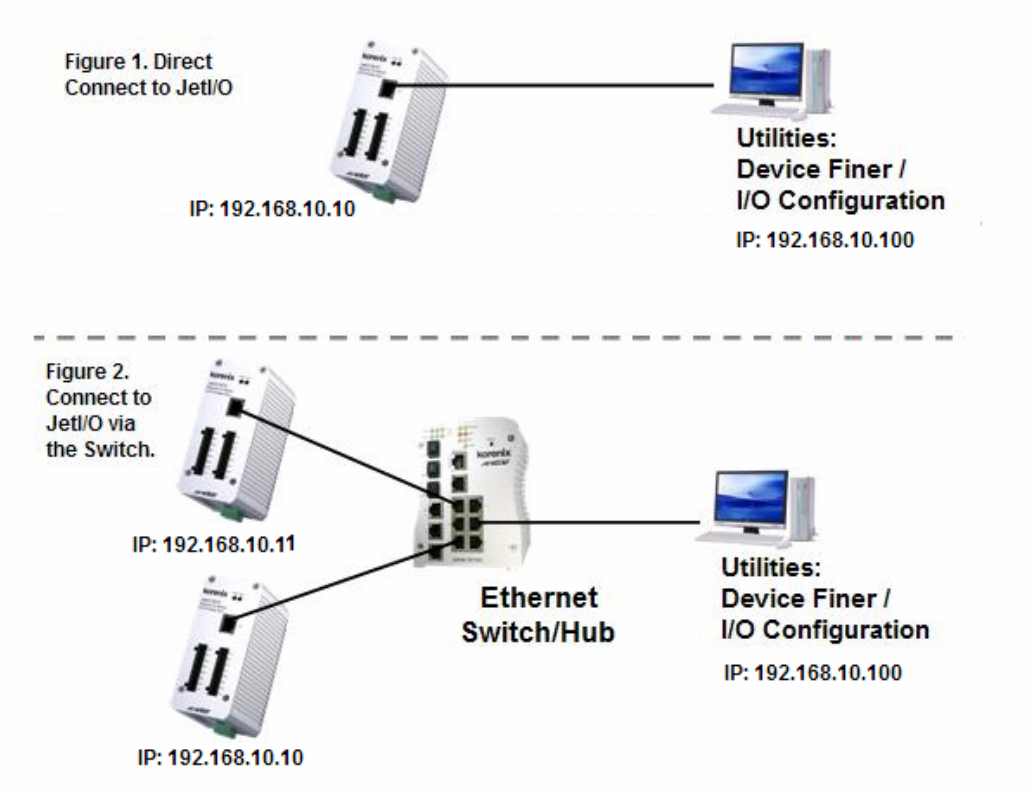
Figure 1. The JetI/O Intelligent Ethernet I/O Server Architecrure.

3.2 Preparation for Remote Management

JetI/O 6500 series Intelligent I/O Server provides several types remote management methods. You can configure the JetI/O via the Etherent network. You just need to know the device's IP address and then you can remotely control or monitor the I/O channels' information.

JetI/O provides several ways for users to configure the IP address. The default IP

address is 192.168.10.3. You can directly connect the JetI/O one after one to change its IP address. Or connect the JetI/Os to the same switch or network, then the host PC can modify the IP address via the switch or network.



If you purchase several JetI/Os and connect them to the same network before change their IP address. They must have the same default IP address, and you may not control them well due to the IP conflict. At this time, you should change their IP address first. The JetI/O' Block I/O configuration utility or Device Finder Utility can help you to do this.

Note 1: Device Finder Utility allows you to discover the JetI/Os which have the same IP address. Change the IP address of the JetI/O one after one. After you configured the new IP address for the unit, please notice whether the ARP table of the device is flashed or not. If not, you can choose "Start -> Run", type "cmd" to open the DOS prompt. Use "arp –d" to clear the ARP cache.

Note 2: You can find the detail progress, please refer to the next chapters.

4 Feature Configuration

JetI/O 6500 series Industrial Managed Ethernet I/O module provides several configuration methods. This chapter introduces the configuration steps.

Following topics are covered in this chapter:

4.1 Block I/O Configuration Utility

Block I/O Utility is the major JetI/O Configuration Utility. With this tool, you can browse the available units, view the status of each channel, configure the I/O settings, configure active alarms and conditions&Go logic rule.

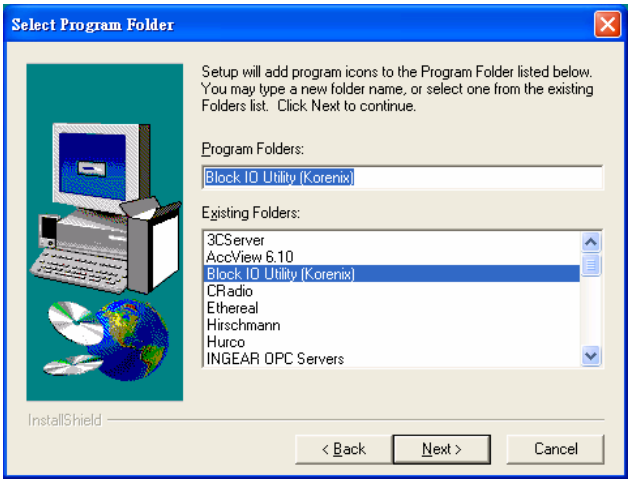
4.1.1 Installation

1. Go to the “Utility -> IO Configuration” folder. Click “Setup.exe” to run the setup progress.

2. Click “Next” and type the Name and Company in the “User Information” window. Then click “Next”.

3. Choose the Destination Directory in the “Choose Installation Location” window. Then click “Next”.

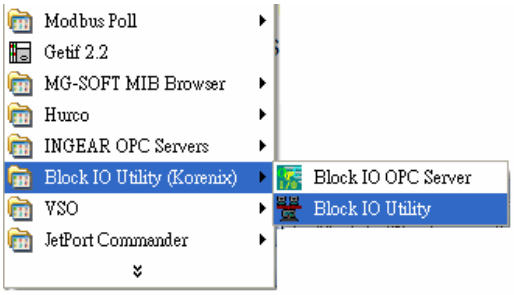
4. Type the name for the Block I/O Configuration Utility or use the default name, Block IO Utility (Korenix) for the program in the “Program Folder” field of the “Select Program Folder” window. Then click “Next”.



