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## Chapter 1 EDAM-9000 Utility Guide

In order to properly configure EDAM series. You will need following items to complete your system hardware configuration.

### 1.1 System Requirement

#### Host computer

- ♦ IBM PC compatible computer with 486 CPU (Pentium is recommended)
- ♦ Microsoft 95/98/2000/NT 4.0 (SP3 or SP4) or higher versions
- ♦ At least 32 MB RAM
- ♦ 20 MB of hard disk space available
- ♦ VGA color monitor
- ♦ 2x or higher speed CD-ROM
- ♦ Mouse or other pointing devices
- ♦ 10 or 100 Mbps Ethernet Card
- ♦ 10 or 100 Mbps Ethernet Hub (at least 2 ports)
- ♦ Two Ethernet Cable with RJ-45 connector
- ♦ Power supply for EDAM-9000 (+10 to +30 V unregulated)
- ♦ Make sure to prepare all of the items above, then connect the power and network wiring as Figure 1-1 Power wiring.

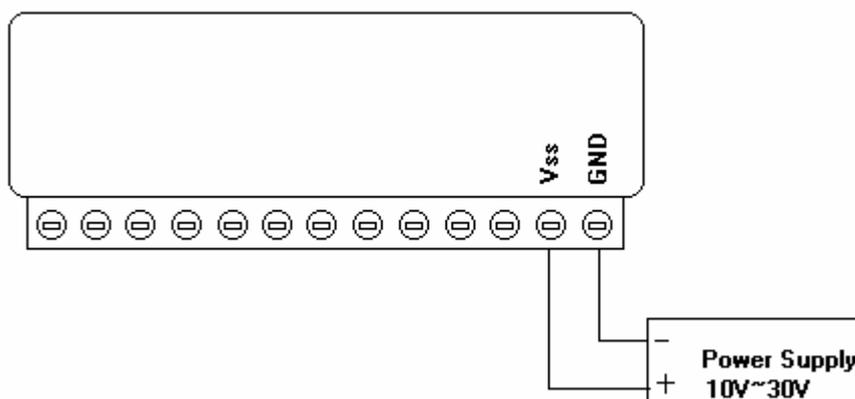


Figure 1-1 Power wiring

### 1.2 Install Utility Software on Host PC

Inlog provide free download Manual and Utility software for EDAM-9000 modules' operation and configuration. Link to the web site: [www.inlog.com.tw](http://www.inlog.com.tw) and click into the "Download Area" to get the latest version EDAM-9000 manual and Ethernet I/O Utility. Once you download and setup the Utility software, there will be a shortcut of the Utility executive program on Windows' desktop after completing the installation.

## Chapter 2 EDAM Ethernet I/O Utility Overview

The Utility software offers a graphical interface that helps you configure the EDAM-9000 modules. It is also very convenient to test and monitor your remote DAQ system. The following guidelines will give you some brief instructions on how to use this Utility.

- ♦ Main Menu
- ♦ Network Setting
- ♦ Adding Remote Station
- ♦ Security setting
- ♦ I/O Module Configuration
- ♦ Alarm Setting
- ♦ I/O Module Calibration
- ♦ Security Setting
- ♦ Terminal emulation
- ♦ Data/Event Stream

## Chapter 3 Main Menu

Double Click the icon of EDAM Ethernet I/O Utility shortcut, the Operation screen will pop up as Figure3-1.

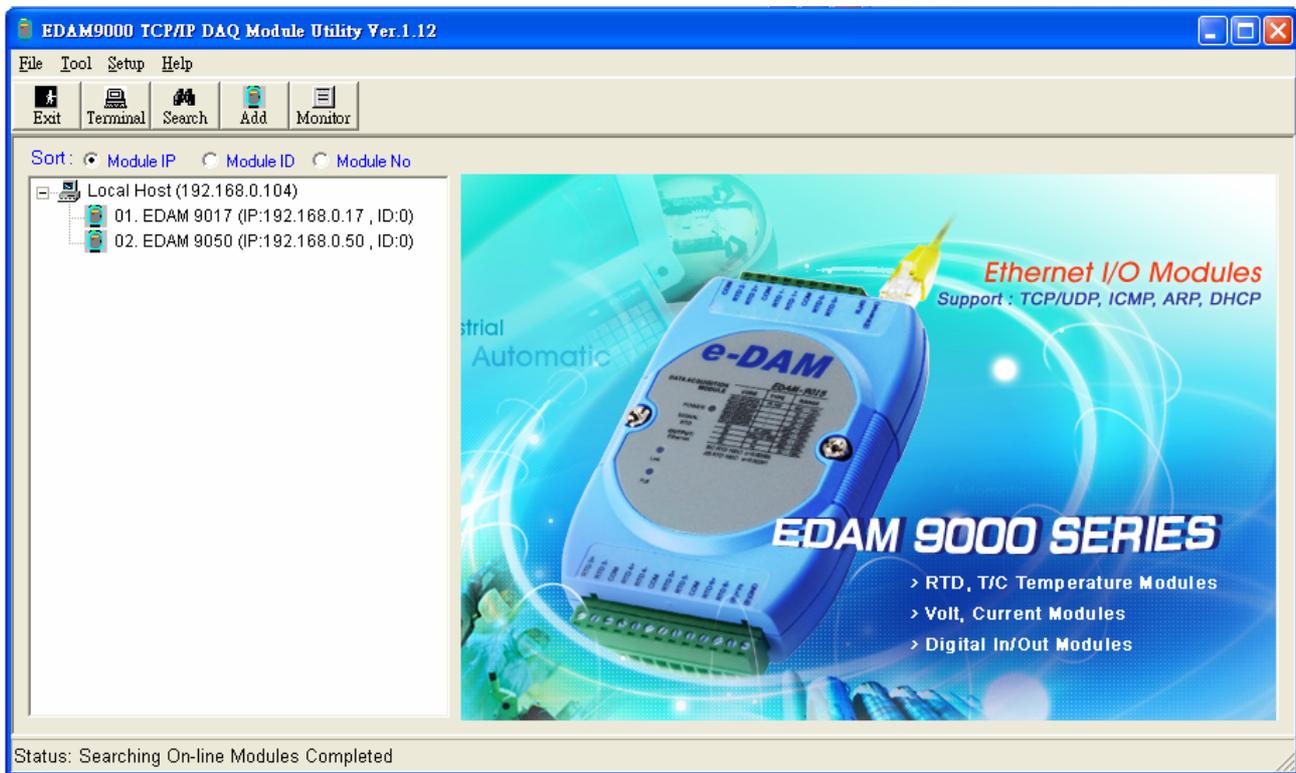


Figure3-1 main window

The top of the operation screen consists of a function menu and a tool bar for user's commonly operating functions.

### 3.1 Function Menu

- ♦ **File** contents "Exit" Function, using to exit this Utility program.
- ♦ **Tool** contents functions as below:
  - Search** for Ethernet Device Search all EDAM-9000 units in the specific Ethernet domination. (The same with host PC's Ethernet domination)
  - Add Remote Ethernet Device:** Create a new EDAM-9000 module located in other Ethernet domination, both available to local LAN and Internet application.
  - Monitor Stream/Event Data:** comes from the remote I/O module
  - Terminal:** Call up the operation screen of Terminal emulation to do the request / response command execution.
- ♦ **Setup:** Contents Timeout and Scan Rate setting functions. Please be aware of the time setting for other Ethernet domination usually longer than local network.
- ♦ **Help:** Contents on-line help function as user's operation guide; the item **About** contents information about software version, released date, and support modules.

