

User's Manual [For Windows 98/Me/NT/2000/XP/7]

(Supports 7000, 8000, 87000 series modules and modbus controllers)



OPC®, the OPC-Logo and OPCTM Foundation are trademarks of the OPC Foundation. (www.opcfoundation.org) Microsoft®, Microsoft .NETTM, VisualStudio.NETTM and Microsoft WindowsTM are trademarks of the Microsoft Corporation (www.microsoft.com)

Table of Contents

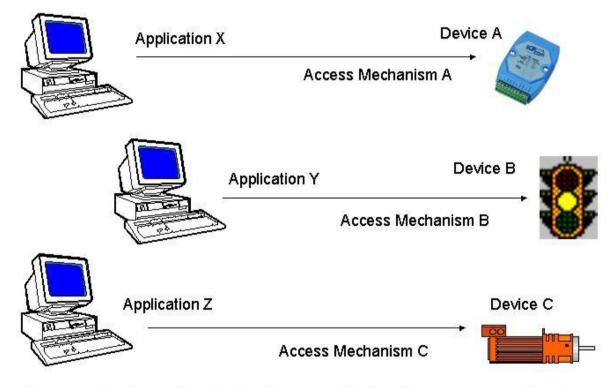
1 NAPOPC_ST DA Server	4
1.1 Installing NAPOPC_ST DA Server	5
1.2 Uninstalling NAPOPC_ST DA Server	6
1.3 File	7
1.4 Searching Modules	10
1.5 Monitoring Devices	13
1.6 Adding A New Device	
1.6.1 Adding A New I-7K/I-8K/I-87K/ZB-2K I/O Module	15
1.6.2 Adding A New RPC Controller	17
1.6.3 Adding A New FRnet I/O	
1.6.4 Adding A New Modbus TCP Controller	
1.6.5 Adding A New Modbus RTU Controller	24
1.6.6 Adding A New Modbus ASCII Controller	26
1.7 Adding A New Group	29
1.8 Adding A New Tag	
1.8.1 Adding A New Tag For I/O Module	30
1.8.2 Adding A New Tag For Controller	31
1.8.3 Scaling Settings	
1.9 Adding Multi Tags For Modbus Device	
1.10 Expand/ Shrink Devices	35
1.11 Read/Write Tags	
1.12 Editing A Device/Group/Tag Properties	
1.13 Deleting A Device/Group/Tag	
1.14 Generating Tags	
1.15 Configurate Initial Status	
1.16 License Manager	
1.17 Help	41
1.18 About	
2 Quick Start	
3 Connect To OPC Server	44
3.1 Optimize Your Communication	
3.2 VB5 Client Demo Program	
3.3 .Net Client Demo Program	50
3.4 LabVIEW	
3.5 NATIONAL INSTRUMENTS	
3.6 WIZCON	
3.7 iFix	
3.8 InduSoft	
3.9 Citect SCADA	
4 Remote Accessing	
4.1 System Requirement	
4.2 Configuring DCOM	
4.2.1 Configuring On the Server Site (XPAC)	
4.2.2 Configuring On the Server Site (PC)	
4.2.3 Configuring On the Server Site (WinPAC)	
4.2.4 Configuring On the Client Site (PC)	
4.2.5 Configuring On the Client Site (XPAC)	
5 Writing Client Program with VB	140

5.	1 F	Programming with VB5	
	5.1.1	Overview of OPC & VB	
	5.1.2	Tools You Will Need to Build Your VB Client	141
	5.1.3	Building Your VB Client – Step By Step	141
5.	2 F	Programming with .Net	
	5.2.1	Limitations about .Net client programming	144
	5.2.2	Tools – You Need to Build Your .Net Client	145
	5.2.3	Building Your VB.Net Client – Step By Step	145
	5.2.4		
6	Chan	iges List	
6.	1 N	New features of NAPOPC version 3.0	
	6.1.1	New IO Kernel	
	6.1.2	Customized Module/Device Polling Time	
	6.1.3		
	6.1.4	Miscellaneous	
6.	2 N	New features of NAPOPC version 3.09	
	6.2.1	Support Remote Procedure Call with Quicker/UPC	
	6.2.2		
6.	3 N	New features of NAPOPC_ST version 3.11	
	6.3.1	Rename NAPOPC to be NAPOPC_ST	
	6.3.2		
6.	4 F	Features of NAPOPC_ST version 3.20	
	6.4.1	Support ET-7000 Search	154
	6.4.2	11	
	6.4.3	Support FRnet Module	
	6.4.4	Support Account Selection	
	6.4.5		
6.	5 F	Features of NAPOPC_ST version 3.30	
	6.5.1	Support FRnet module via RPC communication	
	6.5.2	11	
	6.5.3		
7	Refe	rence	

1 NAPOPC_ST DA Server

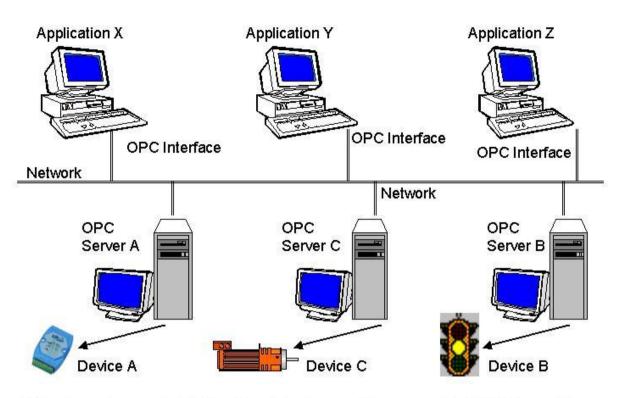
The NAPOPC_ST DA Server uses an Explorer-style user interface to display a hierarchical tree of modules and groups with their associated tags. A group can be defined as a subdirectory containing one or more tags. A module may have many subgroups of tags (see page 8). All tags belong to their module when they are scanned for perform I/O. (The "OPC" stands for "OLE for Process Control" and the "DA" stands for "Data Access".)

The following two figures show the difference between traditional mechanisms and the OPC mechanism.



For accessing the various devices for any application, there are many different mechanisms provided by different vendors.

Figure 1-0-1 Traditional mechanisms used to access a device.



Different vendors provide both different devices and the appropriate OPC Server. To access each device for any application, there is only one common mechanism through the "OPC Interface".

Figure 1-0-2 Using the OPC mechanism to access a device.

The main program of NAPOPC_ST DA Server is "NAPOPCSvr_ST.exe". It automatically calls the "DCON_PC.DLL", "IOCtrl.DLL" and "UART.DLL" functions on demand.

1.1 Installing NAPOPC_ST DA Server

You can get the software from the "CD: \Napdos\Napopcsvr\" or you can download it from http://opc.icpdas.com/download.htm .

Hardware Requirement:

- A personal computer with at least a Pentium, 133 MHz or faster processor
- 32 Mbytes ram (Preferably 64 Mbytes ram)
- 10 Mbytes hard disk free space

Software Requirement:

One of the following computer operating systems must be installed on your computer system.

- Windows 98
- Windows ME/NT/2000
- Windows XP
- Windows 7 32 bits

Double click the CD:\\Napdos\Napopcsvr\NAPOPC_ST DA Server.exe and follow the installing wizard to finish the installation.

After you complete the above steps, you can start the NAPOPC_ST Server by clicking the "NAPOPC_ST DA Server" as below.

🛅 Icpdas	🕨 🧰 NAPOPC_ST 🔸 🧰 Client
	🗧 🔁 FAQ
	🛅 Manual
	📩 NAPOPC_ST DA Manual
	X NAPOPC_ST DA Server
	🧭 Uninstall NAPOPC_ST DA Server
	📋 Readme.txt
	📋 What's new

Note: If you want to use FRnet modules in NAPOPC_ST, please download FRB driver and install it first. If you want to use FBR driver under windows 7 64 bits, please make sure if it is available or not. Download link: http://www.icpdas.com/download/frnet/index.htm

Note: Please uninstall old version NAPOPC_ST before install new NAPOPC_ST

1.2 Uninstalling NAPOPC_ST DA Server

	Currently installed programs:		Show up <u>d</u> ates	Sort by: Name		×
Change or Remove	B Device Simulation Framework 1.0.1	30-18	90383	Size	2.99MB	~
Programs	1 <mark>1</mark> 9 I-756x			Size	2.21MB	
-	Inno Setup QuickStart Pack version 5.3.11			Size	5.91MB	
Add <u>N</u> ew Programs	💕 InnoIDE 1.0.0.55			Size	6.03MB	
	🛃 Microsoft .NET Framework 2.0 Service Pack 2			Size	183.00MB	
6	🛃 Microsoft .NET Framework 3.0 Service Pack 2			Size	207.00MB	
	🛃 Microsoft .NET Framework 3.5 SP1			Size	28.11MB	
dd/Remove <u>W</u> indows	5 Microsoft .NET Framework 4 Client Profile			Size	120.00MB	
omponents	Microsoft .NET Framework 4 Extended			Size	38.04MB	
	🛃 Microsoft Document Explorer 2008			Size	26.27MB	
et Program	Microsoft Windows Driver Kit 7.1.0.7600					
ccess and Defaults	📓 Modbus Slave 4.4.5			Size	0.81MB	
Derduits	RAPOPC_ST DA Server version 3.3			Size	<u>12.07MB</u>	P
	Click here for support information.			Used	frequently	
				Last Used On	11/4/2010	
	To remove this program from your computer, click Remove.				Remove	
	🔀 NI Server Explorer			Size	4.11MB	
	😃 Tera Term 4.67			Size	8.16MB	

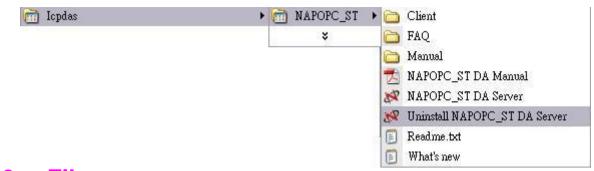
Step 1:

Go to "Add or Remove Programs" dialog and select NAPOPC_ST DA Server

Step 2:

Press "Remove" button to remove NAPOPC_ST DA Server

NAPOPC_ST DA Server v3.30 or later version provides "Uninstall" function as below. You can use this function to uninstall NAPOPC_ST DA Server.



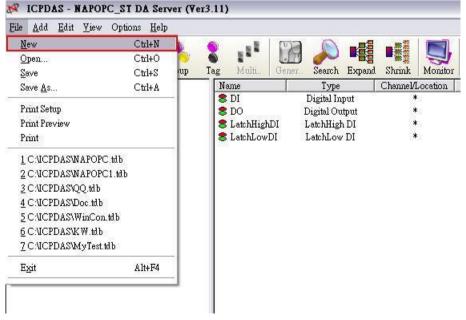
1.3 File

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

ile <u>A</u> dd <u>E</u> dit <u>V</u> iew	Options <u>H</u> elp	S			
<u>N</u> ew	Ctrl+N				
<u>O</u> pen	Ctrl+O	0	6 I** U	🔊 🥕 📲	
<u>S</u> ave	Ctrl+S	up	Tag Multi Ge	ner Search Expand	Shrink Monitor
Save <u>A</u> s	Ctrl+A		Name	Туре	Channel/Location
D.1.10.1			8 DI	Digital Input	*
Print Setup			8 DO	Digital Output	*
Print Preview			S LatchHighDI	LatchHigh DI	*
Print			S LatchLowDI	LatchLow DI	*
1 CAUCPDASWAPOPO	C.td.b				
2 C: UCPDAS WAPOPO	C1.tdb				
3 C:\ICPDAS\QQ.tdb					
4 C:\ICPDAS\Doc.tdb					
5 C:\ICPDAS\WinCon	.tdb				
6 C: \ICPDAS\KW.tdb					
7 C:\ICPDAS\MyTest.t	db				
Exit	Alt+F4				

New:

Clean current project and create a new project

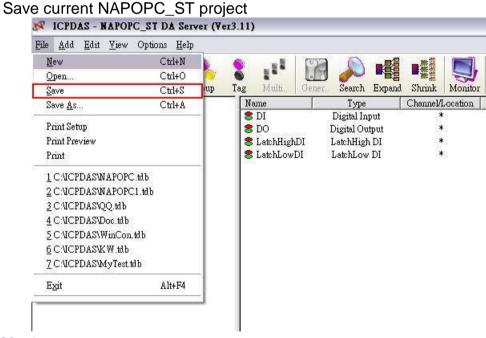


Open:

Lo

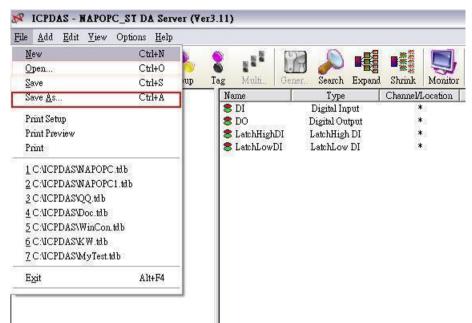
ile Add Edit View	Options <u>H</u> elp						
			12.200 0.221	1.22		_	
New	Ctrl+N	-	2	12			
<u>Open</u>	Ctrl+O	up	Tag Multi	Gener	Search Expa	nd Shrink	Monitor
<u>S</u> ave Save <u>A</u> s	Ctrl+S Ctrl+A	op	Name	Gener	Туре	Channel/	1 Constant
2006 <u>V</u> 2	CUITA	-	S DI		Digital Input	*	
Print Setup		1	8 DO		Digital Output	*	
Print Preview			8 LatchHig		LatchHigh DI	*	
Print			S LatchLov		LatchLow DI	*	
1 CAUCPDASWAPOPO	C.td.b						
2 CAUCPDASWAPOPO	1.tdb						
3 C:\ICPDAS\QQ.tdb							
4 C:\ICPDAS\Doc.tdb							
5 C:\ICPDAS\WinCon	.tdb						
6 C:\ICPDAS\KW.tdb							
- 7 C:\ICPDAS\MyTest.t	db						
Exit	Alt+F4						

Save:

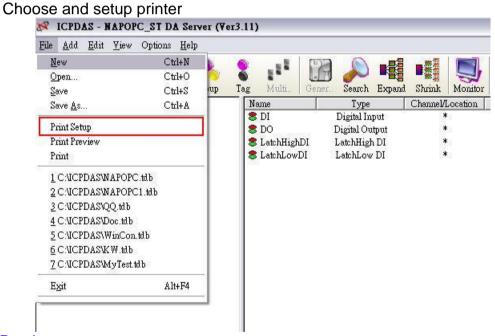


Save as...:

Save NAPOPC_ST project as a new one

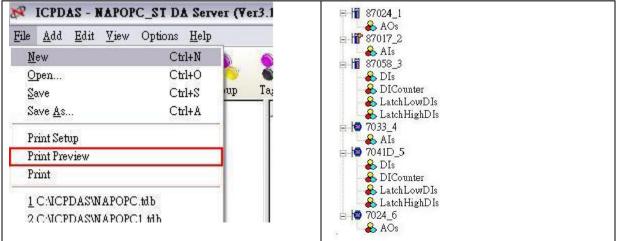


Print Setup:



Print Preview:





Print

TO. A33 T30 T0 (Outions II.le				
<u>File A</u> dd <u>E</u> dit <u>V</u> iew (202 5121 1/2		
New	Ctrl+N				
<u>O</u> pen	Ctrl+O	2	ag Multi (Gener Search Expand	Shrink Monito
<u>S</u> ave	Ctrl+S	up T			
Save <u>A</u> s	Ctrl+A		Name	Туре	Channel/Location
Print Setup			S DI	Digital Input	*
Print Preview			B DO	Digital Output I LatchHigh DI	*
Print			LatchHighDl LatchLowDI	20 · · · · · · · · · · · · · · · · · · ·	*
11000		4	Data Bow Di	Babiliow Di	
1 CAICPDASWAPOPC.t	db				
2 CAUCPDASWAPOPC1	.tdb				
3 C:\ICPDAS\QQ.tdb					
4 C:\ICPDAS\Doc.tdb					
- 5 C:\ICPDAS\WinCon.td	b				
6 C:\ICPDAS\KW.tdb	5771				
7 C:\ICPDAS\MyTest.tdb	0				
Exit	Alt+F4				

1.4 Searching Modules

The "Search Modules..." function lets you configure the OPC server automatically. It searches the RS-232 and RS-485 network to find modules and then generates tags automatically. This function generates AI/AO, DI/DO, Latched DI and Counter tags.

NOTE:

For complete module support, please update "\ICPDAS\NAPOPC_ST \module.ini", "\ICPDAS\NAPOPC_ST\module_ET.ini", "\ICPDAS\NAPOPC_ST\m odule_FRnet.ini" ,and "\ICPDAS\NAPOPC_ST\module_WISE.ini"from http://opc.icpdas.com/download.htm frequently.

Step 1: Click on the "Add/ Search Modules..." menu item or the \checkmark icon to search for modules.

<u>A</u> dd	<u>E</u> dit	<u>V</u> iew	Options	<u>H</u> elp				1 1 2
- 10 A.S.	ew <u>D</u> evia ew Grou		Ctrl+D Ctrl+G		23			
3	ew <u>T</u> ag	590	Ctrl+T	G	Gener.	Search	Expand	Shrink
Se	earch <u>M</u> o	dules.	. Ctrl+M		ne DI	[Type Search mo	dules
G	Generate Tags		Ctrl+A		ю	I	Digital Out	tput

Step 2: The "Search Modules" dialog box pops up.

		WIGE
COM 1	Ethernet IO/	
Baud Rate Searchi	ng — Clear Modul	es
□ 921600 □	460800 🥅 230400 🗍	115200
57600	38400 🔲 19200 🗍	9600
	2400 🗖 1200	
Select All	Clear	All
Address (1 to 255) – Checksum – Ti	meout (mSe
Start 0	Disabled	200
	Enabled	1200
End 255		
'tatus:		
narus.		

COM Port:

Specifies which "COM Port" number is search. The default value is 1 and the valid range is from 1 to 255. Please verify the "COM Port" number that the RS-232 or RS-485 network is connected.

Ethernet IO/WISE:

If this field is checked, NAPOPC can search not only the modules communicating via COM port but also "Ethernet IO" and "WISE" modules via Ethernet automatically.

Clear Modules:

Modules can be added many times. If this field is checked, it removes all modules from the list window before searching. Checking this box prevents adding a duplicate module. The default setting is "not checked".

Baud Rate Searching:

Specifies which "Baud Rate" will be look for. The default setting is "9600".

Naturally, if multiple baud rates are checked, the search will be longer. The computer system must close and then reopen the COM ports to communicate with modules when searching for multiple baud rates. This also reduces communication performance. Thus, using the same baud rate and COM port number for every module is highly recommended.

Select All:

Sets all of the "Baud Rate" be checked. Please refer to the above "Baud Rate Searching" section.

Clear All:

Sets all of the "Baud Rate" be unchecked (nothing to search). Please refer to the above "Baud Rate Searching" section.

Address/Start:

Specifies the starting address. The default value is 1 and the valid range is from 1 to 255. It won't search for an address below these settings.

Address/End:

Specifies the ending address. The default value is 255 and the valid range is from 1 to 255. It won't search for an address greater than these settings.

Checksum/Disabled:

If this field is checked, modules are searched with no checksum. If both the "Disabled" and "Enabled" fields were unchecked, the search would be undefined.

Checksum/Enabled:

If this field is checked, it searches modules with checksum. If both the "Disabled" and "Enabled" fields were unchecked, again, the search would be undefined.

Timeout:

Specifies the communicate timeout value for each module. The default value is 500 (equal to 0.5 Seconds), measured in millisecond(s) [0.001 Second(s)]. After a module has been found, this timeout value will also be recorded for further use.

Users can reduce this value to shorten the search time. Be careful. A shorter search time may cause communication failure.

Status:

It shows the searching status (includes: progress in %, Address in "A:??", Baud-Rate in "B:???", Checksum in "S:?" and Error-Code in "EC:??"). The timeout error code is 15. In most cases, it indicates no module has responded to the current command.

Search:

After setting the above options, click this button to search. The window will be closed automatically when completed.

Stop:

During the search, users can click the button to stop. The window will stay on the screen after the search is cancelled.

Exit:

Users can click the button to close the window.

Step 3: After the search, the discovered modules will be listed on the Device-Window (left side). Users can also see the tags on the Tag-Window (right side) generated by the "Search Modules..." function automatically.

<u>File A</u> dd <u>E</u> dit <u>V</u> iew C	ptions <u>H</u> elp				
	evice-Window) 👔 🛛 🚺 Ta	ag-Window		
New Open Say	Device Group	Tag Gene	search Expand Shr		
🖃 👹 7033D	Name	Туре	Channel/Location		
AIs	8 Ch00	Bit Inpy.	0		
1 2 7044	8 Ch01	Bit Input	1		
🔒 🔒 DIs	8 Ch02	Bit Input	2		
🔒 🦂 DOs	8 Ch03	Bit Input	3		
🔒 🔏 LatchLowDIs	8 Ch04	Bit Input	4		
🛛 🥉 LatchHighDIs	8 Ch05	Bit Input	5		
🖻 🗠 7060D	8 Ch06	Bit Input	6		

The "Search Modules..." function generates "Digital Input", "Digital Output" "Bit Input" or "Bit Output" tags.

The "Digital Input" and "Digital Output" tags use one communication to read the status of all channels, while the "Bit Input" and "Bit Output" tags use one communication to read only one-channel status. The "Digital Input" and "Digital Output" tags have better performance than the "Bit Input" and "Bit Output" tags. Using the "Digital Input" and "Digital Output" tags to access modules is highly recommended.

<u>File A</u> dd <u>E</u> dit <u>V</u> iew O	ptions <u>H</u> elp	2.002 #1.00.0000.000			
New Open Save	Device Group	Tag Gener.	Search Expand Shu		
- 100 7033D	Name	Туре	Channel/Location		
AIs	8 Ch00	Bit Input	0		
E 🔯 7044	8 Ch01	Bit Input	1		
A Dis	8 Ch02	Bit Input	2		
DOs >	2 Ch03	Bit Input	3		
🛛 🥉 LatchLo 🛛 Grou	ps ChO4	Bronut	4		
🔏 LatchHigners	Ch05	Dit	5		
🖻 🚾 7060D	8 Ch06	Bit Tags	6		

1.5 Monitoring Devices

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

Step 1: Click the "View/ Monitor" menu item or the Sicon to enable monitor.