5. Click “Next” in the “Starting Copying File” window to continue the setup progress.

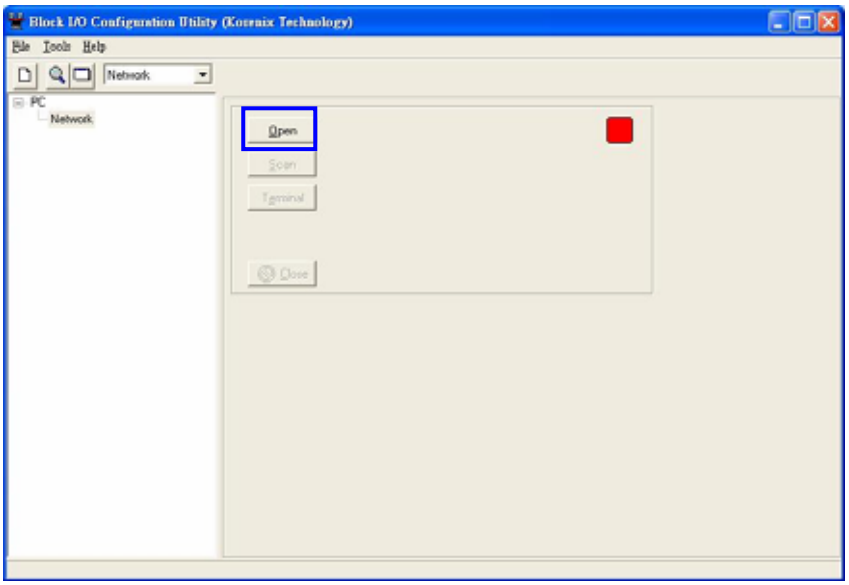
6. As long as you see the “Setup Complete” window that means the progress is finished. Click “Finish” to exit the setup progress.

7. Go to “Start” -> “Program”, then you can see the “Block IO Utility(Korenix) folder. There are 2 utilities are installed, Block IO OPC Server and Block IO Utility.

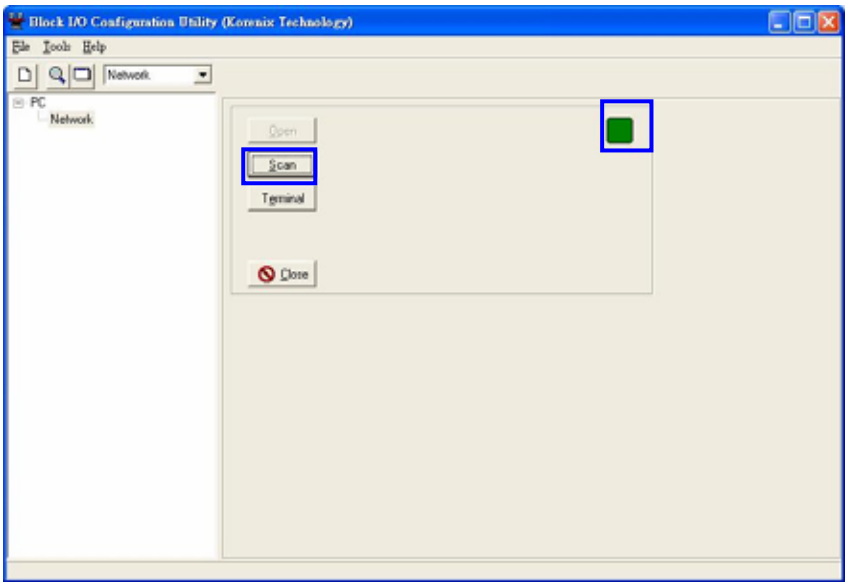


4.1.2 Device Scan

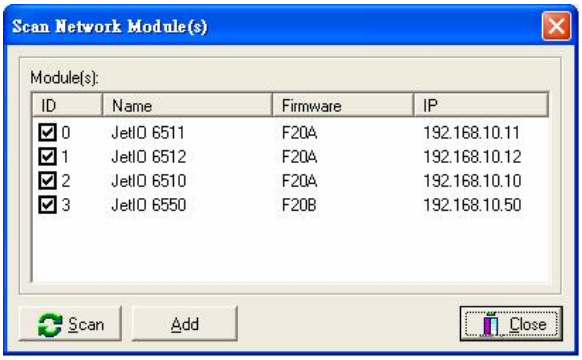
1. Lunch the Block IO Utility and then press “Open” to enable the network Interface.



The right indicator will show “Green” after you opened the interface. Click “Cloos” can close the network interface.