### 3.2 Tool Bar

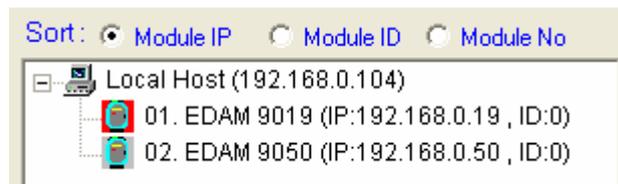
There are five push buttons in the tool bar.



- ♦ **Exit:** Exit utility program
- ♦ **Terminal:** Terminal emulation
- ♦ **Search:** Search EDAM module
- ♦ **Add:** Add remote EDAM I/O module
- ♦ **Monitor:** Monitor the Stream/Event Data
- ♦

### 3.3 List Sort

The searched units will be listed in the tree-structure display area in order by “**Sort**” selection



- ♦ **Module IP:** Sort by module IP
- ♦ **Module ID:** Sort by module ID
- ♦ **Module No:** Sort by module name

### 3.4 Network Setting

As the moment you start up this Windows Utility, it will search all EDAM-9000 I/O modules on the host PC's domination Ethernet network automatically. Then the tree-structure display area will appeal with the searched units and the relative IP address.

Since Utility software detects the EDAM-9000 on the network, user can begin to setup each unit.

Choose any one I/O module listed on the tree-structure display area and entry the correct password. The module basic configuration table is listed as shown in for setting

The screenshot shows a configuration window titled "Module:EDAM-9019" with four tabs: "Module IP", "Stream/Event IP", "Input Settings", and "General Settings". The "Module IP" tab is selected. The window is divided into two main sections. The top section, labeled "IP Address", contains the following fields and controls: "IP Address" (192.168.0.19), "SubMask" (255.255.255.0), "Gateway" (0.0.0.0), and "Mac Address" (E0-00-00-00-00-19). To the right of these fields are "Module ID" (0) and two radio button groups: "Web Server" (with "Enable" selected) and "DHCP" (with "Enable" selected). An "Update" button is located at the bottom right of this section. The bottom section, labeled "Password", includes a red warning text "Acceptable Char. 0~9,a~z or A~Z" and two input fields: "Enter New Password (Max 8 chars):" and "Comfirm the Password (Max 8 chars):". An "Update" button is at the bottom right of this section.

Figure 3-2

### 3.4.1 Module IP

**MAC Address:**

This is also called Ethernet address and needs no further configuration.

**IP Address, Subnet Mask, and Default Gateway:** (default 10.0.0.1, 255.0.0.0 and 0.0.0.0)

The IP address identifies your EDAM-9000 devices on the global network. Each EDAM-9000 has same default IP address **10.0.0.1**. Therefore, *please do not initial many EDAM-9000 at the same time to avoid the Ethernet collision*. If you want to configure the EDAM-9000 in the host PC's dominating network, only the IP address and Subnet Mask will need to set (The host PC and EDAM Ethernet I/O must belong to same subnet Mask).

If you want to configure the EDAM-9000 via Internet or other network domination, you have to ask your network administrator to obtain a specific IP and Gateway addresses, and then configure each EDAM-9000 with the individual setting.

**DHCP:** (default Enabled)

Allow you to get IP address from the DHCP servo without setting IP address by manual. ***DHCP is default enabled***

**Web Server:** (default Enabled)

Allow you monitor and control I/O status on EDAM-9000 modules remotely through web browser.

**Module ID:** (default 00)

Each module must has a unique ID number to be identified when the DHCP enabled, because you would not know the module IP address when DHCP enabled, but if with the different ID number. You can call provided function call(TCP\_GetIPFromID) to get correct IP address for each ID number

**Password:** (default 00000000)

Allow you to change the password of the module

### 3.4.2 Stream/Event IP

**Stream/Event Enable Setting:** (default all disabled)

Set Stream /Event data Destination IP

**Active Stream time inetval:** (default 1 sec)

set time interval for sending stream data

### 3.4.3 Input or Output Settings:

Configure Input or output channel type

### 3.4.4 General Settings:

Misc. settings and status (value) display

### 3.5 Add Remote Stations

To meet the remote monitoring and maintenance requirements, The EDAM-9000 system does not only available to operate in local LAN, but also allowed to access from Internet or Intranet. Thus users would able to configure an EDAM-9000 easily no matter how far it is.

Select item **Tool**\Add Remote Ethernet I/O in function menu or click the button, the adding station screen will pop up as Figure3-3. Then key-in the specific IP address and click the **“Ping”** button. If the communication success, click **“Add”** to add EDAM Ethernet I/O unit into the tree-structure display area.

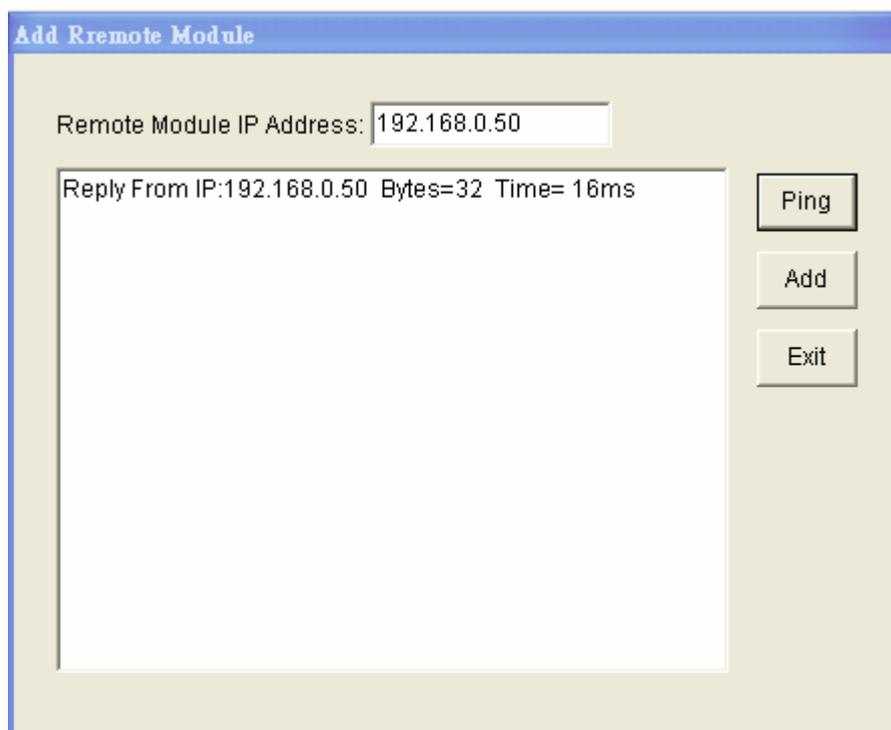


Figure3-3 Add remote module

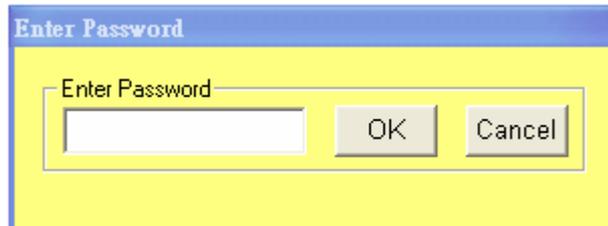
Note:

There is several conditions need to be sure before adding a remote EDAM-9000 system in the windows Utility.