<u>File Add Edit View</u> C	ptions <u>H</u> elp							
Monit	or Ctrl+U		0	EC]	0			
New Open -	Bar Ctrl+B	лр	• Tag	Gener.	Search	Expand	Shri	
🕞 🔯 7033D 🖌 🖌 <u>T</u> oolE	lar			Туре	Cha	nnel/Locat	tion	
🔒 🔏	8 Ch00	2, 433	Bi	it Input	2.0	0		
🖻 🔷 7044	8 Ch01		Bi	it Input		1		
🔒 DIs	8 Ch02		Bi	it Input		2		
🔒 🔒 DOs	8 Ch03		Bi	it Input	3			
🔒 🔒 LatchLowDIs	8 Ch04		Bit Input Bit Input			4 5		
🔒 🔏 LatchHighDIs	8 Ch05							
🖻 🔯 7060D	8 Ch06		Bi	it Input		6		
🔒 DIs	1.20							
🔒 🔏 DOs								
🔒 🔒 Counter								
🔒 🔏 LatchLowDIs								
🔒 🔓 LatchHighDIs								

Step 2: Select the "DIs" group in the Device-Window (left side) to monitor its own Bit -Input tags.

🕀 🖓 7011	Name	Туре	Channel/Location	Value
🗄 🖓 7012D	8 Ch00	Bit Input	0	
🗄 🖓 7033D	8 Ch01	Bit Input	1	
🗄 🖓 7044	8 Ch02	Bit Input	2	
🗄 🖓 7060D	8 Ch03	Bit Input	3	
ė	8 Ch04	Bit Input	4	
	8 Ch05	Bit Input	5	
DOs	8 Ch06	Bit Input	6	
- 🔒 Counter				
🕺 🚣 LatchLowDIs				

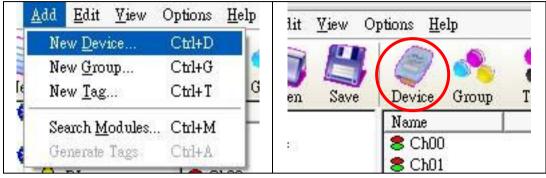
Step 3: Select the "7050D" module on the Device-Window to monitor its own Digital-Input and Digital-Output tags.

🕀 🖓 7033D	Name	Туре	Channel/Location	Value
🗄 🖓 7044	8 Ch00	Counter	0	
🗄 🖓 7060D	8 Ch01	Counter	1	
🖮 🔤 7050D	8 Ch02	Counter	2	
🚽 🔒 DIs	8 Ch03	Counter	3	
🚽 🔒 DOs	8 Ch04	Counter	4	
Counter	8 Ch05	Counter	5	
LatchLowDIs	8 Ch06	Counter	6	
🔒 LatchHighDIs				

1.6 Adding A New Device

1.6.1 Adding A New I-7K/I-8K/I-87K/ZB-2K I/O Module

Step 1: Click on the "Add/ New Device..." menu item or the sicon to add a new module.



Step 2: The "Select Device" dialog box pops up.

- Step 3: Click on the "DCON" radio button.
- **Step 4:** Click on the "I-7K/I-8K/I-87K/ZB-2K I/O Modules" radio button. **Step 5:** Click the "Remote" or "With Controller" radio button.

evice Name Device1 1-7K/1-8K/1-87K/ZB-2K I.	85 3 M = 3
Module Setting	
Remote	7K 7017 💌 ZB-2K 💌
With Controller Cont	troller 🗾 87K 💌
	8K 💽
Address 1 (0~	255) Timeout (mSec) 500
Slot 0~	7 for 8K Modules) Checksum Disable 💌
	I Timeout 1 Sec
COM Port Setting	Parity None 💌
aud Rate 115200 -	Data Bits
,	Stop Bits 1
RPC	
ontroller Setting	
Address 192.168.255.1	Port 505 Timeout 500

Device Name:

Names with spaces or punctuation such as "|!.," cannot be used within a module name. The clients use the "Device Name" and "Tags" to access its value. The "Device Name" can not be the same as any other module.

7K/ 87K/ 8K/ZB-2K Controller Module ID:

User can click on the Combo Box to select a Module ID.

Address:

Specifies a Module Address for this module. The default value is 1 and the valid range is between 1 to 255.

This field is disabled for the 8000 sub-devices. It will use the 8000 main-device's address.

Timeout:

Specifies timeout (Response time) value for this module. The default value is 200 ms. A smaller timeout value may cause communication failure and a greater timeout value may reduce the performance of the client program.

This field is disabled for the 8000 sub-devices and it will use the 8000 main-device's timeout value.

Slot:

The 8000 main-device has 4 or 8 slots for the 8000 sub-device to plug in. This "slot" field indicates the slot number that the 8000 sub-device is using. The valid range is from 0 to 7.

This field is disabled for 8000 main-device and 7000 series modules.

Checksum:

This checksum field must match the hardware setting. A mismatch will always cause a communication failure with this module.

This field is disabled for the 8000 sub-devices and it will use the 8000 main-device's checksum.

Enable WDT:

The "Enable WDT" checkbox switches if the module enables watchdog function or not. If the module wants to use watchdog, it should be configured by DCON Utility to enable WDT and setup timeout value.

WDT Timeout:

The "WDT Timeout" range is 1 to 25.5 sec. Please give an appropriate value for each module. And the "Communication Mechanism" has to be "Multi-Thread".

COM Port:

Specifies the COM port to be used. Please verfiy which COM port number that the RS-232 / RS-485 network is using. Wrong settings will always cause communication failure.

This field is disabled for the 8000 sub-devices. It will use the 8000 main controller unit COM port setting.

Baud Rate:

Specifies the baud rate to be used. Verify the module's current baud rate. A wrong setting will always cause communication failure for this module.

This field is disabled for the 8000 sub-devices. It will use the 8000 main-controller unit baud rate.

Simulate I/O:

The "Simulate I/O" checkbox switches to a simulator of reading I/O. Since the simulator does not open the COM port, it is an easy way to work with the server, to configure tags or to connect clients without requiring any hardware. This field is disabled and not used for the 8000 main controller unit.

Pending Time:

Minimum interval time between two access. To activate this function, NAPOPC_ST can work under optimized communication performance. If this module only needs to be accessed 1 time per 5 seconds. You can set pending time as 5000 ms. NAPOPC_ST will automatically spread time resource to other modules which are connected with each other.

OK:

Click on the "OK" button to add the new module setting.

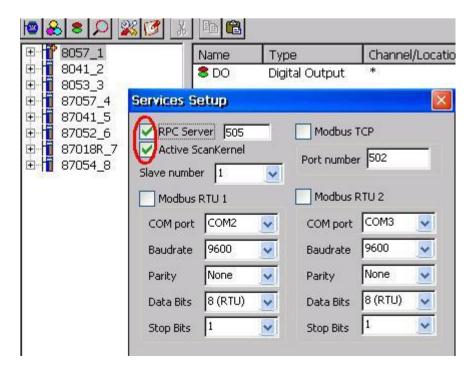
Cancel:

Click on the "Cancel" button to avoid any changes.

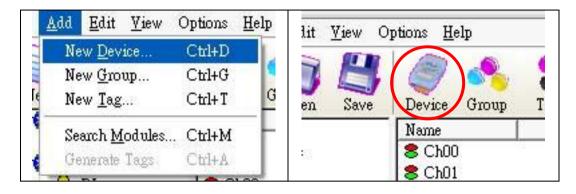
Step 6: Click on the "OK" button to add this new module.

1.6.2 Adding A New RPC Controller

Before adding a new "RPC" controller, please check "RPC Server" and "Active ScanKernel" at "Services Setup" dialog of "NAPOPC_CE5/CE6" in WinCon/WinPAC/ ViewPAC.



Step 1: Click on the "Add/ New Device..." menu item or the sicon to add a new module.



Step 2: The "Select Device" dialog box pops up.

Step 3: Click on the "DCON" radio button.

Step 4: Click on the "RPC" radio button.

I-7K/I-8K/I-87K/ZB-	2K I/O Module	
fodule Setting ——		
O Remote	7K 🔀 ZB-2K	~
O With Controller	Controller 🛛 💽 87K	v
	8K	
Address 1	(0~255) Timeout (mSec) 300	_
Slot 0	(0~7 for 8K Modules) Checksum Disabl	
COM Port Setting —		
COM 1	Parity None	Ψ.
aud Rate 115200	Data Bits 8	1
	Stop Bits 1	<u>v</u>
RPC)		
ontroller Setting		28
Address 192.168.2.	55.1 Port 505 Timeout 300)

Device Name:

Names with spaces or punctuation such as "|!.," cannot be used within a module name. The clients use the "Device Name" and "Tags" to access its value. The "Device Name" can not be the same as any other module.

Timeout:

Specifies timeout (Response time) value for this controller. The default value is 200 ms. A smaller timeout value may cause communication failure and a larger timeout value may reduce the performance of the client program.

Port:

You have to set up the value with "505" for communicating with NAPOPC_CE5 or NAPOPC_CE6.

IP Address:

The uniqe IP address of your NAPOPC_CE5 or NAPOPC_CE6.

OK:

Click on the "OK" button to add the new controller setting.

Cancel:

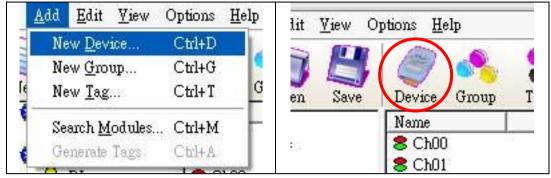
Click on the "Cancel" button to avoid any changes. **Step 5:** Click on the "OK" button to add this new device.

Step 6: After clicking on the "OK" button, NAPOPC_XPE will automatically synchronize and generate the modules of "NAPOPC_CE5/CE6".

New Open Save Device Group	Tag Multi.	Gener Search Expand	Shrink Monitor
E Device5	Name	Туре	Channel/Location
8057_1	8 Ch00	Bit Output	0
DOs 🖌	8 Ch01	Bit Output	1
i⊐ <mark>1</mark> 8041_2	8 Ch02	Bit Output	2
DOs	8 Ch03	Bit Output	2 3 4 5 6 7 8
E 1 8053_3	8 Ch04	Bit Output	4
DIs 🕹	8 Ch05	Bit Output	5
B 87057_4	8 Ch06	Bit Output	6
DOs 🔒	8 Ch07	Bit Output	7
B 87041_5	8 Ch08	Bit Output	
DOs	8 Ch09	Bit Output	9
E 📊 87052_6	8 Ch10	Bit Output	10
🖌 🔒 DIs	8 Ch11	Bit Output	11
- 💫 DICounter	8 Ch12	Bit Output	12
- 💫 LatchLowDIs	8 Ch13	Bit Output	13
🚽 🔏 LatchHighDIs	8 Ch14	Bit Output	14
🖻 📊 87018R_7	8 Ch15	Bit Output	15
AIs			
E 1 87054_8			
🖌 🔒 DIs			
DOs 🔒			
🚽 🔬 DICounter			
- 🔏 LatchLowDIs			
🔏 LatchHighDIs			

1.6.3 Adding A New FRnet I/O

Step 1: Click on the "Add/ New Device..." menu item or the vice icon to add a new module.



Step 2: The "Select Device" dialog box pops up. **Step 3:** Click on the "FRnet" radio button.

elect Device		
O DCON	FRnet C Modbus	
Device Name Device Board Setting Active Board 0	1 Port : 0	
FR FR-	g Receiver Address: 8 Sender Address: 0	
Simulate I/O		
	OK Cancel	

Device Name:

Names with spaces or punctuation such as "|!.," cannot be used within a module name. The clients use the "Device Name" and "Tags" to access its value. The "Device Name" can not be the same as any other module.

Active Board:

Board number that you want to active, start from number 0(0 the First FRB Board, 1 the Second FRB Board). Please refer to the FRB Board manual for more information.

Port:

The "Port" indicates the port number(0 or 1) of FRB Board. Please refer to the FRB Board manual for more information.

FRnet Module ID:

User can click on the Combo Box to select a FRnet module ID.

Receiver Address:

FRnet communication needs correct hardware configurations for the sender address (SA) and receiver address (RA) on the host controller and the remote module in the network. Please refer to the FRnet manual for more information.

Sender Address:

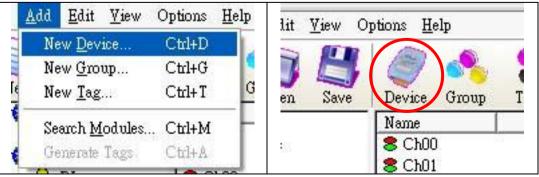
FRnet communication needs correct hardware configurations for the sender address (SA) and receiver address (RA) on the host controller and the remote module in the network. Please refer to the FRnet manual for more information..

Simulate I/O:

The "Simulate I/O" checkbox switches from reading I/O from the module to running a simulator. Since the simulator does not open the COM port, it is an easy way to work with the server, to configure tags or to connect clients without requiring any hardware.

1.6.4 Adding A New Modbus TCP Controller

Step 1: Click on the "Add/ New Device..." menu item or the 🔍 icon to add a new module.



Step 2: The "Select Device" dialog box pops up.

Step 3: Click on the "Modbus" radio button.

Step 4: Click on the "Modbus TCP" radio button.

Port 502 Word Swap COM Port Setting Parity None COM I I Baud Rate 115200 I Stop Bits I I
Request Tag Number Coil 122 Register 122

Device Name:

Names with spaces or punctuation such as "|!.," cannot be used within a module name. The clients use the "Device Name" and "Tags" to access its value. The "Device Name" can not be the same as any other module.

ISaGRAF:

Connect ISaGRAF controller

General Modbus Device:

Connect general modbus device

IP Address:

The uniqe IP address of your Modbus TCP controller.

Port:

You have to set up the value with "502" for communicating with ICP DAS Modbus TCP controller

Address:

Specifies a Address for this controller. The default value is 1 and the valid range is between 1 to 247.

Timeout:

Specifies timeout (Response time) value for this controller. The default value is 200 ms. A smaller timeout value may cause communication failure.

Msg Delay:

Specifies message delay value for this controller. The default value is 0 ms. A smaller msg delay value may have a higher system loading, but it will have a faster data exchange speed.

Word Swap:

The "Word Swap" checkbox switches the interpretation of 4 Byte values. Sometimes we need to make the checkbox "TRUE" in order to achieve the purpose of Lo-Hi/Hi-Lo communication.

Request Tag Number:

The "Request Tag Number" sets tag value numbers that each command will get from device. For ISaGRAF, it should less than 124 for coil and register. For 7188MTCP, it should less than 498 for coil and 127 for register. The default numbers are both 122. (For Modbus standard, it can't greater than 2000 for coil and 127 for register.

Simulate I/O:

The "Simulate I/O" checkbox switches to a simulator of reading I/O. Since the simulator does not open the TCP/IP port, it is an easy way to work with the server, to configure tags or to connect clients without requiring any hardware.

Pending Time:

Minimum interval time between two access. To activate this function, NAPOPC_ST can work under optimized communication performance. If this module only needs to be accessed 1 time per 5 seconds. You can set pending time as 5000 ms. NAPOPC_ST will automatically spread time resource to other modules which are connected with each other.

OK:

Click on the "OK" button to add the new controller setting.

Cancel:

Click on the "Cancel" button to avoid any changes.

Step 5: Click on the "OK" button to add this new device.

1.6.5 Adding A New Modbus RTU Controller

Step 1: Click on the "Add/ New Device..." menu item or the vice icon to add a new module.

Add Edit View (Options <u>H</u> elp	lit View Option <u>s</u> Help
New <u>D</u> evice	Ctrl+D	
New Group	Ctrl+G	
le New <u>T</u> ag	Ctrl+T G	en Save Device Froup T
Search Modules	Ctrl+M	Name
	Ctrl+A	: 8 Ch00
Generale rags.	Culta Dioo	8 Ch01

Step 2: The "Select Device" dialog box pops up.

Step 3: Click on the "Modbus" radio button.

Step 4: Click on the "Modbus RTU" radio button.

⊙ Modbus RTU O Modbus ASCII O Modbus TCP	 O ISaGRAF O General Modbus Device IP Address 192.168.255.1 Port 502 	Address 1 Timeout 500 Msg Delay 0 Word Swap
COM Port Setting COM 1 Jaud Rate 11520	Stop	Bits 8 💌
equest Tag Numbe	r Coil 122	Register 122

Device Name:

Names with spaces or punctuation such as "|!.," cannot be used within a module name. The clients use the "Device Name" and "Tags" to access its value. The "Device Name" can not be the same as any other module.

ISaGRAF:

Connect ISaGRAF controller

General Modbus Device:

Connect general modbus device

Address:

Specifies a Address for this controller. The default value is 1 and the valid range is between 1 to 247.

Timeout:

Specifies timeout (Response time) value for this controller. The default value is 200 ms. A smaller timeout value may cause communication failure and a larger timeout value may reduce the performance of the client program.

Msg Delay:

Specifies message delay value for this controller. The default value is 0 ms. A smaller msg delay value may have a higher system loading, but it will have a faster data exchange speed.

Word Swap:

The "Word Swap" checkbox switches the interpretation of 4 Byte values. Sometimes we need to make the checkbox "TRUE" in order to achieve the purpose of Lo-Hi/Hi-Lo communication.

COM Port:

Specifies the COM port to be used. Please verfiy which COM port number that the RS-232 / RS-485 network is using. Wrong settings will always cause communication failure.

Baud Rate:

Specifies the baud rate to be used. Verify the module's current baud rate. A wrong setting will always cause communication error for this controller.

Parity:

Specifies the parity scheme to be used. It is one of the following values.

Value	Description
None	No parity
Even	Even
Odd	Odd

Data Bits:

Specifies the number of bits in the bytes transmitted and received.

Stop Bits:

Specifies the number of stop bits to be used. It is one of the following values.

Value	Description
1	1 stop bit
2	2 stop bits
1.5	1.5 stop bits

Request Tag Number:

The "Request Tag Number" sets tag value numbers that each command will get from device. For ISaGRAF, it should less than 124 for coil and register. For 7188MTCP, it should less than 498 for coil and 127 for register. The default numbers are both 122. (For Modbus standard, it can't greater than 2000 for coil and 127 for register.

Simulate I/O:

The "Simulate I/O" checkbox switches to a simulator of reading I/O. Since the simulator does not open the TCP/IP port, it is an easy way to work with the server, to configure tags or to connect clients without requiring any hardware.

Pending Time:

Minimum interval time between two access. To activate this function, NAPOPC_ST can work under optimized communication performance. If this module only needs to be accessed 1 time per 5 seconds. You can set pending time as 5000 ms. NAPOPC_ST will automatically spread time resource to other modules which are connected with each other.

OK:

Click on the "OK" button to add the new controller setting.

Cancel:

Click on the "Cancel" button to avoid any changes.

Step 5: Click on the "OK" button to add this new device.

1.6.6 Adding A New Modbus ASCII Controller

Step 1: Click on the "Add/ New Device..." menu item or the sicon to add a new module.

<u>Add Edit V</u> iew Options]	<u>H</u> elp	lit View Options Help
New <u>D</u> evice Ctrl+D		
New <u>G</u> roup Ctrl+G [4 New <u>T</u> ag Ctrl+T	G	en Save Device Froup I
Search <u>M</u> odules Ctrl+M Generate Tags Ctrl+A		Name Ch00 Ch01

Step 2: The "Select Device" dialog box pops up.

Step 3: Click on the "Modbus" radio button.

Step 4: Click on the "Modbus ASCII" radio button.

ontroller Setting Modbus RTU Modbus ASCII Modbus TCP	 O ISaGRAF O General Modbus Device IP Address 192.168.255.1 Port 502 	Address 1 Timeout 500 Msg Delay 0
COM Port Setting COM 1 and Rate 11520 equest Tag Numbe	Stop	Bits 8 💌

Device Name:

Names with spaces or punctuation such as "|!.," cannot be used within a module name. The clients use the "Device Name" and "Tags" to access its value. The "Device Name" can not be the same as any other module.

ISaGRAF:

Connect ISaGRAF controller

General Modbus Device:

Connect general modbus device

Address:

Specifies a Address for this controller. The default value is 1 and the valid range is between 1 to 247.

Timeout:

Specifies timeout (Response time) value for this controller. The default value is 200 ms. A smaller timeout value may cause communication failure and a larger timeout value may reduce the performance of the client program.

Msg Delay:

Specifies message delay value for this controller. The default value is 0 ms. A smaller msg delay value may have a higher system loading, but it will have a faster data exchange speed.

Word Swap:

The "Word Swap" checkbox switches the interpretation of 4 Byte values. Sometimes we need to make the checkbox "TRUE" in order to achieve the purpose of Lo-Hi/Hi-Lo communication.

COM Port:

Specifies the COM port to be used. Please verfiy which COM port number that the RS-232 / RS-485 network is using. Wrong settings will always cause communication failure.

Baud Rate:

Specifies the baud rate to be used. Verify the module's current baud rate. A wrong setting will always cause communication error for this controller.

Parity:

Specifies the parity scheme to be used. It is one of the following values.

Value	Description
None	No parity
Even	Even
Odd	Odd

Data Bits:

Specifies the number of bits in the bytes transmitted and received.

Stop Bits:

Specifies the number of stop bits to be used. It is one of the following values.

Value	Description
1	1 stop bit
2	2 stop bits
1.5	1.5 stop bits

Request Tag Number:

The "Request Tag Number" sets tag value numbers that each command will get from device. For ISaGRAF, it should less than 124 for coil and register. For 7188MTCP, it should less than 498 for coil and 127 for register. The default numbers are both 122. (For Modbus standard, it can't greater than 2000 for coil and 127 for register.

Simulate I/O:

The "Simulate I/O" checkbox switches to a simulator of reading I/O. Since the simulator does not open the TCP/IP port, it is an easy way to work with the server, to configure tags or to connect clients without requiring any hardware.

Pending Time:

Minimum interval time between two access. To activate this function, NAPOPC_ST can work under optimized communication performance. If this module only needs to be accessed 1 time per 5 seconds. You can set pending time as 5000 ms. NAPOPC_ST will automatically spread time resource to other modules which are connected with each other.

OK:

Click on the "OK" button to add the new controller setting.

Cancel:

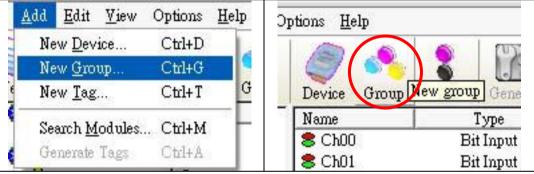
Click on the "Cancel" button to avoid any changes.