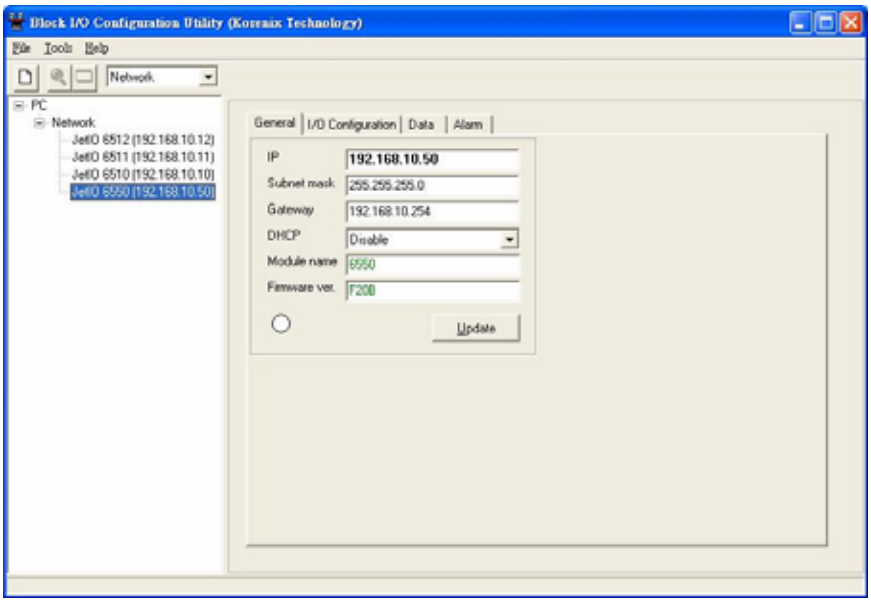


2. Click “Scan” to open the “Scan Network Module(s)” popup window. Click Scan to start the searching.



Note: Please modify the IP address of your target devices. The scan feature can't browse the devices which have the same IP address. Only one of the devices which have the same IP address can be found. This is the current restriction. Please modify the IP address first. You can use web browser, Block I/O Utility or Device Finder to do the IP modification.

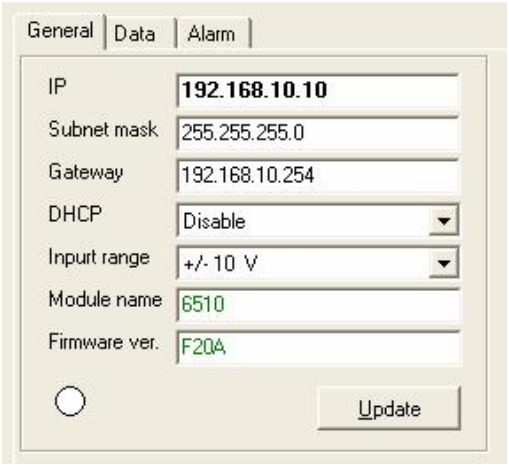
3. Click "Add" to add the available JetI/O units. Then you can see the JetI/O units are listed in the left column.



4. Move the mouse over to one of the JetI/O units. Select the unit then you can configure and monitor the configurations of the JetI/O. The features Block I/O Configuration utility provides are similar please find your model name and go to its configuration introduction chapter in below.

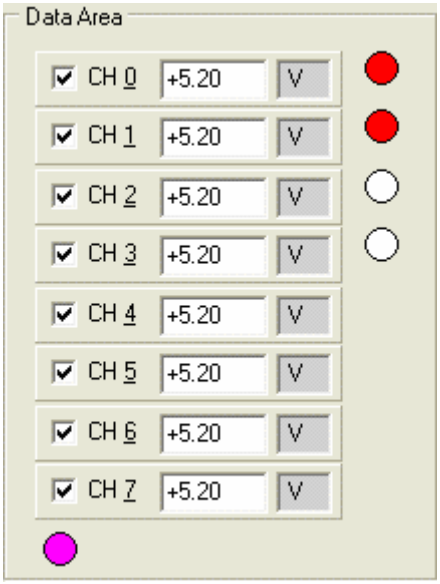
4.1.3 JetI/O 6510 Configuration

4.1.3.1 Go to **"General"** page. You can view the current settings, modify the IP address, Subnet mask, Default Gateway, Enable or Disable DHCP Client mode, select the Input range of this device and check the Firmware version. After modified the network setting, press "Update" to active the new setting. The indicator will show green when update successfully.

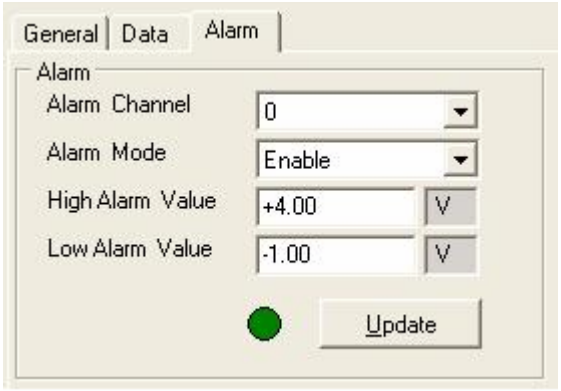


4.1.3.2 Go to **"Data"** page. You can monitor the current working voltage of each channel.

Check Box	Select the check box to monitor the info of the channel. Unselect the check box when you don't want to monitor it.
White	Afte enabled the alarm feature of the channel, these is a white circle behind the channel.
Red	The circle become to Red when the alarm is activated.
Blinking	The indicator in the bottom of the Data Area means the utility is monitoring the status of the channels. If there is error occurred, the color become to red or not light.



4.1.3.3 Go to **"Alarm"** page. You can setup the High/Low alarm value (Voltage or Current) for each channel.



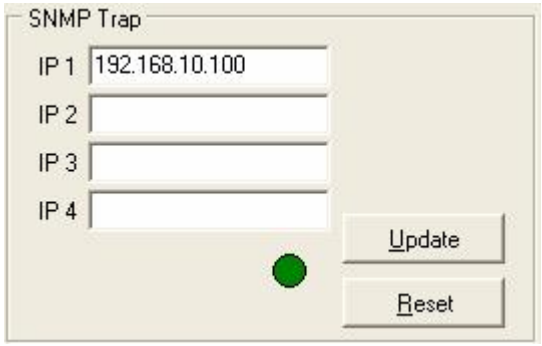
Alarm Channel: Select the channel.