- ♦ Be sure the specific IP is existed and available.
- ♦ Be sure to complete the network linkage for both sides.
- ♦ Be sure to adjust the best timing of timeout setting.
- ♦ Even you are not sure whether the communication is workable or not, there is also a **“Ping”** function for testing the network connection.

### 3.6 Security Setting

Though the technology of Ethernet discovered with great benefits in speed and integration, there also exist risk about network invading form anywhere. For the reason, the security protection design has built-in EDAM-9000 I/O modules. Once user setting the password into the EDAM-9000 firmware, the important system configurations (Network, Firmware, Password) are only allowed to be changed by password verification.



Note:

The default password of EDAM-9000 is "00000000". Please make sure to keep the correct password by yourself. If you lose it, please contact to Inlog's technical support center for help.

### 3.7 Terminal Emulations

You can issue commands and receive response by clicking the Terminal button on the tool bar. There are two kinds of command format supported by this emulating function. Users can choose ASCII or ModBus Hexadecimal mode as their communication base. If the ASCII mode has been selected, the Windows Utility will translate the request and response string in ASCII format.

**ASCII Command mode:** shown as Figure 3-4.

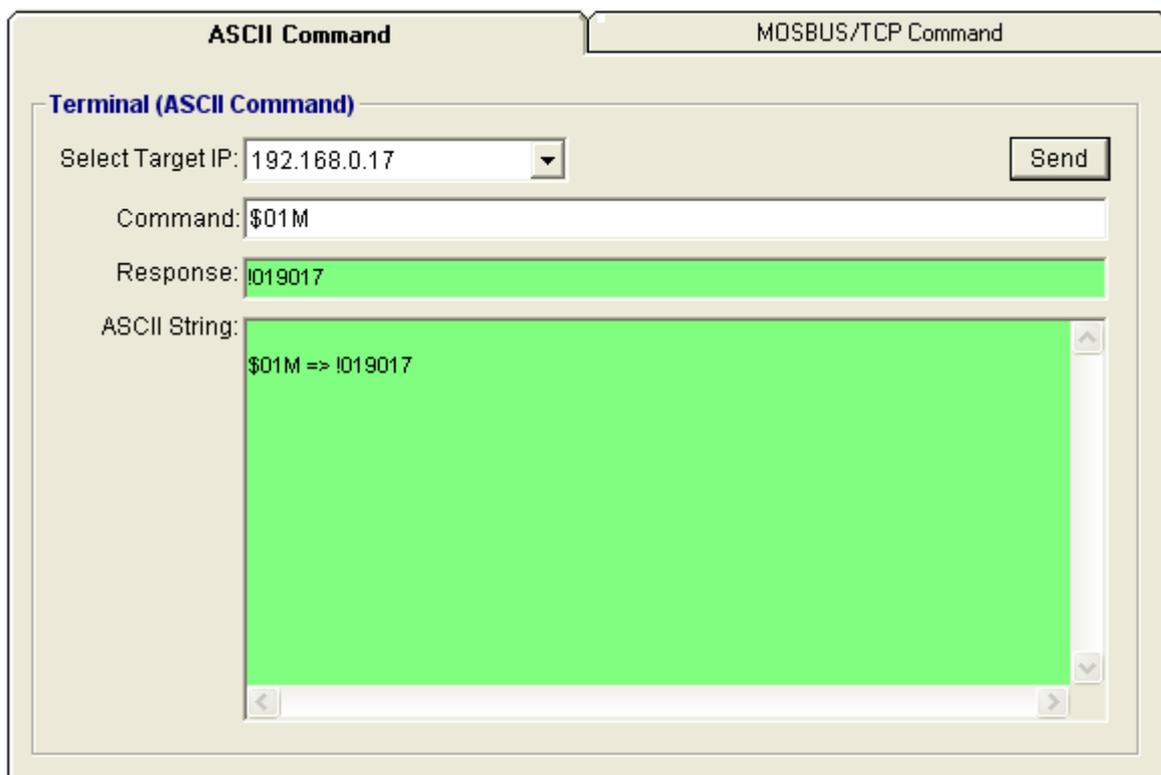


Figure 3-4 ASCII Command Terminal

ModBus Hexadecimal mode: shown as Figure 3-5.

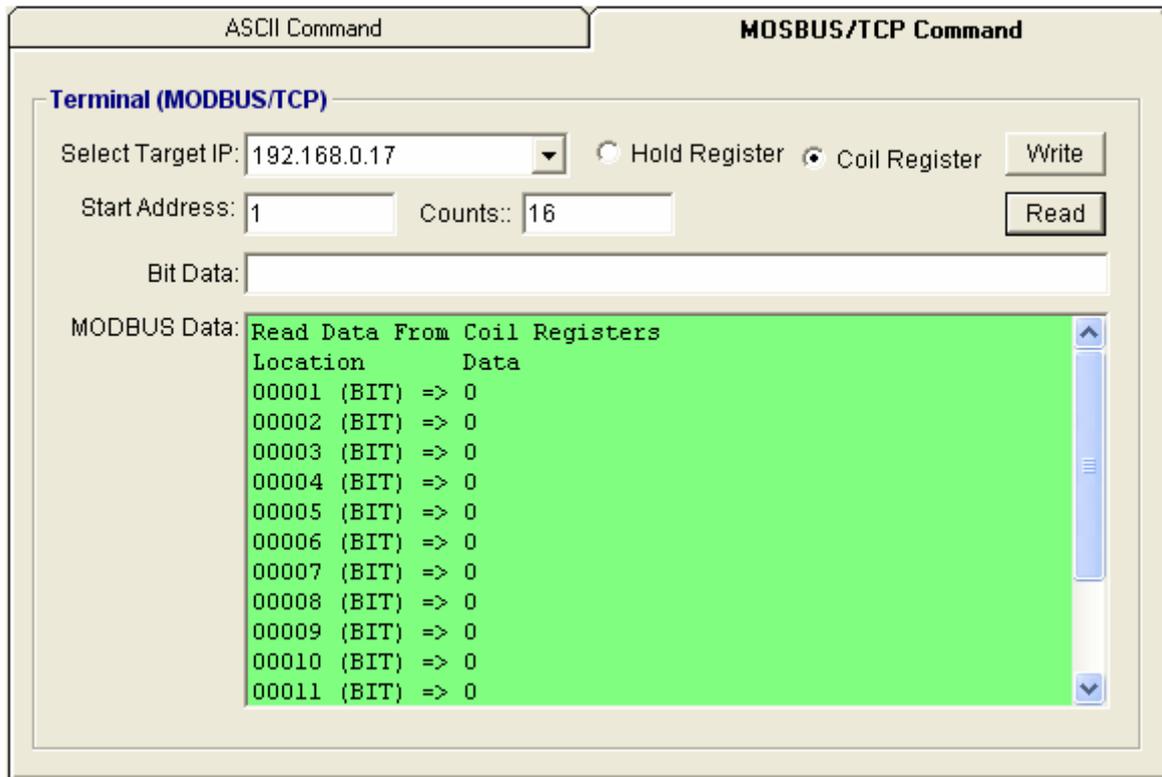


Figure 3-5 ModBus Terminal

### 3.8 Data /Event Stream

#### Data Stream Configuration

In addition to TCP/IP communication protocol, EDAM-9000 supports UDP communication protocol to regularly broadcast data to specific host PCs. Click the tab of Data Stream, then configure the broadcasting interval and the specific IP addresses which need to receive data from the specific EDAM-9000 I/O module. This UDP Data Stream function broadcasts up to 8 host PCs simultaneously, and the interval is user-defined from 50ms to 7 Days.