Step 5: Click on the "OK" button to add this new device.

1.7 Adding A New Group

If the device you add is "RPC", you do not need to add groups manually. NAPOPC_ST will automatically synchronize and generate the modules of "RPC".

Step 1: Click on the "Add/ New Group" menu item or the 🏊 icon to add a new group.



Step 2: The "Group" dialog box pops up.

Group	
Name Group	ОК
Name Group	Cancel

Name:

A "Group Name" may have any name, but avoid names with spaces or punctuation such as "[!.,". The "Group Name" must not be used twice. A group can be defined as a subdirectory containing one or more tags. A device may have many subgroups of tags. All tags belong to their module when they are scanned to perform I/O.

1.8 Adding A New Tag

If the device you add is "RPC", you do not need to add tags manually. NAPOPC_ST will automatically synchronize and generate the modules of "RPC".

1.8.1 Adding A New Tag For I/O Module

Step 1: Click on the "Add/ New Tag" menu item or the 🚨 icon to add a new tag.

<u>A</u> dd <u>E</u> dit <u>V</u> iew (Options <u>H</u> elp	Help
New <u>D</u> evice	Ctrl+D	
New <u>G</u> roup	Ctrl+G	/ 👀 🕥 🔝 🥜
New <u>T</u> ag	Ctrl+T C	e Group Tag New tag Sear
Samb Madula	CHUN	: Туре С
	29451107816	100 Bit Input
Generate Tags	Ctrl+A	101 Bit Input

Step 2: The "Tag Properties" dialog box pops up.

Step 3: Choose the "Settings" page. Because the tag belongs to the module-type device, the "I/O Modules" radio button is active.

Name Tag1 Description			_
-Device Type			
⊙ I/O Module	Туре	Analog Input	-
	Channel	0	
O Controller	Location	1 Input Regi	ster 💌
	Data Type	Bool	v
Scaling Enable Settings			
Simulation signal Sine			

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" cannot be a duplicate of another tag in the same group.

Description:

Specifies the description text for this tag. This can be blank.

Type:

Specifies the command to be used for this tag. Different modules support different commands. For commands, please refer to a "MODULES.HTM" file in \\ICPDAS\NAPOPC_ST folder

Channel:

Specifies the channel number to be used for this tag. The "Digital Input" and "Digital Output" tags do not use this channel setting, because all channels are read with one communication.

Simulation signal:

The valid signal is SINE, RAMP and RANDOM. This field is validated when the module uses simulation I/O. Please refer to the "Adding A New Device" section.

OK:

Click on the "OK" button to add the new tag setting.

Cancel:

Click on the "Cancel" button to avoid any changes.

Scaling:

Enable:

Check this check-box to enable the "Settings..." button.

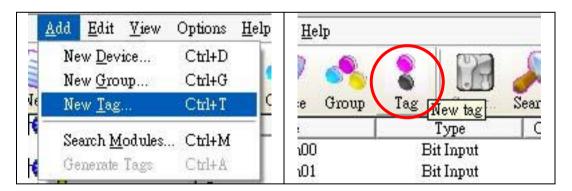
Settings:

Click on this button to set the scaling feature.

For more information, please refer to the section "1.7.3 Scaling Settings".

1.8.2 Adding A New Tag For Controller

Step 1: Click on the "Add/ New Tag" menu item or the 📕 icon to add a new tag.



Step 2: The "Tag Properties" dialog box pops up.

Step 3: Choose the "Settings" page. Because the tag belongs to the controller-type device, the "Controller" radio button is active.

Name Tag1			
Description			
-Device Type			
O I/O Module	Туре	Analog Input	-
-	Channel		
• Controller	Location		•
Controller			
	Data Type	Janon	
Scaling Enable Settings			
Simulation signal Sine]

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" cannot be a duplicate of another tag in the same group.

Description:

Specifies the description text for this tag. This can be blank.

Data:

Specifies the data type of this tag which's location type is "Input Register" or "Output Register". NAPOPC_ST Server support five kinds of data type which are "Short", "Long", "Float", "Word", and "DWord".

Data Type	Definition	Range
Short	16-bit signed integer	-32768~32767
Long	32-bit signed integer	-2147483648~2147483647
Float	Floating-point variable	-1.7E-308~1.7E+308
Word	16-bit unsigned integer	0~65535
DWord	32-bit unsigned integer	0~4294967295
The date type of	f "Input Coll" or "Output Col	

The data type of "Input Coil" or "Output Coil" is "Bool".

Location:

Specifies the tag address. It must be the same with the the variable address in the controller. Besides, you have to choose the location type. After you choose the location number, there are four location types you can choose. They are "Input Coil", "Output Coil", "Input Register", and "Output Register". When you monitor controller device (see 1.3 Monitoring Device), the "Channel/Location" field will show a value according to the location and location type as below.

Location Type	Range
Output Coil	000001 - 065536
Input Coil	100001 - 165536
Input Register	300001 - 365536
Output Register	400001 - 465536

Simulation signal:

The valid signal is SINE, RAMP and RANDOM. This field is validated when the module uses simulation I/O. Please refer to the "Adding A New Device" section.

OK:

Click on the "OK" button to add the new tag setting.

Cancel:

Click on the "Cancel" button to avoid any changes.

Scaling:

Enable:

Check this check-box to enable the "Settings..." button.

Settings:

Click on this button to set the scaling feature.

For more information, please refer to the section "1.7.3 Scaling Settings".

1.8.3 Scaling Settings

In general, the "Scaling" feature is only useful for the "floating-point" data type.

. <u> 0</u> : 10
()10

Raw Data:

Min: The original Minimum value. ([MinRaw]) Max: The original Maximum value. ([MaxRaw])

Scales to:

Units: The unit of the scaled value. (Just for reference only.) Min: The scaled Minimum value. ([MinScale]) Max: The scaled Maximum value. ([MaxScale])

Conversion:

Linear:

Scaled Value = ((Original Value – [MinRaw]) / ([MaxRaw] – [MinRaw])) * ([MaxScale] – [MinScale]) + [MinScale]

Square Root:

Scaled Value = ((sqrt (Original Value) – [MinRaw]) * ([MaxScale] – [MinScale])) / sqrt ([MaxRaw] – [MinRaw]) + [MinScale]

Deadband (%):

In general, keep "0" in this field.

For more information, please refer to the "4.5.1.6 Percent Deadband" section in the "OPCDA20_Cust.PDF" manual, page 68.

OK:

Click the "OK" button to save these settings.

Cancel:

Click the "Cancel" button to avoid any changes.

1.9 Adding Multi Tags For Modbus Device

This function only work when the device's protocol is Modbus. **Step 1:** Click on the "Add/ Multi Tags" menu item or the 👫 icon to add a new tag.

 New <u>D</u> evice New <u>G</u> roup New <u>T</u> ag	Ctrl+D Ctrl+G Ctrl+T	G	Sroup	Tag Multi Multi Tags
<u>S</u> earch Modules Generate Tags	C trl+M Ctrl+A)O()01)02	Reg Output[Float] Reg Output[Short]
Multi Tags	Curra)0()0()02)03)04	Reg Output[Float] Reg Output[Short]

Step 2: The "Add Multi Tags Dialog" dialog box pops up.

Step 3: Choose correct "Prototype", "Data Type" and key in Modbus address.

Prototype					
C Coil Input	C Co	il Output	C Register I	nput C Re	gister Output
Data Type —					
C Bool	C Short	C Long	C Float	C Word	C DWord
Modbus Addre			Separat	ion	
From	1 To		1		OK

Prototype:

There are four kinds of prototype for modbus tag. "Coil Input", "Coil Output", "Register Input" and "Register Output".

Data Type:

"Bool": 8 bits, True or False
"Short": 16 bits, -32768 ~ 32767
"Long": 32 bits, -2147483648. ~ 2147483647
"Float": 32 bits, float numbers
"Word": 16 bits, 0 ~ 65535
"DWORD": 32 bits, 0 ~ 4294967295

Modbus Address:

"From" : modbus address number of start tag, 1 ~ 65535

"To" : modbus address number of end tag. 1 ~ 65535

Separation:

Separation numbers between each tag. 1 ~ 100

OK:

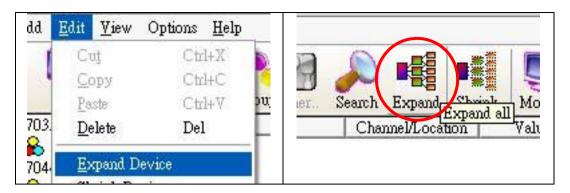
Click on the "OK" button to add the new tag setting.

Cancel:

Click on the "Cancel" button to avoid any changes.

1.10 Expand/ Shrink Devices

Click on the "Edit/ Expand device (Shrink device)" menu item or the $\blacksquare(\blacksquare)$ icon to expand(shrink) all devices..



1.11 Read/Write Tags

First, you have to use the "Monitor" function to see values of tags by checking the "View/ Monitor" menu item. Select a tag and right click the mouse button. Then select the "Properties..." option. Choose the "Read & Write" page to read/write the tag.

Step 1: Click the "View/ Monitor" menu item to enable monitor.

- **Step 2:** Select a tag and right click the mouse button. Then select the "Properties.." option.
- Step 3: Choose the "Read & Write" page. You can see the "Tag name" and "Access right" at the first. If the access right is "Read only!", the write function is disable.

Read Value		
Value: OFF		Read!
Quality: Uncertain		
Timestamp: 08/30/04 10:01:5	1	
lag name: Ch00		
Access right: Read&Write!		
Write Value		
Timestamp: 08/30/04 10:01:4	49	
Quality: Uncertain		
Value:		
0		Write!

Read Value/Value:

You can press the "Read!" button to read the tag value as you saw on the "Tag-Window".

Read Value/Quality:

Three kinds of qualities, "Good", "Bad", and "Uncertain", would be shown. If the communication status is good, the quality shows "Good". If the communication status has something wrong, the quality shows "Bad". And the other situation is "Uncertain". Maybe you do not click the "View/ Monitor" menu item to enable monitor etc.

Read Value/Timestamp:

It shows the time, when you read the tag.

Tag name:

It is the same with the "Name" at the "Settings" page. You can modify it at the "Settings" page.

Access right:

Two kinds of access right, "Read Only!" and "Read&Write!", would be shown. The access right depends on what kind of tag property it is. Please refer to the "1.7 Adding A New Tag"

Write Value/Timestamp:

It shows the time, when you write the tag.

Write Value/Quality:

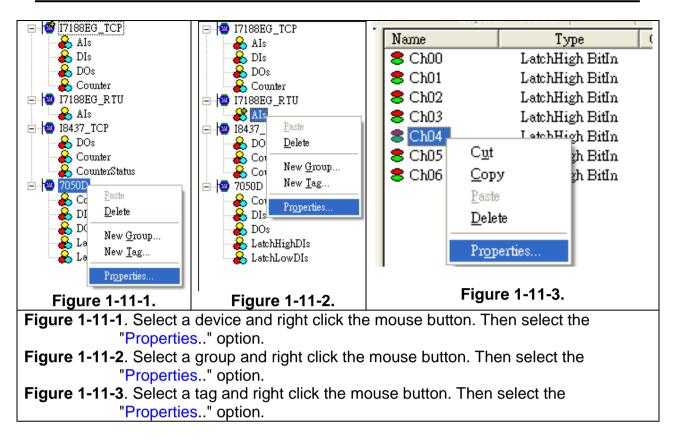
Three kinds of qualities, "Good", "Bad", and "Uncertain", would be shown. If the communication status is good, the quality shows "Good". If the communication status has something wrong, the shows "Bad". And the other situation is "Uncertain". Maybe you do not click the "View/ Monitor" menu item to enable monitor etc.

Write Value/Value:

You can press the "Write!" button to write the value you key-in to the tag. If the tag data type is "Boolean" the write value "0" means "OFF" and the write value "not 0" means "ON".

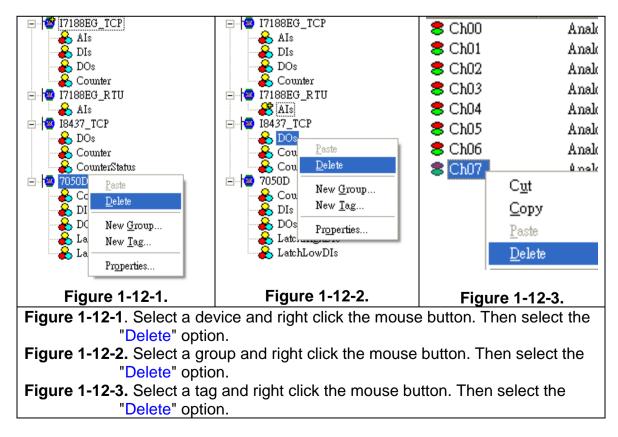
1.12 Editing A Device/Group/Tag Properties

To edit a existing Device(/Group/Tag), just select the Device(/Group/Tag) and right click the mouse button. Then select the "Properties..." option.



1.13 Deleting A Device/Group/Tag

To delete a existing Device/Group/Tag, just select the Device(/Group/Tag) and right click the mouse button. Then select the "Delete..." option or the ⁽²⁾ icon.

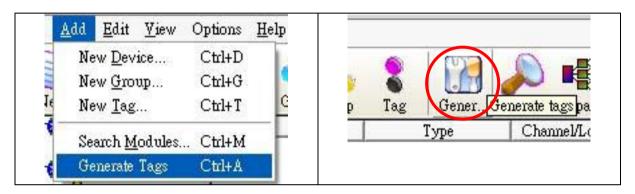


1.14 Generating Tags

This function lets you easily test the OPC server in the simulation mode. It is only valid if the selected device of module type has no sub "Module", "Group" and "Tag".

Step 1: Select a device of module type you want to generate tags.

Step 2: Click on the "Add/ Generate Tags" menu item or the 🔛 icon to generate tags.



1.15 Configurate Initial Status

This function lets you configurate initial status of NAPOPC_ST server when client softwares connect to it. The ""Recent File Source" options lets user save related information in registry under "Administrator account" or "Current user account". Some DCOM application needs to adjust this option for specific scenario. The "File Open Dialog" option lets user load a file automatically or manually. The "System Tray" option can hide or minimize program of NAPOPC_ST server. And "Communication Mechanism" option lets user define the communication behavior of NAPOPC_ST. Generally, "Multi-Thread" is the best choice for high performace. However, for some particular OPC clients which can not work smoothly under "Multi-Thread" communication, user can choose "Single-Thread" instead. This function, Configurate Initial Status, can be selected only when "Monitor" function isn't running.

Step 1: Click on the "Options/ Configurate Initial Status" menu item to open "Initial Setting Dialog".



 Administrator Account Current User Account System Tray Hide (Hide in Background) Minimize (Show Icon on System Tray) 	File Open Dialog • Last One (Auto-load, No Ask)	(OK)
Administrator Account Current User Account System Tray Hide (Hide in Background) Minimize (Show Icon on System Tray) Communication Mechanism	🔿 User Select (Manually)	Cancel
C Current User Account System Tray C Hide (Hide in Background) C Minimize (Show Icon on System Tray) Communication Mechanism	Recent File Source	
System Tray Hide (Hide in Background) Minimize (Show Icon on System Tray) Communication Mechanism	Administrator Account	
 Hide (Hide in Background) Minimize (Show Icon on System Tray) Communication Mechanism 	C Current User Account	
 Minimize (Show Icon on System Tray) Communication Mechanism 	System Tray	
Communication Mechanism	🔿 Hide (Hide in Background)	
	📀 Minimize (Show Icon on System	Iray)
🔿 Single-Thread	Communication Mechanism	
	🔘 Single-Thread	

Note: "Communication Mechanism" has to be "Multi-Thread" if DCON device enables WDT function.

1.16 License Manager

NAPOPC_ST DA Server v3.30 or later version provides "License Manager" function to manage the NAPOPC_ST license. You can purchase USB hardkey to enhance the functionality of NAPOPC_ST DA Server.

Step 1: Click on the "Options/ License Manager" menu item to open "License Manager Dialog".

File	<u>A</u> dd	Edit	⊻iew	Options	Help
E	71		D	Confi	gurate Initial Status
E		5		Licen:	se Manager 🛛 📲
Ne	ew	Open	Save	Devi	ce Group Tag Multi.

Step 2: If there is no USB hardkey plugged in, license status shows "Application version: Standard".

iteCode & License	
SiteCode :	Сору
License status:	
Application version: Standard	
SBHK Authorize	

Step 3: If there is a USB hardkey plugged in, license status shows how many licenses it has. For this example, it shows "3rdModbus: ALL" which means NAPOPC_ST DA Server allows using third party modbus devices.

an o 1	Сору
SiteCode :	
63D4 CA12 174B 070D BC00 4DE	B3 2EDB BDC6 67D0 CA12 17
License status:	
Application version: Custom 3rdModbus: ALL	
' JSBHK Authorize iteKey :	Authorize

Step 4: If you have already had USB hardkey and you want to upgrade it, you need to press "Copy" to copy SiteCode to your distributor. Your distributor will give you a SiteKey to fill it in SiteKey field and press "Authorize" to upgrade USB hardkey.

NOTE:

You can plug two identical license Hardkeys in one PC. NAPOPC will execute redundancy when one Hardkey takes place failure unexpectedly.

1.17 Help

Refer to the user's manual by Checking the "Help/ User's Manual" menu item. All PDF formatted files are best view using Acrobat Reader 5 or newer. You can install it from our CD or download a free copy from <u>Adobe's Web Site</u>.

Clicking on the "Help/ User's Manual" menu item or the ¹⁰ icon refer to the user's manual.

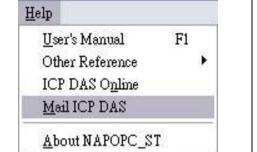
NA 17 6		100
Other Reference 🕨 🕨		Ø
CP DAS O <u>n</u> line	ew Print	Help
Mail ICP DAS		

Visit our web by checking the "Help/ ICP DAS Online" menu item or contact us by checking the "Help/ Mail ICP DAS" menu item.

Click on the "Help/ ICP DAS Online" menu item or the icon to browse our web.

Help User's Manual	F1		1		
Other Reference		- I I	?		SC .
ICP DAS Online			Help	Web Mail	Ab
<u>M</u> ail ICP DAS					
About NAPOPC_ST	3				

Click on the "Help/ Mail ICP DAS" menu item or the 3/2 icon to contact us.



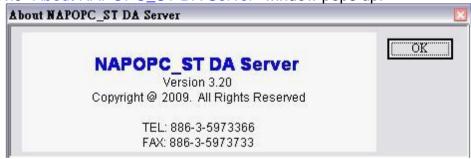


1.18 About

Click on the "Help/ About NAPOPC_ST" menu item or the *icon* to see the "About NAPOPC_ST DA Server" dialog box. It shows the version number.

Step 1: Click on the "Help/ About NAPOPC_ST" menu item.

Step 2: The "About NAPOPC_ST DA Server" window pops up.



2 Quick Start

Please follow these steps:

[Configure NAPOPC_ST Server]

- Wire Modules or Controllers. Wire modules in the RS-232 / RS-485 network. (Refer to "\CD \Napdos\7000\manual \GetStart.PDF" manual.) Wire controllers to your PC.
- Configure Modules or Controllers. Use DCON Utility to set modules. (Refer to "\CD \Napdos\7000\manual \GetStart.PDF" manual.) Use ISaGRAF to configure the I-7188EG/XG or I-8xx7.
- 3. Install the OPC server. Install the NAPOPC_ST on your computer.
- Run the OPC Server. Launch the OPC server by executing " C:\ICPDAS\NAPOPC_ST\NAPOPCSvr_ST.exe"
- Search Modules. Refer to the "1.3 Search Modules..." section to search modules in the RS-485 network.
- Add a new controller Refer to the "1.5 Adding A New Device" section to add a new modbus RTU or modbus TCP controller.
- 7. Save Configuration. Save the configuration by clicking "File/Save" menu item.
- Close OPC server. Close OPC Server by clicking "File/Exit" menu item.

[Connect to NAPOPC_ST Server]

 Connect to OPC server. Run your client program and connect to our OPC server by linking "NAPOPC.Svr" or " NAPOPC.Svr.1". (Please refer to user's manual of your client software provided by your vendor.) This forces the system to run the OPC server automatically in background.

3 Connect To OPC Server

The OPC is defined by the OPC Foundation, and any client program supporting OPC can connect to OPC server (for example: Lab VIEW v5.0 and WIZCON 7.51). Any computer language supporting the COM mechanism can also connect to the OPC server directly through the COM interface.

The first section shows you how to optimize your communication. And the following sections show you how to connect to OPC server by using client program provided by Factory Soft, Inc, Lab VIEW, Server Explorer provided by National Instruments, WIZCON, iFix, InduSoft and CitectSCADA. To connect to OPC server by other OPC client, please refer to your OPC client user's manual.

3.1 Optimize Your Communication

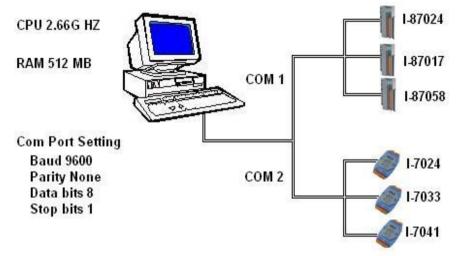
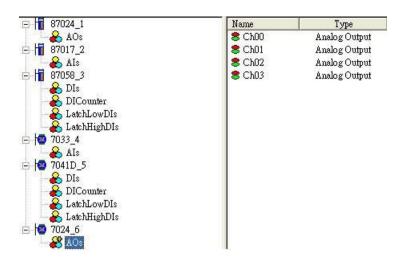


Figure 3.1.1 Communication architecture of I/O modules

Figure 3.1.1 is a figure of communication architecture of I/O modules. NAPOPC_ST server accesses to I-87024/I-87017/I-87058/I-7024/I-7033/I-7041 via serial COM port. The assumed situation, we only need the interval time of accessing I-87024 and I-7024 is 1 sec. The interval time of I-7041 and I-87058 is 3 sec. However, we want to update I-7033 and I-87017 every 100 ms. For this purpose, we can achieve it by seven steps as below.

