

NAPOPC.M2M DA Server

User's Manual

Warranty

All products manufactured by ICP DAS are warranted against defective materials for a period of one year from the date of delivery to the original purchaser.

Warning

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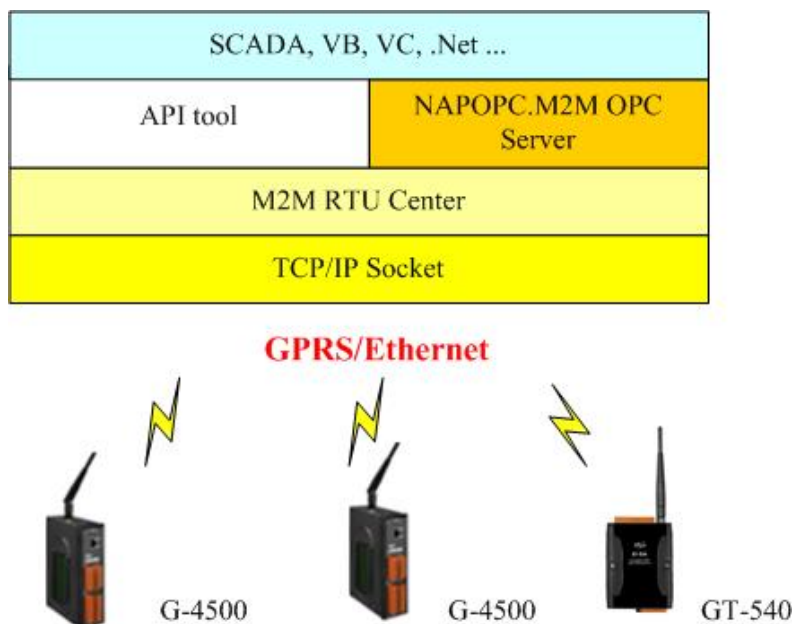
1. General Information

1.1 NAPOPC.M2M Introduction

● Overview

ICP DAS NAPOPC.M2M is an OPC software package operated as an OPC driver of a HMI or SCADA system. It provides seamless connection from GPRS RTU products (G-4500 RTU, GT-540...) from ICP DAS to SCADA system (InduSoft, Wonderware, iFix, Citect, LabView and etc) following OPC 2.0 Data Access Standards.

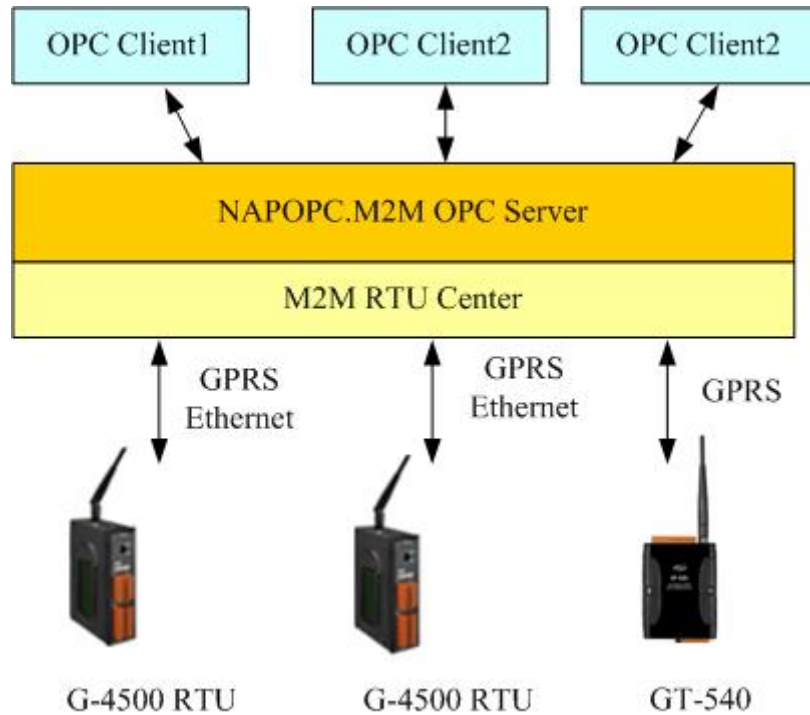
By using NAPOPC.M2M OPC server and ICP DAS RTU products not only monitors the data but sends them out in real time to the control center through GPRS or Ethernet Network. Also, by combining a GPS (optional) with G-4500, G-4500 suddenly becomes a tracking system which you can often find out in the car system, marine system, etc.



Application structure of the NAPOPC.M2M DA Server

● **NAPOPC.M2M Architecture**

NAPOPC.M2M OPC server must be applied with M2M RTU Center software. M2M RTU Center is the administrator software to manager GPRS RTU products of ICP DAS. NAPOPC.M2M DA server would exchange data with M2M RTU software. As NAPOPC.M2M OPC server is running, M2M RTU Center would be executed automatically.



● Support Hardware

Product Type	Description
G-4500-SIM300 CR	Tri-band M2M Mini-Programmable Automation Controller (RoHS)
G-4500D-SIM300 CR	Tri-band M2M Mini-Programmable Automation Controller with LCD display (RoHS)
G-4500P-SIM300 CR	Tri-band M2M Mini-Programmable Automation Controller with GPS function (RoHS)
G-4500PD-SIM300 CR	Tri-band M2M Mini-Programmable Automation Controller with LCD display and GPS function (RoHS)
G-4500-SIM340 CR	Quad-band M2M Mini-Programmable Automation Controller (RoHS)
G-4500D-SIM340 CR	Quad-band M2M Mini-Programmable Automation Controller with LCD display (RoHS)
G-4500P-SIM340 CR	Quad-band M2M Mini-Programmable Automation Controller with GPS function (RoHS)
G-4500PD-SIM340 CR	Quad-band M2M Mini-Programmable Automation Controller with LCD display and GPS function (RoHS)
GD-4500-SIM340 CR	Quad-band M2M Mini-Programmable Automation Controller (RoHS)
GD-4500D-SIM340 CR	Quad-band M2M Mini-Programmable Automation Controller with LCD display (RoHS)
GD-4500P-SIM340 CR	Quad-band M2M Mini-Programmable Automation Controller with GPS function (RoHS)
GD-4500PD-SIM340 CR	Quad-band M2M Mini-Programmable Automation Controller with LCD display and GPS function (RoHS)

1.2 Software Installation of NAPOPC.M2M DA Server

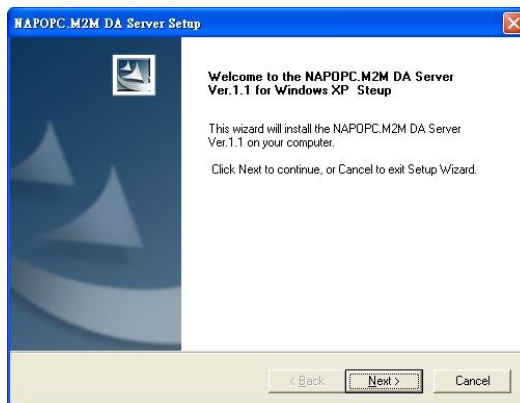
The software Installation for NAPOPC.M2M DA Server is demonstrated in the following descriptions. After finishing the procedure, the software, demos and manual will be in your PC.

The software of NAPOPC.M2M DA Server can be used in Windows 2000 / XP environments. For these Windows operation systems, the recommended installation procedure is given as follows:

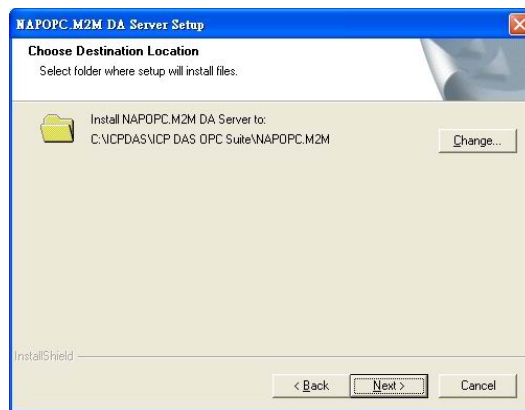
Step 1: You can get the Installing software “NAPOPC.M2MServer.exe”

Step 2: Please double-click “NAPOPC.M2MServer.exe” to run the setup.

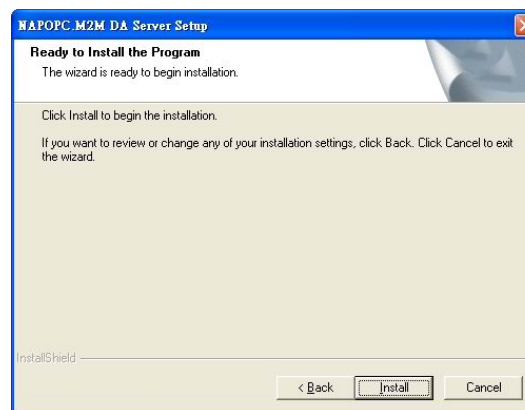
Step 3: The first screenshot of setup is shown as follows, please press “Next” button to continue the process.



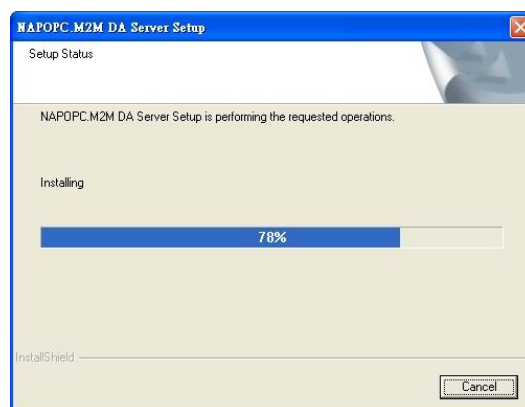
Step 4: After confirm the Installation path, please press “Next” button.



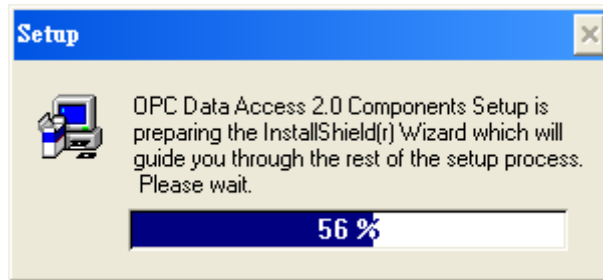
Step 5: Please press “Install” button. The setup process will start.