#### Event Stream Configuration

In addition to TCP/IP communication protocol, EDAM-9000 supports UDP communication protocol to regularly broadcast data to specific host PCs. Click the tab of Data Stream, then configure the broadcasting interval and the specific IP addresses which need to receive data from the specific EDAM-9000 I/O module. This UDP Data Stream function broadcasts up to 8 host PCs simultaneously, and the interval is user-defined from 50ms to 7 Days.

#### Data Stream Monitoring

After finishing the configuration of Data Stream, you can select the tab "Stream Monitor" in the function bar or click icon to call up operation display as Figure 3-6 Stream display.

Select the IP address of the EDAM-9000 you want to read data, then click "Start" button. The Utility software will begin to receive the stream data on this operation display.

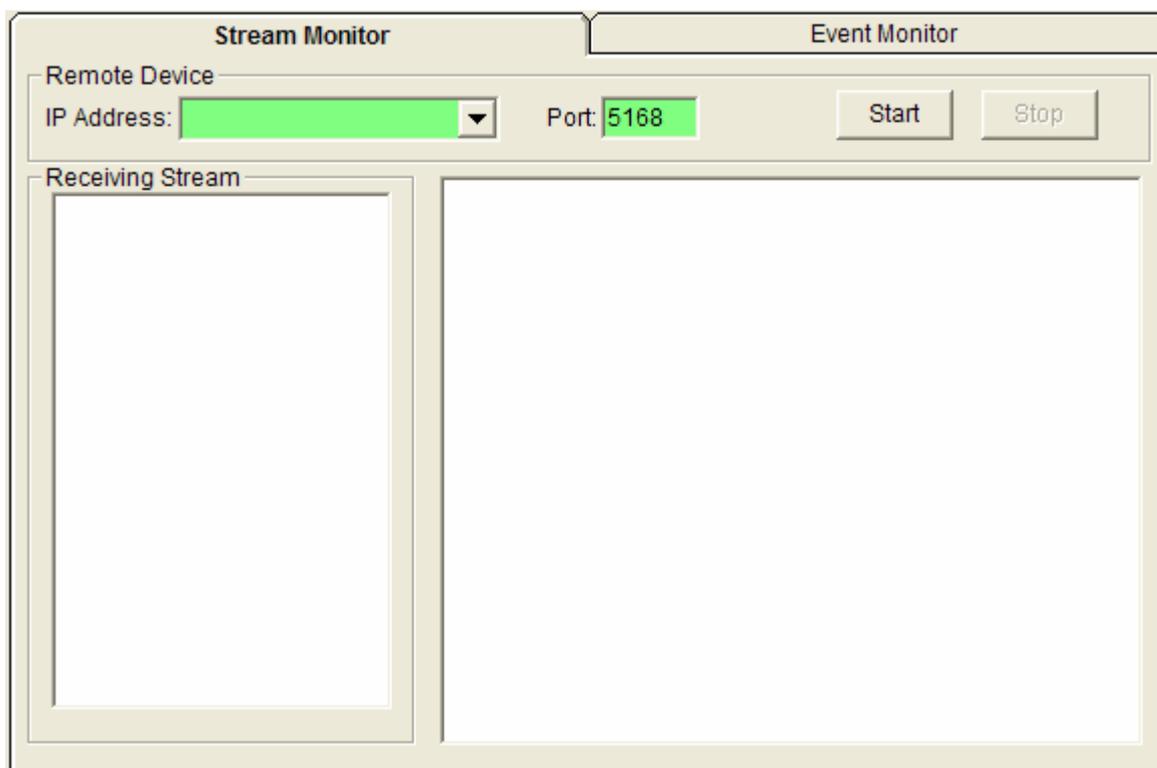


Figure 3-6 Stream display

**Data Event Monitoring**

After finishing the configuration of Data Event, you can select the tab “Event Monitor” in the function bar or click icon to call up operation display as Figure 3-7 Event display.

Select the IP address of the EDAM-9000 you want to read data, then click “**Start**” button. The Utility software will begin to receive the stream data on this operation display.

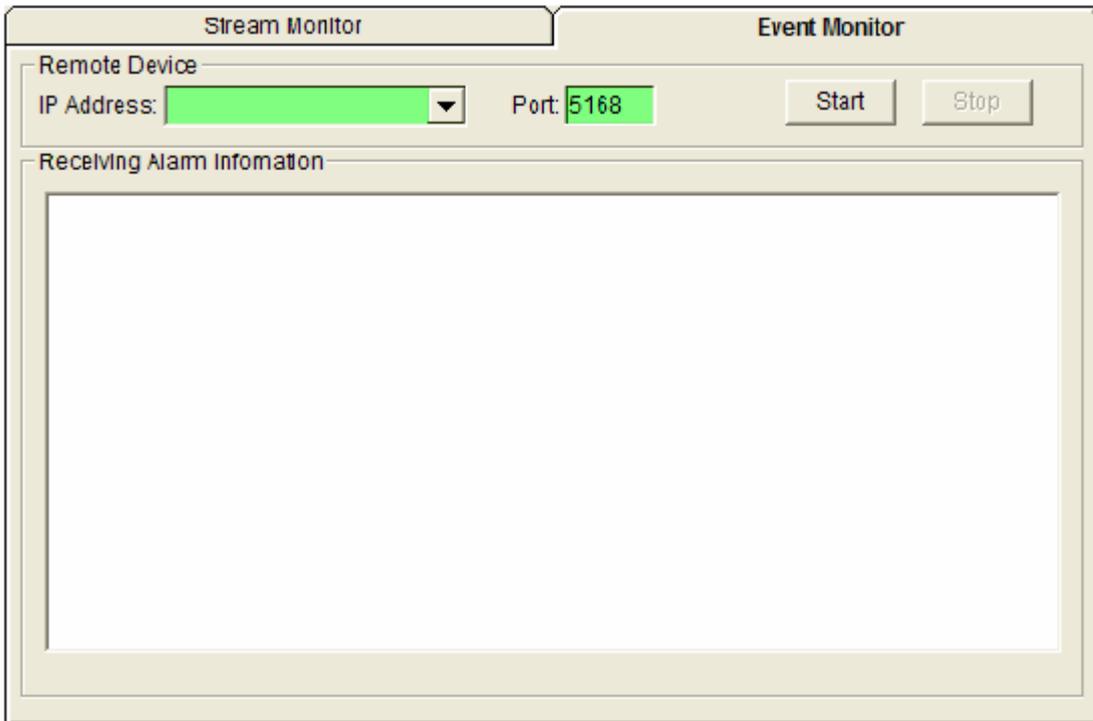


Figure 3-7 Event display

### 3.9 I/O Module Configurations

#### 3.9.1 Digital Input/Output Module

Selecting EDAM-9000 Digital Modules and select “Test” tab, user can read following information from the Utility.