Alarm Mode: Enable or Disable

High Alarm Value, Low Alarm Value: Type the value here.

Update: Activate the new setting.

SNMP Trap Server Setting: You can configure up to 4 SNMP Trap Server here. Type the IP address and press "Update" to activate the new setting.

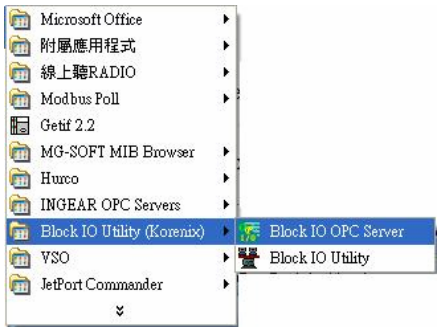


The indicator show green when press update.

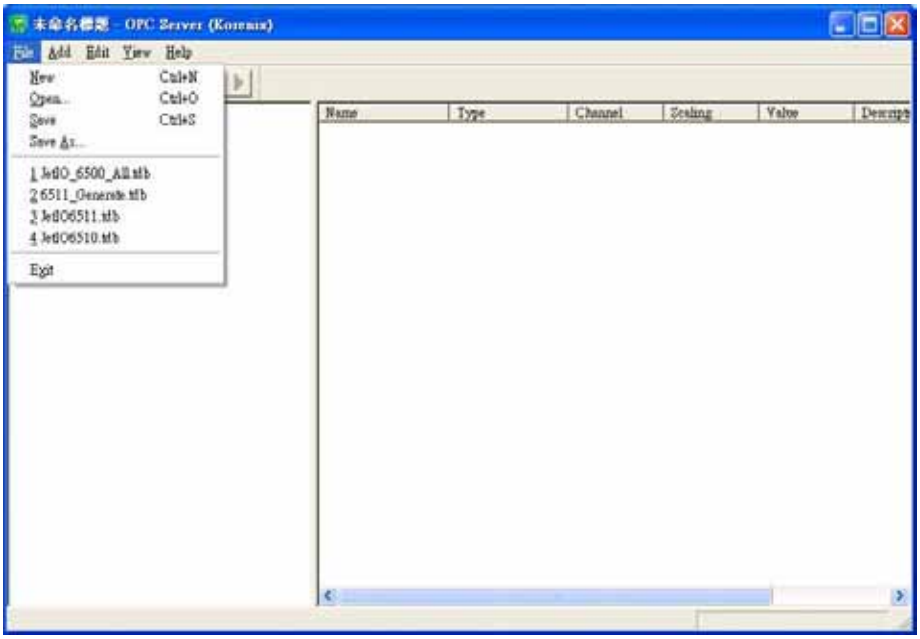
4.2 Block I/O OPC Server Utility

4.2.1 OPC Server Utility

1. Go to “Start” -> “Program”, then you can see the “Block IO Utility(Korenix) folder. There are 2 utilities are installed, Block IO OPC Server and Block IO Utility.



2. Open the “Block IO OPC Server”.
3. Select “File -> New” to create new profile. Or select “File -> Open” to open profile you saved.



4. Select “Add -> New Device”, the popup window “Driver Selection” will appear. (Only appear in the first time you add new device). Click “Add” and type the driver name and correct IP address. Click “OK” to next popup windows for Driver Selection. Use “Edit -> Comm Setting” can modify the parameters.

Figure 4.1 “Add” the “New Device”.

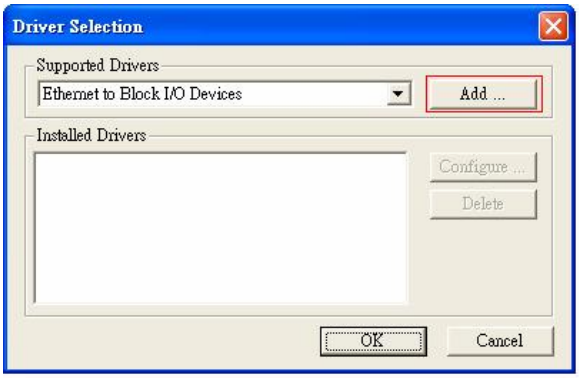


Figure 4.2 Installed Driver Selection Window.

