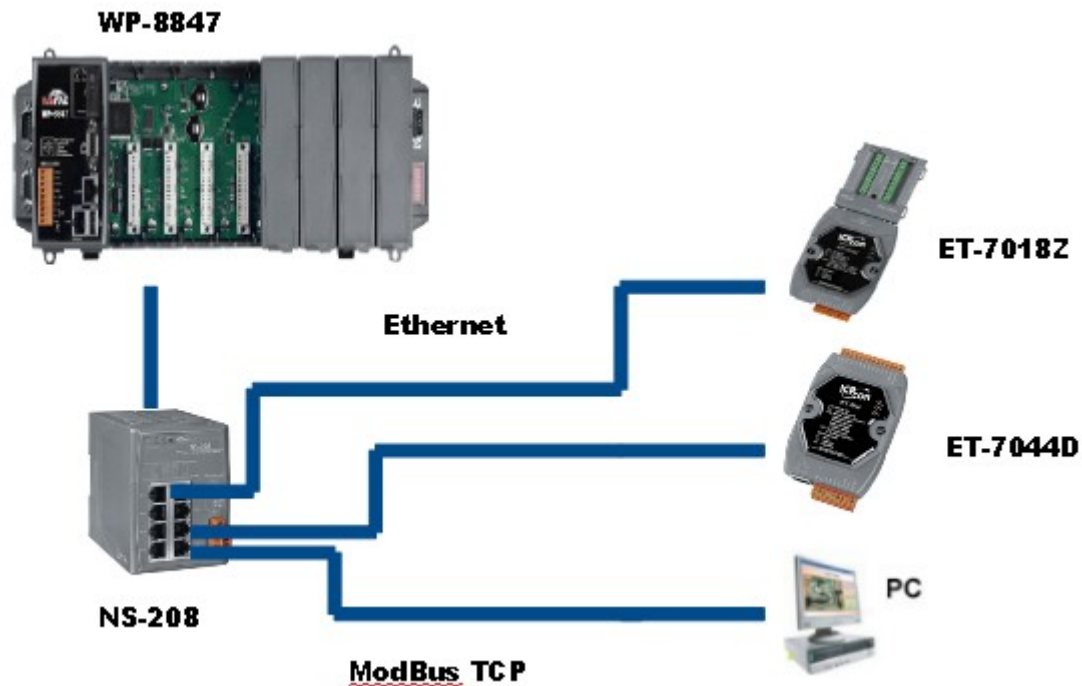


**FAQ126 : How to use the WP-8847 to connect ET-7018Z and ET-7044D and develop the HMI program by InduSoft, VS2008 C# and VB.NET ?**

[raven@icpdas.com](mailto:raven@icpdas.com)

This document shows how to use the WP-8xx7's ethernet port to connect the ET-7018Z and ET-7044D modules. The ET-7018Z is for measuring maximum 10 channel temperature inputs. The ET-7044D is for outputting max 8 channel Digital outputs. There are three HMI sample programs in this example. One is written in InduSoft, another one is written in C#.NET, the other one is written in VB.NET. Following is the architecture of the example:



For further information about the ET-7000 series product, please refer to the following page.  
[http://www.icpdas.com/products/Remote\\_IO/et-7000/et-7000\\_selection\\_guides.htm](http://www.icpdas.com/products/Remote_IO/et-7000/et-7000_selection_guides.htm)



**ET-7018Z**



**ET-7044D**

## Reference

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User manual of the ET-7000 series:

[http://www.icpdas.com/products/Remote\\_IO/et-7000/et7k\\_manual\\_software.htm](http://www.icpdas.com/products/Remote_IO/et-7000/et7k_manual_software.htm)

Please download the MiniOS7 Utility:

[http://www.icpdas.com/products/Remote\\_IO/et-7000/et7k\\_manual\\_software.htm](http://www.icpdas.com/products/Remote_IO/et-7000/et7k_manual_software.htm)

More information about the WP-8xx7 series product:

[http://www.icpdas.com/products/PAC/i-8000/getting\\_started\\_manual.htm](http://www.icpdas.com/products/PAC/i-8000/getting_started_manual.htm)

User manual of the ISaGRAF can be found in :

[http://www.icpdas.com/products/PAC/i-8000/getting\\_started\\_manual.htm](http://www.icpdas.com/products/PAC/i-8000/getting_started_manual.htm)

More information about connecting modbus device please refer to the ISaGRAF manual chapter 8:

[http://www.icpdas.com/products/PAC/i-8000/getting\\_started\\_manual.htm](http://www.icpdas.com/products/PAC/i-8000/getting_started_manual.htm)

Please refer to "FAQ113.pdf". This document shows how to connect the Modbus TCP device by ISaGRAF PAC.

[www.icpdas.com](http://www.icpdas.com) → FAQ → Software → ISaGRAF Ver.3(English) → 113

Basic operations with InduSoft project.

[http://www.icpdas.com/products/Remote\\_IO/et-7000/et7k\\_manual\\_software.htm](http://www.icpdas.com/products/Remote_IO/et-7000/et7k_manual_software.htm)

Please refer to the chapter 6 and chapter 10 of the "WP-8xx7 Getting Started manual" for programming C#.NET and VB.NET in WP-8xx7.

[http://www.icpdas.com/products/PAC/i-8000/getting\\_started\\_manual.htm](http://www.icpdas.com/products/PAC/i-8000/getting_started_manual.htm)

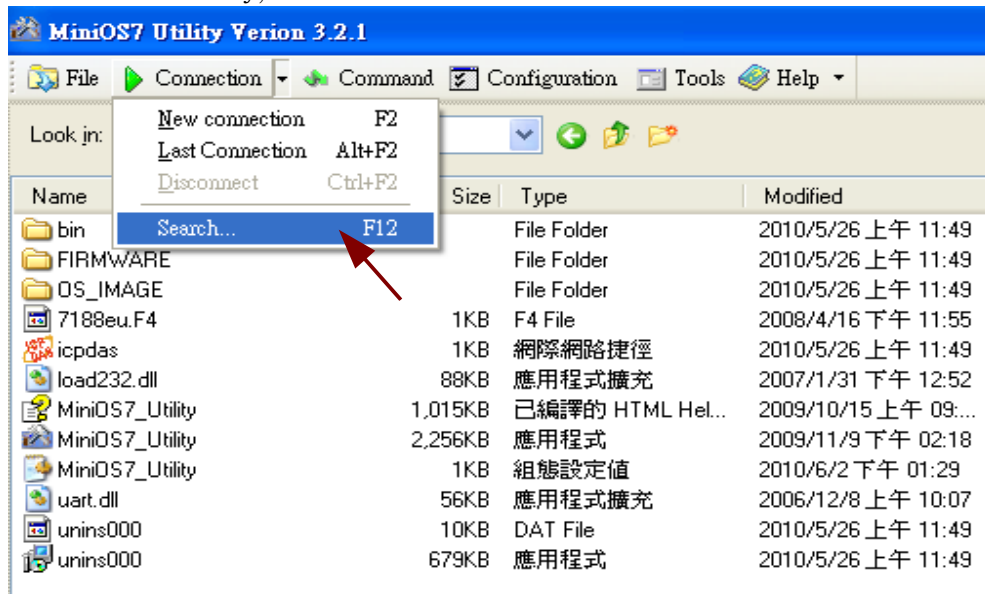
You can download the document and sample program in :