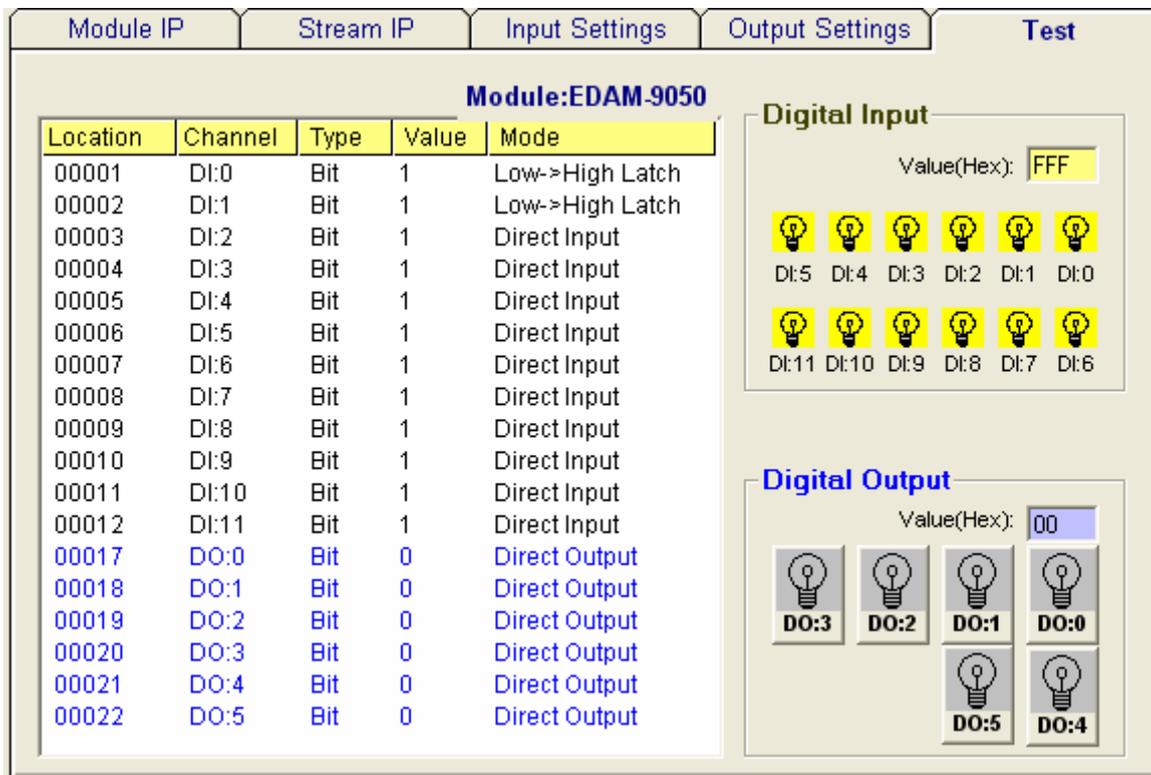


Figure 3-8 ModBus location and I/O status

#### Digital I/O Module Configuration

**Location:** Standard Modbus address. EDAM Ethernet I/O Utility shows the Modbus mapping address of each I/O channel. (Please refer to E9K\_Modbus.pdf file) And the addresses will be the indexes for applying into the database of HMI or OPC Server.

**Channel:** Indicate the channel number of digital I/O module

**Type:** Data Type of the I/O channel. The data type of Digital I/O modules is always “Bit”.

**Value:** The current status on each channel of I/O Module. The value of digital I/O modules could be “0” (OFF) or “1” (ON).

**Mode:** Describes the I/O types of the specific module. In addition to monitor the current DI/DO status, the Windows Utility offers a graphical operating interface as Figure3-9. You can read the Digital input status through the change of the indicator icons. Oppositely, you can write the digital output status through clicking the indicator icons.

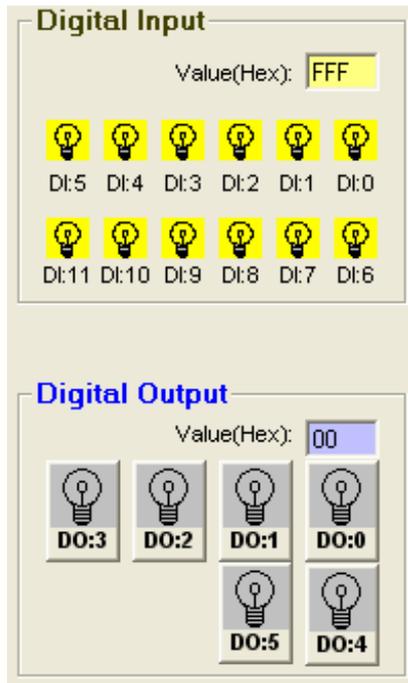


Figure3-9 DI/O status display

The digital input channels support counter and signal latch functions. Click the specific channel, there will be four working modes for choosing.

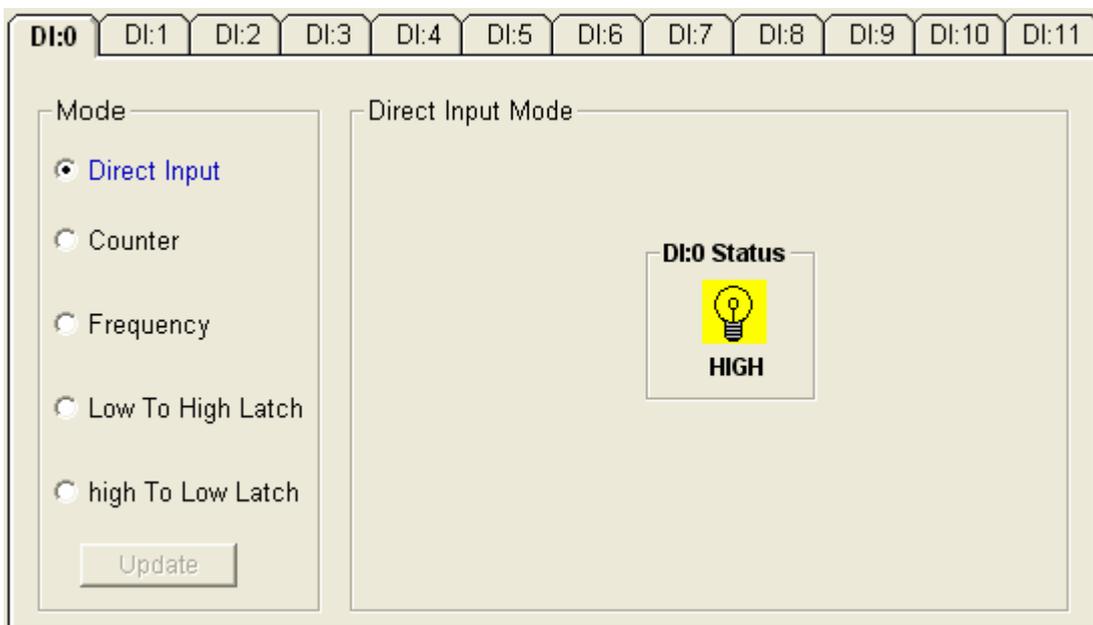


Figure 3-10 Direct input mode

The screenshot shows the configuration window for DI:0. At the top, there are tabs for DI:0 through DI:11. The 'Mode' section on the left contains five radio buttons: 'Direct Input', 'Counter' (selected), 'Frequency', 'Low To High Latch', and 'high To Low Latch'. Below these is an 'Update' button. The 'Counter Mode' section on the right contains a 'Filter' checkbox with 'Enable' and 'Disable' options; 'Disable' is checked. Below the filter are two input fields: 'Enter Minimum Low signal width: 0 x0.5 msec' and 'Enter Minimum High signal width: 0 x0.5 msec'. An 'Update' button is positioned below these fields. At the bottom of the window, there is a 'Counter Value: 0' field, a 'Start' button, and a 'Clear' button.