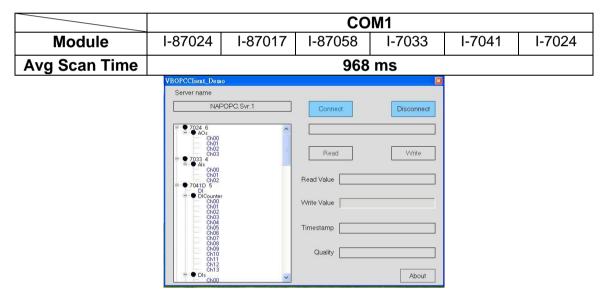
Step 1: First of all, we try to connect all modules on COM1 and to auto search these modules.



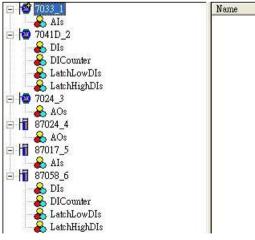
Step 2: Connect OPC client to NAPOPC_ST Server. At the status bar of

NAPOPC_ST window, it shows average scan time Avg Scan time: 968 ms when clicking any module.

We will find the average scan time is 968 ms.



Step 3: We divide these modules into two groups. I-87024/I-87017/I-87058 connects to COM1. I-7033/I-7041/I-7024 connects to COM2. And we search again.



Step 4: Connect OPC client to NAPOPC_ST server again. We can discover the average scan time separately when clicking each module. We will find the average scan time of COM1 is 391 ms, and of COM2 is 516 ms.

	COM 1				COM2	
Module	I-87024	I-87017	I-87058	I-7033	I-7041	I-7024
Avg Scan Time	391 ms			516 ms		

Step 5: Now we can set pending time to each module as below.

	I-7033	I-7041	I-7024
Pending Time		2000	800

	I-87024	I-87017	I-87058
Pending Time	800	—	2000

Controller Setting Port Type	
O Modbus TCP Port Address 502	Address 1
TCP/IP Address 192.168.255.1	Timeout 200
O Modbus RTU O ISaGRAF	Msg Delay
O M-7K	🔲 Word Swap
COM Port Setting COM 1 Baud Rate 9600	Parity None Data Bits 8 (RTU) Stop Bits 1
O Request Tag Number Coil : 122	Register 122
Simulate I/O (does not access the RS-485/Mod	nus device)
Pending Time 800 mSec	OK Cancel

Step 7: Discover the average scan time of COM1 and COM2. We can find it is at our target. The average scan time of COM1 is 62 ms. The average scan time of COM2 is 31 ms.

	COM 1				COM2	
Module	I-87024	I-87017	I-87058	I-7033	I-7041	I-7024
Avg Scan Time		62 ms		31 ms		

3.2 VB5 Client Demo Program

We provide three OPC client demo programs for Visual Basic 5.0, Visual Basic .Net and Visual C# .Net. It is placed under the "\\ICPDAS\NAPOPC_ST\Client\" folder after installation of our NAPOPC_ST server. Note: The .Net demo programs could compatibility for Visual Studio .Net 2003 or later.

Step 1: Launch the client demo program.

(The client program will search the system registry to find OPC servers. The new servers will be added to the list.)

Step 2: Select the "NAPOPC.Svr.1" OPC Server.

Step 3: Click on the "Connect" button.

	NAPOPC Te	st Client	000
OPC Server			
NAPOPC.Sv	r.1	Connect	Disconnect
FactorySoft.	Rapid.Service.1 ModbusShell.1 Shell.1 Slutions ASMBTCPO		
NAPOPC.Sv	r.1	>	
OCSTK.DA			
Matrikon.OF	C.Simulation.1	1	
, 			
Tag Value	Read	Loop Read	
Text1			1
Counte 0	Write	Stop Loop	Exit

Step 4: Select a file which you want to use and click on the "OK" button.

Open a NAPOPC Doc	ament
Click here to browse more files 01. ISaGRAF_TEST.tdb 02. ISaGRAF_TEST1.tdb 03. WINCON_8837.tdb 04. NAPOPC1.tdb 05_NAPOPC2_tdb	OK

The following steps 5 ~ 6 are read operation of Modbus TCP controllers.

Step 5: Select a tag matching on your configuration.

(For example: Select the "i-8437" controller, "DO" group and "DO1" tag in the tree-view window.)

Step 6: Click on the "Read" button to read the ""MTCP_8054.DO.DO1" value.

	NAPOPC Test	Client	000
OPC Server			
NAPOPC.Svi	r.1 💽	Connect	Disconnect
Tag Selected:	MTCP_8054.DO.DO		
hand here here here here here here here her	.P_8054 DO DO DO2 DO3 DO4 DO5 DO6		
Tag Value False	Read	Loop Read	
Counte 0	Write	Stop Loop	Exit

The following steps 7 ~ 9 are write operation of Modbus TCP controllers.

- Step 7: Select a tag matching on your configuration. (For example: Select the "i-8437" controller, "DO" group and "DO1" tag in the tree-view window.)
- Step 8: Fill in the "Tag-Value" field with 1.

Step 9: Click the "Write" button to write the "MTCP_8054.DO.DO1" value.

	NAPOPC	Test Client	000
OPC Server			
NAPOPC.SV	rr.1	Conne	et Disconnect
Tag Selected	: MTCP_8054.	DO.DO1	
	CP_8054		
9] DI] DO		
	DO1		
	DO1 DO2 DO3		
	DO3 DO4)	U
	DO3 DO4 DO5)	J
Tag Value	DO3 DO4 DO5 DO6	.1	U V
Tag Value	DO3 DO4 DO5	d Loop Read	

The following steps 10 ~ 12 are read operation, which loops unless you stop it.

- **Step 10:** Click on the "Loop Read" to continuously read data.
- Step 11: After about 5 seconds (or more), click on the "Stop Loop" button to stop reading.
- **Step 12:** A window pops up to show the performance. Close it by clicking the "OK" button.

	NAPOPC Test Client	000
OPC Server	Connect	Disconnect
Tag Selected:	MTCP_8054.DO.DO1	
	Project1 Performance = 1435 Reads/Sec	
Tag Value	Read Loop Read)
False Counte 4711	Write Stop Loop	Exit

Step 13: Click on the "Disconnect" button to disconnect from the OPC server.

Step 14: Click on the "Exit" button to end the client demo program.

	NAPOPC T	est Client	000
OPC Server			
NAPOPC.Svr.1		 Conne 	ct Disconnect
Tag Selected:	MTCP_8054.DO).DO1	
Tag Value	Read	Loon Read	1
Tag Value False	Read	Loop Read	Exit

3.3 .Net Client Demo Program

We provide another two OPC client demo programs for Visual Basic .Net 2003 and Visual C# .Net 2003. It's placed under the following folder "\\ICPDAS\NAPOPC_ST\Client\OPC_NetClientDemo\VBOPCClient_Demo" and "\\ICPDAS\NAPOPC_ST\Client\OPC_NetClientDemo\VCSOPCClient_Demo"after installation of our NAPOPC_ST server.

Step 1: Launch the client demo program "VBOPCClient_Demo.exe" or "VCSOPCClient_Demo.exe". (The client program set "NAPOPC.Svr.1" as default OPC Server)

Step 2: Click on the "Connect" button.

VBOPCClient_Demo					
erver name	• • • • • • • • • • • • • • • •				
erver name		<u></u>	*****		111111111
1	Server Name		Connect		Disconne
		· · · · ·	Connect		Disconne
					11111111
		:::: .			
		i i i i i		1	
			Read		Write
			d Value :		
		Rea	d value .		
		 Writ 	e Value		
		· · · · · · · · · · · · · · · · · · ·	nestamp	<u></u>	<u></u>
		1.00	iestamp.		
			· · · · · · · <u>· · ·</u>		
		1.1	Quality		
			· · · · · · · · L		
					· ·
					· · About

Step 3: Select a file which you want to use and click on the "OK" button.

Open a NAPOPC Document		
Click here to browse more files 01. ISaGRAF_TEST.tdb 02. ISaGRAF_TEST1.tdb 03. WINCON_8837.tdb 04. NAPOPC1.tdb 05. NAPOPC2.tdb	▲ ▼ OK	

The following steps 4 ~ 5 are read operation of Modbus TCP controllers.

Step 4: Select a tag matching on your configuration.

(For example: Select the "i-8437" controller, "DO" group and "DO1" tag in the tree-view window.)

Step 5: Click on the "Read" button to read the "MTCP_8054.DO.DO1" value.

٧	BOPCClient_Demo
Server name	
NAPOPC.Svr.1	Connect Disconnect
B● MTCP_8054 B● DI	MTCP_8054.D0.D01
DI1 DI2 DI3 DI4 DI5	Read
D16 D17 D18	Read Value False
D01 D02 D03 D04	Write Value
D05 D06 D07	Timestamp2004/7/8 下午 02:15:41
D08	Quality GOOD
	About

The following steps 6 ~ 8 are write operation of Modbus TCP controllers.

- Step 6: Select a tag matching on your configuration. (For example: Select the "i-8437" controller, "DO" group and "DO1" tag in the tree-view window.)
- Step 7: Fill in the "Write Value" field with 1.

Step 8: Click the "Write" button to write the "MTCP_8054.DO.DO1" value.

Ψ(CSOPCClient_Demo
Server name NAPOPC.Svr.1 MTCP_8054 DI DI DI DI DI DI DI D	CSOPCCLiext_Demo Connect Disconnect MTCP_8054.D0.D01 Read Write Read Value Write Value 1
D02 D03 D04 D05 D06 D07 D08	Wine Value 1 Timestamp 2004/7/8 下午 02:31:17 Quality GOOD
	About

Step 13: Click on the "Disconnect" button to disconnect from the OPC server.

3.4 LabVIEW

000
New
Open Examples.
Configure
Help

Step 1: Run the LabVIEW program and select "Open..." -> Example

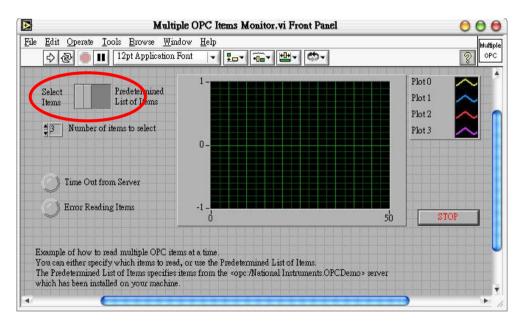
Step 2: Click on the "Search Examples" button to get information on using OPC.

D	NI Example Finder	00
Browse Search Submit	Double-click an example to open it.	Description
Enter keyword(s) opc	No examples match your search criteria	No available description information.
Search		
Double-click keyword (s)		
opc		
		÷
		All hardware compatible with selected example. Double-click a device to view Web information
Search for:		I III
any of the words		
🗆 Include ni.com examples 🌑		
Hardware		
No hardware found 😝		Ť
		Setup Help Close

Step 3: Double-click on the "Multiple OPC Items Monitor.vi" item in the middle window of NI Example Finder dialog..

	NI Example Finder	00
Browse Search Submit	Double-click an example to open it.	Description
Enter keyword (s)	6 Examples match your search criteria	This example uses the DataSocket VIs
opc	Browse To OPC Item.vi	that shipped with versions of LabVIEW prior to version 6i. These
ope	Multiple OPC Items Monitor.vi	VIs are provided with LabVIEW 6i
Search	NI DAQ OPC Client.vi	for compatibility. The DataSocket
Double-click keyword(s)	NI Demo OPC Client.vi	primitives shipping with LabVIEW 6i
Double-click keywolu(s)	NI FieldPoint OPC Client.vi	are not currently fully compatible with OPC. When using DataSocket to
opc	OPC Quality and Timestamp Attributes.vi	connect to OPC Servers, use the older
		compatibility DataSocket VIs.
		All hardware compatible with selected
		example. Double-click a device to view
•		Web information
Search for:		
any of the words 📑		
🗆 Include ni.com examples 📖		
- were mount even bro		
dware		
No hardware found 🛛 📢		

Step 4: Click on the "Select Items" item in the "Multiple OPC Items Monitor.vi" demo.



Step 5: Run this demo.

Step 6: Click on a machine name in the "Network" tree-view.

Step 7: Select the "NAPOPC.Svr" OPC server.

Step 8: Click on the "OK" button to close it.

Step 9: Select a file which you want to use and click on the "OK" button.

Step 10: Select an item (tag) in the tree-view.

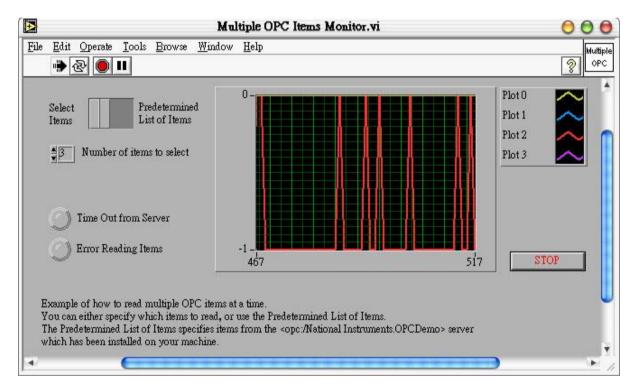
	0 7 DO1	A (<u>o</u> k
	DO2 DO3		<u>C</u> ancel
	🍢 DO3		
	MDO4		
	DO5		
	DO6 DO7		
01	DOS		
the second se	nstruments OPC Dem	•	
•			
rowse host:		1/	Refresh

Step 11: Click on the "OK" button to add this one

Step 12: Repeat the steps 6 ~ 11 to add more items(tags).

Step 13: Click on the "Cancel" button to finish adding items(tags).

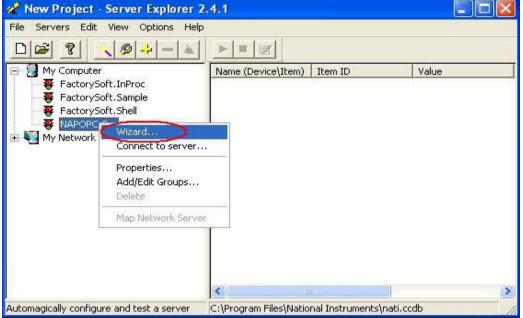
Step 14: The grid window graphs a line(s) to show changes of each item (tag).



3.5 NATIONAL INSTRUMENTS

National Instruments is a comprehensive industrial automation company by providing the software, hardware, and technologies necessary to transform personal computers into powerful computer-based and networked measurement and automation systems. The ServerExplorer is one of their products for connecting to OPC Server. For more information, please visit <u>http://www.ni.com</u>

Step 1: Start ServerExplorer. Right-click on "NAPOPC.Svr", then select "Wizard".



Step 2: The OPC Wizard - Connection dialog box appears. Then click on "Next>"

		Press the 'Next' button to connect to the OPC Server.
	Server:	NAPOPC.Svr
P. M. S.	Machine:	\\RABBIT
	Run As:	Local Server (EXE)
**	*	
		<back next=""> Cancel Help</back>

Step 3: Select a file which you want to use and click on the "OK" button.

Step 4: Enter the **Group Name** and **Update Rate**. The name can be any name you want. Click "Next>" to continue.

OPC Wizard - Group Creation	Press the 'Next' button to create the OPC Group	
	Group Name: Wizard Group Update Rate (msec): 100	
	< Back Next > Cancel H	Help

Step 5: Select all the items that you want to view from the **Available OPC Items** list. Then click "Finish".

	Press the 'Finish' button to Available OPC Items	create th	e selected OPC Item(s). Selected OPC Items	
3 4	Items (Device\Item)	^	Items (Device\Item)	^
T ALL SAL	6 7016_17.Als.Ch00		6 17188EG_TCP.IO.BI1	
in the second	Ø 7016_17.D0	_	6 17188EG_TCP.IO.BI2	
PRONS	👉 7016_17.D0s.Ch00		👉 17188EG_TCP.IO.BI3	
SKE	👉 7016_17.D0s.Ch01		67 17188EG_TCP.10.814	
1715	👉 7016_17.D0s.Ch02	>>	0 17188EG_TCP.IO.BO1	
ALC: NO.	👉 7016_17.D0s.Ch03	_	🚽 👉 17188EG_TCP.10.B02	
Ŧ	👉 7050D.Counter.Ch00		17188EG_TCP.IO.BO3	
	👉 7050D.Counter.Ch01		17188EG_TCP.IO.BO4	
1	👉 7050D.Counter.Ch02		👉 17188EG_TCP.IO.T1	
	🔗 7050D.Counter.Ch03		👉 17188EG_TCP.IO.V1	
FO YESSIN	🔗 7050D.Counter.Ch04		👉 17188EG_TCP.10.V2	
	🛷 7050D.Counter.Ch05	~	17188EG TCP.IO.V3	~
	<		<	>

Step 6: Now you should be able to view the OPC connection that you just created.

File Servers Edit View Options Help			
P	Name (Device\Item) Item ID	Value	Timestamp
- 🐺 FactorySoft.InProc		0	15:50:16:
FactorySoft.Sample		0	15:50:16:
FactorySoft.Shell		0	15:50:16:
E 8 NAPOPC.Svr		0	15:50:16:
🖻 🐡 Wizard Group	Ø 17188EG_TC 17188EG_TCP.IO	0	15:50:16:
I7188EG_TCP.IO.BI	@ 17188EG_TC 17188EG_TCP.IO	0	15:50:16:
I7188EG_TCP.IO.BI2 I7188EG_TCP.IO.BI3	▲ I7188EG_TC I7188EG_TCP.IO	0	15:50:16:
7188EG_TCP.IO.BI3	Ø 17188EG_TC 17188EG_TCP.IO	0	15:50:16:
/ 17188EG_TCP.IO.BO1	▲ I7188EG_TC I7188EG_TCP.IO.T1	100	15:50:16:
17188EG_TCP.IO.BO2		-199.4	15:50:16:
17188EG_TCP.IO.BO3	▲ I7188EG_TC I7188EG_TCP.IO.V2	-33.4	15:50:16:
🧑 17188EG_TCP.IO.BO4	I7188EG_TC I7188EG_TCP.IO.V3	523	15:50:16:
6 I7188EG_TCP.IO.T1	I7188EG_TC I7188EG_TCP.IO.V4	23	15:50:16:
🧑 17188EG_TCP.IO.V1			
🚽 🕢 17188EG_TCP.IO.V2			
- 👉 17188EG_TCP.IO.V3			
🖉 17188EG_TCP.IO.V4			
🖅 🌄 My Network Places			
	<		>
Ready	C:\Program Files\National Instruments\nati.co	db	

Step 7: To add new items, right-click on the group name then select "Add/Edit Items".

n ID		
n ID		
	Value	Timestamp
88EG_TCP.IO	0	15:50:16:
BBEG_TCP.IO	0	15:50:16:
88EG_TCP.IO	0	15:50:16:
B8EG_TCP.IO.T1	100	15:50:16:
B8EG_TCP.IO.V1	-199.4	15:50:16:
B8EG_TCP.IO.V2	-33.4	15:50:16:
B8EG_TCP.IO.V3	523	15:50:16:
B8EG_TCP.IO.V4	23	15:50:16:
	-	>
		struments\nati.ccdb

Step 8: Make sure the **Item ID** textbox at the bottom has the correct object and item name. Then click "Add>>" to add the item to the list on the right. In this example, we add the "I7188EG_TCP.IO.V5". Click "OK" when you are done.

Item Definition		Names (Device'\Item)
 ☐ 17188EG_TCP ☐ 10 ☐ 17188EG_RTU ☑ 7050D ☑ 7188×8 ☑ 18437_TCP ☑ 7050D_16 ☑ 7016_17 	BI1 BI2 BI3 BI4 BO1 BO2 BO3 BO4 T1 V1 V1 V2 V3 V3 V4 V5	 I7188EG_TCP.IO.BI1 I7188EG_TCP.IO.BI2 I7188EG_TCP.IO.BI3 I7188EG_TCP.IO.BI3 I7188EG_TCP.IO.B01 I7188EG_TCP.IO.B02 I7188EG_TCP.IO.B03 I7188EG_TCP.IO.B04 I7188EG_TCP.IO.V1 I7188EG_TCP.IO.V1 I7188EG_TCP.IO.V2 I7188EG_TCP.IO.V3 I7188EG_TCP.IO.V4
Name (Device\Item):	Data Type:	
17188EG_TCP.IO.V5	Default	
Item ID:	Access Paths:	
17188EG_TCP.IO.V5	Default	
Advanced	Active Add >>	Validatel

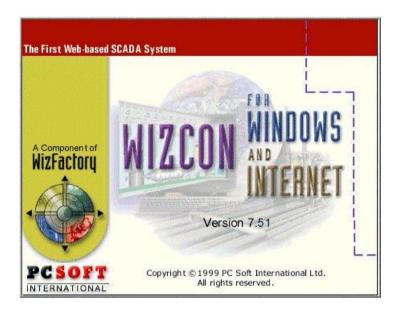
Step 9: Now you should be able to read all the items that you added in the main window.