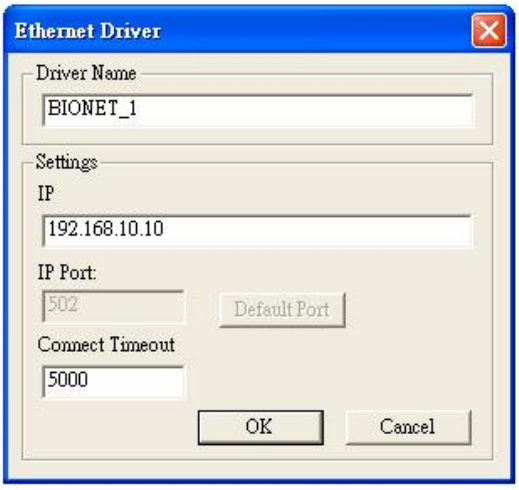
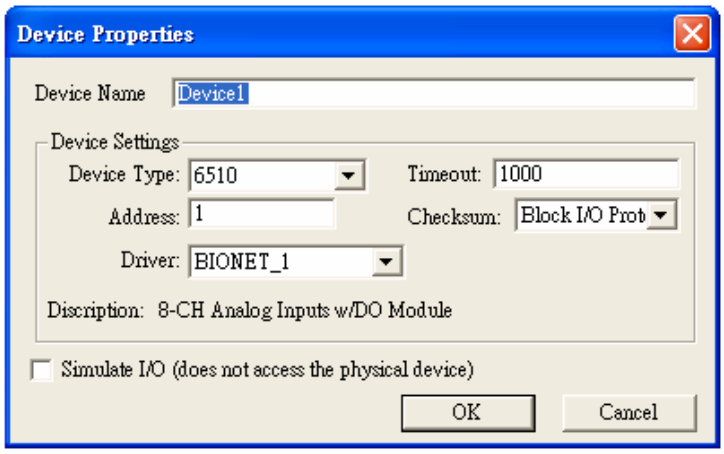
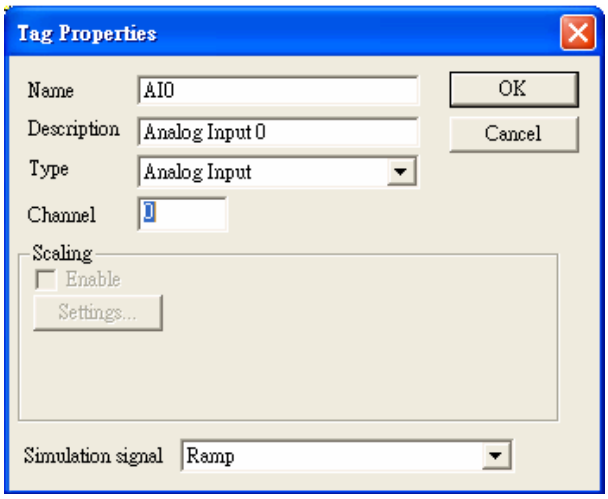


Figure 4.3 “Ethernet Driver” for the devices.

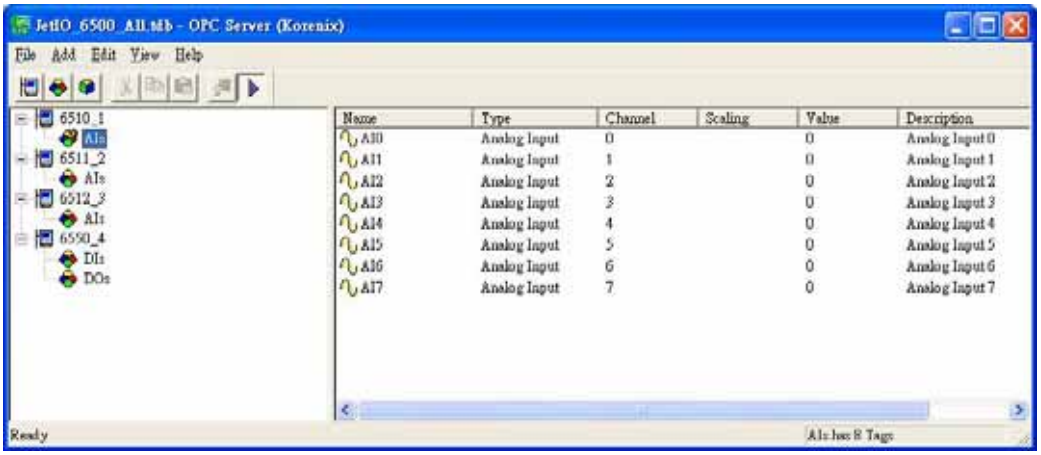
5. Type the “Device Name” and select the “Device Type” in the “Device Configuration” window.



6. Select “Add -> New Group” to create new group for the later new tags you’ll create. Select “Add -> New Tag” and fill the “Tag Properties” in the popup window. Select the tag and “Edit –> Properties“, you can modify the tag properties.



7. Select “Add -> Generate Tags”, the utility generate all the channels’ tags for the device.



Name: The name of the channel. You can manually change this value.

Type: The input type of the channel.

Channel: The channel ID.

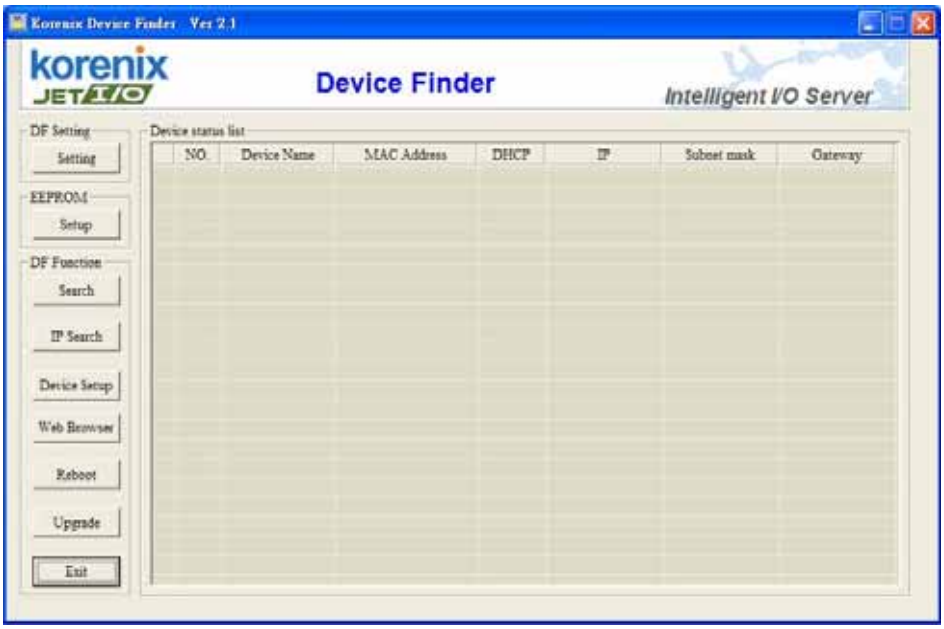
Value: The value of the channel, you can use “Monitor” to read them.