Figure 3-11 Counter setting

The screenshot shows the configuration window for DI:0. At the top, there are tabs for DI:0 through DI:11. The 'Mode' section on the left contains five radio buttons: 'Direct Input', 'Counter', 'Frequency', 'Low To High Latch' (selected), and 'high To Low Latch'. Below these is an 'Update' button. The 'Low To High Latch Mode' section on the right contains a 'Latch status' field with the value 'Latched' and a 'Clear Latch' button.

Figure 3-12 Input latch setting

Note:

1. The new working mode setting will take effective after click the "Update" button.
2. If necessary, users could invert the original single for flexible operation needs.

The digital output channels support pulse output and delay output functions. Click the specific channel, there will be four working modes for choosing.

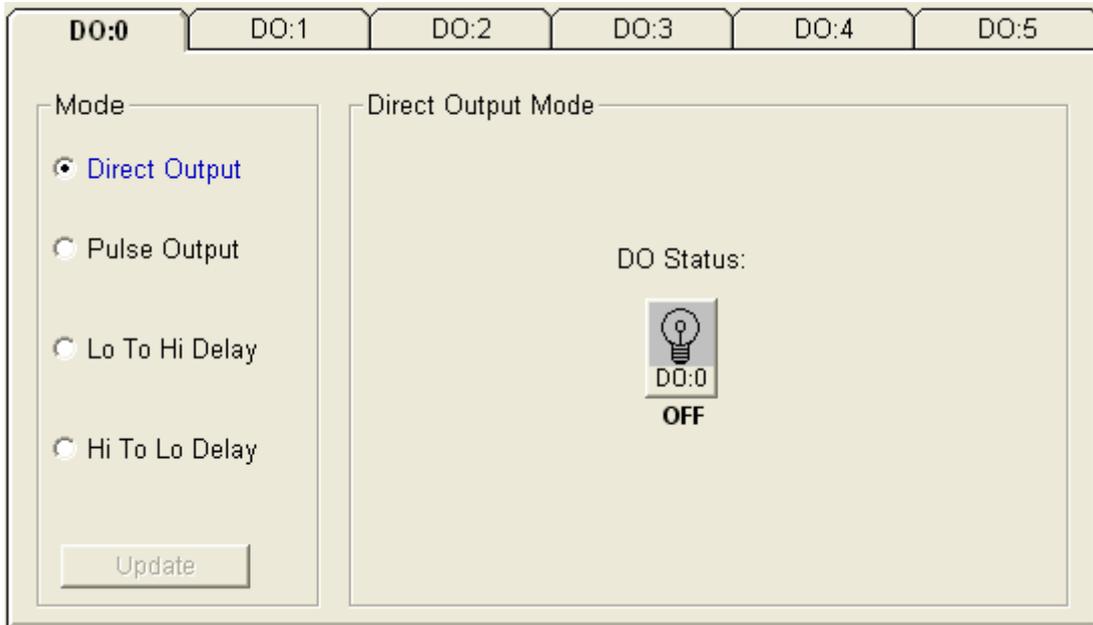


Figure 3-13 Direct output setting

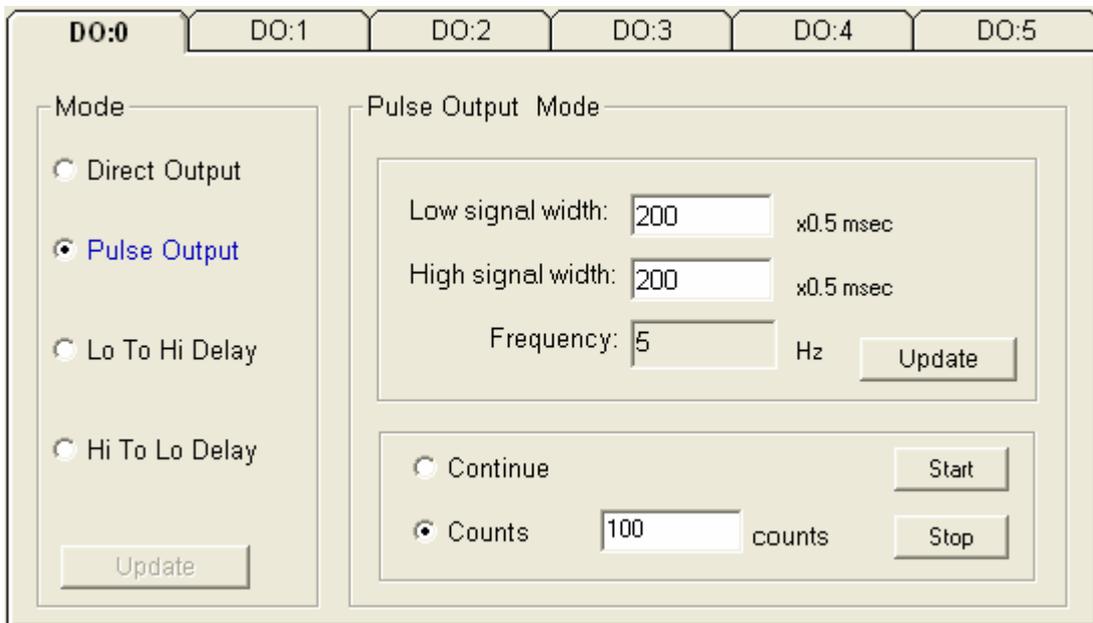


Figure 3-14 Pulse output setting

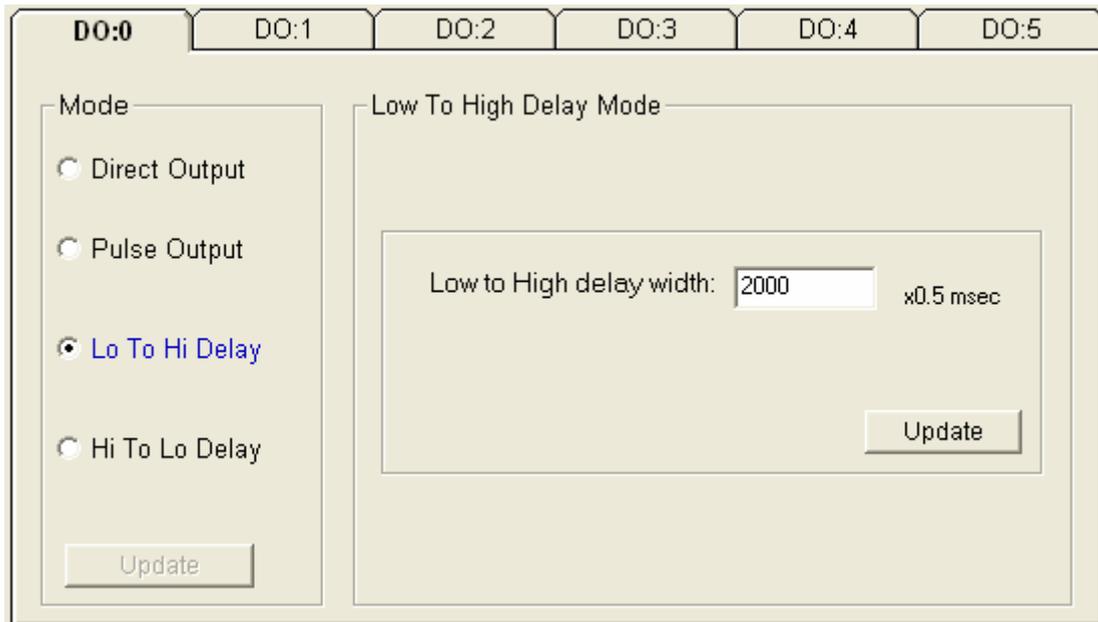


Figure 3-15 Low to High Delay setting

### 3.9.2 Analog Input Module

Selecting EDAM-9000 analog input Modules includes EDAM-9017 and select “**General Settings**” tab, user can read following information from the Utility.

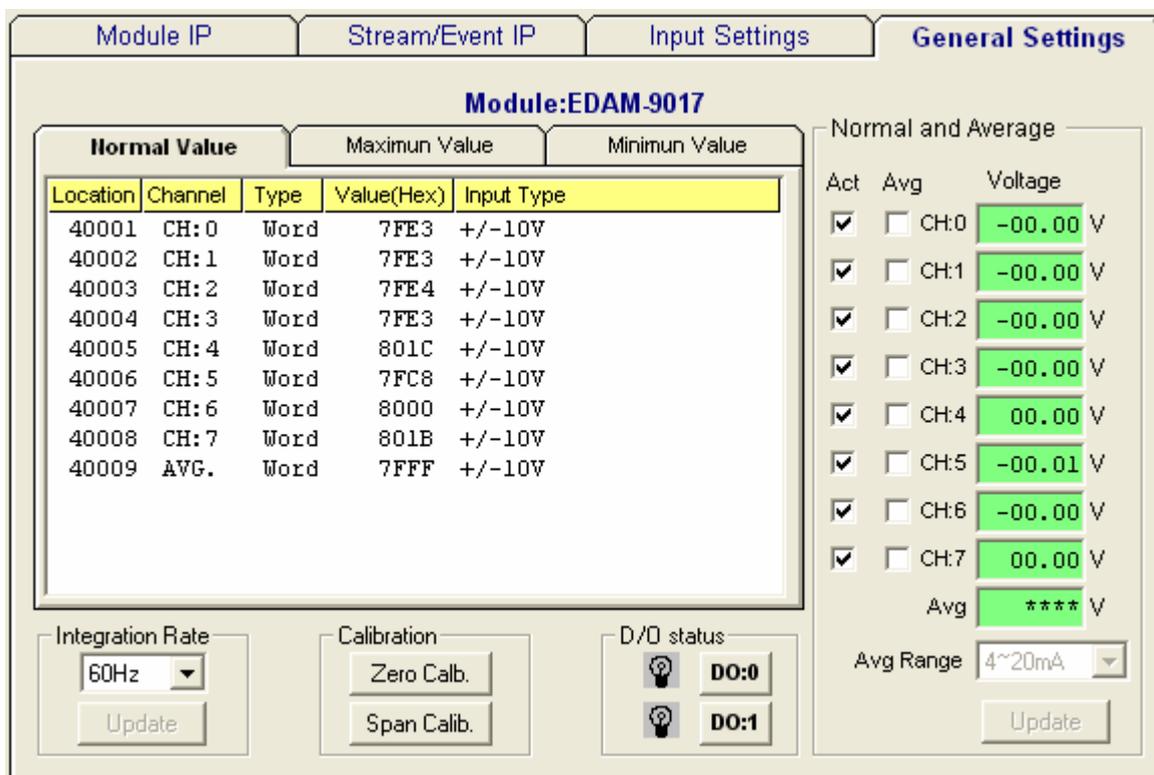


Figure 3-16 ModBus location and analog value

## EDAM-9000 Utility User's manual

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**Location:** Standard Modbus address. (Refer to Assigning address for I/O module in Chapter 4)

**Channel:** the channel number

**Type:** Data type of the I/O channel. The data type of analog Input modules is always "word".

**Value:** The current status on each channel of I/O modules. Windows Utility provides both decimal and hexadecimal values used for different applications.

**Input Type:** Sensor types and measurement range of the specified module.

Before acquiring the current data of an analog input module, you have to select the input range and integration time. Then the input data will be scaled as the specified range with engineer unit.