[www.icpdas.com](http://www.icpdas.com) → FAQ → Software → ISaGRAF Ver.3(English) → 126

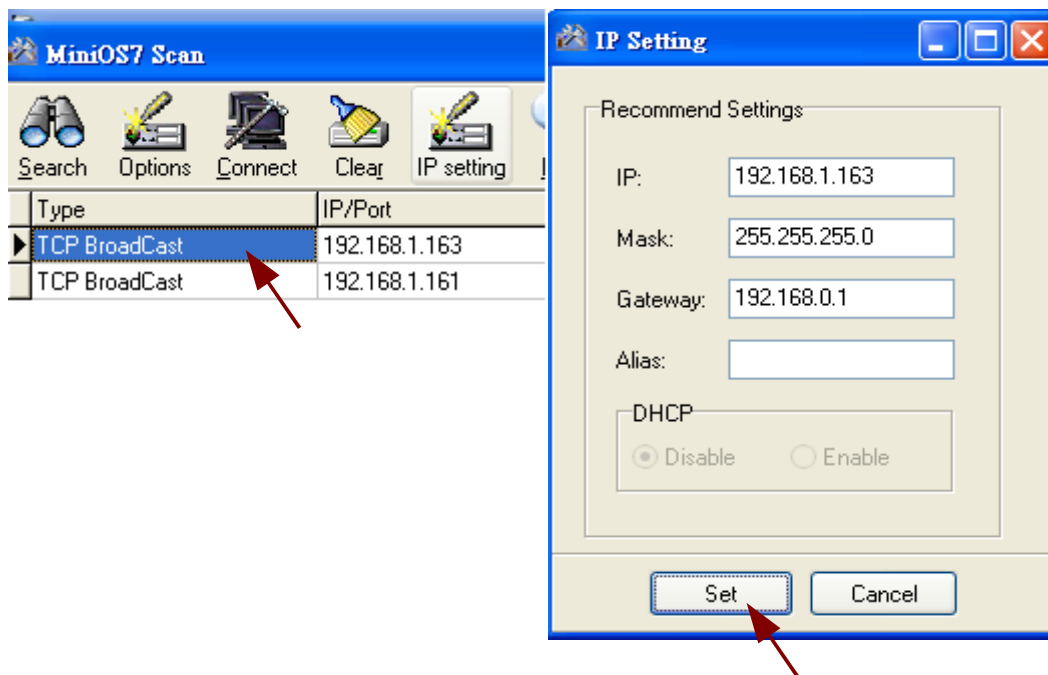
## 1.1 Configuring ET-7000 series :

The MiniOS7 Utility is a tool for setting IP address on ET-7000 modules. Please follows below steps to set a proper IP address to the ET-7000 module.

1. run the MiniOS7 Utility, then click on "Search" on the connection menu bar.



2. Then double click the searched item to set the new proper IP and Mask address for the ET-7000 modules.



After setting the ET7018Z's IP, run the IE browser and type-in IP address of the ET-7018Z(ex:<http://192.168.1.163/> Account & Password : Admin ) Click "configuration menu→Module I/O Setting" on the left menu. Scrolling down the page to find the " ModBus Setting (AI Basic Setting)". All of the channel(ch0~ch9) must be set to "T/C K-type" in this example.

For the ET-7044D, only the IP address need to be set, no other settings needed.

### ET-7018Z Mofule I/O Setting

ICP DAS  
http://www.icpdas.com

Main Menu

- Overview
- Configuration
  - Network Settings
  - Basic Settings
  - Module I/O Settings
- Authentication
- Web HMI
  - Web HMI
  - Web Edit
- Pair Connection
- More Information

Submit

#### Modbus Settings (AI Basic Setting)

	Range (40427)	Enable (10595)
Ch0	[0F] T/C K-type, -270°C ~ 1372°C	OFF <input type="radio"/> ON <input type="radio"/>
Ch1	[0F] T/C K-type, -270°C ~ 1372°C	OFF <input type="radio"/> ON <input type="radio"/>
Ch2	[0F] T/C K-type, -270°C ~ 1372°C	OFF <input type="radio"/> ON <input type="radio"/>
Ch3	[0F] T/C K-type, -270°C ~ 1372°C	OFF <input type="radio"/> ON <input type="radio"/>
Ch4	[0F] T/C K-type, -270°C ~ 1372°C	OFF <input type="radio"/> ON <input type="radio"/>
Ch5	[0F] T/C K-type, -270°C ~ 1372°C	OFF <input type="radio"/> ON <input type="radio"/>
Ch6	[0F] T/C K-type, -270°C ~ 1372°C	OFF <input type="radio"/> ON <input type="radio"/>
Ch7	[0F] T/C K-type, -270°C ~ 1372°C	OFF <input type="radio"/> ON <input type="radio"/>
Ch8	[0F] T/C K-type, -270°C ~ 1372°C	OFF <input type="radio"/> ON <input type="radio"/>
Ch9	[0F] T/C K-type, -270°C ~ 1372°C	OFF <input type="radio"/> ON <input type="radio"/>

### ET-7044D WebHMI

Web HMI

- Web HMI
- Web Edit
- Pair Connection
- More Information

No	Register	Status/Action
D00	0	OFF
D01	1	OFF
D02	2	OFF
D03	3	OFF
D04	4	OFF
D05	5	OFF
D06	6	OFF
D07	7	OFF

Communication Status: Good.