Description: The description of this channel, you can munually change this value.

8. Select “View -> Monitor” to monitor the status of the tags. Or you can click the  Monitor icon in the UI.
9. Select “File -> Save” to save the profile, then your OPC Client can monitor the Jet I/O status.

4.3 Device Finder Utility

1. Go to the “Utility -> Device Finder” folder. Click “DeviceFinder.exe” to run the program.



2. Click “Setting” of the DF Setting, you can configure the polling period time.
3. Click “Setup” of the EEPROM, you can see the info of the device. It’s good to do debugging.
4. Click “Search”, Device Finder can automatically search the JetI/Os.
5. Click “IP Search” to search one specific IP address.
6. Click “Device Setup” to configure the IP address… basic network settings.
7. Click “Web Browser” to connect the web UI of the device.
8. Click “Reboot” to reboot the device.
9. Click “Upgrade” to upload the new firmware.
10. Click “Exit” to exit the program.

4.4 SNMP

Simple Network Management Protocol (SNMP) is a protocol used for exchanging management information between network devices. SNMP is a member of the TCP/IP protocol suite. JetI/O 6500 series support SNMP v1 and v2c.

An SNMP managed network consists of two main components: agents and a manager. An agent is a management software module that resides in a managed switch. An agent translates the local management information from the managed device into a SNMP compatible format. The manager is the console through the network.

JetI/O 6500 series supports Public MIB: System. Private MIB includes channels’ information. SNMP Trap allows the JetI/O to send the active alarm to trap servers.

4.5 Web UI

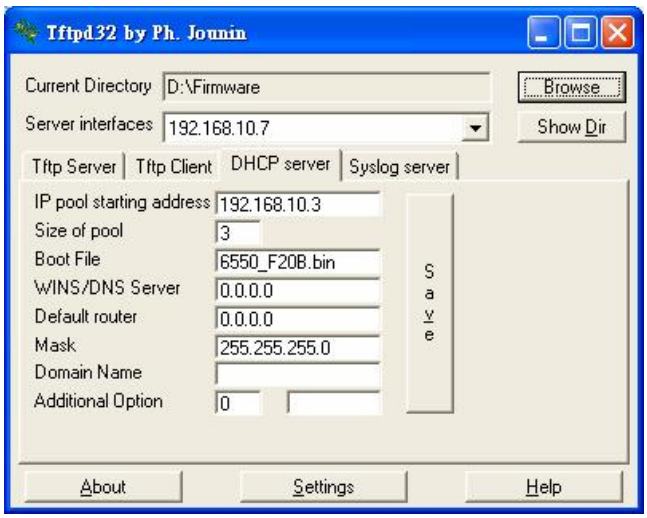
Type the IP address of the device. Then you can access the embedded web browser of the I/O server. The web browser allows you monitor the information/status of each channels.

4.6 How to Upgrade Firmware

The JetI/O server allows you remotely upgrade the firmware to fix the known issues or to enhance the software features. When user starts the progress of the firmware upgrade, the JetI/O runs as the DHCP client mode to get the IP from DHCP Server and download the boot file from the server. (Not the same as JetNet or other product.)

For JetI/O firmware upgrading utility, we recommend the freeware utility, **TFTP32.** You can easily download the tool in the web site: **http://tftpd32.jounin.net/**

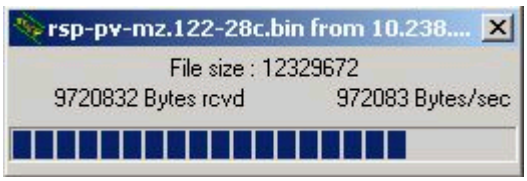
1. Download the file and run it first.
2. Browse the “Current Directory” of the firmware file you put. And select the network interface card you used.
3. Configure the setting in the “DHCP Server” mode.
   a. Type the start IP address in the “IP pool starting address”.
   b. Type the volume for the Size of the pool. The volume is the IP address the DHCP Server can assign to the clients.
   c. Boot File: Type the file name you want update.
   d. Mask: Type the subnet mask here.
   e. The other settings are optional, depend on your environment.



   f. After configured, press “Save” to save the settings.

4. Open the Device Finder Utility and search the available JetI/O servers. Select the

target unit/units you want upgrade. Then press “Upgrade” to start the progress. The JetI/O can get dynamic IP and download file from the TFTP32. The popup window shows you the upgrading progress in TFTP32.



5. After firmware file downloading finished. The JetI/O server’s firmware can be upgraded automatically.
6. Open the Block I/O Configuration utility and check the firmware in “General” page.

5 Modbus/TCP Command Set

This chapter introduces the Modbus/TCP command set JetI/O provided. When you creating application for your SCADA/HMI or coding your own programs. The command set is helpful for you to find the value of each registers.

Following topics are covered in this chapter:

5.1 Introduction of Modbus/TCP Protocol

5.2 JetI/O 6510 Modbus/TCP Address Mapping

5.1 Introduction of Modbus/TCP Protocol

5.1.1 Modbus/TCP Protocol

The Modbus protocol, developed by Gould-Modicon, is widely used in industrial communications to integrate PLC's, computer, terminals and other various I/O devices. Intelligent JetI/O Server equipped with communication interface provides an Ethernet communication links with Modbus/TCP protocol support.

Modbus/TCP is a variant of the Modbus family of communication protocol. Modbus/TCP is a Master/Slave communication protocol. A master (a host PC) initiates queries, a slave (one of the JetI/O servers) then responds by supplying the requested data to the master by using Modbus/TCP commands.