## EDAM-9000 Utility User's manual

To provide users more valuable information, the EDAM-9000 analog modules have designed with calculation functions, includes Maximum, Minimum, and Average values of individual channels. Click the Maximum value tab, you will see the historical maximum values in each channel unless to press the against "Reset" buttons.

Module IP
Stream/Event IP
Input Settings
General Settings

**Module:EDAM-9017**

Normal Value
**Maximun Value**
Minimum Value

Location	Channel	Type	Value(Hex)	Input Type	Reset
40011	CH:0	Word	7FEE	+/-10V	0
40012	CH:1	Word	7FEE	+/-10V	1
40013	CH:2	Word	7FEE	+/-10V	2
40014	CH:3	Word	7FED	+/-10V	3
40015	CH:4	Word	8028	+/-10V	4
40016	CH:5	Word	7FFA	+/-10V	5
40017	CH:6	Word	8002	+/-10V	6
40018	CH:7	Word	8028	+/-10V	7
					All

Integration Rate  
 60Hz

Calibration

D/O status  
 DO:0  
 DO:1

Act
Avg
Voltage

<input checked="" type="checkbox"/>	<input type="checkbox"/>	CH:0	-00.00	V
<input checked="" type="checkbox"/>	<input type="checkbox"/>	CH:1	-00.00	V
<input checked="" type="checkbox"/>	<input type="checkbox"/>	CH:2	-00.00	V
<input checked="" type="checkbox"/>	<input type="checkbox"/>	CH:3	-00.00	V
<input checked="" type="checkbox"/>	<input type="checkbox"/>	CH:4	00.01	V
<input checked="" type="checkbox"/>	<input type="checkbox"/>	CH:5	-00.00	V
<input checked="" type="checkbox"/>	<input type="checkbox"/>	CH:6	00.00	V
<input checked="" type="checkbox"/>	<input type="checkbox"/>	CH:7	00.01	V
		Avg	****	V

Avg Range
4~20mA

Click the Minimum value tab, you will see the historical minimum values in each channel unless to press the against "Reset" buttons.