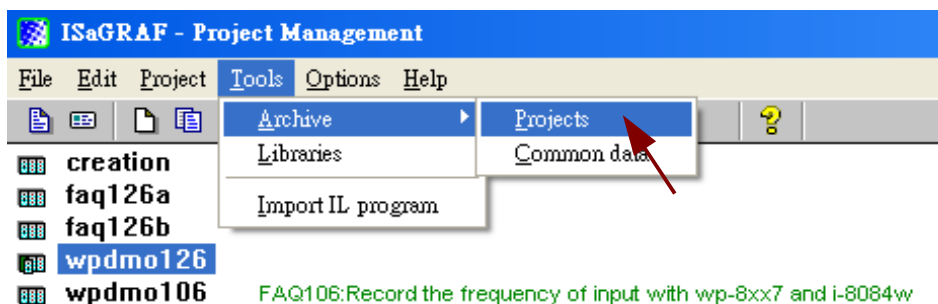
MainPage

## 1.2 : ISaGRAF project in the example

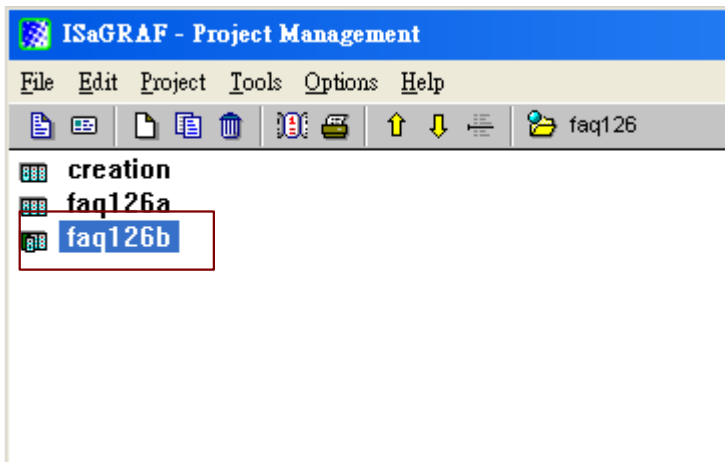
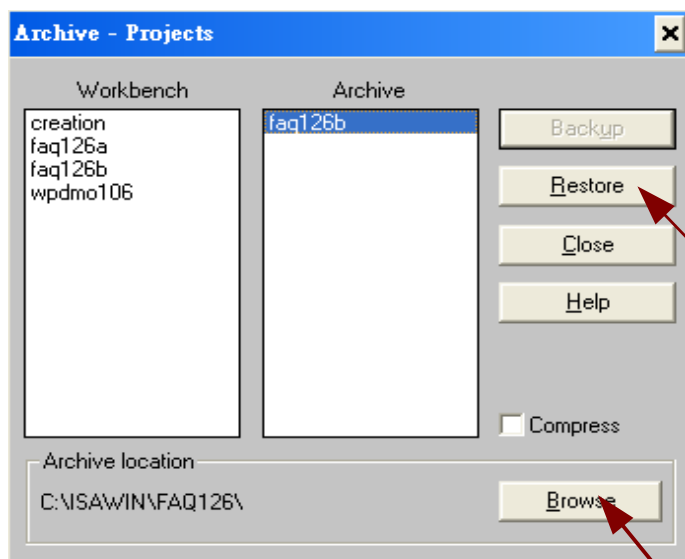
### 1.2.1 : Restore the ISaGRAF project

Please follow the below steps to restore "faq126.pia".

1. run tools → Archive → projects

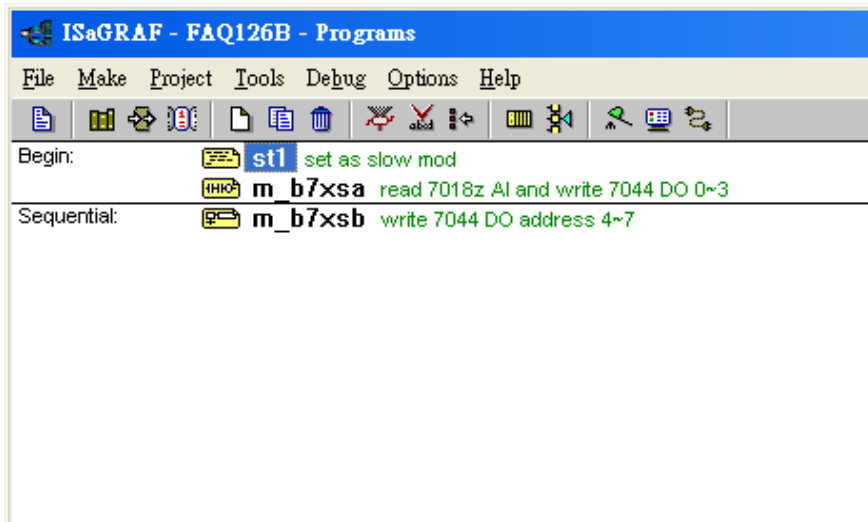


2. Click Browse button to select the correct folder. Then click "faq126b" and "Restore" to restore it.



## 1.2.2 : Illustration of this ISaGRAF example project

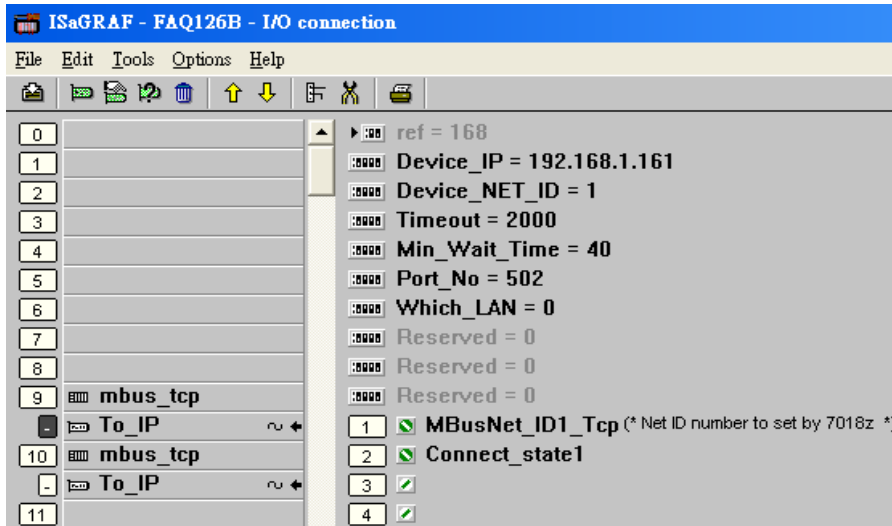
There are three programs in this example project : the "st1","m\_b7xsa"and "m\_b7xsb".



### Variable Definition

Name	Type	Attribute	description
ok,ok2	Boolean	Internal	Estimating program execute correctly.
DO00~DO07	Boolean	Internal	Setting ET-7044D module's D/O channel. Variable's network address is 11~18.
tmp	Boolean	Internal	Estimating PLC mode in "st1" program.
init	Boolean	Internal	Initial value is true. Let "st1" program execute once.
Temper0~9	Integers	Internal	Reading the ET-7018Z A/I value. Variable's Network address is 1~9.
MBus_Net_ID1_TCP	Integers	Input	This is 7018Z's Net ID for setting project's I/O connection.
MBus_Net_ID2_TCP	Integers	Input	This is 7044S's Net ID for setting project's I/O connection.
connect_state1	Integers	Input	ET-7018Z's connecting state.
connect_state2	Integers	Input	ET-7044D's connecting state.
timer	Timer	Internal	ET-7044 D/O switching time.