5.1.2 Function Code (FC)

The Intelligent JetI/O Server uses a subset of the standard Modbus/TCP function code to access device-dependent information. Modbus/TCP function code is defined as below.

FC	Name	Usage
01	Read Coils	Read the state of a digital output
02	Read Input Status	Read the state of a digital input
03	Read Holding Register	Read holding register in 16-bits register format
04	Read Input Registers	Read data in 16-bits register format
05	Write Coil	Write data to force a digital output ON/OFF
06	Write Single Register	Write data in 16-bits register format
15	Force Multiple Coils	Write data to force multiple consecutive coils

5.1.3 Error Checking

The utilization of the error checking will help eliminate errors caused by noise in the communication link. In Modbus/TCP mode, messages include an error-checking field that is based on a Cyclical Redundancy Check (CRC) method. The CRC filed checks the contents of the entire message. It applied regardless of any parity check method used for the individual BYTE acters of the message. The CRC value is calculated by the transmitting device, which appends the CRC to the message. The receiving device recalculates a CRC during receipt of the message, and compares the calculated value to the actual value it received in the CRC filed.

5.1.4 Exception Response

If an error occurs, the slave sends an exception response message to master consisting of the slave address, function code, exception response code and error check field. In an exception response, the slave sets the high-order bit (MSB) of the response function code to one. The exception response codes are listed below.

Code	Name	Descriptions
01	Illegal Function	The message function received is not allowable action.
02	Illegal Data Address	The address referenced in the data field is not valid.
03	Illegal Data Value	The value referenced at the addressed device location is no within range.
04	Slave Device Failure	An unrecoverable error occurred while the slave was attempting to perform the requested action.
05	Acknowledge	The slave has accepted the request and processing it, but a long duration of time will be required to do so.
06	Slave Device Busy	The slave is engaged in processing a long-duration program command.
07	Negative Acknowledge	The slave cannot perform the program function received in the query.
08	Memory Parity Error	The slave attempted to read extended memory, but detected a parity error in the memory.

5.2 JetI/O 6510 Modbus/TCP Address Mapping

JetI/O 6510 Common Register Map (Holding Registers)			
Protocol Address (Hex)	**PLC Address (Decimal)**	**Access**	**Description**
0000	40001	R/W	(Read/Write) Watch-dog enable/disable **R/W:AABB** **AABB:0000H** (disable) **AABB:FF00H** (enable)
0001	40002	R/W	(Read/Write) Watch-dog cycle count **R/W:AABB** **AABB:0001H~00FFH** **(0.1*AABB)=Cycle Time (sec)**
0002	40003	R/W	**R:** Read the host-watchdog status **W:** Reset the host-watchdog status **R:AABB** **AABB:0000H** (remote module OK) **AABB:FF00H** (host-watchdog fail) **W: AABB** **AABB:FF00H(reset)**
0003	40004	R	Read the firmware version **R:AAAA** **AAAA:F12A (HEX)**

0004	40005	R	Read module name **R:AAAA** **AAAA: 6510 (HEX)**
0005	40006	R	Read reset status **R:AABB** **AABB:0000H** (after using this read command) **AABB:0001H**(The value is equal to0001H after reset module)
0006	40007	R	Read AD offset Calibration Coefficients **R:AABB(bit 16~23)**
0007	40008	R	Read AD offset Calibration Coefficients **R:00AA(bit 0~15)**
0008	40009	R	Read AD span Calibration Coefficients **R:AABB(bit 16~23)**
0009	40010	R	Read AD span Calibration Coefficients **R:AABB(bit 0~15)**
000A	40011	R/W	Input range (address low) Code:08H~0DH 08H: ± 10V 09H: ± 5V 0AH: ± 1V 0BH: ± 500mV 0CH: ± 150mV 0DH: ± 20mA
000B	40012	R/W	Offset calibration (R: no used) **W: AABB** **AABB:FF00H**
000C	40013	R/W	Span calibration (R: no used) **W: AABB** **AABB:FF00H**
JetI/O 6510 Special Register Map (Holding Registers)			
000D	40014	R/W	Read/write Channel 0 Low alarm value R/W:AABB
000E	40015	R/W	Read/write Channel 0 High alarm value R/W:AABB
000F	40016	R/W	Read/write Channel 1 Low alarm value R/W:AABB
0010	40017	R/W	Read/write Channel 1 High alarm value R/W:AABB
0011	40018	R/W	Read/write Channel 2 Low alarm value R/W:AABB
0012	40019	R/W	Read/write Channel 2 High alarm value R/W:AABB
0013	40020	R/W	Read/write Channel 3 Low alarm value R/W:AABB
0014	40021	R/W	Read/write Channel 3 High alarm value R/W:AABB
0015	40022	R/W	Read/write Channel 4 Low alarm value