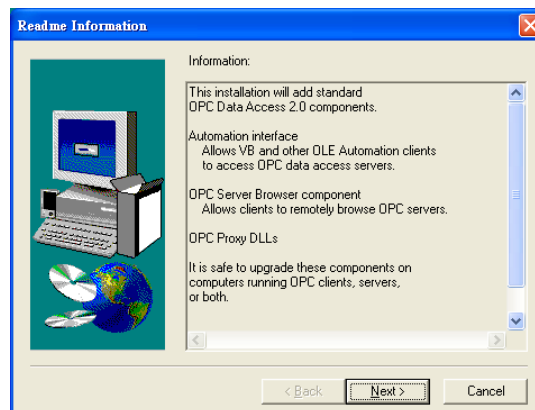
Step 6: The setup process is running.



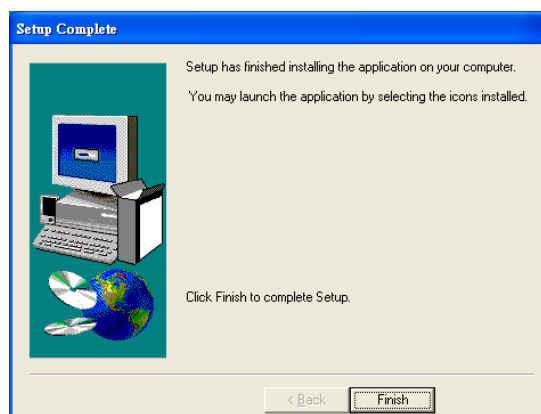
Step 7: When finishing the setup process of NAPOPC.M2M DA Server, it will automatically install the OPC Data Access 2.0 Components software.



Step 8: Please press "Next" button to start setup process.



Step 9: Please press "Finish" button to finish the setup process.

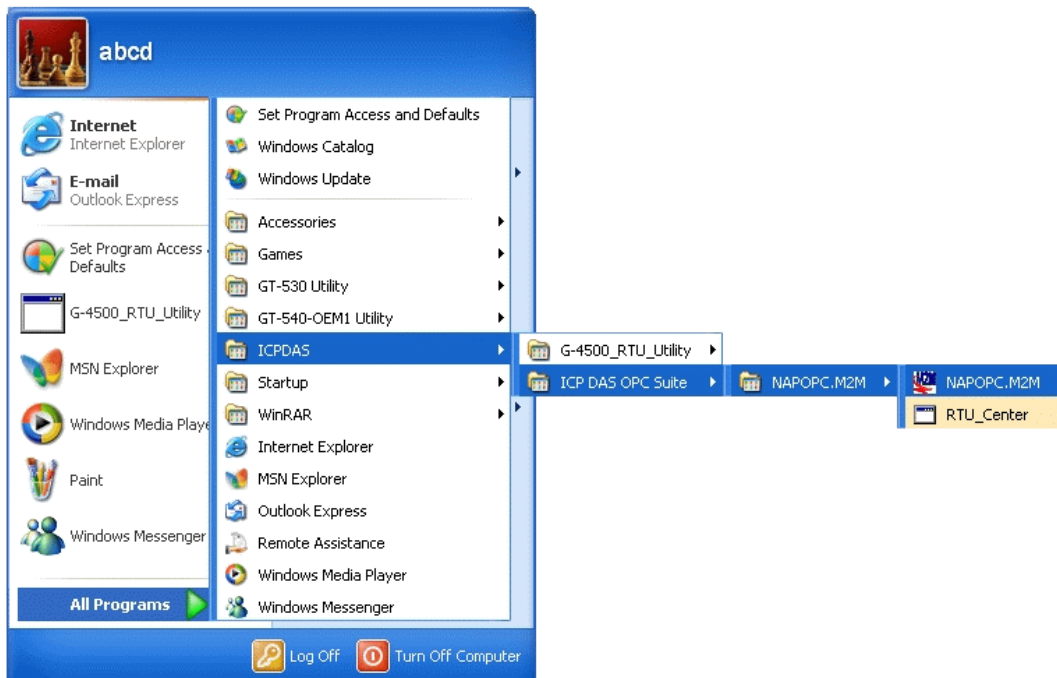


The installing folder is in the following directory:

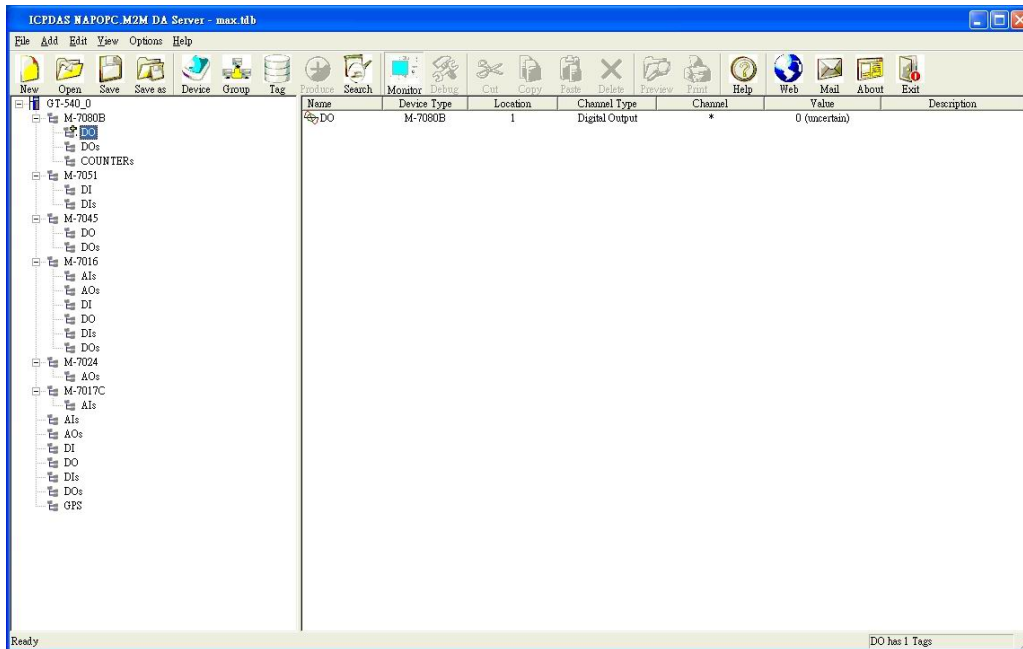
“C:\ICPDAS\ICP DAS OPC Suite\NAPOPC.M2M”

Step 10: Launch the OPC server from the start menu [Start]-[Programs]- [ICPDAS]-[IPC DAS OPC Suite]-[NAPOPC.M2M].

The program files picture is shown as follows.



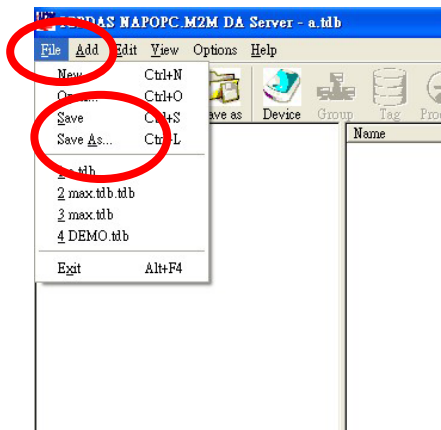
1.3 NAPOPC.M2M DA Server Interface Introduction



Software main screen

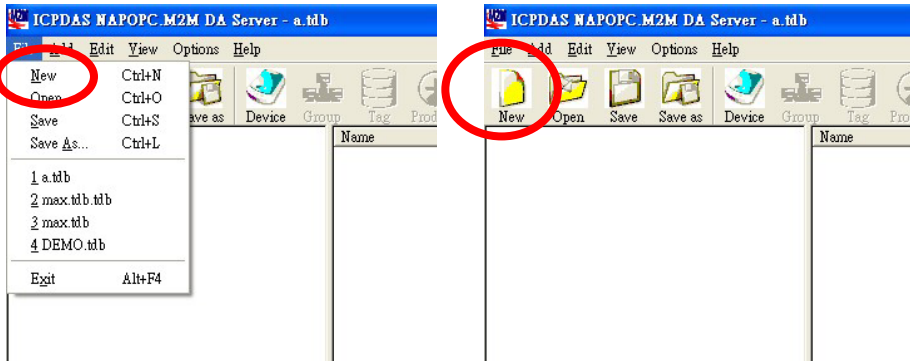
1.3.1 Screen Features - File

All configuration settings can be saved into configuration file by clicking the "File/ Save" or "File/ Save As ..." menu item. The OPC server will automatically load the last configuration file with every launch.



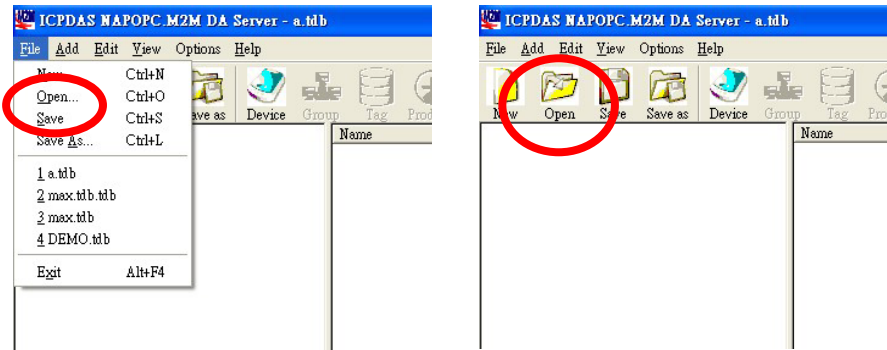
1. New

Clean current project and create a new project

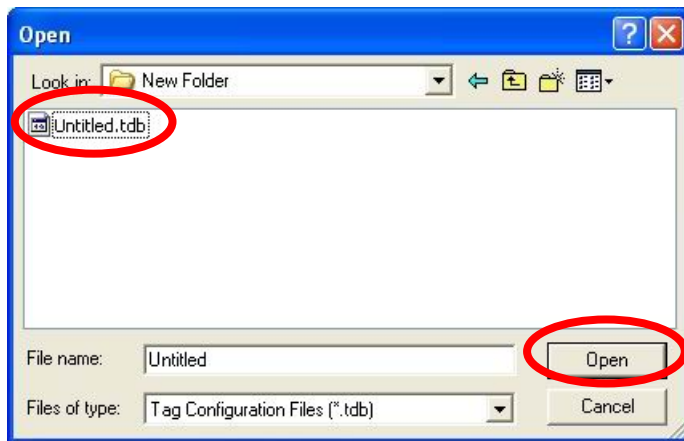


2. Open

Load old NAPOPC.M2M project.