🖃 😼 My Computer 🖉	Name (Device\Item)	Item ID	Value	Timestamp
FactorySoft.InProc	I7188EG_TCP.IO.BI1	I7188EG_TCP.IO	0	15:52:49:823
FactorySoft.Sample	I7188EG_TCP.IO.BI2	I7188EG_TCP.IO	0	15:52:49:823
FactorySoft.Shell	👉 17188EG_TCP.IO.BI3	I7188EG_TCP.IO	0	15:52:49:823
E- F NAPOPC.Svr	I7188EG_TCP.IO.BI4	I7188EG_TCP.IO	0	15:52:49:823
🖻 🚭 Wizard Group	I7188EG_TCP.IO.BO1	I7188EG_TCP.IO	0	15:52:49:843
I7188EG_TCP.IO.BI I7188EG_TCP.IO.BI	I7188EG_TCP.IO.BO2	I7188EG_TCP.IO	0	15:52:49:843
/ 17188EG_TCP.IO.BJ	I7188EG_TCP.IO.BO3	I7188EG_TCP.IO	0	15:52:49:843
17188EG_TCP.IO.BI	17188EG_TCP.IO.BO4	I7188EG_TCP.IO	0	15:52:49:843
17188EG_TCP.IO.B	👉 17188EG_TCP.IO.T1	I7188EG_TCP.IO.T1	100	15:52:49:883
/ 17188EG_TCP.IO.B	👉 17188EG_TCP.IO.V1	I7188EG_TCP.IO.V1	-199.4	15:52:49:863
/ I7188EG_TCP.IO.B	👉 17188EG_TCP.IO.V2	I7188EG_TCP.IO.V2	-33.4	15:52:49:863
/ I7188EG_TCP.IO.B	I7188EG_TCP.IO.V3	I7188EG_TCP.IO.V3	523	15:52:49:863
🕢 🕢 I7188EG_TCP.IO.T:	17188EG_TCP.10.V4	17100EG_TCP.IO.V4	23	15:52:49:863
🚽 👉 17188EG_TCP.IO.V:	17188EG_TCP.IO.V5	I7188EG_TCP.IO.V5	50	3 5:52:49:863
- 👉 I7188EG_TCP.IO.V				
// I7188EG_TCP.IO.V				
- 🙋 I7188EG_TCP.IO.V				
// I7188EG_TCP.IO.V				

3.6 WIZCON

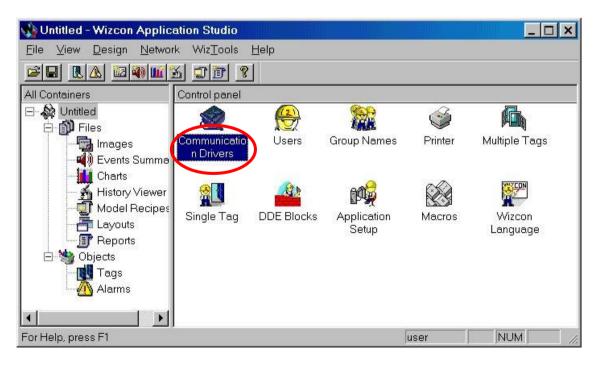
Wizcon for Windows and Internet is a powerful HMI/SCADA software package that delivers real-time and historical information from the plant floor to the boardroom and beyond. For more information, please visit <u>http://www.emation.com</u>

Step 1: Run WIZCON (Version 7.51 or newer) program.



Step 2: Create a new project.

Step 3: Click on the "Communication Drivers" icon in the right hand window.



Step 4: Click on the "Add" button to add new drivers.

C	ommunicatio	n Drivers					? ×
	2 ть	e following c	communication	drivers are	defined in the	application	
1	Logical Na	Device	Name		Parameters		
	_						
		- 12	S - 31				
	Add	<u>R</u> e	move	Properties			
400	2					Close	Help
10000	Add) <u>B</u> e	move	<u>P</u> roperties		Close	Help

Step 5: Select the "OPC Client" item.

Step 6: Click on the "Next >" button.

Please select the communication driver from the list. OPC Client
Omron AnyNet TCP/IP Omron E5J/E5K Omron SVSM4C family
OPC Client Opto 22, TCP/IP Perax P200 PHILIPS ▼
Description: OLE for Process Control Client
The second se

Step 7: Enter the driver name (for example: "NAPOPC").

Step 8: Select the OPC Server Name as "NAPOPC.Svr.1".

Step 9: Click on the "Test Access" button to see if the OPC server can be accessed.

Step 10: Click on the "Finish" button.

Specify a unique logical name for the driver NAPOPC OPC Senser Name NAPOPC.Syr.1
Note Name (ISomer, or www.server.com) Browse
Test Access

Step 11: Click on the "Close" button.

Logical Name	Device	Name	Parameters
IAPOPC	OPC	OPC Client	Read/Write,Out of Block
1		40	

Step 12: Click on the "OK" button to close the window.



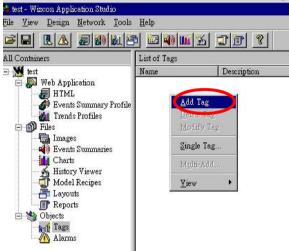
Step 13: Click on the far-right icon (the arrow) to close the WIZCON.



Step 14: Restart the WIZCON.

Step 15: Select the "Tags" item from the left-hand window.

Step 16: Right click the mouse button and select the "Add Tag" option to add tag(s).

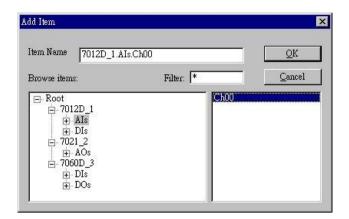


- Step 17: Enter a tag name in the "Tag Name" field.
- Step 18: Select "PLC" in the "Tag Source" field.
- Step 19: Select "NAPOPC"" in the "Driver" field.
- Step 20: Select "Always" in the "Sample" field.
- Step 21: Click on the "..." button to set the "Address" field.

	📗 Tag Definition: NEW Tag	? ×
	General Record DDE Link Tag Name: A10 Description:	<u>G</u> roups
	Tag Source: PLC	
Set Address	Driver: NAPOPC Sample Address: C In Monit C In Monit	Sample Rate: or 1
Oet Address	Tag Type: Analog	
	Format: Unsigned-16 Conversion Tolerance: 0 Value 1	Measured Engineering
	Low Limit 1 Value 2 High 0	1
	<u> </u>	Apply <u>H</u> elp

Close

Step 22: Select a tag and click on the "OK" button.



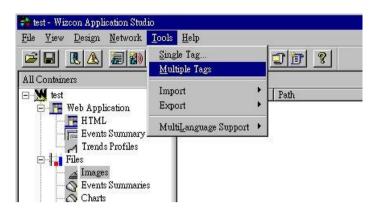
Step 23: Click on the "OK" button to close it.

	cord DDE Link Tag Name: Description:	AIO		Groups
ag Source:	PLC	•		
	NAPOPC 7012D_1.AIs.Ch0	Sample Never In Mon Always	itor	le Rate: sec. 0 📰 ms
ag Type:	Analog	•		
'ag Type: Format:	-			Engineering
	Analog Unsigned-16		n Measured	Engineering
Format:	Unsigned-16		Measured	

Step 24: The right hand window shows the tag(s) that were previously added.

🛟 test - Wizcon Application Studio						- 🗆 ×
<u>File View Design N</u> etwork <u>T</u> ools	<u>H</u> elp					
	ð 🖾 🚳 🛍	<u>% TP ?</u>				
All Containers	List of Tags					
🖃 💹 test	Name	Description	Source	Format	Driver	Addres
🖻 🔚 Web Application	MA00		PLC	Unsigned-16	NAPOPC	7021_:
HTML	∧ AIO		PLC	Unsigned-16	NAPOPC	7012D
Events Summary Profile						20120-0-0-0
Trends Profiles						
🗇 📊 Files						
- 🛃 Images						
🔤 🕢 🚫 Events Summaries						
History Viewer						
- 3 Model Recipes						
Layouts						
🖉 Reports						
🖻 <u></u> Objects						
Tags						
🔤 📶 Alarms						

Step 25: Click on the "Tools/ Multiple Tags" menu item.



Step 26: Click on the "OK" button to close the "Tag Filter" window.

Tag Filter — Tag Filter — From	Source File
Name: Driver No.: Control Cont	To ↓ Wizpro ↑ File (.GLS) ↓ mmy ♥ Compound

Step 27: The "Tags Exerciser Program" window shows tag(s) and value(s).

File Option Help						
[Name]	[Driver][Address] [V	alue]	[Rate][S	ample]	[TYPE]
A I 0 A 0 0	02	7012D_1.AIs.Ch00	3	1.00	Y	A
A00	02	7021 2.AOs.Ch00	3	1.00	Y	A

3.7 iFix

iFIX is a powerful HMI/SCADA system that features full process visualization, data collection and management, and supervisory control. iFIX, the HMI/SCADA component of the Installation Dynamics family of automation software, is a Windows NT-based industrial automation solution for monitoring and controlling manufacturing operations. For more information, please visit <u>http://www.intellution.com</u>.

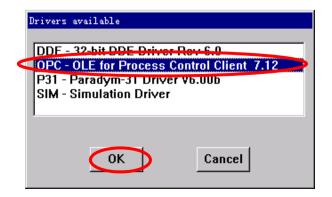
Step 1: Run iFix 2.1 and start system configuration.

Step 2: Click on the "Add" button to add I/O drivers.

SCADA Configuration	
SCADA Support Database Definition	
© Enable O Disable Database Name: DATABASE	?
VO Driver Definition	
I/O Driver Name: SIM - Simulation Driver	?
Configured I/O Drivers	
SIM - Simulation Driver Add)
Configure	
Setup	
Delete	
Backup SCADA SCADA Name:	
OK Cancel H	elp

Step 3: Select the "OPC - OLE for Process Control Client 7.12" driver.

Step 4: Click on the "OK" button.



Step 5: Select the "OPC - OLE for Process Control Client 7.12" driver.

Step 6: Click on the "Configure..." button to configure the I/O driver.

SCADA Configuration	
SCADA Support Database Definition	
⊙ Enable ○ Disable Database Name: DATAB	BASE ?
1/O Driver Definition	
I/O Driver Name: OPC - OLE for Process Control C	lient 7.12 ?
Configured I/O Drivers	
SIM - Simulation Driver OPC - OLE for Process Control Client 7.12	Add
OFC OLL IN FILLESS CONTOR CHERT 7.12	Configure
	Setup
	Delete
Backup SCADA SCADA Name:	
OK	Help

Step 7: Click on the "Connect..." button.

• Use Local Serve	Remote machine name or TCP/IP
C Vse Remote Server	
To run the User Interface, you must first connect to an I/O Driver OLE Automation Server. If you want to connect to the server on this machine, select "Use Local	[€]-Network
If you want to connect to a server on another machine, select "Use Remote Server" and enter the machine name, or a TCP/IP address of the machine that has the server that you You can use the tree browser to help select a remote machine name.	

Step 8: To configure the OPC server.

C:\DYNAMICS\Untitled.opc = PowerTool	1			
<u>F</u> ile <u>E</u> dit <u>V</u> iew <u>D</u> isplay Mode <u>O</u> ption	us <u>H</u> elp			
	Mar Lu			
אניא אניא	OPCDrv OLE for mber of mber of	Process Control (Client, Version 7.12	
+ <u></u> +	+ D	\times		
For Help, press F1				

Step 9: Select the "NAPOPC.Svr" and click on the "OK" button.

Late.	lution OPCEL Hutton OPCEL C. Svr	DA DA. 1	

Step 10: Add server, group and items. Fill properties by clicking on the "Browse Server..." button.

De C:\DYNAMICS\Untitled.opc = PowerTool
File Edit Yiew Display Mode Options Help
Item Item2 Enable Group1 Descriptic OPC Item Settings: Item Item Access No Access Path Requested Server Browse Server Client Settings: Disable Output Latch Date Latch Date
For Help, press F1

Step 11: Select the item which you need. Click on the "OK" button.

Etem IDs:	Access Paths:
□ NAPOPC.Svr □ 7018P_1 □ AIs □ Ch00 □ Ch01 □ Ch03 □ Ch04 □ Ch05 □ Ch06 □ Ch06 □ Ch07	TOTEP_1. AIs. ChO2
ItemID 7018P_1.AIs.Ch02	Access

Step 12: Enter database manager of iFix 2.1.

Step 13: Add relative data units.

For example: AI. Driver: "OPC OLE for Process Control Client 7.12". I/O Address: "Server1;Group1:Item1".

Analog Input - [AI1]*
Basic Alarms Advanced
Tag Name : AI1 Description
Addressing
Driver : OPC OLE for Process Control Client 7.12 V/O Configuration
I/O Address : Server1;Group1;Item1 Signal Mone Conditioning None Options :
Scan Settings Engineering Units Low Limit 0.00
Scan Time 1 High Limit 100.00 Phase At : Units :
Save Cancel Help

Step 14: The window displays the current value of the AI unit.

	Manager - [FIX : 1 row it View Blocks Drive		Heln			_ 8 ×
	a x 🖻 🖻 🛤	- 64 120 1	51 •4 •% •6 🔎 😵 🕺			
Open conne	ction to node an Time	1/0 Dev	I/O Addr	Curr Value		<u> </u>
1 Al1	1	OPC	Server1;Group1;7018P_1.Als.Ch	26.24	1	
2					1	
3]	-
4]	
5						
•		·			•	•
Open connection (to a node and view the	database	OF	F EDIT default	default	default

3.8 InduSoft

InduSoft Web Studio is a powerful, integrated collection of automation tools that includes all the building blocks needed to develop human machine interfaces (HMIs), supervisory control and data acquisition (SCADA) systems, and embedded instrumentation and control applications. Web Studio runs in native Windows NT, 2000, XP and CE 3.0 environments and conforms to industry standards such as Microsoft DNA, OPC, DDE, ODBC, XML, SOAP and ActiveX. For more information please visit: <u>http://www.indusoft.com/</u>

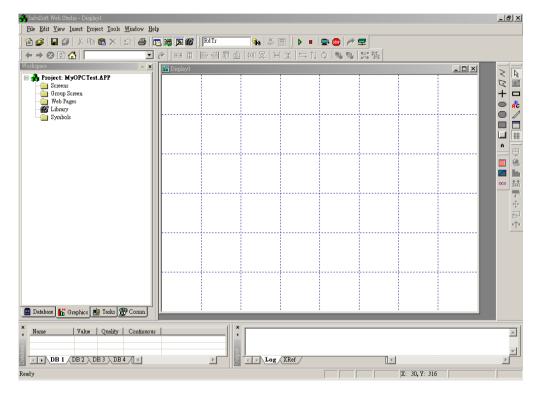
Step 1: Before using the InduSoft OPC Client module, you need to install and configure the OPC server in the machines you will run it.

5	ICPDAS - NAPOPC DA Server	000
Eile Add Edit Yiew Options Help		
New Open Save Device Group	Tag Gener Search Expand Shrink Monitor Cut Copy Paste Delete Preview Print Help Web Mail	About
Image: Second state sta	Nume Type ChannelLocation Value Scaling Description C A00 Bit laput 1 C A02 Bit laput 2 C A03 Bit laput 2 C A04 Bit laput 4 C CA05 Bit laput 6 C A06 Bit laput 6 C A07 Bit laput 7 C A08 Bit laput 9 C CA10 Bit laput 10 C CA12 Bit laput 11 C CA12 Bit laput 12 C CA13 Bit laput 13	
Keedy	Dis has 14 Tegs	

Step 2: Run the InduSoft (Version 4.1 or newer)



Step 3: Create the new project.



Step 4: In the Studio Workspace window, click the OPC tab, right-click the OPC folder, and click "Insert":

💑 InduSoft Web Studio - Display1						_ B ×
Eile Edit View Insert Project Tools Window Help						
) 🖆 🥔 🗳 🗊 🖇 🖻 🖀 🗙 🗢 🚭 🖪			🗐 🛛 🕨 🖛 🚍			
	e a ∎ ⊡ 🗧	〒 山 和 昇 ↦	[国]⇒社◇ 周			
	🜃 Display1				_ [] >	
Project: MyOPCTest.APP						
📓 Database 👫 Graphics 📑 Tasks 🕵 Comm						
× Name Value Quality Continuous	1	X				
						_
DB1 DB2 DB3 DB4 (Þ	Log	XRef /			
			CAP		X: 1, Y: 233	

Step 5: OPC Attributes window pops up.

OPCC:	L001.OPC			
		er Identifier: The set of the se	Disable: Status:	
	Tag Name			ltem
1				
2				
3				
4				
5				
1				Ъ
				· ·

Step 6: Click on the Server Identifier: drop-down menu and select the "NAPOPC.Svr".

Description:	Server Identifier:	Disable:	
ICP	NAPOPC.Svr		
Read Update Rate (ms):	NAPOPC.Svr Studio.Scada.UPC	Status:	-
Remote Server Name:			

The configuration table for OPC has the following entries:

- Description: this field is used for documentation only. The OPC Client module ignores it.
- Server Identifier: this field should contain the name of the server you want to connect. 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 of 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 indicates the server should use the fastest practical rate.
- Percent Deadband: this field indicates the percent change in an item value that will cause a notification by the server. It's only valid for analog items.
- 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 7: In the first cell of the Tag Name column type the tag name created in database.

Step 8: In the first cell of the item you can right-click it to get a menu.

escrip	tion:	Server I	Identifier:	Disable:	
CP		NAPOR	PC.Svr 🔄] [
lead U	pdate Rate (ms):	Percent	t Deadband:	Status:	
lemote	Server Name:				
HERCONAC.	ALCONTRACTOR SCIENCES	Browse.	-		
		DIOWSE.			
	Tag Nam	ne	ltern	Scan	
1	Tag Nam do1	ne 🗌			
1	1	ie			
	1	ne C		PC Browser	1
2	1	10		PC Browser	
2 3	1	ie	ر ا م	PC Browser	
2 3 4	1	ie	ر پر م اک د د	PC Browser	

Step 9: Click the OPC Browser to appear the OPC Browser window.

	02057	Server Identifie	12	Disable:		
Descript ICP	tion:	NAPOPC.Svr	135	Disable:		
4			_			
Read U	pdate Rate (ms);	Percent Dead	pand:	Status:		
		1		ļ		
emote	Server Name:					
		Browse				
	n <u></u>	70	-			will.
	Tag Nam	e	UPL Browser:	'NAPOPC.Svr' [LOCA	AL.]	×
1	do1		ONC List of I	tems	×	ОК
- 32			012			
			10 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			C a secondaria
3						Cancel
3 4			🔲 🔅 🧰 🕻	Dis		Cancel
3 4 5				Dis		Cancel
3 4 5 6				DIs DOS V Ch00 V Ch01		Cancel
3 4 5 6 7				DIs DOs V ChOO V ChO1 Counter		Cancel
3 4 5 6				DIs DOs V ChOO V ChO1 Counter DI		Filter:
3 4 5 6 7				Dis DOs V ChOO V ChO1 Counter DI		Filter:
3 4 5 6 7				Dis DOs V Ch00 V Ch01 Counter DI _3 ID_4		Filter: C <u>B</u> ead C <u>W</u> rite
3 4 5 6 7				Dis DOs V Ch00 V Ch01 Counter DI _3 ID_4		Filter:

Step 10: Select an item(tag) in the tree-view.

Step 11: Click the "OK" button to add this one.

OPCCL	001.OPC				-02
ſ	ion: odate Rate (ms) Server Name:	Per	ver Identifier: POPC.Svr cent Deadband: wse	<u>-</u>	Disable:
ŕ	Tag Nam	e	Ite	m	
1	do1		7012D_2.DOs.Ch	00	Always
2					
3					
4					
5					
6					
7	-				
8					
.					

Step 12: Repeat the step between 7 to 11 to add more tags.

Step 13: Creating a Text String for the Input/Output Dynamic. Click the Text icon on the Object Editing toolbar. Position the crosshairs in the Display2.scr. Press the"#" key three times to display "###" in the gray square.

Step 14: Click the Text Input/Output property icon on the Object Editing toolbar. *Text I/O* appears in the drop-down menu of the Object Properties window. In the Tag/Expression field type the tag name you want to link.

🙀 Display2						-OX
						-
	do1	###				
Objec	t Properties		i I	i i	×	
-im	Replace	Hint:	Text		•	
<u>C</u> aj	otion: 🗱					
Ali	gn Left	- Borde	er Color	Transparent		
	<u>F</u> onts	Bac	kColor:	Extern transl		
						-
•						• //.

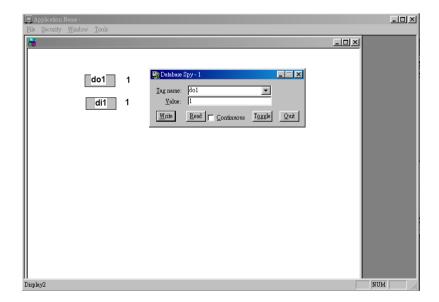
Step 15: From the Project select status. Then select the OPC Client Runtime in "Execution Tasks" tab. Click on the Startup button to setup the Startup as Automatic.

Task	Status	Startup	
🖪 Background Task		Automatic	<u>S</u> tart
😭 Database Spy		Manual	
DDE Client Runtime		Manual	Stop
🚰 DDE Server		Manual	
Driver Runtime		Manual	
🔜 LogWin		Manual	Startup
ODBC Runtime		Manual	
OPC Client Runtime		Automatic	
🎲 TCP/IP Client Runtime		Manual	
Y TCP/IP Server		Manual	
Viewer 📃		Automatic	

Step 16: Run the program InduSoft OPC Client Runtime module automatically or by the menu "Project->Status". After running this program, a small icon will appear in your system tray. To close the InduSoft OPC Client module, right-click its icon in the system tray, and select "Exit".



Step 17: Database Spy allows you to monitor and forces application tags, reading and writing to the database. You can find it in Tools menu.



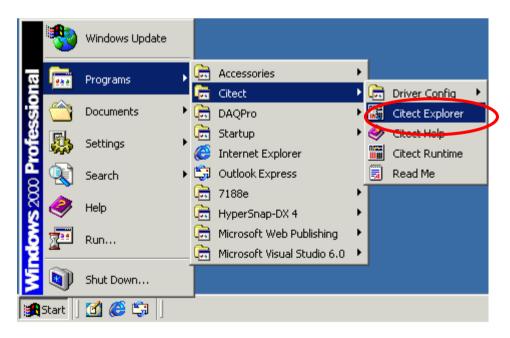
3.9 Citect SCADA

CitectSCADA is a reliable, scaleable and high performance SCADA system that includes over 100 drivers and free development software. Used in a wide range of industries, CitectSCADA enables users to reduce costs by optimizing process operations. Furthermore, it not only reduce risk with built-in redundancy for servers, networks and communications, but open data connectivity via OPC client & server, OLE DB, ODBC, DDE and API as well as over a hundred native drivers. CitectSCADA can implement in Windows 98, NT and 2000. Visit <u>http://www.citect.com</u> for more information about CitectSCADA

Step 1: Before using the CitectSCADA, you need to install and configure the OPC server in the machines you will run it (see Chapter 1).

🔐 Untitled - NAPOPC I	DA Server				
File Add Edit View	Options He	elp			
<u>% Q = & @ </u>					
P	Name	Туре	Channel/Location	Value	Description
AOs 7012D_2 AIs DIs DOs Counter	S Ch00	Analog Output	0	0	
Ready			AOs has 1 Tag	ļs	

Step2: Start up the CitectSCADA with version 5.40.



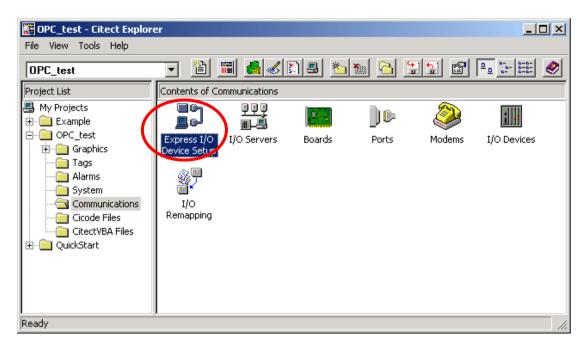
Step3: Left click the "page-marked button" or select "File / New Project..." from the CitectSCADA window menu to build a new project in the CitectSCADA.