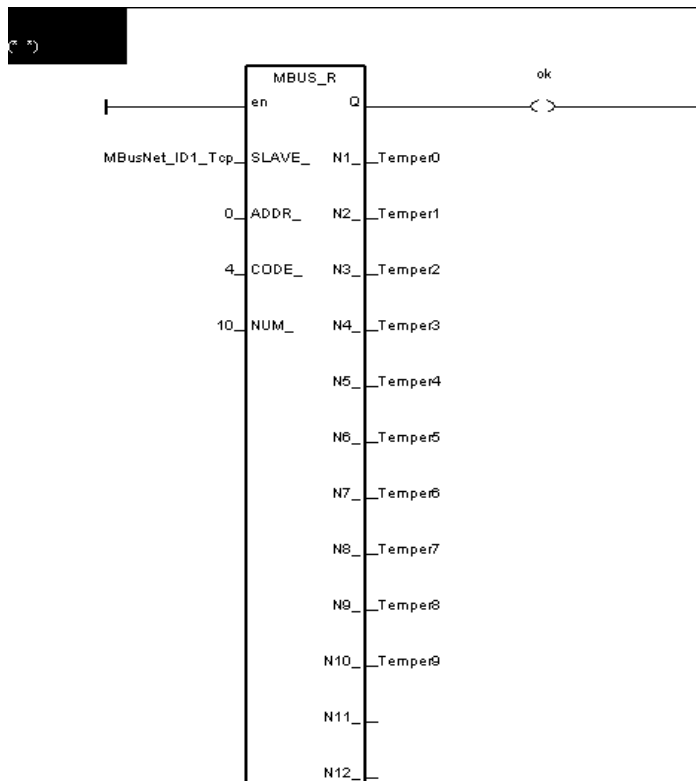
I/O connection :



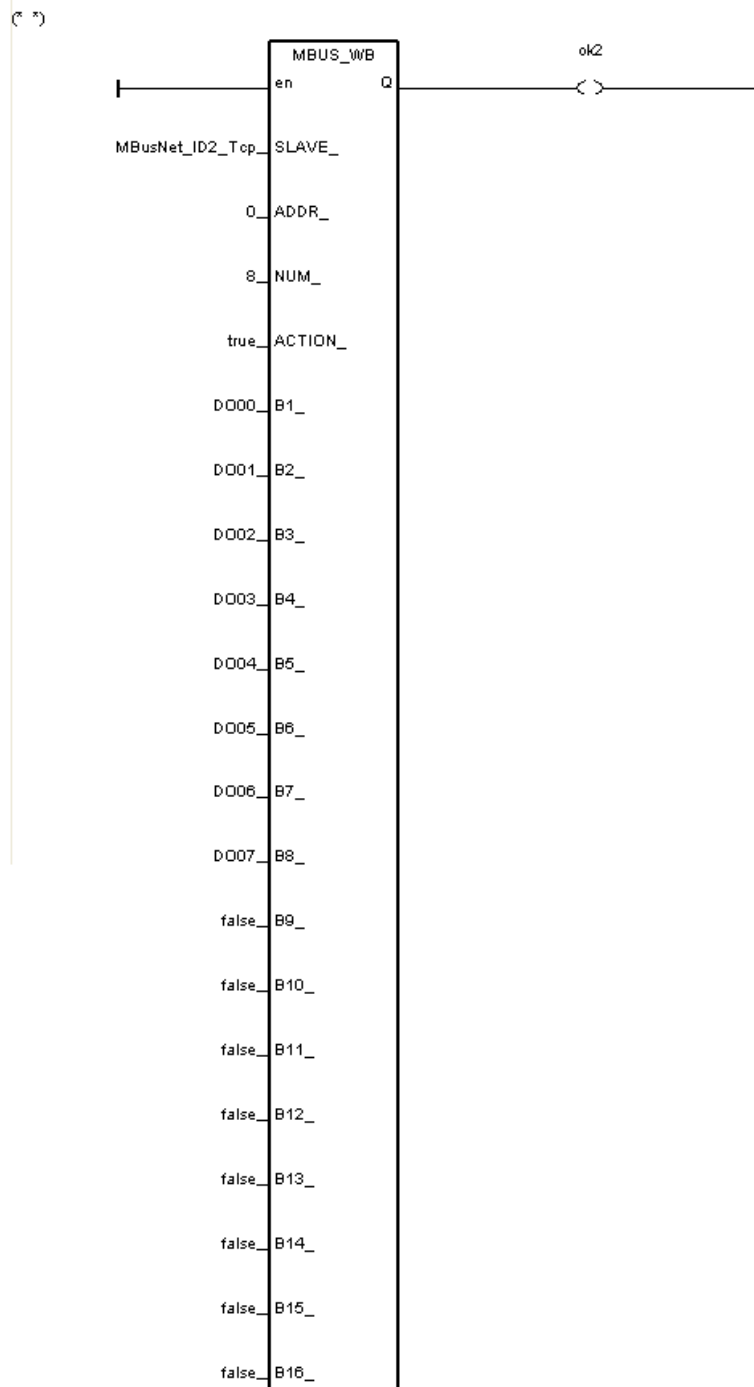
1. **Device\_IP** : ET-7000 module's IP address.
2. **Device\_NET\_ID** : Modbus TCP Slave's device ID, default value is 1.
3. **Timeout** : communication timeout setting. Unit is ms.
4. **Min\_Wait** : waiting time in ms before sending next request command.
5. **Which LAN** : using which LAN port to connect modbus TCP devices. Default setting is 0.  
 0:Auto Selecting port LAN1/2. 1 :always selecting LAN1. 2 :always selecting LAN2.

**"m\_b7xsa" ladder program illutration :**

**MBUS\_R** : Function Block for reading the ET-7018Z's A/I value. Using Modbus code 4 to read 10 words. Starting with address 0.