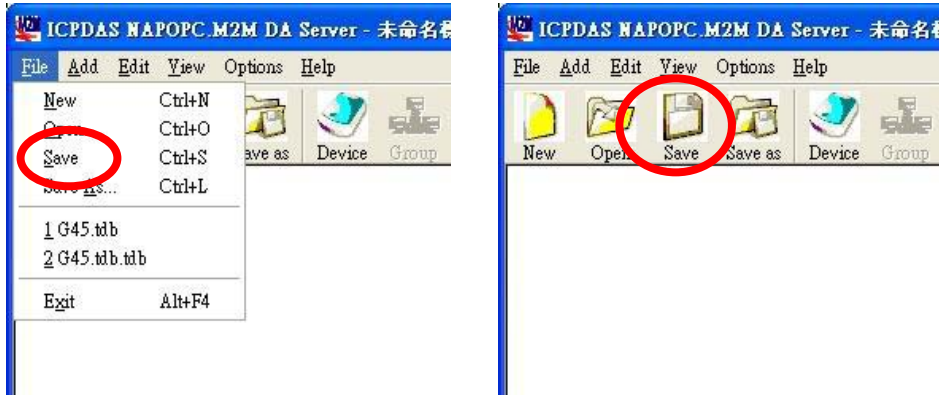


Select the project file you want, and then open.



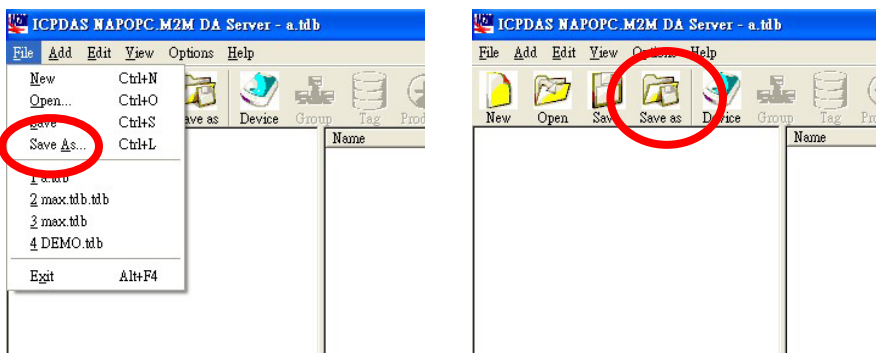
3. Save

Save current NAPOPC.M2M project

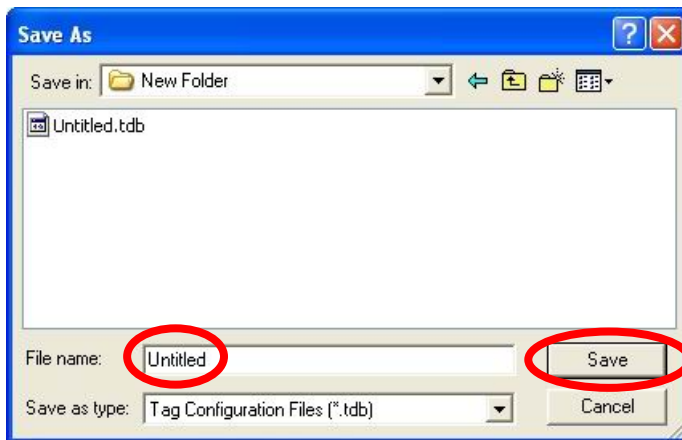


4. Save As...

Save NAPOPC.M2M DA Server project as a new one

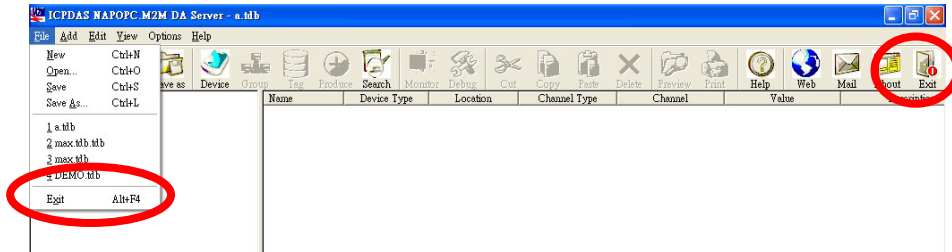


Give a new file name, and then save.



5. Exit

Click on the "File/ Exit " menu item or the "Exit" Toolbar to exit the NAPOPC.M2M DA Server.



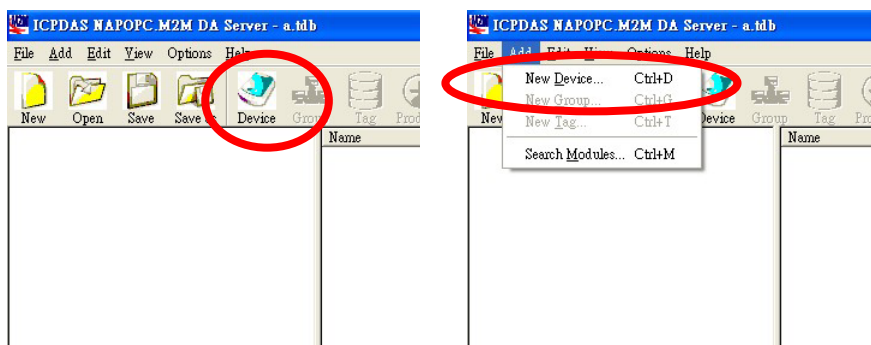
If some OPC clients are connecting to this server, it will show this warning message box to remind user to disconnect the OCP clients before closing the server.

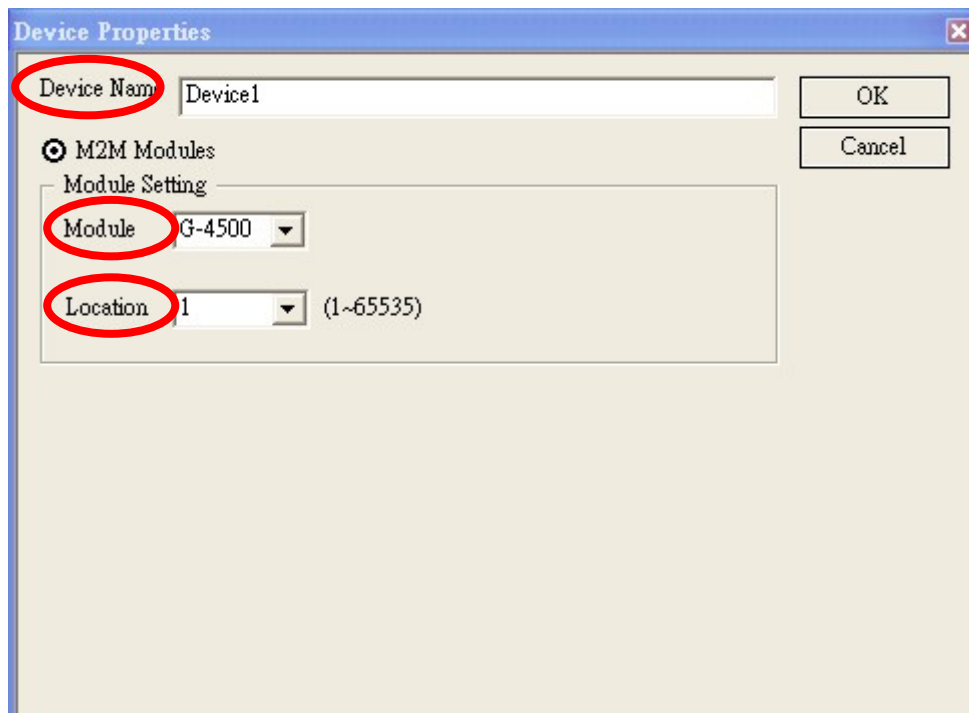


1.3.2 Screen Features – Add

1. New Device

Create new device in NAPOPC.M2M DA Server





The screenshot shows a 'Device Properties' dialog box with the following fields and settings:

- Device Name:** Device1
- M2M Modules:** Selected (radio button)
- Module Setting:**
 - Module:** G-4500
 - Location:** 1 (Range: 1~65535)
- Buttons:** OK, Cancel

Device Name:

Please input your Device name

Module:

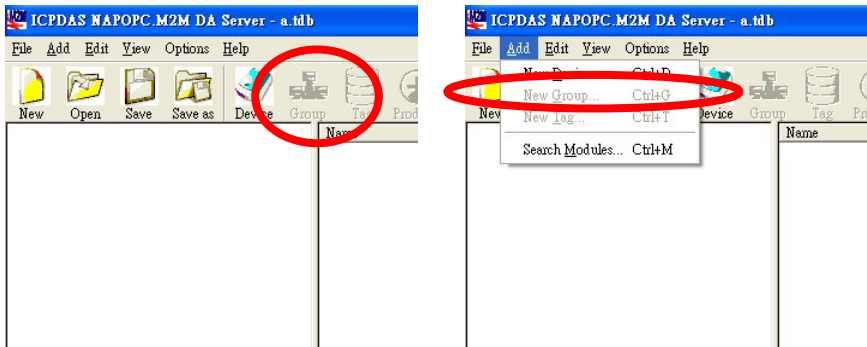
Select your connection module like G-4500 or GT-540...etc.

Location:

Please input the station ID of your module. It can't repeat the same station ID in the RTU Center. The station ID must match your connection module. (Range: 1 ~ 65535)

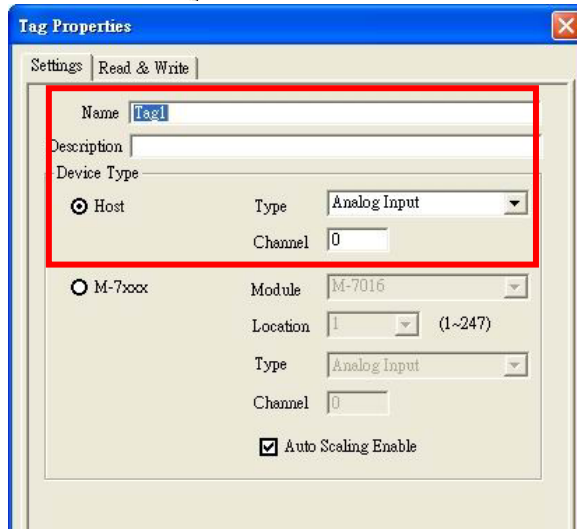
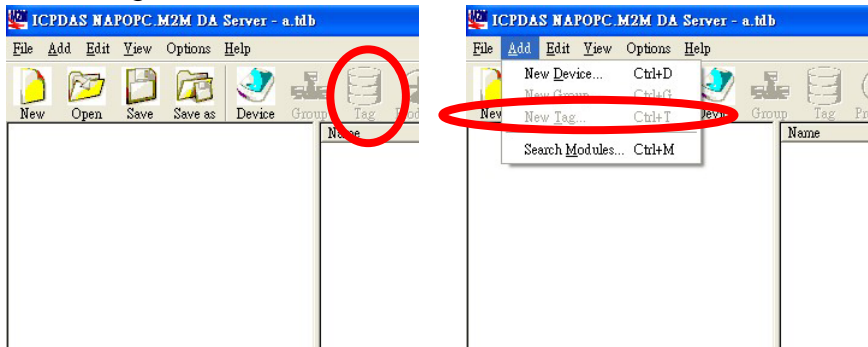
2. New Group

Create new group in NAPOPC.M2M DA Server



3. New Tag

Create new tag in the NAPOPC.M2M DA Server



Name:

Any "Tag Name" may be used, but avoid names with spaces or punctuation such as "!", ".", ". The clients will use the "Device Name" and "Tags" to access its value. Hence the "Tag Name" can't be a duplicate of another tag in the same group.