QuickStart - Citect Explo File View Tools Help	
QuickStart	T (1)
Project List	Contents of My Projects
My Projects	Computer QuickStart Example Setup
Ready	11.

Step4: Fill a name of new project in the blank and then click "OK button" to finish this process.

New Project	×
Name: OPC_test	
Description:	
Location: C:\Citect\User\DPC_test Browse	
Page defaults	1
Template style: Standard	
Template resolution: Default	
☐ Show template title bar	
Background colour:	
OK Cancel Help	1

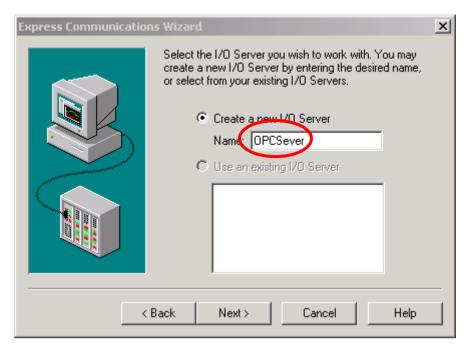
Step5: Click the "Express I/O Device Setup" icon to set all communication parameters.



Step6: Start up the "Express Communications Wizard Dialog".



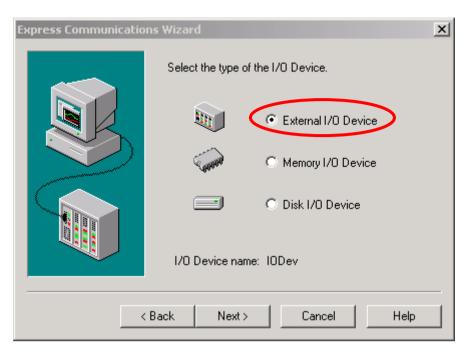
Step7: Create a new I/O Server and define a name called "OPCServer" for that one.



Step8: Create a new I/O Device under the I/O Server that created previously and define a name called OPCDev for that one.

Express Communication	s Wizard	×
	Select the I/O Device you wish to work with. You may create a new I/O Device by entering the desired name, or select from your existing I/O Device Name: OPCDev C Edit an existing I/O Device	
< E	Back Next > Cancel Help	

Step9: Select "External I/O Device" to be the type of OPCDev I/O Device.



Step10: Set OPC to be the method of communication for OPCDev I/O Device.

Express Communicat	ions Wizard	×
Select the manufacturer, model and method of communication for the I/O Device	Mitsubishi Modicon Moore Industries National Mematron OPC Foundation OPC Servets Memotropies	
Selected driver Manufacturer:	OPC Foundation	
Model:	OPC Servers	
Communications:	OPC	
	< Back Next > Cancel Help	

Express Communica	ations Wizard	×				
You need to provide an address for your I/O Device. Pre the Driver Address Help button for help on the address of driver you have selected.						
	Driver Address Help					
	Enter an address below or accept the default.					
Address:	NAPOPC.Svr.1					
Selected driver-		-				
Manufacturer:	OPC Foundation					
Model:	OPC Servers					
Communications:	OPC					
		_				
	< Back Next > Cancel Help					

Step11: Set Address to be "NAPOPC.Svr.1" for OPCDev I/O Device.

Step12: Do not set any parameter in this step.

Express Communication	ns Wizard X
	Select this option if you want this I/O Device to link to an external tag database.
	Link I/O Device to an external tag database External tag database;
	Browse
	Database type:
	Concept Ver 2.1 ASCII file
	Connection string:
	Add prefix to externally linked tags
	Tag prefix:
	Automatic refresh of tags
<	Back Next > Cancel Help

Step13: Click the "OK button" to finish the setting of communication parameters.

Express Commu	inications Wizard
	The Communications Wizard will make the following changes to the project 'OPC_test'. Using new 1/0 Server 'OPCSever'. Creating 1/0 Device 'OPCDev'. + Type: Disk 1/0 Device + Manufacturer: OPC Foundation
	Manufacturer. OP C Foundation Model: OPC Servers Communications: OPC + Address: [RUN]:OPCDev.CDK
	Press Finish to save this setup.
	< Back Finish Cancel Help

Step14: Open the "Citect Project Editor window" to edit Boards parameters.

🔓 Citect Project Editor [OPC_te	st]-COMPILED		
File Edit Tags Alarms System	Communication	Tools Window	Help
📓 🔏 🔝 🔳 🐰 🖻	Express Wizard	4 9 19 10	1
	I/O Server		
(Boards		
	Ports		
	Modems		
	I/O Devices		
	Remapping		
Sets up the I/O Server boards			

Step15: Edit Boards parameters. The Address (scanning period) is set to be "250ms", and the Special Opt is set to be blank.

🛄 Boards [C	DPC_test2]
Server Name	OPCServer A
Board Name	BOARD1
Board Type	OPC
Address	250 V I/O Port V Interrupt V
Special Opt	
Comment	
Add Record : 1	Replace Delete Help

Step16: Define two Variable Tags.

🔚 OPC_test - Citect Explor	er	
File View Tools Help		
OPC_test	<u>. 19 10 468 8 8 8 8 8 9 10 10 10 10 10 10 10 10 10 10 10 10 10 </u>	۲
Project List	Contents of Tags	
My Projects		
OPC_test Graphics Graphics Alarms Graphics Grap	Nariable Tao Trend Tags SPC Tags	
Ready		

Step17: Define a variable tag for analog output of the modules 7021. The Variable Tag Name is "A_out1", the Data type is "REAL", the I/O Device Name is selected to be "OPCDev", and the Address is "7021_1.AOs.Ch00".(see Step 6)

🛄 Variable Tags [OPC_test]	
Variable Tag Name A_out1	Data Type REAL 🗨 🔺
I/O Device Name OPCDev 💿	Address 7021_1.A0s.Ch00
Raw Zero Scale	Raw Full Scale
Eng Zero Scale	Eng Full Scale
Eng Units	Format
Comment	
Add <u>R</u> eplace <u>D</u> elete <u>H</u> elp	
Record: 1	Linked: No 🗾

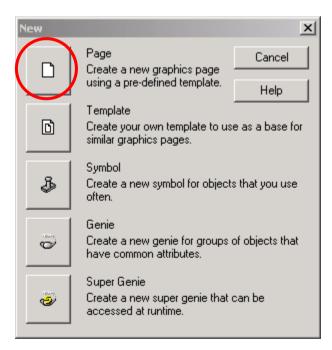
Step18: Define another variable tag for analog input of the modules 7012D. The Variable Tag Name is "A_in1", the Data type is "REAL", the I/O Device Name is selected to be "OPCDev", and the Address is "7012D_2.Als.Ch00". (See Step 6)

🔜 Variable Tags [OPC_test]	
Variable Tag Name A_in1	Data Type REAL 🔽
I/O Device Name OPCDev	Address Z012D_2.Als.Ch00
Raw Zero Scale	Raw Full Scale
Eng Zero Scale	Eng Full Scale
Eng Units	Format
Comment	
Add <u>R</u> eplace <u>D</u> elete <u>H</u> elp	
Record: 2	Linked: No

Citect Grap le Edit View		Arrange	Tools	Window	v Help					_	
New Open Close Find	Ctrl+N Ctrl+o			<u></u> 12 10		1 7	<u>8</u> 5	<u> 1921</u>	2		•
Save Save As Save All Import	Ctrl+5										
Properties Defaults											
Compile Run	Alt+F10 F5										
Print Print Setup	Ctrl+P ,										
Exit	Alt+F4										
	bage, templat					I.		-	0,0	GUIDE	GI

Step19: Create a new page in the "Citect Graphics Builder window".

Step20: Click the "page-marked button" to create a new page.



Use Template				×
Template: normal			Style:	
			bottom 🔺	OK
			top version2	Cancel
normal page	emenu poptrend	rangechart		Edit
			T P	
	ccpk spcpareto	spcxrschart	I Linked I I Title bar	
			Resolution:	
standardchart sur	nmary tab1menu	tab2menu	1	Help

Step21: Select normal template to be the background and function of this page.

Step22: Select "Objects /Text " from "Citect Graphics Builder window menu" to insert a "Text Object" on the page.

	uilder - [OPC_test -				
🏹 File Edit View	Objects Text Arran	 Help			_ & ×
	Free Hand Line	- 8 - 8	i Po	٢	-
? µ	Straight Line Rectangle				_
	Ellipse	 			
<u>f(x)</u>	Polygon	+3			
-A	Pipe				
(Text				
m	Button				
~	Symbol Set				
	Trend				
Υ .	Cicode Object				
₽					
হ					T
Adds text		IЩ 0×0	-1-1	136,15	GUIDE GRID

Step23: Key-in the words "AO:" in the Text object. Then, left click to put the Text object on the page and set "Appearance parameters" of Text object.

[™] Appearance ∞ [™] Movement Font:	Style:	Size:	Ś
Arial	Bold	18	
Arial Arial Black Comic Sans MS Courier Courier New Fixedsys Georgia	Regular Bold Bold Italic Italic	12 14 16 18 20 22 24 ▼ 24 ▼	
Alignment Effects			o ispiraty values

Step24: Select "Objects/Number" from "Citect Graphics Builder window menu" to insert a "Number Object" on the page. Left Click to put Number object on the page. Then, set "Appearance attributes" and "Input attributes" for this Number object.

Text Properties	×
🖌 Appearance 🔄 Movement 🔄 Scaling 🔄 Fill 🔄 Input 🔄 Slider 🔄 Access	
	311
Text Properties	×
✓ Appearance 🧹 Movement 🗹 Scaling 🖉 Fill 🗹 Input 🖉 Slider 🗹 Access	
- Key sequence command	
Key sequence	Touch
	- Keyboard Commands
Security	ard Co
Command area: <all areas=""> <-> Privilege level: <<a>None></all>	ommands

Step25: Set another Text object and Number object by the same way, and the "Appearance attributes" of Text and Number object are showed below.

Text object:

Text Properties	Scaling ∫ ∞ Fill ∫ ∞ Inp	out 🧹 Slider 🗹 Access	×
Font: Arial Arial Black Comic Sans MS Courier Courier New Fixedsys Georgia Alignment Effects Effects Strikeout	Style: Bold Bold Bold Italic Italic	Size: 18 20 22 24 26 28 36 V	General 3D Effects 🖉 Display Value
C Right C Centre Foreground:		DK Cancel /	Apply Help

Number object:

Text Properties	×
Appearance & Movement & Scaling & Fill & Input & Slider & Access	
Multi-state Array Nueric String Format:	General 3D Effects 🗸 Display Value 🖉 Visibility
OK Cancel Apply Help	

Step26: When finish the all object and attribute setting, the page is looked like as one, which shows below.

· · · · · · · · · · · · · · · · · · ·	
<i>f(x)</i>	
↔ ↔ ↔ AO: ####.### ↔	
<u>₽</u> AI: ####.###	

Step27: Select "File/Save " from "Citect Graphics Builder window menu" to save this page.

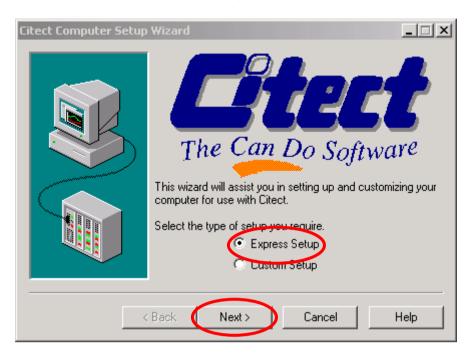
			OPC_test - Untitled1]	
	File Edit View	Objects	Text Arrange Tools Window Help	_ 8 ×
<u>.</u>	New	Ctrl+N) 🖬 🕹 🖻 🖻 🗠 ங 📲 🕾 🕾 🛣 🏈	•
	Open Close	Ctrl+O		
	Find		; 2	
6	Save	Ctrl+S	ئېـ	
ć	Save As Save All	Carro		
 ~	Import		_	
	Properties Defaults		AO: ####.###	
	Compile Run	Alt+F10 F5	AI: ####.###	
2	Print Print Setup…	Ctrl+P	-	
<u>></u>	Exit	Alt+F4		
Ŷ	>			
Q	P			_
▲	as the setius			
	Exit			▼ ▶ IDE ∫ GRID

Page	Template	Symbol	Genie	Super Genie
Page:	Proje	et:	Preview:	ОК
page1	OPC	_test	🔽 Enable	
	exa	mple	A	Cancel
		2		
		test kstart		New
				Delete
1			×	
				Help

Step28: Fill the name of this page and save it under OPC_test project.

Step29: Left click the "computer-marked button" to define the role of this computer.

GPC_test - Citect Explo File View Tools Help	'er				_ [
OPC_test Project List	Contents of OP Graphics	Real Providence of the second	System	Communica	Cicode Files	Ø
Ready						

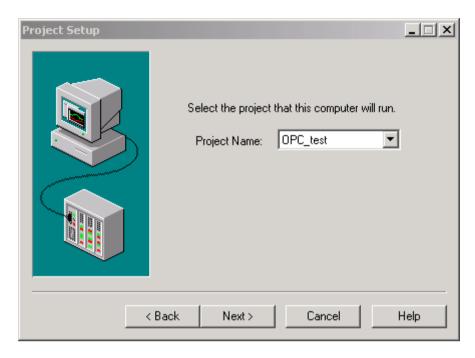


Step30: Start up the Citect Computer Setup Wizard.

Step31: Select the "Stand-alone computer" item to be the role of this computer.

Computer Role Setup	×
	Select the role of this computer.
	Server and Display Client
	Network computer
and the second sec	C Server and Display Client
	O Display Client
	O Manager Client
< Ba	ck Next > Cancel Help

Step32: Select the project "OPC_test" to be the project that this computer will run.



Step33: Click the "Next button" to next step.





Step34: Left click the "Finish button" to finish the computer setup.

Step35: Select OPC_test project and press "F5" to run this project. Compare the NAPOPC Server monitor and CitectSCADA runtime window.

🔢 Untitled - NAPOI	PC DA Serv	/er		🛗 page 1	l		
File Add Edit Vie	w Options	Help		3			
🙋 🕹 🛢 🔎	メ 国						
7021_1	Name	Type Ch	ann Value				
AOs	8 Ch00	An 0	0.001	ð			
🔏 AIs							
DIs							
Counter					••		
-				ÛÛ	AO:	0.000	
				₽.			
					AI:	0.001	
				Ø			
	•			9			
Ready			AIs //				

Untitled - NAI		_ 🗆 🗵	🛗 page 1			_ 🗆 🗵
	View Options Help		7 1	.234		
Pro21_1 AOS 7012D_2 AIS DIS DOS Counte	S Ch00 An 0	:hann Value 0.001		AO: AI:	0,000 1.234 0.001	
 Ready	•	AIs	Ì			

Step36: Key-in the value "1.234" to output a voltage via the module 7021.

Step37: Both NAPOPC_ST Server monitor and CitectSCADA runtime window show the analog input of the modules 7012D is 1.231V.

🔢 Untitled - NAPO	PC DA Serv	ver	_	L D X	🛗 page 1			_ D ×
File Add Edit Vie	ew Options	s Help			3			
🛯 🕹 🛎 🔎	X Pa							
7021_1	Name		Chann	Value	<u> </u>			
AOs	8 Ch00	An (ו	1.231	ð			
🔏 AIs								
DIs					<2			
Counter					$\hat{\mathbf{v}}$	AO:	1.233	
						AU:	1.233	
					오	AI:	1.231	
						<i>,</i> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1.201	
					Q			
					61			
	•				2			
Ready				AIs //				

Step38: Check if the analog output value of the modules 7021 that showed in the NAPOPC_ST Server monitor is 1.234V.

	🖞 Untitled - NAPOI	PC DA Server				<u> </u>	🔛 page 1			_ 🗆 ×
_	File Add Edit Vie		Þ				?			
	🔊 名 🛎 🔎	X 🖻 🛍								
Г	7021_1	Name	Туре	Channel/Location	Scaling	Value	<u> </u>			
	AOS	8 Ch00	Analog Output	0		1.233	đ			
	DIs						3			
	DOs									
							· 윤	AO:	1.233	
							-℃	AI:	1.232	
							3			
							\square			
							61			
							휜			
		•				F				
F	Ready			AOs ha	s 1 Tags					

4 Remote Accessing

OPC Client has two ways to access the OPC Server. One is called "Local Accessing", and the other is called "Remote Accessing". If the OPC Client and the OPC Server are at the same computer, we said this kind of architecture is "Local Accessing". In other words, if the OPC Client should access OPC Server through a network, we said this kind of architecture is "Remote Accessing".

The following figure shows the integrated architecture including "Local Accessing" and "Remote Accessing". At the real Process Industry, the two ways are often used at the same time. At the Process Management Layer, we often use "Local Accessing" architecture to monitor and control manufacturing processes. At the Business Management Layer, we just set up the OPC Client to collect the process information from the Process Management Layer. If you just want to construct the "Local Accessing" architecture, you do not need to read this chapter. If you want to construct the "Remote Accessing" architecture, you have to know how to set up the DCOM between OPC Client and OPC Server.

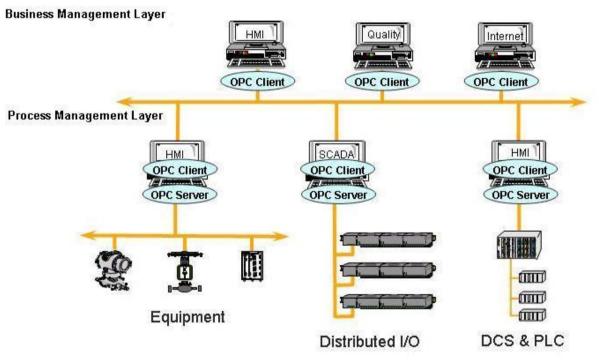


Figure 4-0-1 Local access and Remote access architecture.

4.1 System Requirement

To access a remote OPC server over a network, it is required to enable the DCOM mechanism on both stations, where the client and server are resided.

It is not possible to launch a secure process on a Windows 95 computer from a client computer. All processes in Windows 95 run in the security context of the currently logged-on user; therefore, DCOM on Windows 95 does not support remote activation. A server application on a Windows 95 computer will have to be launched manually or by some other mechanism to be accessed by a client application on another computer. Consequently, the "DefaultLaunchPermissions" and "LaunchPermissions" registry values have no affect on Windows 95.

Platform	Does the platform support the DCOM?
Windows 95	No. Users need to download and install the DCOM95.EXE and DCM95CFG.EXE from Microsoft's web site to enable the remote access.
Windows 98	Yes. Windows 98 supports the DCOM mechanism. It is recommended to upgrade to the newest version of DCOM98. The newest DCOM98 is also available at Microsoft's web site.
Windows NT 4.0	Yes. Windows NT 4.0 supports the DCOM mechanism. It is recommended to upgrade to the newest Service Pack for Windows NT 4.0 (Service Pack 3 or newer one).
Windows 2000	Yes. Windows 2000 supports the DCOM mechanism.
Windows XP	Yes. Windows XP supports the DCOM mechanism.

4.2 Configuring DCOM

Before making changes, register the server application in the registry of both the client and server computers. This may involve either running the server application setup program or running the server application, then shutting it down on both computers. The server application does not need to reside on the client computer.

If the server uses custom interfaces, the marshaling code must be installed on the client and server computers. Automation servers that support "vtbl-binding" must install their type libraries on the client and server computers. Automation servers that do not support "vtbl-binding" do not need to install their type libraries on the client computer.

After changing the registry, run the client application on the client computer. The DCOM looks at the server application registry entries on the client computer and determines the name of the server computer. It will then connect to the server computer, use the server computer registry to determine the location of the server application, and start the server application on that computer.

You can change the registry with the DCOMCnfg.exe tool, the OLE Viewer tool, or manually. For more information on using OLE Viewer or manual changes, please refer to the "Q158582, HOWTO: Configure a Non-DCOM Server and Client to Use DCOM" article on Microsoft's web site. For more information on using DCOMCnfg.exe to configure the DCOM, please refer to "Inside Distributed COM", written by Guy Eddon and Henry Eddon in 1998 for Microsoft Press.

This section shows you how to configure the DCOM status with DCOMCnfg.exe graphic-driven utility (can be found in the Windows NT system32 folder or in the Windows95/98 system folder) on the client and server computer.

The following table shows four combinations of DCOM settings related to NAPOPC_ST DA Server. You can see XPAC and PC can be client site and server site with each other, but WinPAC only can be server site against PC. The limitation is due to DCOM security. We only choose Windows XP for example to set up DCOM because there are too many kinds of OS on PC. You can use other Microsoft desktop operation system on our PC.

Client Site	Server Site
PC(NAPOPC_ST Server)	PC(NAPOPC_ST Server)
PC(NAPOPC_ST Server)	XPAC(NAPOPC_XPE Server)
XPAC(NAPOPC_XPE Server)	PC(NAPOPC_ST Server)
PC(NAPOPC_ST Server)	WinPAC(NAPOPC_CE5 Server)

4.2.1 Configuring On the Server Site (XPAC) Configuring the Firewall

Step1: By default the windows firewall is set to "On". This setting is recommended by Microsoft and by OPC to give your machine the highest possible protection. For trouble shooting, you may wish to temporarily turn off the firewall to prove or disprove that the firewall configuration is the source of any communication failure.

Note: It may be appropriate to permanently turn off the firewall if the machine is sufficiently protected behind a corporate firewall. When turned off, the individual firewall settings outlined here need not be performed to allow OPC communication.

🖗 Windows Firewall 🛛 🔀					
General Exceptions Advanced					
Windows Firewall is helping to protect your PC					
Windows Firewall helps protect your computer by preventing unauthorized users from gaining access to your computer through the Internet or a network.					
On (recommended)					
This setting blocks all outside sources from connecting to this computer, with the exception of those selected on the Exceptions tab.					
Dan't allow exceptions					
Select this when you connect to public networks in less secure locations, such as airports. You will not be notified when Windows Firewall blocks programs. Selections on the Exceptions tab will be ignored.					
0 Dff (not recommended)					
Avoid using this setting. Turning off Windows Firewall may make this computer more vulnerable to viruses and intruders.					
What else should know about Windows Firewall?					
OK Cancel					

Step 2: Select the .Exceptions tab and add all OPC Clients and Servers to the exception list. Also add Microsoft Management Console (used by the DCOM configuration utility in the next section) and the OPC utility OPCEnum.exe found in the Windows\System32 directory.