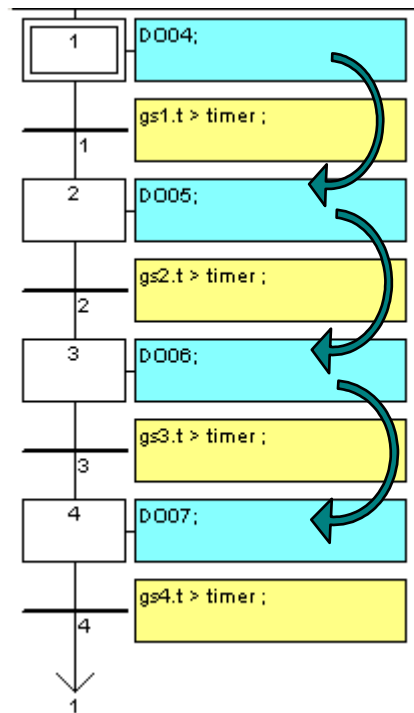
**MBUS\_WB** : Writing D/O to the ET-7044D's D/O channel 0~7. Using the "Mbus\_wb" to write 8 bits. starting with address 0.





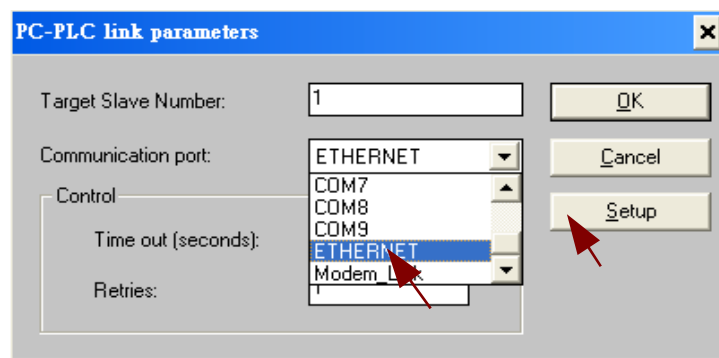
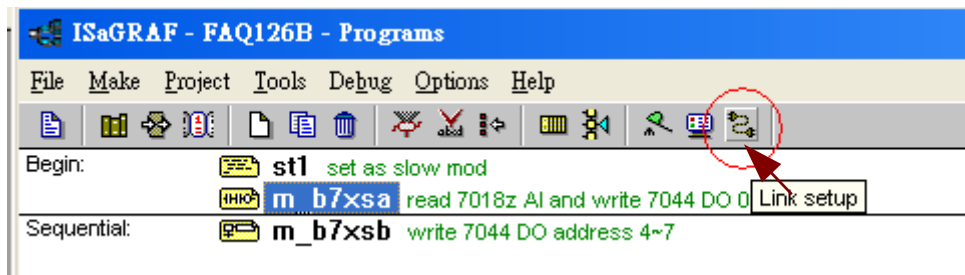
### "m\_b7xsb" SFC program :

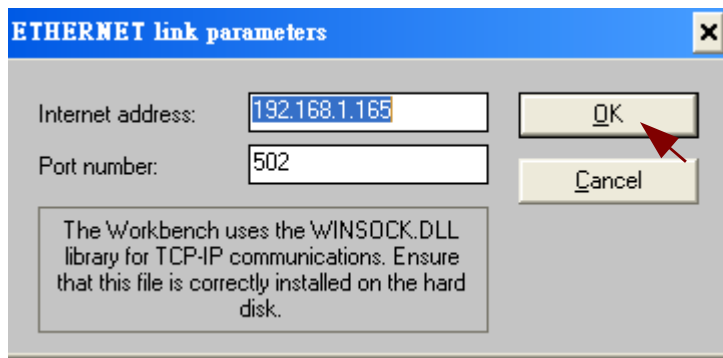
The following SFC program will switch to output the next D/O variable after a period of time (default is 3 seconds).



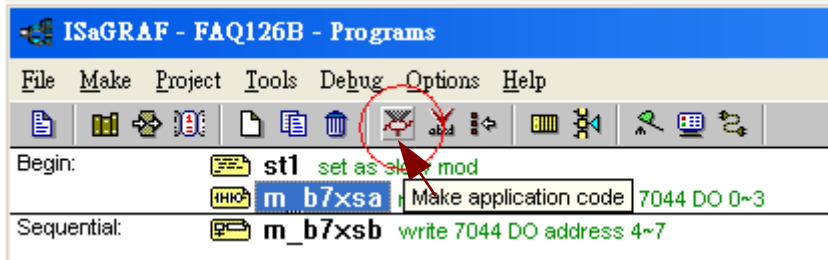
### Downloading the "FAQ126b" to the WP-8847:

1. Click "Link Setup". Then select "ETHERNET" option, if you download project via ethernet. Click "Setup" to set the WP-8847's IP and Port Number 502.

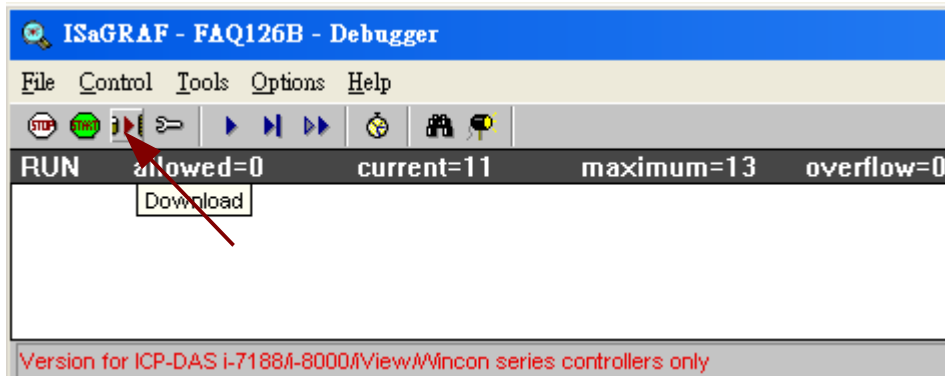
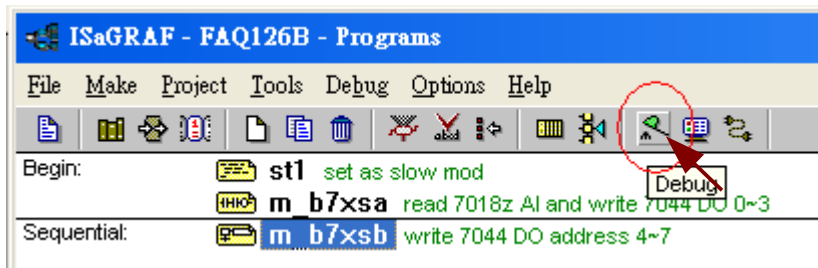