Description:

Users can specify the description text for this tag. This can be blank.

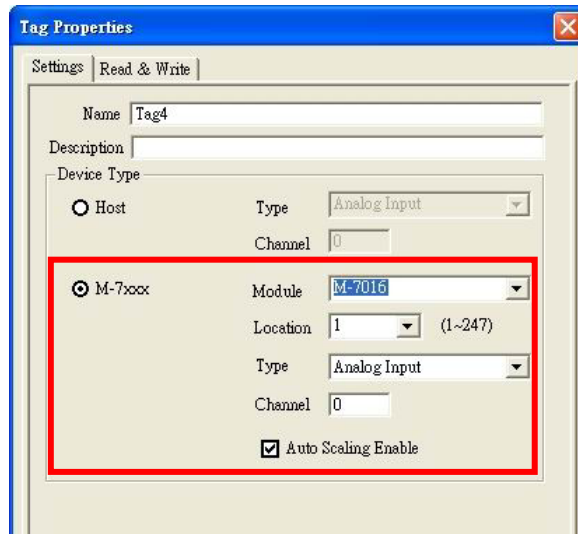
Host Type:

To specify the command to be used for this tag, it can select “Analog Input” or “Analog Output” or “Digital Input” or “Digital Output” or “Bit Input” or “Bit Output” to define the host type.

Host Type	Description
Analog Input	OPC server has received from the device data stored in this data item. The data can only be read
Analog Output	Client sends the data to write in this data item, OPC server put this data item which extracted from the data sent to the device, the client can not read data from this data item.
Digital Input (All Digital Input channels)	OPC server has received from the device data of all Digital Input channels stored in this data item. The data can only be read
Digital Output (All Digital Output channels)	Client sends the data of all Digital Output channels to write in this data item, OPC server put this data item which extracted from the data sent to the device, the client can not read data from this data item.
Bit Input (One Digital Input channel)	OPC server has received from the device data stored in this data item. The data can only be read
Bit Output (One Digital Output channel)	Client sends the data to write in this data item, OPC server put this data item which extracted from the data sent to the device, the client can not read data from this data item.

Host Channel:

Specify the channel number to be used for this tag according to the device. If users select “Digital Input” or “Digital Output”, the “Host Channel” will be an invalid parameter.



M-7000 Module:

Select your Modbus module. If your Modbus module the list, you can select “Custom” to define the parameters of the Modbus device.

M-7000 Location:

Select the location of your Modbus module. (Range: 1 ~ 247)

M-7000 Type:

To specify the command to be used for this tag, it can select “Analog Input” or “Analog Output” or “Digital Input” or “Digital Output” or “Bit Input” or “Bit Output” to define the host type.

Host Type	Description
Analog Input	OPC server has received from the device data stored in this data item. The data can only be read
Analog Output	Client sends the data to write in this data item, OPC server put this data item which extracted from the data sent to the device, the client can not read data from this data item.
Digital Input (All Digital Input channels)	OPC server has received from the device data of all Digital Input channels stored in this data item. The data can only be read
Digital Output (All Digital	Client sends the data of all Digital Output channels to write in this data item, OPC server put this data

Output channels)	item which extracted from the data sent to the device, the client can not read data from this data item.
Bit Input (One Digital Input channel)	OPC server has received from the device data stored in this data item. The data can only be read
Bit Output (One Digital Output channel)	Client sends the data to write in this data item, OPC server put this data item which extracted from the data sent to the device, the client can not read data from this data item.

M-7000 Channel:

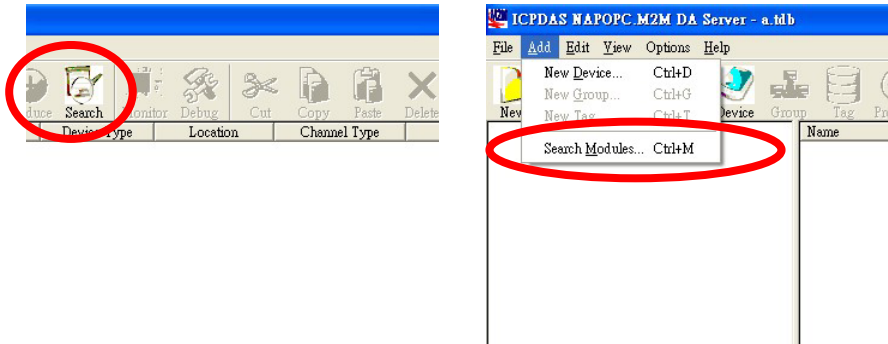
Specify the channel number to be used for this tag according to the device. If users select “Digital Input” or “Digital Output”, the “Host Channel” will be an invalid parameter.

M-7000 Auto Scaling Enable:

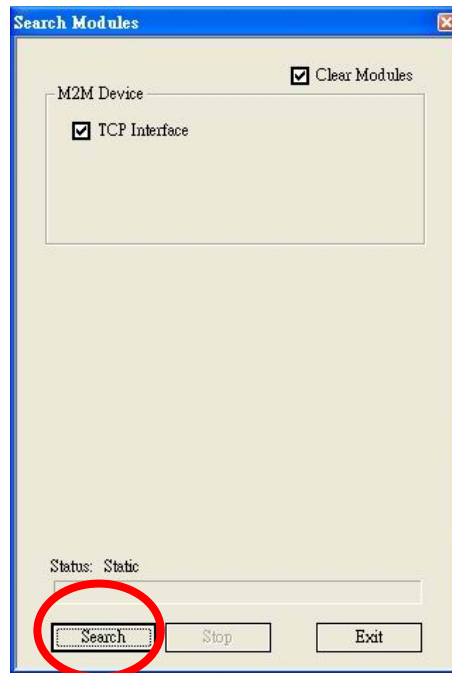
When users use Modbus module of ICP DAS, users can select whether transform hex. value into physical value or not.

4. Search Modules

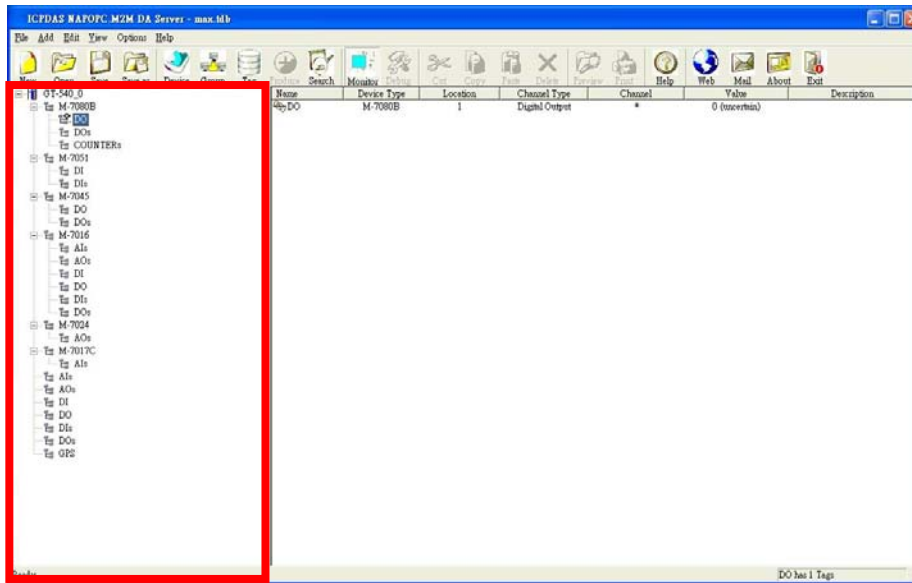
Search all devices in PC. This function can scan all devices in PC automatically and users don't need to configure the devices, groups and tags manually.



Click "Search" to start this procedure.



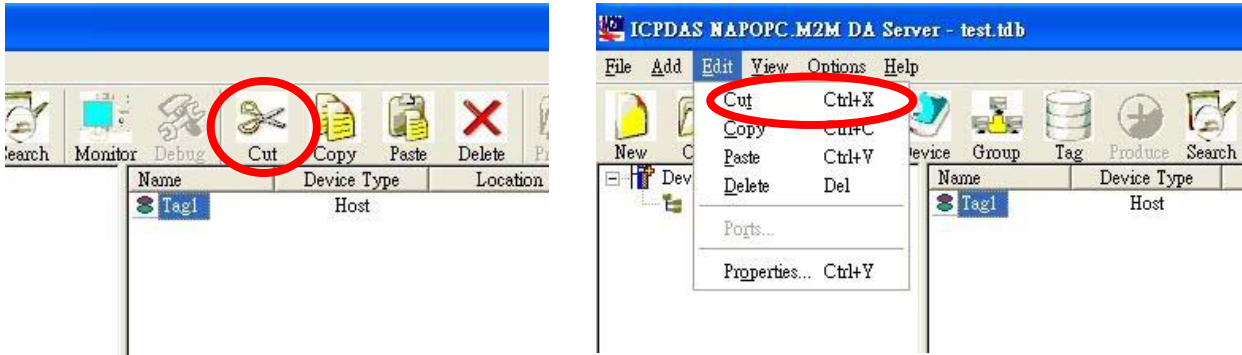
After "Search" modules.