Windows Firewall			
General	Exceptions	Advanced	
program to work	ns and service	locking incoming network connections, exce s selected below. Adding exceptions allows s ht increase your security risk. ss:	
Name	9	22 -	~
 File and Printer Sharing GenAgent.exe GenRegistrarServer.exe GraphWotX32 LASEngine.exe License Monitor Microsoft Management Console OPC DataSpy OPC Simulator Remote Assistance Bemote Deskton 			
🗹 Disp		Add Port <u>E</u> dit on when Windows Firewall blocks a program <u>allowing exceptions?</u>	<u>D</u> elete

In the Add a Program dialog, there is a listing of most applications on the machine, but note that not all of them show up on this list. Use the "Browse" button to find other executables installed on the computer.

Note: Only EXE files are added to the exceptions list. For in-process OPC Servers and Clients (DLLs and OCXs) you will need to add the EXE applications that call them to the list instead.

Add a Program					
To allow communications with	n a program by adding it to the Exceptions list,				
	rowse to search for one that is not listed.				
Programs:					
Alarm Logger Configuration	or 📃				
Alarm Server Corfigurate					
AlarmWorX32					
Carousel					
😿 DataWorX32					
m DBOPCServerConfigurator					
The second secon					
🎩 FreeCell					
🚰 GenDOS3 to GFW16					
🔤 GenDOS4 to GFW16					
🖾 GenStatistics Viewer					
Path: C:\Program Files	AICONICS\GENESIS-32\Bin\				
C					
Change scope	OK Cancel				

Step 3: Add TCP port 135 as it is needed to initiate DCOM communications, and allow for incoming echo requests. In the Exceptions tab of the Windows Firewall, click on Add Port.

🗃 Windows Firewall	
General Exceptions Advanced	
Windows Firewall is blocking incoming network connections, e programs and services selected below. Adding exceptions allow to work better but might increase your security risk. Programs and Services:	
Name	~
File and Printer Sharing	
GenAgent.exe	
GenRegistrarServer.exe	
GraphWorX32	
LASEngine.exe	
License Monitor	
Microsoft Managemert Console	
OPC DataSpy	
OPC Simulator	
Remote Assistance	
Bemote Deskton	
Add Program Add Port	Delete
Display a notification when Windows Firewall blocks a prog	Iram
What are the risks of allowing exceptions?	
ОК	Cancel

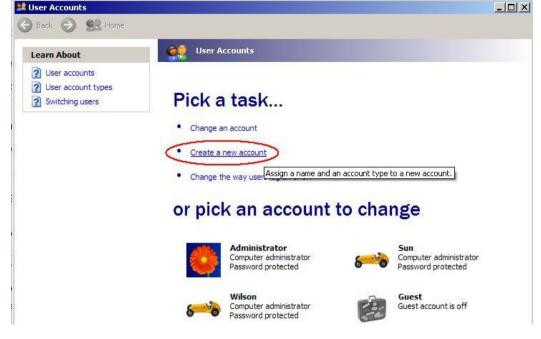
In the Add a Port dialog, fill out the fields as follows: Name: DCOM Port number: 135

Choose the TCP radio button

Add a Port 🛛 🔀			
	to open a port through Windows Firewall. To find the port ol, consult the documentation for the program or service you		
<u>N</u> ame:	ОСОМ		
<u>P</u> ort number:	135		
What are the risks	of cpening a port?		
Change scope	OK Cancel		

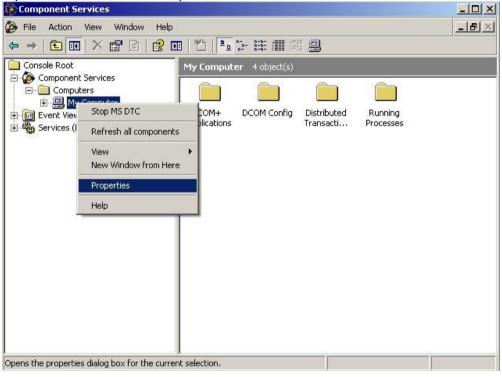
Creating the Account

Step 1: Create a account which must be the same with the account of client site.



Configuring DCOM

Step 1: Run the dcomcnfg.exe program to launch component services. Right clieck "My Computer" and choose "Properties".



Step 2: Select the "Default Properties" tab page.

Step 3: Use the following settings:

Field Name	Set to
Enable Distributed COM on this computer	Checked
Default Authentication Level:	Default
Default Impersonation Level:	Identify

My Computer Properties					
Default Protocols MSDTC COM Security General Options Default Properties					
Enable Distributed COM on this computer					
Enable COM Internet Services on this computer					
Default Distributed COM Communication Properties					
The Authentication Level specifies security at the packet level.					
Default Authentication Level:					
Default					
The impersonation level specifies whether applications can determine who is calling them, and whether the application can do operations using the client's identity.					
Default Impersonation Level:					
Identify 🔽					
Security for reference tracking can be provided if authentication is used and that the default impersonation level is not anonymous. Provide additional security for reference tracking					
OK Cancel Apply					

s that determ it Limits	o launch a	COM Securit lications. You m wn permissions. Edit Default pplications or tions that
s that determ it Limits ions by default t so set limits	o launch a	wn permissions. Edit Default pplications or
ions by default t so set limits	o launch a	pplications or
by default t so set limits		
it Limits		Edit Default

Step 4: Select the "COM Security" tab page.

Step 5: Click on the "Edit Limits..." of "Access Permissions" button to set.

Access Permission	P 🔀
Security Limits	
Group or user names:	
ANONYMOUS LOGON	
Permissions for ANONYMOUS	Add Remove
Local Access Remote Access	
	OK Cancel



Step 6: Click on the "Edit Default..." of "Access Permissions" button to set.

Everyone SELF		
2 SYSTEM		
	Add	Remove
ermissions for Everyone	Allow	Deny
Local Access		
Remote Access		

Step 7: Click on the "Edit Limits..." of "Launch and Activation Permissions" button to set.

Administrators (ZIBET \Administrators)			
ermissio <u>ns for Everyone</u>	Add	Remove Deny	
Local Launch			
Remote Launch			
Local Activation			
Remote Activation	×.		

Step 8: Click on the "Edit Limits..." of "Launch and Activation Permissions" button to set.

Administrators (ZIBET \Ad Everyone INTERACTIVE SYSTEM		
ermissions for Everyone	Add	Remove Deny
Local-Launch Remote Launch Local Activation Remote Activation	V V V V	

Step 9: Right click on the "NAPOPC_XPE DA Server" of "DCOM Config" button and select "Properties".

e Action View Window Help → 🔁 📧 🗙 😭 🙆 😫 🖬					
Console Root\Component Services	Computers\My	Computer	DCOM Config		
🖻 🧰 Computers 📃 🔺	DCOM Config				
My Computer GOM+ Applications	and Suppor	Uploa	WBEM	Provider Su	Aspnet. Sn
DCOM Config					
🕀 🚸 AcroPDF 🕀 🚸 Adobe Acrobat D	MMC Applicati	MobSync	MPriborDB	MSDAINITI	NAP Agent Service
ArchiverService Blocked Drivers					
COM+ Event Sys Ometry Comevents.Come Comevents.Come Ometry Comevents.Come	NAPOPC_XPE DA Server	netman	NetMeeting	Network Provisioni	OpcEnum
Control C		View			
🕀 💑 Defrag NTFS eng 🔳		Properties			

Step 10: Select the "Security" tab page and click "Edit..." of "Configuration Permissions". To make sure there is "Everyone" in "Group or user names" and allow "Full Control" and "Read"

Editor Security ess Permissions Group or user names: Use Default	Edit Security Group or user names: Image: Constrator (OEM-03WQK3Cl4HB\Administrator) Administrators (OEM-03WQK3Cl4HB\Administrators) Image: Constrators (OEM-03WQK3Cl4HB\Administrators) Image: Constrator of the	Control Control Security Image: Control Security Image: Control Group or user names: Image: Control Image: Control Image: Control Image	Access Permissions Security Image: Configuration Permissions Edit Image: Configuration Permissions	Group or user names:
ess Permissions Use Default Customize Edit figuration Permissions Group or user names: Group or user names: Administrator (DEM-03WQK3Cl4HB\Administrator) Customize Edit Group or user names: Customize Group or user names: Customize Group or user names: Group or user names: Group or user names: Customize Group or user names: Group	Group or user names: Group or user names: Administrator (DEM-03WQK3Cl4HB\Administrator) Administrators (DEM-03WQK3Cl4HB\Administrators) CREATOR OWNER Prover Users (DEM-02W(0K3Cl4UD\Deverse Users)) Add	Access Permissions Group or user names: Ise Default Image: Administrator (DEM-03WQK3Cl4HB\Administrator) Customize Edt Configuration Permissions Image: Administrator (DEM-03WQK3Cl4HB\Administrators) Customize Edt Configuration Permissions Image: Administrator (DEM-03WQK3Cl4HB\Administrators) Customize Edt Customize Edt Customize Edt	Access Permissions Group or user names: Group or user names: Customize Configuration Permissions Customize Customize Customize Customize Configuration Permissions Customize Customize Customize Customize Customize Customize Customize Edit Permissions for Everyone Add Permissions for Everyone Add Edit Permissions for Everyone Add Permissions for Everyone Add Edit	Group or user names:
Customize Edit Edit Figuration Permissions Edit Edit.	Edit Edit Edit CREATOR OWNER CREATOR OWNER CREATOR OWNER Add Remov	C Customize Edit Configuration Permissions C Use Default C Customize Edit Edit Edit Permissions for Everyone Allow Deny	C Customize Edit Configuration Permissions Use Default C Customize Edit Edit Permissions for Everyone Allow Deny Full Control	
Edit Edit figuration Permissions Image: CREATOR OWNER	Edit Image: CREATOR OWNER Image: CREATOR OWNER Image: CREATOR O	Customize Edit <pre> CREATOR OWNER</pre>	Customize Edit If CREATOR OWNER Configuration Permissions If Demon Users (OEM OCWORCHUP) Demon Users) C Use Default Add C Customize Edit Permissions for Everyone Allow Deny Full Control	Administrators (DEM-03W/0K3CMHB\Administrators)
figuration Permissions	ns Add Remov	Configuration Permissions Cuse Default Customize Edit	Configuration Permissions C Use Default C Customize Edit Permissions for Everyone Allow Deny Full Control	
	Add Remov	C Use Default C Use Default C Customize C Customize Edit Permissions for Everyone Allow Deny	Use Default Add Remov Edit Permissions for Everyone Allow Deny Full Control	Everyone
		Customize Edit Permissions for Everyone Allow Deny	Customize Edit Permissions for Everyone Allow Deny Full Control	
			Full Control	
		Eul Control		
	Eul Control			
Bead M			Special Permissions	
	Read III III IIII IIII IIIII IIIIIIIIIIII			Api
OK Cancel App	Read I Read		OK Cancel Api	
Full Control	Euk			Full Control Read Special Permissions
	Read III Special Permissions			Ap
	Edit			

Step 11: Select the "Identity" tab page and check "The launching user"

NAPOPC_ST DA Server Properties (? 🔀
General Location Security Endpoints Identity	
Which user account do you want to use to run this application?	
C The interactive user.	
The launching user.	
C This user.	
User: Browse	
Password:	
Confirm password:	
C The system account (services only).	
OK Cancel Apply	

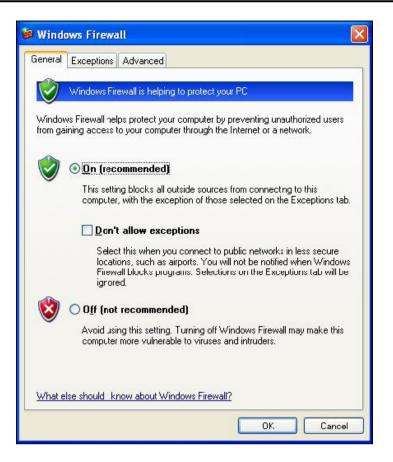
Step 12: Restart XPAC

Shut Down Copyright © : Microsoft Cor		Window Standard	s Embec	ided Microsoft
	What do you	want the computer to (do?	
	Log off Admi	nistrator		
	Log off Admi Shut down	nistrator	1	
	Restart			
	Stand by			
		OK	Cancel	Help

4.2.2 Configuring On the Server Site (PC) Configuring the Firewall

Step1: By default the windows firewall is set to "On". This setting is recommended by Microsoft and by OPC to give your machine the highest possible protection. For trouble shooting, you may wish to temporarily turn off the firewall to prove or disprove that the firewall configuration is the source of any communication failure.

Note: It may be appropriate to permanently turn off the firewall if the machine is sufficiently protected behind a corporate firewall. When turned off, the individual firewall settings outlined here need not be performed to allow OPC communication.



Step 2: Select the .Exceptions tab and add all OPC Clients and Servers to the exception list. Also add Microsoft Management Console (used by the DCOM configuration utility in the next section) and the OPC utility OPCEnum.exe found in the Windows\System32 directory.

Windows Firewall is blocking incoming network connections, except for the programs and services selected below. Adding exceptions allows some progr to work better but might increase your security risk. Programs and Services: Name File and Printer Sharing GenAgent.exe GenAgent.exe GenAgent.exe GraphWork32 License Monitor Microsoft Management Console OPC DataSpy OPC Simulator Remote Assistance Remote Deskton Add Program.	1	
Name File and Printer Sharing GenAgent.exe GenRegistrarServer.exe GraphWok/32 LASEngine.exe License Monitor Microsoft Management Console OPC DataSpy OPC Simulator Remote Assistance Bemole Deskton	below. Adding exceptions allows some progr	ams
 ✓ GenAgent.exe ✓ GenRegistrarServer.exe ✓ GraphWorX32 ✓ LASEngine.exe ✓ License Monitor ✓ Microsoft Management Console ✓ OPC DataSpy ✓ OPC Simulator ✓ Remote Assistance □ Bemote Deskton 		~
 ✓ GenRegistrarServer.exe ✓ GraphWotX32 ✓ LASEngine.exe ✓ License Monitor ✓ Microsoft Management Console ✓ OPC DataSpy ✓ OPC Simulator ✓ Remote Assistance □ Bemote Desktop 		
GraphWorX32 GraphWorX32 LASEngine.exe License Monitor Microsoft Management Console OPC DataSpy OPC Simulator Remote Assistance Bemote Deskton		
LASEngine.exe License Monitor Microsoft Management Console OPC DataSpy OPC Simulator Remote Assistance Bemote Deskton		
License Monitor Microsoft Management Console OPC DataSpy OPC Simulator Remote Assistance Bemote Desktop		
Microsoft Management Console OPC DataSpy OPC Simulator Remote Assistance Bemote Deskton		
OPC DataSpy OPC Simulator Remote Assistance Bemote Deskton		
OPC Simulator Remote Assistance Bemote Deskton	isole	
Remote Assistance Remote Deskton		
		~
	prt <u>E</u> dit <u>D</u> elete	
Display a notification when Windows Firewall blocks a program	/indows Firewall blocks a program	
What are the risks of allowing exceptions?	ceptions?	

In the Add a Program dialog, there is a listing of most applications on the machine,

but note that not all of them show up on this list. Use the "Browse" button to find other executables installed on the computer.

Note: Only EXE files are added to the exceptions list. For in-process OPC Servers and Clients (DLLs and OCXs) you will need to add the EXE applications that call them to the list instead.

Add a Pro	gram			
	mmunications with a pro rogram, or click Browse			
Programs:				
Alarm	Logger Configurator			~
🙎 Alarm 🖞	Server Corfigurator			
AlarmV	VorX32			
🗖 🖾 Carous	sel			
💦 🔀 DataW	/orX32			
	CServerConfigurator			
DrDCD 🏆				
🗾 🌉 FreeCe				
	DS3 to GFW16			
	DS4 to GFW16			
🔤 GenSt	atistics Viewer			~
Path:	C:\Program Files\ICO	NICS\GENE	SIS-32\Bin\	Browse
		_		
Change sci	ope	L	ОК	Cancel

Step 3: Add TCP port 135 as it is needed to initiate DCOM communications, and allow for incoming echo requests. In the Exceptions tab of the Windows Firewall, click on Add Port.

General E	xceptions	Advanced				
aerierar -	nooption	Auvanceu				
programs a to work be	and service atter but mig	ght increase y	elow. Addir	ng exception		pt for the ome programs
Programs -	and Servic	es:				~
	nd Printer !	Sharina				
	Agent.exe	onanny				
	kgenit.exe RegistrarSe					
1. Total (1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	hWorX32	IVGI. CAC				
0.00 34	Ingine.exe					
	nse Monitor					
Micro	soft Mana	gemert Cons	ole			_
	DataSpy					
OPC 🗹	Simulator					
🗹 Rema	ote Assistar	nce				
	nte Deskto	n				~
Add Pro	igram	Add P <u>o</u> r		<u>E</u> dit		<u>D</u> elete
🗹 Display	ı a <u>n</u> otificat	ion when Wi	ndows Fire	wall blocks	a program	
what are l	the risks of	allowing exc	eptions?			

In the Add a Port dialog, fill out the fields as follows: Name: DCOM Port number: 135 Choose the TCP radio button Add a Port Use these settings to open a port through Windows Firewall. To find the port number and protocol, consult the documentation for the program or service you want to use. Name: DCOM Port number: 135

OICP

What are the risks of cpening a port?

Change scope...

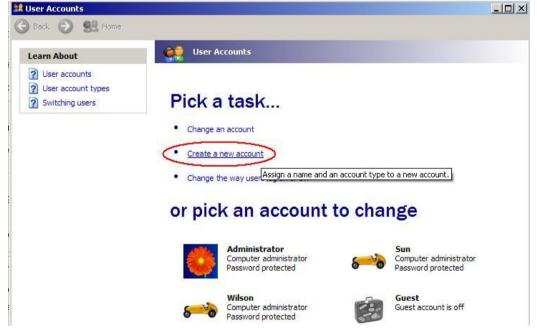
Creating the Account

Step 1: Create a account which must be the same with the account of client site.

O UDP

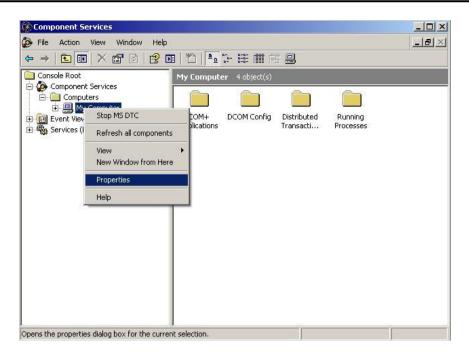
OK.

Cancel



Configuring DCOM

Step 1: Run the dcomcnfg.exe program to launch component services. Right clieck "My Computer" and choose "Properties".



Step 2: Select the "Default Properties" tab page.

Step 3: Use the following settings:

Field Name	Set to
Enable Distributed COM on this computer	Checked
Default Authentication Level:	Default
Default Impersonation Level:	Identify

My Computer Properties	
Default Protocols MSDTC COM Security General Options Default Properties	
Enable Distributed COM on this computer	
Enable COM Internet Services on this computer	
Default Distributed COM Communication Properties	
The Authentication Level specifies security at the packet level.	
Default Authentication Level:	
Default	
The impersonation level specifies whether applications can determine who is calling them, and whether the application can do operations using the client's identity.	
Default Impersonation Level:	
Identify 🗾	
Security for reference tracking can be provided if authentication is used and that the default impersonation level is not anonymous.	
Provide additional security for reference tracking	
OK Cancel Apply	

General	Options	Default Properties
Default Protocols	MSDTC	COM Security
ccess Permissions —		
		s to applications. You may e their own permissions.
	Edit Limits	Edit Default
aunch and Activation	Permissions	
You may edit who is	allowed by default to la	
You may edit who is	allowed by default to la u may also set limits on	
You may edit who is activate objects. You	allowed by default to la u may also set limits on permissions.	applications that
You may edit who is activate objects. You	allowed by default to la u may also set limits on	
You may edit who is activate objects. You	allowed by default to la u may also set limits on permissions.	applications that
You may edit who is activate objects. You	allowed by default to la u may also set limits on permissions.	applications that
activate objects. You	allowed by default to la u may also set limits on permissions.	applications that
You may edit who is activate objects. You	allowed by default to la u may also set limits on permissions.	applications that
You may edit who is activate objects. You	allowed by default to la u may also set limits on permissions.	applications that
You may edit who is activate objects. You	allowed by default to la u may also set limits on permissions.	applications that

Step 4: Select the "COM Security" tab page.

Step 5: Click on the "Edit Limits..." of "Access Permissions" button to set.

ccess Permission		?
Security Limits Group or user names:		
ANONYMOUS LOGON		
Permissions for ANONYMOUS	Add	Remove
Local Access Remote Access		
	ОК	Cancel

cess Permission ecurity Limits Group or user names: CANONYMOUS LOGON Cereivone		<u>(</u>
Permissions for Everyone Local Access Remote Access	Add Allow	Remove Deny

Step 6: Click on the "Edit Default..." of "Access Permissions" button to set.

Everyone SELF SYSTEM		
rmissions for Everyone	Add	Remove
Local Access Remote Access		
	\bigcirc	

Step 7: Click on the "Edit Limits..." of "Launch and Activation Permissions" button to set.

🕵 Administrators (ZIBETVA) 🛃 Everyone	dministrators)	
ermissio <u>ns for Everyone</u>	Add	Remove
Local Launch		
Remote Launch		
Local Activation		
Remote Activation	×.	

Step 8: Click on the "Edit Limits..." of "Launch and Activation Permissions" button to set.

Administrators (ZIBET \Ad Everyone INTERACTIVE SYSTEM		
ermissions for Everyone	Add	Remove Deny
Local-Launch Remote Launch Local Activation Remote Activation	V V V V	

Step 9: Right click on the "NAPOPC_ST DA Server" of "DCOM Config" button and select "Properties".