2. Click "Make Application"



3. Then click debug→to download the ISaGRAF project to the PAC.



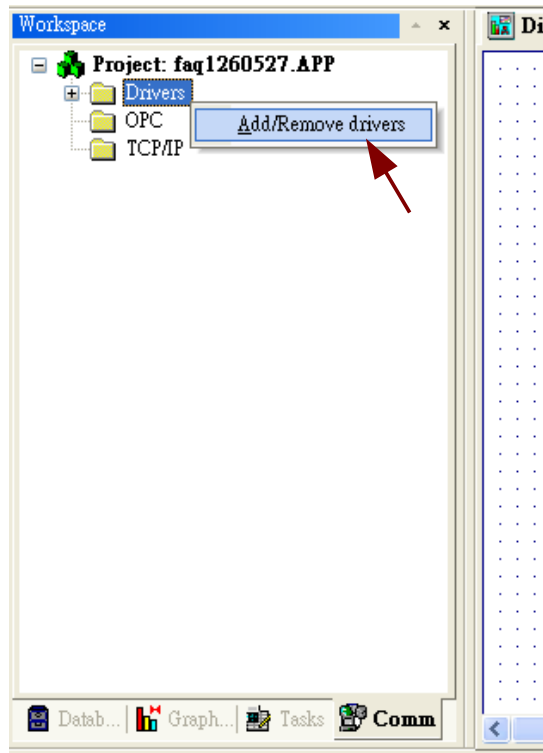
## 1.3 : HMI program by InduSoft

ISaGRAF program is running in the WP-8447 as listed in section 1.2.2. InduSoft can access ISaGRAF's variables if each variable has been set one "Network Address".The following steps shows how to set the InduSoft project to access ISaGRAF variables.

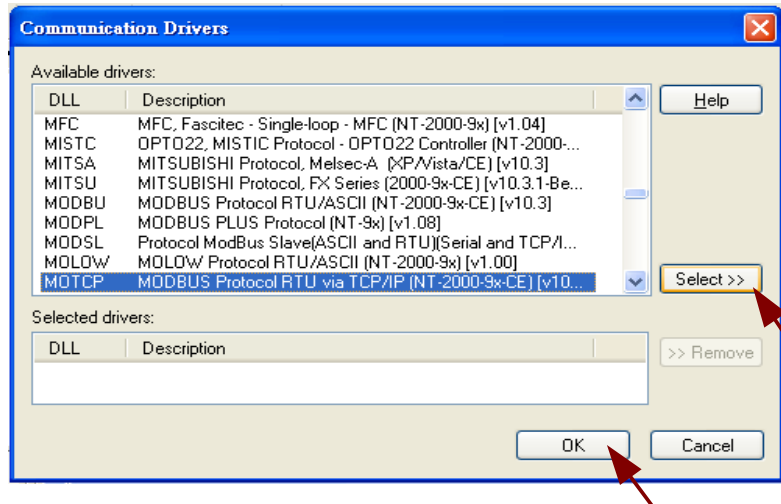
1. Please check variable in the ISaGRAF project. All variables must be assigned with a network address for the HMI software to access them.

Booleans	Integers/Reals	Timers	Messages	FB instances	Defined words
Name	Attrib.	Addr.	Comment		
<b>Temper0</b>	[internal, integer]	0001	7018z tempture value		
<b>Temper1</b>	[internal, integer]	0002			
<b>Temper2</b>	[internal, integer]	0003			
<b>Temper3</b>	[internal, integer]	0004			
<b>Temper4</b>	[internal, integer]	0005			
<b>Temper5</b>	[internal, integer]	0006			
<b>Temper6</b>	[internal, integer]	0007			
<b>Temper7</b>	[internal, integer]	0008			
<b>Temper8</b>	[internal, integer]	0009			
<b>Temper9</b>	[internal, integer]	000A			
<b>MBusNet_ID1_Tcp</b>	[input, integer]	0000	Net ID number to set by 7018z		
<b>MBusNet_ID2_Tcp</b>	[input, integer]	0000	Net ID number to set by 7044		
<b>Connect_state1</b>	[input, integer]	0000			
<b>Connect_state2</b>	[input, integer]	0000			

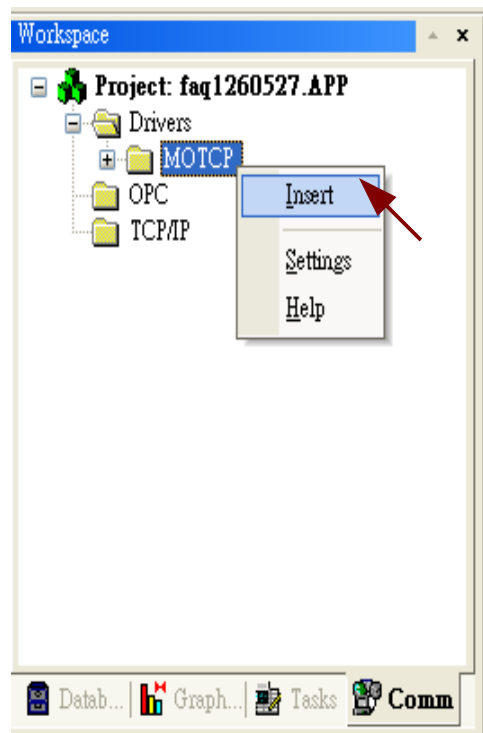
2. Select "Common" then right click on "Drivers" to run "Add/remove driver"



3. Select "MOTCP" and click "OK".



4. Right click on the "MOTCP" and then click "Insert"



5. Insert 3 Data Sheets, then follow the setting listed in the following diagram. (Note: Please add InduSoft tags used to "mo7018z[x]" and their address are decimal.)

Description: 7018Z AI read  Increase priority

Read Trigger:  Enable Read when Idle: 1  Read Completed:

Write Trigger:  Enable Write on Tag Change:  Write Completed:

Station: 127.0.0.1:502:1  Header: 4X:0

	Tag Name	
1	mo7018z[0]	1
2	mo7018z[1]	2
3	mo7018z[2]	3
4	mo7018z[3]	4
5	mo7018z[4]	5
6	mo7018z[5]	6
7	mo7018z[6]	7
8	mo7018z[7]	8
9	mo7018z[8]	9
10	mo7018z[9]	10

MOTCP001.DRV MOTCP002.DRV

Description: DOwrite  Increase priority

Read Trigger:  Enable Read when Idle: 1  Read Completed:  Read Status:

Write Trigger:  Enable Write on Tag Change: 1  Write Completed:  Write Status:

Station: 127.0.0.1:502:1  Header: 0X:0  Min:  Max:

	Tag Name	Address
1	mo7044[0]	11
2	mo7044[1]	12
3	mo7044[2]	13
4	mo7044[3]	14
5	mo7044[4]	15
6	mo7044[5]	16
7	mo7044[6]	17
8	mo7044[7]	18

Description:   Increase priority

Read Trigger:  Enable Read when Idle:  Read Completed:

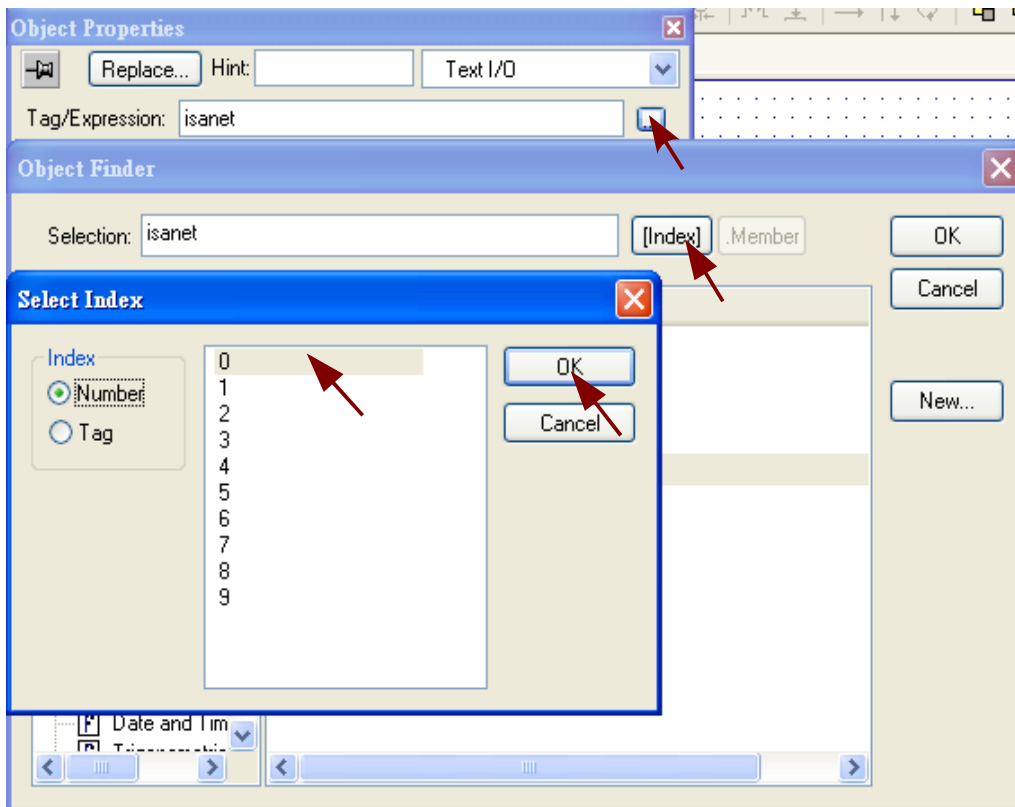
Write Trigger:  Enable Write on Tag Change:  Write Completed:

Station:  Header:

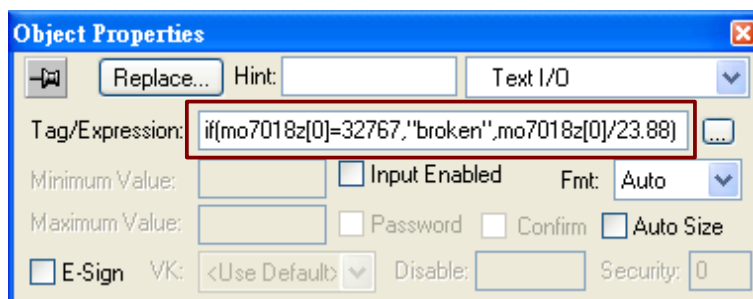
	Tag Name	
1	timer	20

6.The amount of "#" means the amount of character can be displayed on the screen after a text object created.

The screenshot shows a software interface with a 'Display1' window. Inside the window is a grid with a text object containing seven hash symbols (#). A context menu is open over the text, showing options like Cut, Copy, Delete, Group, and Ungroup. An 'Object Properties' dialog is also open, showing various settings for the text object, including 'Tag/Expression', 'Minimum Value', 'Maximum Value', 'Input Enabled', 'Password', 'Confirm', 'Auto Size', 'E-Sign', 'VK', 'Disable', and 'Security'.

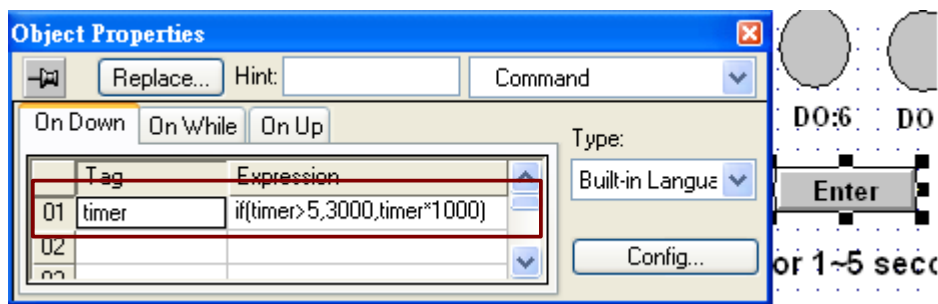


7. Because the ET-7018Z A/I value is ranging between -32768 and 32767. Then scaling the A/I value to a proper temperature value is necessary by adding the `if(mo7018z[0]=32767,"broken",mo7018z[0]/23.88)` statement.



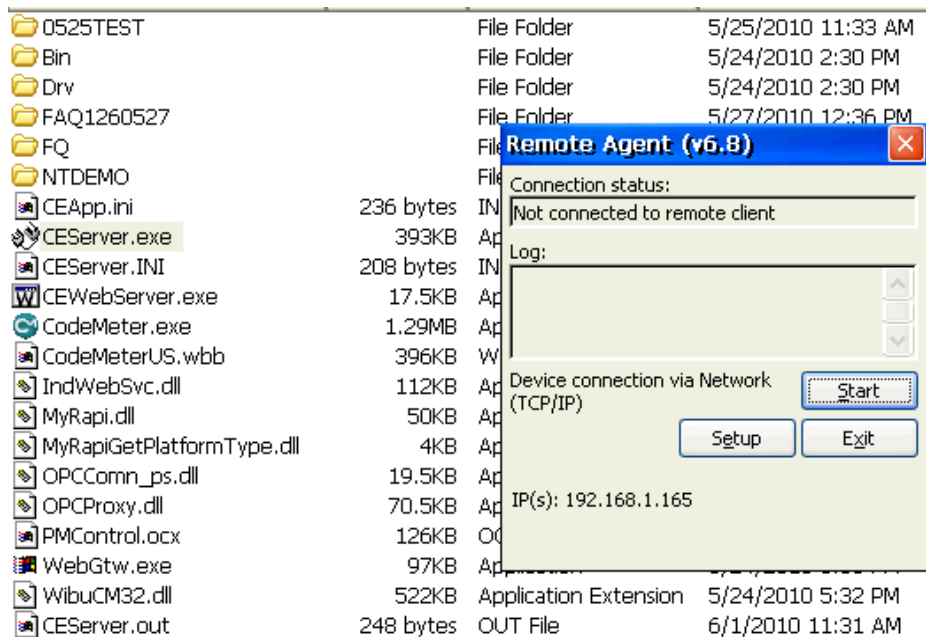
#### Adjusting the ET-7044D D/O switching time:

To modify the "timer" value in the ISaGRAF program properly, please add the `"if(timer>5,3000,timer*1000)"` statement to the "timer" tag.