1.3.3 Screen Features – Edit

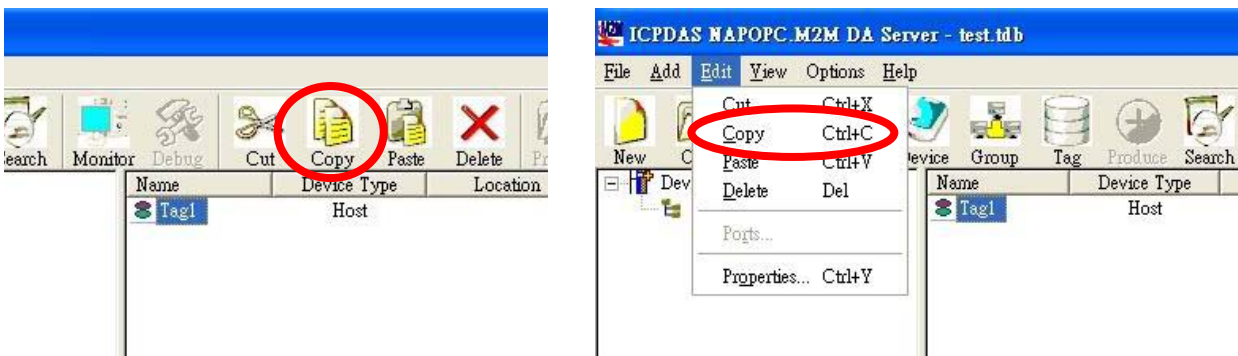
1. Cut

Cut the tag in NAPOPC.M2M DA Server



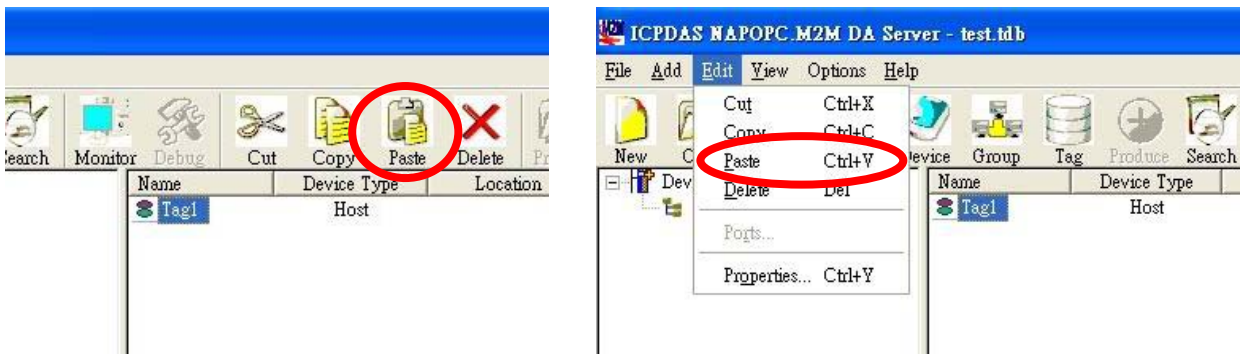
2. Copy

Copy the Tag in NAPOPC.M2M DA Server



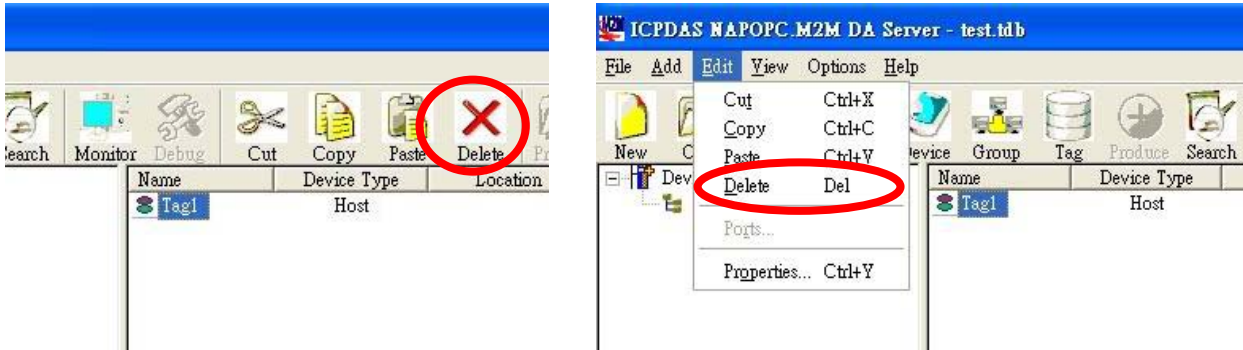
3. Paste

Paste the Tag in NAPOPC.M2M DA Server



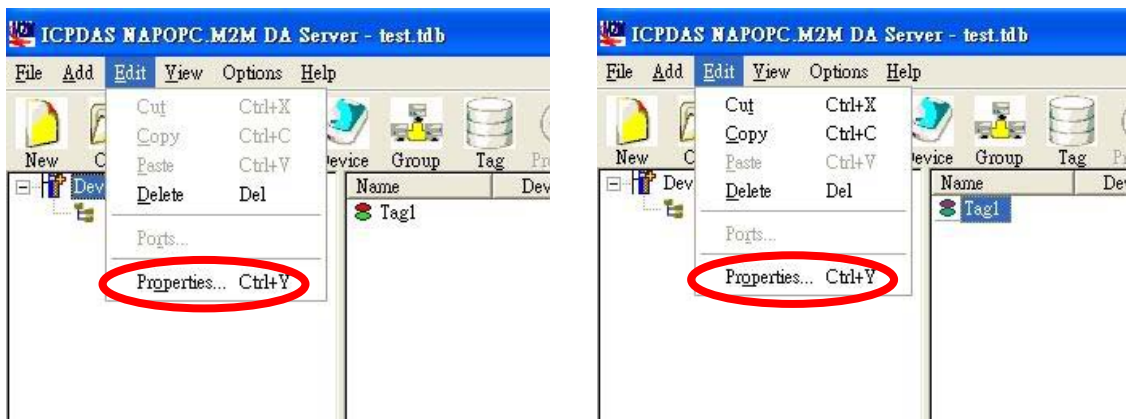
4. Delete

Delete the Device / Group / Tag in NAPOPC.M2M DA Server

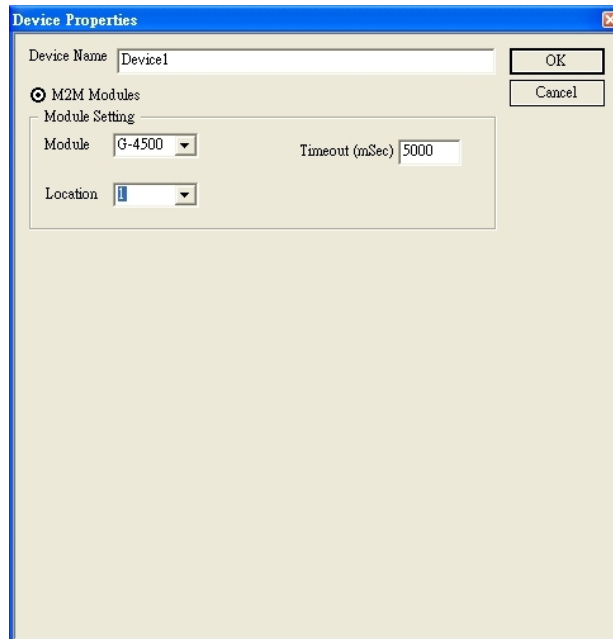


5. Properties

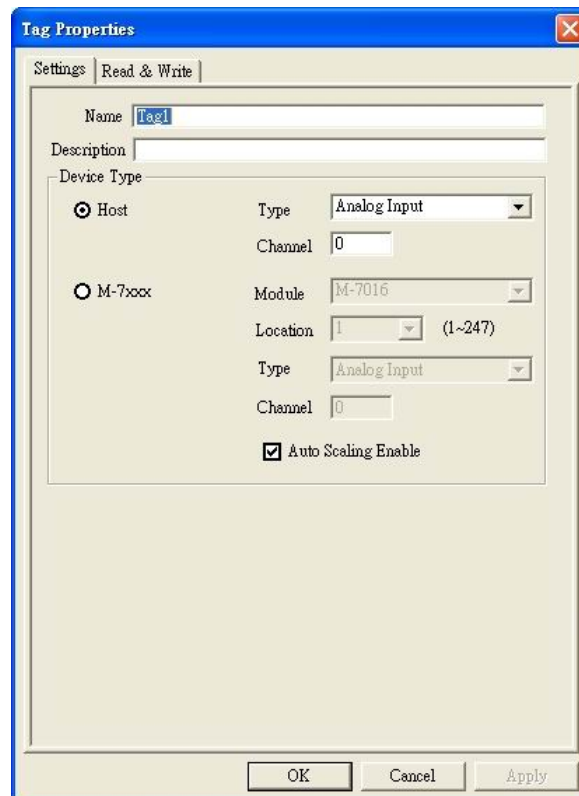
Clicking the "Properties" menu item or double click the Device or Tag to edit the Device's or Tag's properties in NAPOPC.M2M DA Server



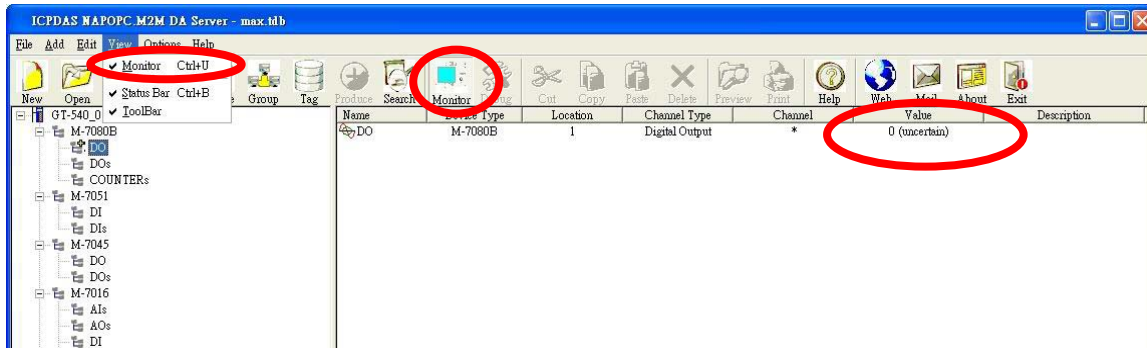
Configure M2M Device (for the detail, refer to “1.3.2”)



Configure M2M Tag (for the detail, refer to “1.3.2”)



1.3.4 Screen Features – View



Monitor :

Use the "Monitor" function to see values of tags by checking the "View/ Monitor" menu item. Uncheck the item to stop monitoring.

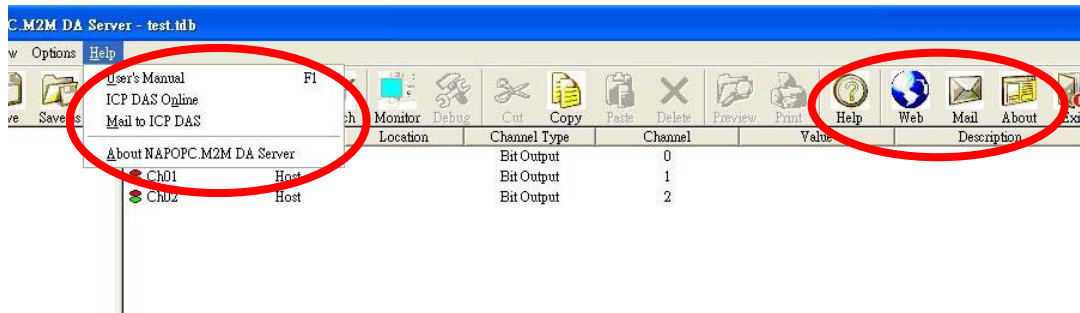
Status Bar :

To show or not show the Status Bar

Tool Bar :

To show or not show the Tool Bar

1.3.5 Screen Features – Help



User’s Manual / Help :

Click on the "Help/User's Manual" menu item or the “Help” Toolbar refer to the user’s manual.