			R/W:AABB
0016	40023	R/W	Read/write Channel 4 High alarm value R/W:AABB
0017	40024	R/W	Read/write Channel 5 Low alarm value R/W:AABB
0018	40025	R/W	Read/write Channel 5 High alarm value R/W:AABB
0019	40026	R/W	Read/write Channel 6 Low alarm value R/W:AABB
001A	40027	R/W	Read/write Channel 6 High alarm value R/W:AABB
001B	40028	R/W	Read/write Channel 7 Low alarm value R/W:AABB
001C	40029	R/W	Read/write Channel 7 High alarm value R/W:AABB
001D	40030	R/W	Read/write masked AD-channels of the module R/W:AABB AA:00 BB:XXXXXXXX(Binary) X: 1 Enable X:0 Disable
001E	40031	R/W	Enable / Disable alarm status R/W: xxxxxxxx (Binary) X : 1 Enable X: 0 Disable Least bit means the channel 0
001F	40032	R/W	Read/write SNMP Trap Number **R/W:AAAA** AAAA:0~4 0: close SNMP trap
0020	40033	R/W	(Read/Write)SNMP Trap IP1 Lo-Word **R: AABB(hex)** **W: AABB(hex)** IP=X.X.AA.BB
0021	40034	R/W	(Read/Write)SNMP Trap IP1 Hi-Word **R: AAB** R/W **B(hex)** **W: AABB(hex)** IP=AA.BB.X.X
0022	40035	R/W	(Read/Write)SNMP Trap IP2 Lo-Word **R: AABB(hex)** **W: AABB(hex)** IP=X.X.AA.BB
0023	40036	R/W	(Read/Write)SNMP Trap IP2 Lo-Word **R: AABB(hex)** **W: AABB(hex)** IP=X.X.AA.BB
0024	40037	R/W	(Read/Write)SNMP Trap IP3 Hi-Word **R: AABB(hex)** **W: AABB(hex)** IP=AA.BB.X.X
0025	40038	R/W	(Read/Write)SNMP Trap IP3 Lo-Word

			R: AABB(hex) **W: AABB(hex)** IP=X.X.AA.BB
0026	40039	R/W	(Read/Write)SNMP Trap IP4 Hi-Word **R: AABB(hex)** **W: AABB(hex)** IP=AA.BB.X.X
0027	40040	R/W	(Read/Write)SNMP Trap IP4 Hi-Word **R: AABB(hex)** **W: AABB(hex)** IP=AA.BB.X.X
0028	40041	R/W	(Write) Repeat enable SNMP Trap **W: FF00(hex)**

JetI/O 6510 Analog Input Register Map (Input Register)			
0000	30001	R	Analog input signal (Channel 0) Units: signed Input Range: ± 10V Return Value: D8F0 ~ 2710(-10000mV ~ +10000mV) Input Range: ± 5V Return Value: EC78 ~ 1388(-5000mV ~ +5000mV) Input Range: ± 1V FC18 ~ 03E8(-100.0mV ~ +100.0mV) Input Range: ± 500mV EC78 ~ 1388(-500.0mV ~ +500.0mV) Input Range: ± 150mV Return Value: FA24 ~ 05DC(150.0mV ~ +150.0mV) Input Range: ± 20mA B1E0~4E20(-20.000mA~+20.000mA)
0001	30002	R	Analog input signal (Channel 1) the same data format as Channel 0
0002	30003	R	Analog input signal (Channel 2) the same data format as Channel 0
0003	30004	R	Analog input signal (Channel 3) the same data format as Channel 0
0004	30005	R	Analog input signal (Channel 4) the same data format as Channel 0
0005	30006	R	Analog input signal (Channel 5) the same data format as Channel 0
0006	30007	R	Analog input signal (Channel 6) the same data format as Channel 0
0007	30008	R	Analog input signal (Channel 7) the same data format as Channel 0

6 Appendix

6.1 SNMP MIB

An SNMP to I/O MIB file that can help you monitor I/O status with SNMP software. You can find the MIB file on the package.

(I). Public- System MIB:

Object ID (OID)	Description	Community, R/W Access
sysDescr	The *sysDescr* directive is used to define the system description of the host on which the SNMP agent (server) is running. This description is used for the *sysDescr* object instance of the MIB-II. SYNTAX: *DisplayString* (SIZE (0..31))	Public, Read Only
sysObjectID	The vendor's authoritative identification of the network management subsystem contained in the entity. This value is allocated within the SMI enterprises subtree. SYNTAX: *DisplayString* (SIZE (0..31))	Public, Read Only
sysUpTime	The *sysUpTime* directive is used to measures the time, in hundredths of a second, since the last system restart. SYNTAX: *DisplayString* (SIZE (0..31))	Public, Read Only
sysContact	The *sysContact* directive is used to define the system contact address used for the *sysContact* object instance of the MIB-II. SYNTAX: *DisplayString* (SIZE (0..31))	Public, Read Only
sysName	The *sysName* directive is a string containing an administratively-assigned name for the system running the SNMP agent. By convention, this should be its fully-qualified domain name. SYNTAX: *DisplayString* (SIZE (0..31))	Public, Read Only
sysLocation	The *sysLocation* directive is used to define the location of the host on which the SNMP agent (server) is running. This directive is used for the *sysLocation* object instance of the MIB-II. SYNTAX: *DisplayString* (SIZE (0..31))	Public, Read Only

(II).Private MIB - Intelligent I/O Server - 6510

Object ID (OID)	Description	Community, R/W Access
eioAin00Value	Analog input signal (Channel 0) SYNTAX: *INTEGER* (0..65535)	Private, Read Only
eioAin01Value	Analog input signal (Channel 1) SYNTAX: *INTEGER* (0..65535)	Private, Read Only
eioAin02Value	Analog input signal (Channel 2) SYNTAX: *INTEGER* (0..65535)	Private, Read Only
eioAin03Value	Analog input signal (Channel 3) SYNTAX: *INTEGER* (0..65535)	Private, Read Only
eioAin04Value	Analog input signal (Channel 4) SYNTAX: *INTEGER* (0..65535)	Private, Read Only
eioAin05Value	Analog input signal (Channel 5) SYNTAX: *INTEGER* (0..65535)	Private, Read Only
eioAin06Value	Analog input signal (Channel 6) SYNTAX: *INTEGER* (0..65535)	Private, Read Only
eioAin07Value	Analog input signal (Channel 7) SYNTAX: *INTEGER* (0..65535)	Private, Read Only

6.2 Revision History

Version	Description	Date
0.1	First draft version.	
0.1-Jan.10	Revised some wording, add how to upgrade firmware. Correct the latest figures.	Jan. 10, 2008