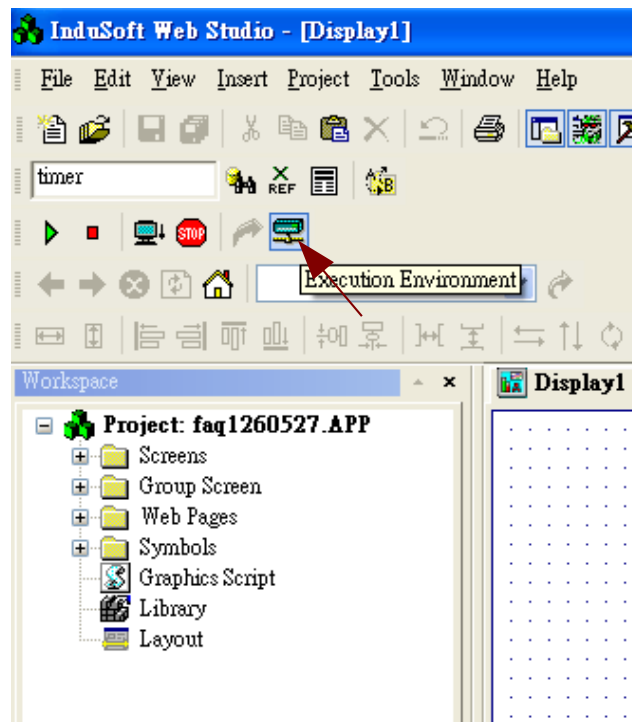


Download The InduSoft Application to the WP-8447 :

1. In PAC, run Micro\_SD\InduSoft\CEServer.exe.

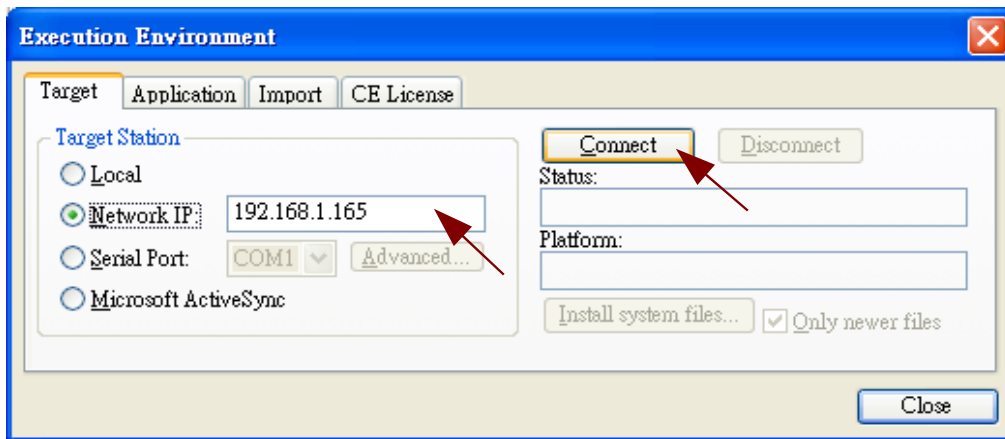


2. click "Project → Execution Environment" in PC InduSoft development environment.

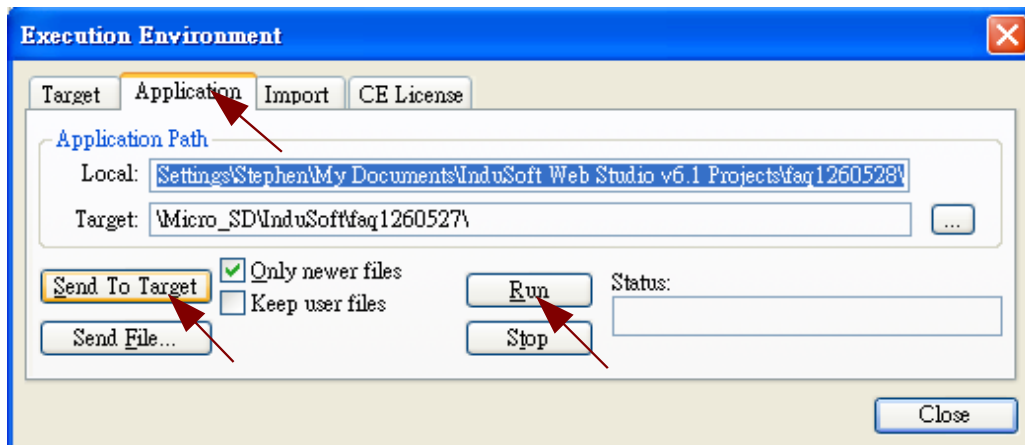




3.To connect the WP-8xx7, choose the "Network IP" option and type the PAC IP address. Then click "connect" to connect the PAC.



4.Choose "Application" tab and click "Send to Target" button to download the application to the PAC.



## 1.4 : HMI program by C#.NET or VB.NET2008

The C#.NET and VB.NET program can call functions in the "quickerbet.dll" to access ISaGRAF variables. Please refer to the chapter 6 and chapter 10 of the WP8xx7 getting started manual .

[http://www.icpdas.com/products/PAC/i-8000/getting\\_started\\_manual.htm](http://www.icpdas.com/products/PAC/i-8000/getting_started_manual.htm)

**Function used in this example :**

ScanAI() : Reading all ET-7018Z's module A/I variable.

ScanDO() : Reading all ET-7044D's module D/O variable.

UserGetReg\_Short() : Reading a word value from ISaGRAF.

UserSetReg\_Short() : Writing a word value from ISaGRAF.

UserGetCoil() : Reading a boolean value from ISaGRAF.

UserSetCoil() : Writing a boolean value from ISaGRAF.

## Running the program

1. download the ISaGRAF program to the PAC.

2. Copy the "faq126demo\_c\_sharp.exe" and "quickernet.dll" for c# program("faq126\_VB\_demo" and "QuickerNet.dll" for VB.NET.) to the \System\_disk\ directory and then run it.