ICP DAS Online :

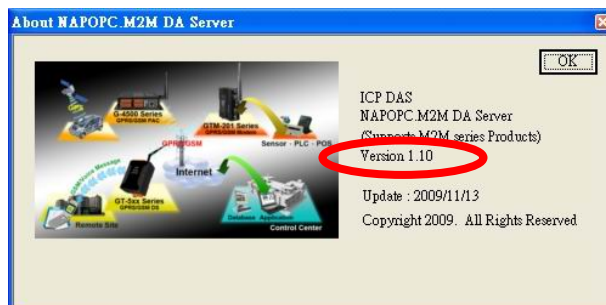
Click on the "Help/ ICP DAS Online" menu item or the “Wed” Toolbar to browse our web.

Mail to ICP DAS :

Click on the "Help/ Mail ICP DAS" menu item or the “Mail” Toolbar to contact us by Outlook Express.

About NAPOPC.M2M DA Server :

Click on the "Help/ About NAPOPC.M2M DA Server" menu item or the About Toolbar to see the "About NAPOPC. M2M DA Server" dialog box.



2. Quick Start

2.1 Operational Guidelines for the initial

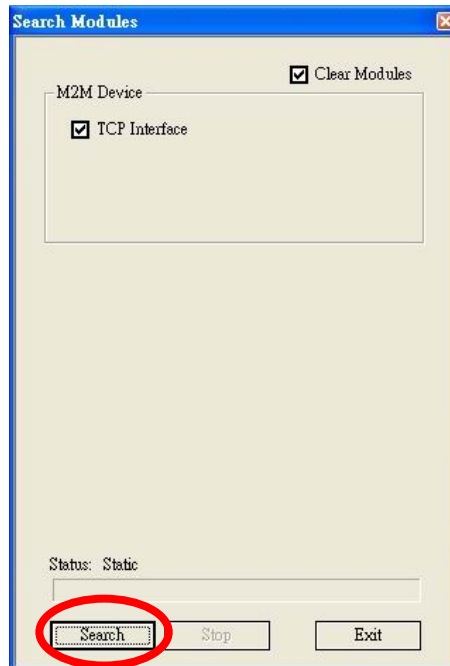
Step 1. Install the NAPOPC.M2M DA server

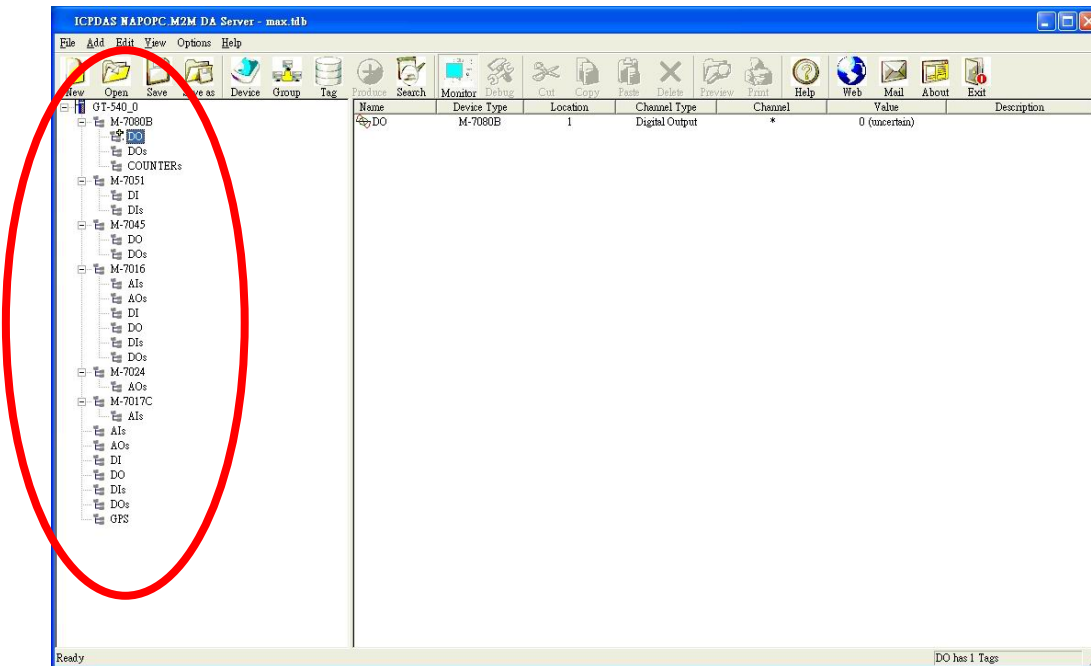
Step 2. Launch the OPC server by executing

" C:\ICPDAS\ICP DAS OPC Suite\NAPOPC.M2M \ NAPOPC.M2M.exe ".



Step 3. Search Modules. Refer to the "1.3.2 Screen Features – Add - Search Modules" to search devices in the PC.



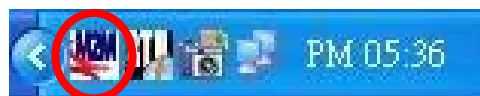


Step 4. Save the Configuration. Save the configuration by clicking "File/Save" menu item.

Step 5. Close OPC server. Close NAPOPC.M2M DA server by clicking "File/Exit" menu item.

Step 6. Connect to NAPOPC.M2M DA server. Users can run the OPC client program to connect to the OPC server by linking the name of "NAPOPC.M2M".

Step 10. When an OPC Client connects to "NAPOPC.M2M", the NAPOPC.M2M DA server will be executed automatically and minimized to the system tray.



2.2 Connect to NAPOPC.M2M DA Server

This OPC is defined by the OPC Foundation, so any client program supporting OPC can connect to the NAPOPC.M2M server.

2.2.1 FactorySoft OPC Client Program

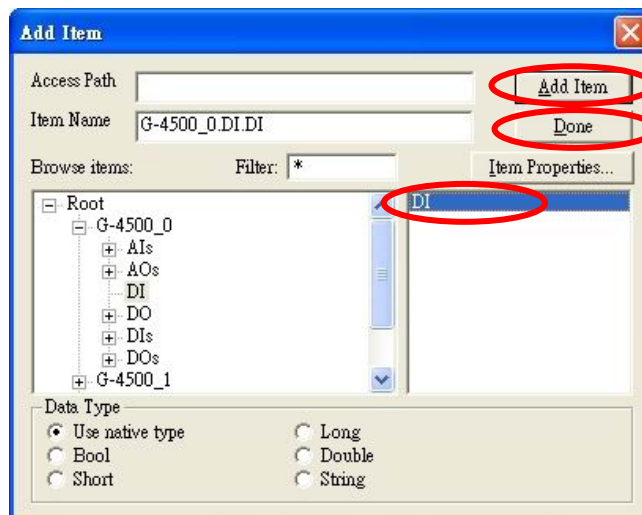
Step 1: Click on the "OPC/ Connect..." menu item.

Step 2: Select the "NAPOPC.M2M (NAPOPC.M2M DA Server)" OPC server.



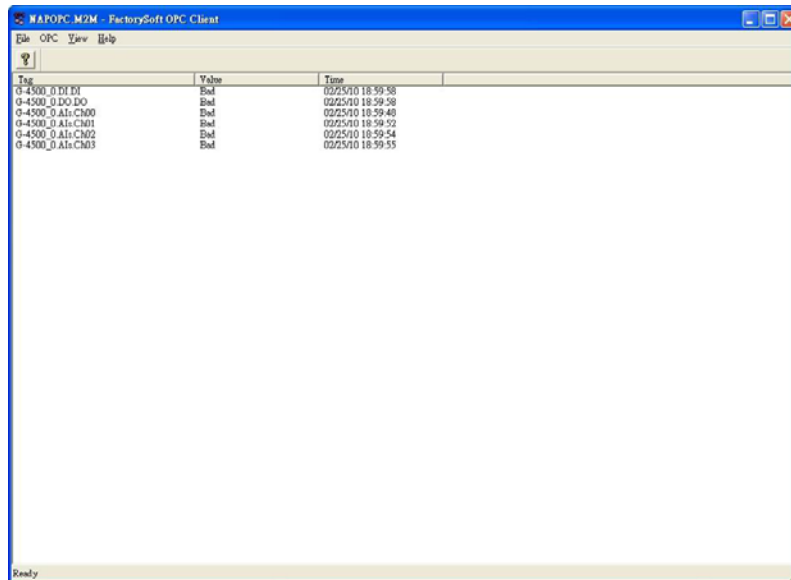
Step 3: Click on the "OPC/ Add Item" menu item to add existing tags.

Step 4: Browse the tree list, then double-click on the tag or click the Add Item button to add.



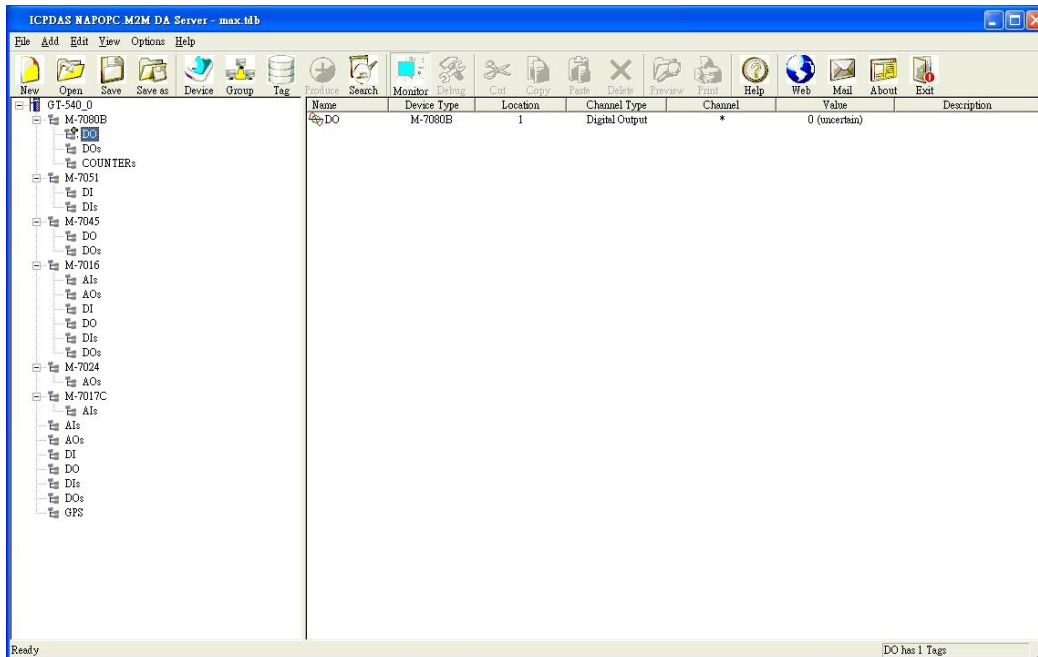
Step 5: Click on the "Done" button to close.