Module IP
Stream/Event IP
Input Settings
General Settings

**Module:EDAM-9017**

Normal Value
Maximun Value
**Minimum Value**

Location	Channel	Type	Value(Hex)	Input Type	Reset
40011	CH:0	Word	7FDA	+/-10V	0
40012	CH:1	Word	7FDC	+/-10V	1
40013	CH:2	Word	7FDC	+/-10V	2
40014	CH:3	Word	7FDB	+/-10V	3
40015	CH:4	Word	7FED	+/-10V	4
40016	CH:5	Word	7FB5	+/-10V	5
40017	CH:6	Word	7FFD	+/-10V	6
40018	CH:7	Word	7FED	+/-10V	7
					All

Integration Rate  
 60Hz

Calibration

D/O status  
 DO:0  
 DO:1

Act
Avg
Voltage

<input checked="" type="checkbox"/>	<input type="checkbox"/>	CH:0	-00.01	V
<input checked="" type="checkbox"/>	<input type="checkbox"/>	CH:1	-00.01	V
<input checked="" type="checkbox"/>	<input type="checkbox"/>	CH:2	-00.01	V
<input checked="" type="checkbox"/>	<input type="checkbox"/>	CH:3	-00.01	V
<input checked="" type="checkbox"/>	<input type="checkbox"/>	CH:4	-00.00	V
<input checked="" type="checkbox"/>	<input type="checkbox"/>	CH:5	-00.02	V
<input checked="" type="checkbox"/>	<input type="checkbox"/>	CH:6	-00.00	V
<input checked="" type="checkbox"/>	<input type="checkbox"/>	CH:7	-00.00	V
		Avg	****	V

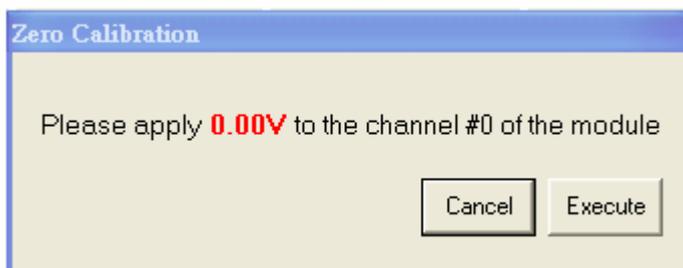
Avg Range
4~20mA

### 3.10 I/O Module Calibrations

Calibration is to adjust the accuracy of EDAM module. There are several modes for module's calibration: Zero calibration, Span calibration, CJC calibration, and Analog Output calibration. Only analog input and output modules can be calibrated, and the EDAM-9017 is the first released analog module.

#### Zero Calibration

1. Apply power to the module and let it warm up for 30 minutes.
3. Make sure the module is correctly installed and properly configured for the input range you want to calibrate.
4. Short channel 0 to GND by wire as short as possible
5. Click the Execute button.



#### Span Calibration

1. Follow the same procedure of zero calibration
2. Use a precision voltage source to apply a calibration voltage to the V+ and V- terminals of the EDAM-9017 module.
3. and click the Execute button.



### 3.11 Input Type Settings

There is several range of each channel of analog module. You should select properly type(range) before apply to the your applications

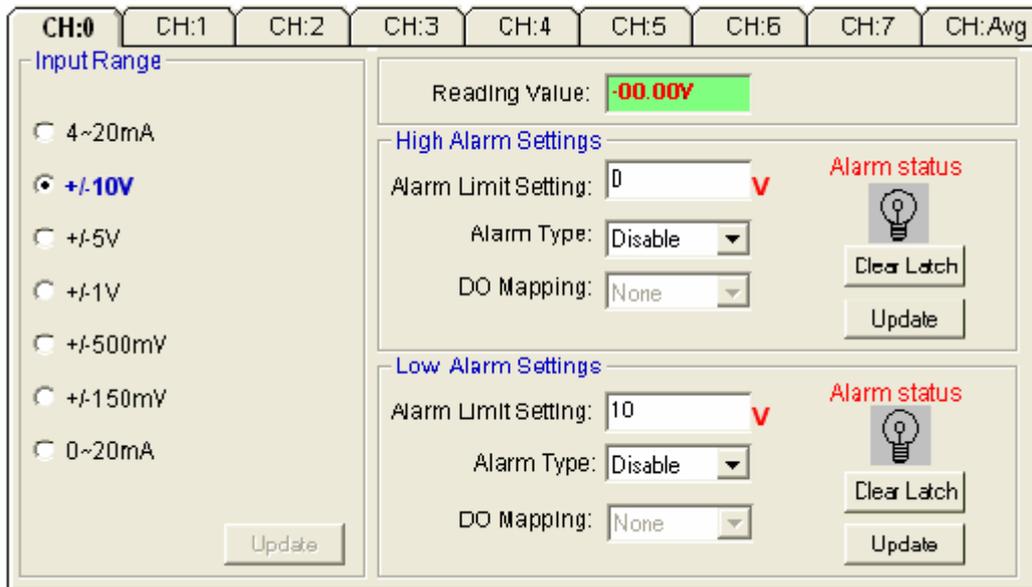


Figure 3-17 Input type setting

**Note:**

*The new working mode setting will take effective after click the "Update" button.*

### 3.12 Alarm Setting

Moreover, all of the analog channels are allowed to configure the High/Low limitation for alarm trigger function. Once the value of the specific channel over or under the limitation, the alarm status could trigger a digital output channel in the ADM-6017.

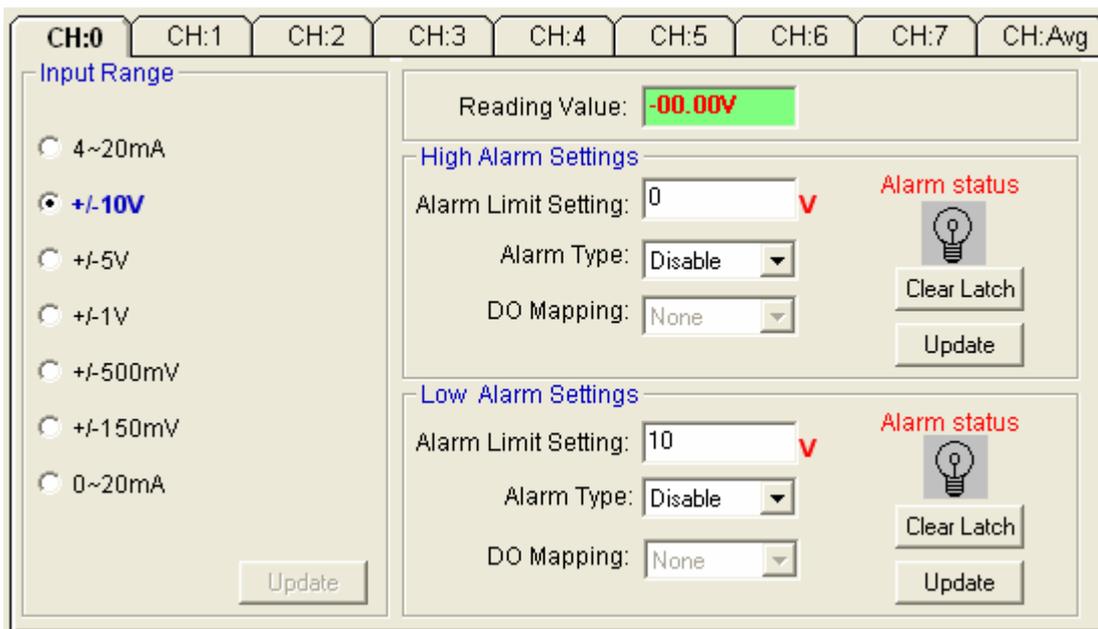


Figure 3-18 Alarm Setting