Step 6: The window shows the values of selected tags.

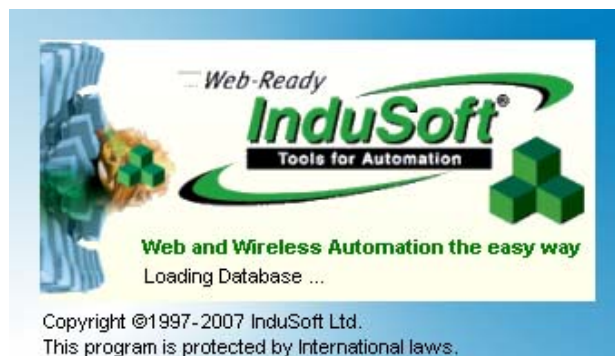


2.2.2 InduSoft

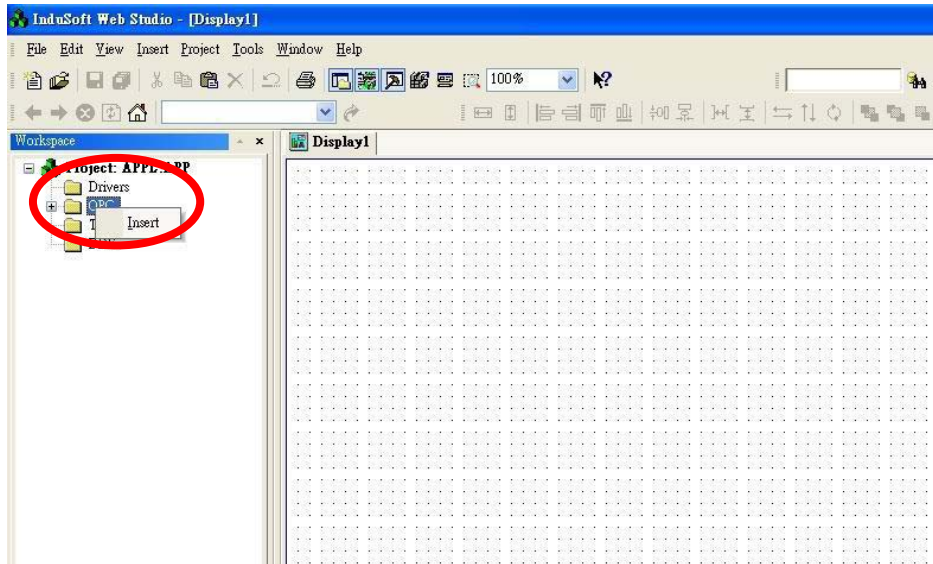
Step 1: Before using the InduSoft OPC Client module, you need to install and configure the NAPOPC.M2M DA server in the machines you will run it.



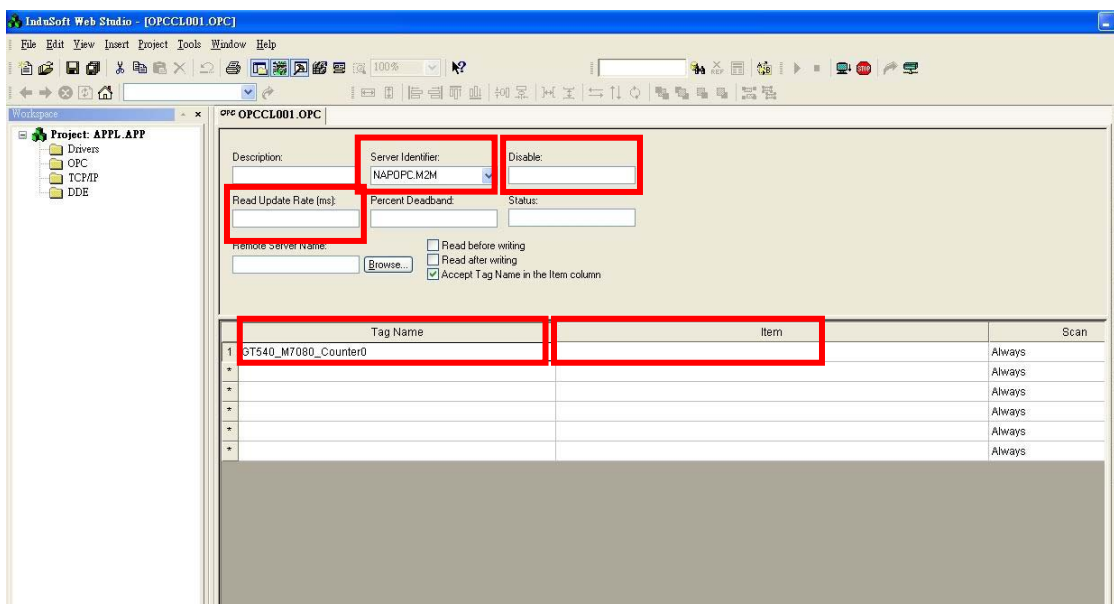
Step 2: Run the InduSoft.



Step 3: In the Studio Workspace window, click the Comm tab, right-click the OPC folder, and click “Insert”.



Step 4: Click on the Server Identifier: drop-down menu and select the “NAPOPC.M2M”, or key in “NAPOPC.M2M”.



The configuration table for OPC has the following entries:

Server Identifier: this field should contain the name of the server you want to connect to. If the server is installed in the computer, its name can be selected through the list box.

Disable: this field should contain a tag or a constant. If its value is different from zero, the communication with the OPC server is disabled.

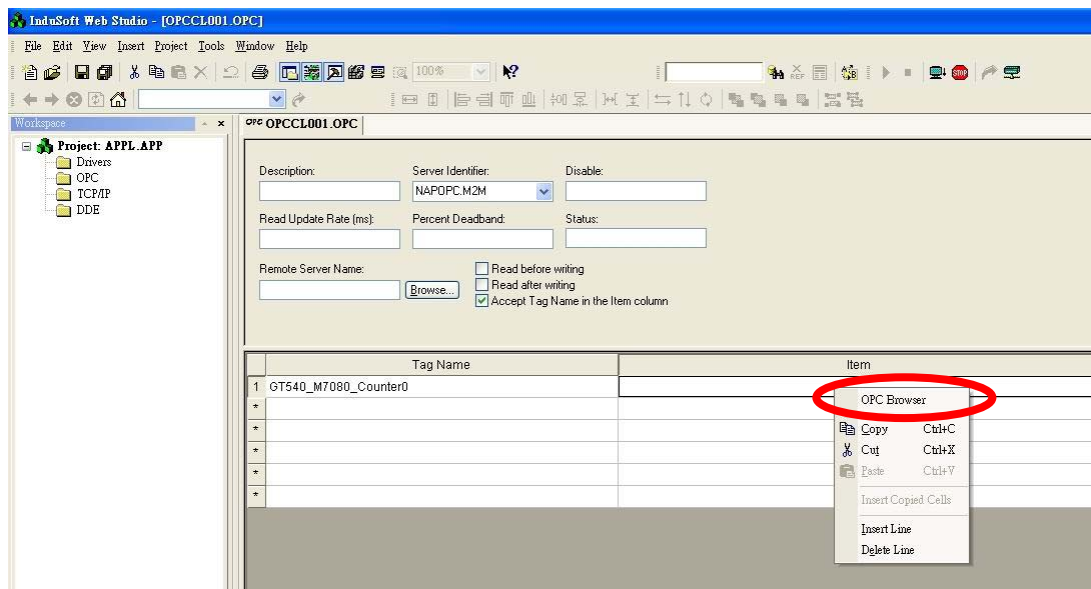
Update Rate: this field indicates how often the server will update this group in milliseconds. If it is zero, the server will use the fastest practical rate.

Tag Name: these fields should contain the tags linked to the server items.

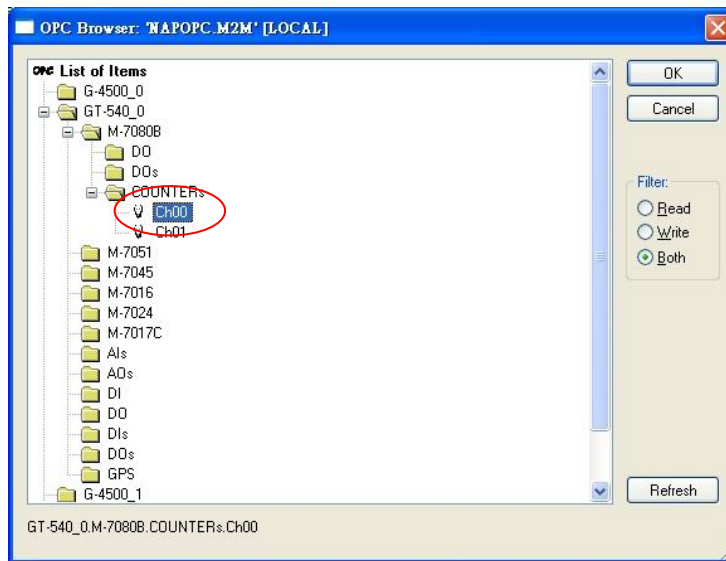
Item: these fields should contain the name of the server's items

Step 5: In the first cell of the Tag Name column type the tag name created in database.

Step 6: Right-click the first cell of the item column and select “OPC Browser” in the pop-up menu to get the OPC browser window.

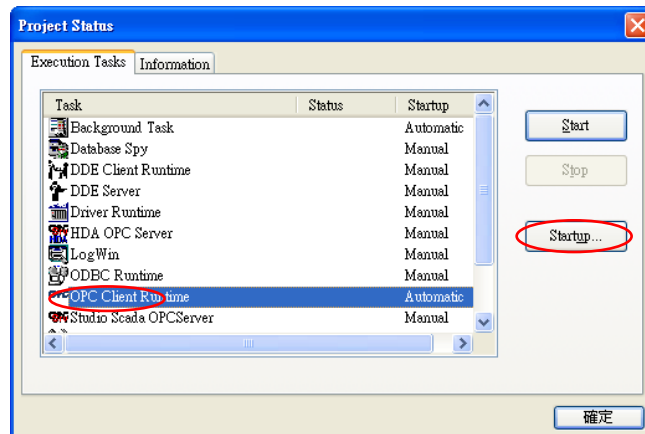


Step 7: Select a tag in the tree-view, and click the “OK” button or double click the tag to add this one.

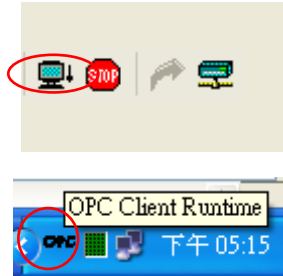


Step 8: Repeat the step 7 ~ 11 to add more tags.

Step 9: From the project select status, then select the “OPC Client Runtime” in “Execution Tasks” tab. Click on the Startup button to setup the Startup as Automatic.



Step 10: Run the program InduSoft OPC Client, after running this program, a small icon will appear in your system tray, main screen will show as below.



3. Error Message

NAPOPC.M2M DA Server may show some error messages as below.

It means there are some error statuses in the system.

Detailed error code is as follows.

Error Code	Description
1	Don't establish the connection
2	Modbus Data are invalid
3	Initial fail
4	Station ID or Modbus Slave ID is invalid

4. Data format definiens

Data format	Description
0	engineering unit.
1	2's complement
2	hexadecimal
3	% of FSR
254	Counter hex
255	Unknown

5. Type code definiens

AI Type code

AI Type Code	Input Type	Data Format	+F.S	-F.S.
00	-15 to +15 mV	Engineering unit	+15.000	-15.000
		% of FSR	+100.00	-100.00
		2's comp HEX	7FFF	8000
01	-50 to +50 mV	Engineering unit	+50.000	-50.000
		% of FSR	+100.00	-100.00
		2's comp HEX	7FFF	8000
02	-100 to +100 mV	Engineering unit	+100.000	-100.000
		% of FSR	+100.00	-100.00
		2's comp HEX	7FFF	8000
03	-500 to +500 mV	Engineering unit	+500.00	-500.00
		% of FSR	+100.00	-100.00
		2's comp HEX	7FFF	8000
04	-1 to +1 V	Engineering unit	+1.0000	-1.0000
		% of FSR	+100.00	-100.00
		2's comp HEX	7FFF	8000
05	-2.5 to +2.5 V	Engineering unit	+2.5000	-2.5000
		% of FSR	+100.00	-100.00
		2's comp HEX	7FFF	8000
06	-20 to +20 mA	Engineering unit	+20.000	-20.000
		% of FSR	+100.00	-100.00
		2's comp HEX	7FFF	8000
07	4 to 20 mA	Engineering unit	+20.000	+04.000
		% of FSR	+100.00	-100.00
		2's comp HEX	7FFF	8000
08	-10 to +10 V	Engineering unit	+10.000	-10.000
		% of FSR	+100.00	-100.00
		2's comp HEX	7FFF	8000
09	-5 to +5 V	Engineering unit	+5.0000	-5.0000
		% of FSR	+100.00	-100.00
		2's comp HEX	7FFF	8000
10	-1 to +1 V	Engineering unit	+1.0000	-1.0000
		% of FSR	+100.00	-100.00

		2's comp HEX	7FFF	8000
11	-500 to +500 mV	Engineering unit	+500.00	-500.00
		% of FSR	+100.00	-100.00
		2's comp HEX	7FFF	8000
12	-150 to +150 mV	Engineering unit	+150.00	-150.00
		% of FSR	+100.00	-100.00
		2's comp HEX	7FFF	8000
13	-20 to +20 mA	Engineering unit	+20.000	-20.000
		% of FSR	+100.00	-100.00
		2's comp HEX	7FFF	8000
14	-210 to 760 °C	Engineering unit	+760.00	-210.00
		% of FSR	+100.00	-027.63
		2's comp HEX	7FFF	DCA2
15	-270 to 1372 °C	Engineering unit	+1372.0	-0270.0
		% of FSR	+100.00	-019.68
		2's comp HEX	7FFF	E6D0
16	-270 to 400 °C	Engineering unit	+400.00	-270.00
		% of FSR	+100.00	-067.5
		2's comp HEX	7FFF	A99A
17	-270 to 1000 °C	Engineering unit	+1000.0	-0270.0
		% of FSR	+100.00	-027.00
		2's comp HEX	7FFF	DD71
18	0 to 1768 °C	Engineering unit	+1768.0	+0000.0
		% of FSR	+100.00	+000.00
		2's comp HEX	7FFF	0000
19	0 to 1768 °C	Engineering unit	+1768.0	+0000.0
		% of FSR	+100.00	+000.00
		2's comp HEX	7FFF	0000
20	0 to 1802 °C	Engineering unit	+1820.0	+0000.0
		% of FSR	+100.00	+000.00
		2's comp HEX	7FFF	0000
21	-270 to 1300 °C	Engineering unit	+1300.0	-0270.00
		% of FSR	+100.00	-020.77
		2's comp HEX	7FFF	E56B
22	0 to 2320 °C	Engineering unit	+2320.0	+0000.0
		% of FSR	+100.00	+000.00
		2's comp HEX	7FFF	0000
23	-200 to 800 °C	Engineering unit	+800.00	-200.00

		% of FSR	+100.00	-025.00
		2's comp HEX	7FFF	E000
24	-200 to 100 °C	Engineering unit	+100.00	-200.00
		% of FSR	+050.00	-100.00
		2's comp HEX	4000	8000
25	-200 to 900 °C	Engineering unit	+900.00	-200.00
		% of FSR	+100.00	-022.22
		2's comp HEX	7FFF	E38E
26	0 to 20 mA	Engineering unit	+20.000	+00.000
		% of FSR	+100.00	+000.00
		2's comp HEX	FFFF	0000
27	-150 to +150 V	Engineering unit	+150.00	-150.00
		% of FSR	+100.00	-100.00
		2's comp HEX	7FFF	8000
28	-50 to +50 V	Engineering unit	+50.000	-50.000
		% of FSR	+100.00	-100.00
		2's comp HEX	7FFF	8000
32	-100 to 100 °C	Engineering unit	+100.00	-100.00
		% of FSR	+100.00	-100.00
		2's comp HEX	7FFF	8000
33	0 to 100 °C	Engineering unit	+100.00	-100.00
		% of FSR	+100.00	-100.00
		2's comp HEX	7FFF	0000
34	0 to 200 °C	Engineering unit	+200.00	+000.00
		% of FSR	+100.00	+000.00
		2's comp HEX	7FFF	0000
35	0 to 600 °C	Engineering unit	+600.00	+000.00
		% of FSR	+100.00	+000.00
		2's comp HEX	7FFF	0000
36	-100 to 100 °C	Engineering unit	+100.00	-100.00
		% of FSR	+100.00	-100.00
		2's comp HEX	7FFF	8000
37	0 to 100 °C	Engineering unit	+100.00	+000.00
		% of FSR	+100.00	+000.00
		2's comp HEX	7FFF	0000
38	0 to 200 °C	Engineering unit	+200.00	+000.00
		% of FSR	+100.00	+000.00
		2's comp HEX	7FFF	0000

39	0 to 600 °C	Engineering unit	+600.00	+000.00
		% of FSR	+100.00	+000.00
		2's comp HEX	7FFF	0000
40	-80 to 100 °C	Engineering unit	+100.00	-080.00
		% of FSR	+100.00	-080.00
		2's comp HEX	7FFF	999A
41	0 to 100 °C	Engineering unit	+100.00	+000.00
		% of FSR	+100.00	+000.00
		2's comp HEX	7FFF	0000
42	-200 to 600 °C	Engineering unit	+600.00	-200.00
		% of FSR	+100.00	-033.33
		2's comp HEX	7FFF	D556
43	-20 to 150 °C	Engineering unit	+150.00	-020.00
		% of FSR	+100.00	-013.33
		2's comp HEX	7FFF	EEEE
44	0 to 200 °C	Engineering unit	+200.00	+000.00
		% of FSR	+100.00	+000.00
		2's comp HEX	7FFF	0000
45	-20 to 150 °C	Engineering unit	+150.00	-020.00
		% of FSR	+100.00	-013.33
		2's comp HEX	7FFF	EEEE
46	-200 to 200 °C	Engineering unit	+200.00	-200.00
		% of FSR	+100.00	-100.00
		2's comp HEX	7FFF	8000
47	-200 to 200 °C	Engineering unit	+200.00	-200.00
		% of FSR	+100.00	-100.00
		2's comp HEX	7FFF	8000
128	-200 to 600 °C	Engineering unit	+600.00	-200.00
		% of FSR	+100.00	-033.33
		2's comp HEX	7FFF	D556
129	-200 to 600 °C	Engineering unit	+600.00	-200.00
		% of FSR	+100.00	-033.33
		2's comp HEX	7FFF	D556
130	-50 to 150 °C	Engineering unit	+150.00	-050.00
		% of FSR	+100.00	-033.33
		2's comp HEX	7FFF	D556
131	-60 to 180 °C	Engineering unit	+180.00	-060.00
		% of FSR	+100.00	-033.33

		2's comp HEX	7FFF	D556
254 (Counter)	0 to 4294967295	Counter Value	Counter Value	Counter Value
255 (Customer)	0 to 0	Customer define	Customer define	Customer define

AOType code

AO Type Code	Input Type	Data Format	+F.S	-F.S.
00	0 to 20 mA	Engineering unit	+20.000	00.000
		% of FSR	+100.00	+000.00
		2's comp HEX	FFF	0000
01	4 to 20 mA	Engineering unit	+20.000	04.000
		% of FSR	+100.00	+000.00
		2's comp HEX	FFF	0000
02	0 to 10 V	Engineering unit	+10.000	00.000
		% of FSR	+100.00	+000.00
		2's comp HEX	FFF	0000
48	0 to 20 mA	Engineering unit	+20.000	00.000
		% of FSR	+100.00	+000.00
		2's comp HEX	FFF	0000
49	4 to 20 mA	Engineering unit	+20.000	04.000
		% of FSR	+100.00	+000.00
		2's comp HEX	FFF	0000
50	0 to 10 V	Engineering unit	+10.000	00.000
		% of FSR	+100.00	+000.00
		2's comp HEX	FFF	0000
51	-10 to +10 V	Engineering unit	+10.000	-10.000
		% of FSR	+100.00	+000.00
		2's comp HEX	FFF	0000
52	0 to +5V	Engineering unit	+05.000	-05.000
		% of FSR	+100.00	+000.00
		2's comp HEX	FFF	0000
53	-5 to +5V	Engineering unit	+05.000	-05.000
		% of FSR	+100.00	+000.00
		2's comp HEX	FFF	0000
255 (Customer)	0 to 0	Customer define	Customer define	Customer define

History of version

Revision

Version	By	Date	Description
1.00	Yide	2010/03/05	
1.01	Yide	2010/03/28	