🛞 Component Services					
File Action View Window Help					
Console Root\Component Services	Computers\My	Computer	DCOM Config		<u>_ ×</u>
Computers	DCOM Config				
My Computer OM+ Applications	and Suppor	Uploa	WBEM	Provider Su	Aspnet. Sn 🔺
DCOM Config					٠
AcroPDF	MMC Applicati	MobSync	MPriborDB	MSDAINITI	NAP Agent Service
Blocked Drivers					(
ComEvents.Com GomEvents.Com GomEvents.Com	NAPOPC_XPE DA Server	netman	NetMeeting	Network Provisioni	OpcEnum
E CustReg Class		View			
⊕ Oefrag FAT engir ⊕ Defrag NTFS eng		Properties			- 🧐 🚽
	•				

Step 10: Select the "Security" tab page and click "Edit..." of "Configuration Permissions". To make sure there is "Everyone" in "Group or user names" and allow "Full Control" and "Read"

Editor Security ess Permissions Group or user names: Use Default	Edit Security Group or user names: Image: Constrator (OEM-03WQK3Cl4HB\Administrator) Administrators (OEM-03WQK3Cl4HB\Administrators) Image: Constrators (OEM-03WQK3Cl4HB\Administrators) Image: Constrator of the	Control Control Security Image: Control Security Image: Control Group or user names: Image: Control Image: Control Image: Control Image	Access Permissions Security Image: Configuration Permissions Edit Image: Configuration Permissions	Group or user names:
ess Permissions Use Default Customize Edit figuration Permissions Group or user names: Group or user names: Administrator (DEM-03WQK3Cl4HB\Administrator) Customize Edit Group or user names: Customize Group or user names: Customize Group or user names: Group or user names: Group or user names: Customize Group or user names: Group	Group or user names: Group or user names: Administrator (DEM-03WQK3Cl4HB\Administrator) Administrators (DEM-03WQK3Cl4HB\Administrators) CREATOR OWNER Prover Users (DEM-02W(0K3Cl4UD\Deverse Users)) Add	Access Permissions Group or user names: Ise Default Image: Administrator (DEM-03WQK3Cl4HB\Administrator) Customize Edt Configuration Permissions Image: Administrator (DEM-03WQK3Cl4HB\Administrators) Customize Edt Configuration Permissions Image: Administrator (DEM-03WQK3Cl4HB\Administrators) Customize Edt Customize Edt Customize Edt	Access Permissions Group or user names: Group or user names: Customize Configuration Permissions Customize Customize Customize Customize Configuration Permissions Customize Customize Customize Customize Customize Customize Customize Edit Permissions for Everyone Add Permissions for Everyone Add Edit Permissions for Everyone Add Permissions for Everyone Add Edit	Group or user names:
Customize Edit Edit Figuration Permissions Edit Edit.	Edit Edit Edit CREATOR OWNER CREATOR OWNER CREATOR OWNER Add Remov	C Customize Edit Configuration Permissions C Use Default C Customize Edit Edit Edit Permissions for Everyone Allow Deny	C Customize Edit Configuration Permissions Use Default C Customize Edit Edit Permissions for Everyone Allow Deny Full Control	
Edit Edit figuration Permissions Image: CREATOR OWNER	Edit Image: CREATOR OWNER Image: CREATOR OWNER Image: CREATOR O	Customize Edit <pre> CREATOR OWNER</pre>	Customize Edit If CREATOR OWNER Configuration Permissions If Demon Users (OEM OCWORCHUP) Demon Users) C Use Default Add C Customize Edit Permissions for Everyone Allow Deny Full Control	Administrators (0EM-03W/0K3CMHB\Administrators)
figuration Permissions	ns Add Remov	Configuration Permissions Cuse Default Customize Edit	Configuration Permissions C Use Default C Customize Edit Permissions for Everyone Allow Deny Full Control	
	Add Remov	C Use Default C Use Default C Customize C Customize Edit Permissions for Everyone Allow Deny	Use Default Add Remov Edit Permissions for Everyone Allow Deny Full Control	Everyone
		Customize Edit Permissions for Everyone Allow Deny	Customize Edit Permissions for Everyone Allow Deny Full Control	
			Full Control	
		Eul Control		
	Eul Control			
Bead M			Special Permissions	
	Read III III IIII IIII IIIII IIIIIIIIIIII			Api
OK Cancel App	Read I Read		OK Cancel Api	
Full Control	Euk			Full Control Read Special Permissions
	Read III Special Permissions			Ap
	Edit			

Step 11: Select th	e " <mark>Identity</mark> " tab pag	ge and check "T	he launching user"

NAPOPC_ST DA Server	Properties	? 🔀
General Location Secur	ity Endpoints Identity	
Which user account do yo	ou want to use to run this applicatio	in?
C The interactive user.		
 The interactive user. 		
The launching user.		
C This user.		
User:		Browse
Password:		
Confirm password:		
C The system account (s	services only).	
	OK Cancel	Apply



4.2.3 Configuring On the Server Site (WinPAC) System Requirement

OS version: WinPAC OS 1.3.04 or later Program: NAPOPC_CE5 DCOMCnfg.exe WinPAC Utility 2.0.2.1 or later

Configuring DCOM

Step 1: Run the \\NAPOPC_CE5\napopc_ce5boot.exe program to register.

Step 2: Run the dcomcnfg.exe program and choose "Default".





Step 3: Select the "Access" button to add an account which is current connection account from client site.

	ОК
	Cancel
	Add
	Delete
dd Permissions	
dd Permissions Principal: Test	ок

Step 4: Select the "Launch" button to add an account which is current connection account from client site as above.

Step 5: Execute "WinPAC Utility->Network Setting->Users and Password"

WinPAC Utility [2.0.2.1]	
File Help Configuration	
System Setting Ethernet Setting Network Setting Sy	rstem Information Au
FTP Setting Users and Password	
User name Password	
Test Add	Delete
User name Password Note: The accounts is the servers sea FTP, WebServe	
Setting	

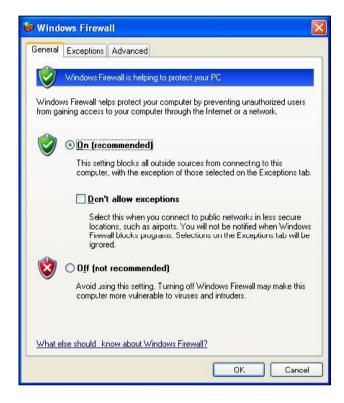
Step 6: Fill out "User name", "Password", and press "Add". The "User name" and "Password" must be the account we set at **Step 3.** After pressing "Add", press "Setting" to finish all settings.

Step 7: Run WinPAC Utility to save and reboot.

4.2.4 Configuring On the Client Site (PC) Configuring the Firewall

Step1: By default the windows firewall is set to "On". This setting is recommended by Microsoft and by OPC to give your machine the highest possible protection. For trouble shooting, you may wish to temporarily turn off the firewall to prove or disprove that the firewall configuration is the source of any communication failure.

Note: It may be appropriate to permanently turn off the firewall if the machine is sufficiently protected behind a corporate firewall. When turned off, the individual firewall settings outlined here need not be performed to allow OPC communication.



Step 2: Select the .Exceptions tab and add all OPC Clients and Servers to the exception list. Also add Microsoft Management Console (used by the DCOM configuration utility in the next section) and the OPC utility OPCEnum.exe found in the Windows\System32 directory.

ieneral Exceptions	Advanced		
programs and servic to work better but m	blocking incoming netw ces selected below. Add ight increase your secu	ling exceptions allows	
Programs and Servi	ces:		
Name			
File and Printer			
GenAgent.exe			
GenRegistrarS			
GraphWorX32			
LASEngine.exe			
License Monito			
Microsoft Mana	agement Console		
OPC DataSpy OPC Simulator			
Remote Assista			
Bemote Deskt			~
1.1 Remote Heskin			
Add P <u>r</u> ogram	Add Port	<u>E</u> dit	<u>D</u> elete
🔽 Display a notifica	ation when Windows Fir	ewall blocks a program	n
		1. T	
in a second second	of allowing exceptions?		

In the Add a Program dialog, there is a listing of most applications on the machine, but note that not all of them show up on this list. Use the "Browse" button to find other executables installed on the computer.

Note: Only EXE files are added to the exceptions list. For in-process OPC Servers and Clients (DLLs and OCXs) you will need to add the EXE applications that call them to the list instead.

Add a Pro	gram	×
	mmunications with a program by adding it to the Exceptions list rogram, or click Browse to search for one that is not listed.	
Programs:	rogram, of click browse to search for one that is not listed.	
	Logger Configurator	~
	Server Corfigurator	
Alarm		
🗖 Carou:	sel	
💦 🔀 DataW	/orX32	
	CServerConfigurator	
SODID 🔮		
EreeCo		
The second se	DS3 to GFW16	
	DS4 to GFW16 atistics Viewer	
, uenot		~
Path:	C:\Program Files\ICONICS\GENESIS-32\Bin\ Browse	
		_
		_
Change sc	ope OK Cancel	

Step 3: Add TCP port 135 as it is needed to initiate DCOM communications, and allow for incoming echo requests. In the Exceptions tab of the Windows Firewall, click on Add Port.

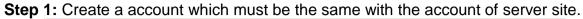
Window	vs Firewa	ll	
General E	Exceptions	Advanced	
programs to work b	and service	locking incoming network connection s selected below. Adding exceptions ht increase your security risk.	
Name		·s.	~
File a	and Printer !	iharing	
🗹 Genv	Agent.exe		
🗹 Genl	RegistrarSe	ver.exe	_
🗹 Grap	hWorX32		=
🗹 LASI	Engine.exe		
🗹 Licer	nse Monitor		
Micro Micro	osoft Manaj	jemert Console	-
	DataSpy		
OPC 🗹	Simulator		
	ote Assista		
	ote Neskto		
Add Pr	ogram	Add Port	Delete
	u a potificat	on when Windows Firewall blocks a	Diodiam
- Dishid	y a <u>n</u> ouncat	on when windows i newall DIUCKs a	program
what are	the fisks of	allowing exceptions?	
			0K Cancel

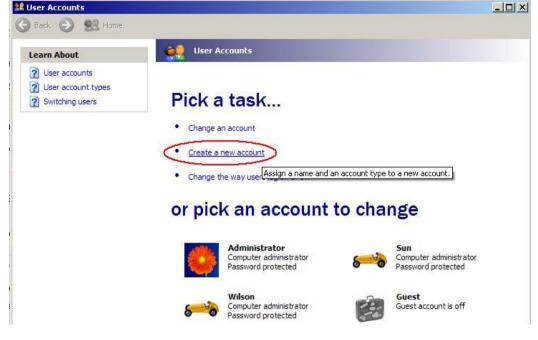
In the Add a Port dialog, fill out the fields as follows: Name: DCOM Port number: 135

Choose the TCP radio button

Add a Port	
	to open a port through Windows Firewall. To find the port ol, consult the documentation for the program or service you
<u>N</u> ame:	ОСОМ
Port number:	135
What are the risks	of cpening a port?
Change scope	OK Cancel

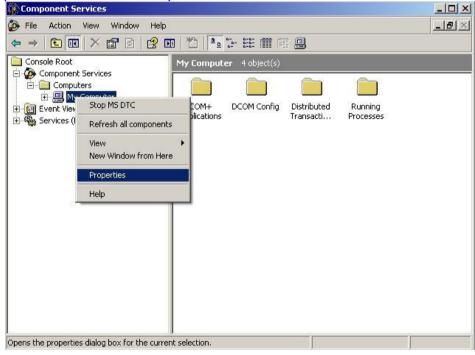
Creating the Account





Configuring DCOM

Step 1: Run the dcomcnfg.exe program to launch component services. Right clieck "My Computer" and choose "Properties".



Step 2: Select the "Default Properties" tab page.

Step 3: Use the following settings:

Field Name	Set to
Enable Distributed COM on this computer	Checked
Default Authentication Level:	Default
Default Impersonation Level:	Identify

My Computer Properties
Default Protocols MSDTC COM Security General Options Default Properties
Enable Distributed COM on this computer
Enable COM Internet Services on this computer
Default Distributed COM Communication Properties
The Authentication Level specifies security at the packet level.
Default Authentication Level
Default
The impersonation level specifies whether applications can determine who is calling them, and whether the application can do operations using the client's identity.
Default Impersonation Level:
Identify 🔽
Security for reference tracking can be provided if authentication is used and that the default impersonation level is not anonymous. Provide additional security for reference tracking
OK Cancel Apply

Step 4: Select the "COM Security" tab page.

General	Options	Default Properties
Default Protocols	MSDTC	COM Security
ccess Permissions		
) is allowed default acces applications that determine	
	Edit Limits	Edit Default
You may edit who	is allowed by default to l You may also set limits on yn permissions.	applications that
activate objects.) is allowed by default to l You may also set limits on	
You may edit who activate objects. `	is allowed by default to l You may also set limits on yn permissions.	applications that
You may edit who activate objects. `	is allowed by default to l You may also set limits on yn permissions.	applications that
You may edit who activate objects. `	is allowed by default to l You may also set limits on yn permissions.	applications that
You may edit who activate objects. `	is allowed by default to l You may also set limits on yn permissions.	applications that

Step 5: Click on the "Edit Limits..." of "Access Permissions" button to set.

Access Permission		? 🔀
Security Limits		
Group or user names:		
ANONYMOUS LOGON		
🕵 Everyone		
Permissions for ANONYMOUS	Add	Remove
LOGON	Allow	Deny
Local Access Remote Access		
Helliole Access		
	ОК	Cancel

Access Permission		? 🛛
Security Limits		
Group or user names:		
ANONYMOUS LOGON		
Everyone		
	Add	Remove
Permissions for Everyone	Allow	Deny
Local Access		
Remote Access		
	<u> </u>	
I		
	OK	Cancel

Step 6: Click on the "Edit Default..." of "Access Permissions" button to set.

oup or user names: Everyone SELF SYSTEM		
rmissions for Everyone	Add	Remove
Local Access Remote Access		

Step 7: Click on the "Edit Limits..." of "Launch and Activation Permissions" button to set.

Launch Permission		? 🔀
Security Limits		
Group or user names:		
🛃 Administrators (ZIBET \Ad	lministrators)	
Everyone		
	Add	Bemove
Demissions for Demonstra	Allow	
Permissions for Everyone	Allow	Deny
Local Launch Remote Launch		
Local Activation		
Remote Activation		
	ОК	Cancel

Step 8: Click on the "Edit Limits..." of "Launch and Activation Permissions" button to set.

unch Permission		?
Default Security		
Group or user names:		
🕵 Administrators (ZIBET \Adm	iinistrators)	
🚮 Everyone		
MINTERACTIVE		
]	4	
	Add	Remove
Permissions for Everyone	Allow	Deny
Localtaunch		
Remote Launch		
Local Activation	~	
Remote Activation	~	
	ОК	Cancel
	OIL	

Step 9: Right click on the "NAPOPC_ST DA Server" of "DCOM Config" button and select "Properties".



Step 10: Select the "Location" tab page and check "Run application on the following computer". And enter the Server IP here.

POPC_XPE DA Server Properties	?
aeneral Location Security Endpoints Identity	
The following settings allow DCOM to locate the corre application. If you make more than one selection, the applicable one. Client applications may overide your s	n DCOM uses the first
Run application on the computer where the data i Run application on this computer.	s located.
Run application on the following computer:	1
192.168.1.91	Browse
ОК Са	
OK Car	ncel Apply

Step 11: Select the "Identity" tab page and check "The launching user"

NAPOPC_ST DA Server Properties	2 🖬
General Location Security Endpoints Identity Which user account do you want to use to run this application?	
C The interactive user.	
The launching user. This user.	
Password:	
Confirm password: C The system account (services only).	
OK Cancel Appl	

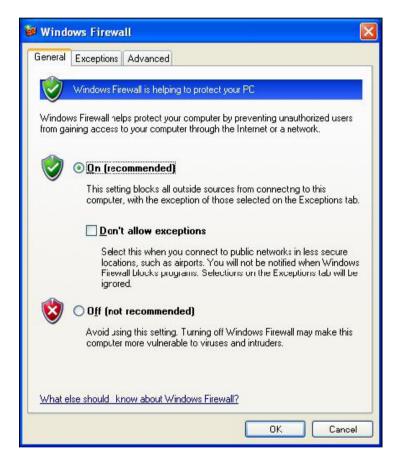
Step 12: Restart PC

4.2.5 Configuring On the Client Site (XPAC)

Configuring the Firewall

Step1: By default the windows firewall is set to "On". This setting is recommended by Microsoft and by OPC to give your machine the highest possible protection. For trouble shooting, you may wish to temporarily turn off the firewall to prove or disprove that the firewall configuration is the source of any communication failure.

Note: It may be appropriate to permanently turn off the firewall if the machine is sufficiently protected behind a corporate firewall. When turned off, the individual firewall settings outlined here need not be performed to allow OPC communication.



Step 2: Select the .Exceptions tab and add all OPC Clients and Servers to the exception list. Also add Microsoft Management Console (used by the DCOM configuration utility in the next section) and the OPC utility OPCEnum.exe found in the Windows\System32 directory.

ieneral	Exceptions	Advanced	
program to work	ns and service	s selected below. Adding ht increase your security	k connections, except for the g exceptions allows some programs risk.
Name		553	<u>~</u>
🗆 File	e and Printer !	Sharing	
🗹 Ge	nAgent.exe		
☑ Gr ☑ LA ☑ Lia	enRegistrarSe aphWorX32 SEngine.exe sense Monitor		
I OF I OF	PC DataSpy PC Simulator	gement Console	
	emote Assistar emote Deskto		~
Add	Program	Add P <u>o</u> rt	Edit <u>D</u> elete

In the Add a Program dialog, there is a listing of most applications on the machine, but note that not all of them show up on this list. Use the "Browse" button to find other executables installed on the computer.

Note: Only EXE files are added to the exceptions list. For in-process OPC Servers and Clients (DLLs and OCXs) you will need to add the EXE applications that call them to the list instead.

Alarm	Logger Configurator		
🧟 Alarm	Server Corfigurator		
🚉 Alarm\	VorX32		
🖾 Carou:	el		
💦 DataV	/orX32		
🛗 DBOP	CServerConfigurator		
S DIDCO	IM		
🌉 FreeC	ell		
🛅 GenDi	DS3 to GFW16		
🔤 GenDi	DS4 to GFW16		
🔤 GenSt	atistics Viewer		1

Step 3: Add TCP port 135 as it is needed to initiate DCOM communications, and allow for incoming echo requests. In the Exceptions tab of the Windows Firewall,

click on Add Port.

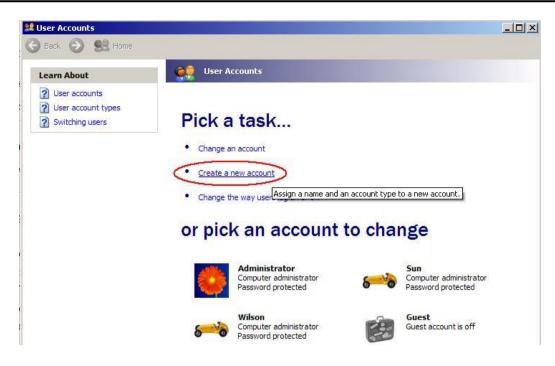
🖗 Windows Firewa	ill						×
General Exceptions	Advanced						
Windows Firewall is b programs and service to work better but mig Programs and Servic	es selected b ght increase y	elow. Addir	ng exce				ams
Name	5.53 						~
File and Printer	Sharing						
GenAgent.exe							
Gen RegistrarSe	rver.exe						
GraphWorX32							
🗹 LASEngine.exe							
🗹 License Monitor							
🗹 Microsoft Manaj	gemert Cons	ole					-
🗹 OPC DataSpy							
OPC Simulator							
Remote Assistan							-
Bemote Deskto	n						
Add Program	Add Por	t.	Edit	8		Delete	
							_
V Display a notificat	ion when Wi	ndows Fire	wall blo		rogram		
✓ Display a <u>notificat</u>			wali bioi		rogram		
What are the risks of	allowing exc	eptions?					
					ж)	Car	ncel

In the Add a Port dialog, fill out the fields as follows: **Name: DCOM Port number: 135** Choose the TCP radio button

Add a Port		×
	to open a port through Windows Firewall. To find the port ol, consult the documentation for the program or service y	
<u>N</u> ame:	ОСОМ	
<u>P</u> ort number:	135	
What are the risks	of cpening a port?	

Creating the Account

Step 1: Create a account which must be the same with the account of server site.



Configuring DCOM

Step 1: Run the dcomcnfg.exe program to launch component services. Right clieck "My Computer" and choose "Properties".

旧 Component Se	rvices					
Dile Action	View Window Help					_8×
⇔ → 🗈 💀	X 🗗 🖻 😫 💷	<u>۳</u>	5- 8:8: III (1	8		ha.
Console Root	Services ers Stop MS DTC Refresh all components	IV Compute	58 5250	Distributed Transacti	Running Processes	
Opens the properties	s dialog box for the current s	election				

Step 2: Select the "Default Properties" tab page.

Step	3:	Use	the	following	settings:

Field Name	Set to
Enable Distributed COM on this computer	Checked
Default Authentication Level:	Default
Default Impersonation Level:	Identify

My Computer Properties					
Default Protocols MSDTC COM Security General Options Default Properties					
 Enable Distributed COM on this computer Enable COM Internet Services on this computer Default Distributed COM Communication Properties The Authentication Level specifies security at the packet level. 					
Default Authentication Level: Default The impersonation level specifies whether applications can determine who is calling them, and whether the application can do operations using the client's identity.					
Identify Security for reference tracking can be provided if authentication is used and that the default impersonation level is not anonymous. Provide additional security for reference tracking					
OK Cancel Apply					

Step 4: Select the "COM Security" tab page.

General	Options	Default Properties
Default Protocols	MSDTC	COM Security
ccess Permissions	P	
	o is allowed default acces applications that determine	
	Edit Limits	Edit Default
You may edit who	-	applications that
You may edit who activate objects.	o is allowed by default to la You may also set limits on	
You may edit who activate objects.	o is allowed by default to k You may also set limits on wn permissions.	applications that
You may edit who activate objects.	o is allowed by default to k You may also set limits on wn permissions.	applications that
You may edit who activate objects.	o is allowed by default to k You may also set limits on wn permissions.	applications that
You may edit who activate objects.	o is allowed by default to k You may also set limits on wn permissions.	applications that

Step 5: Click on the "Edit Limits..." of "Access Permissions" button to set.

ccess Permission		?
Security Limits		
Group or user names:		
ANONYMOUS LOGON		
🕵 Everyone		
	Add	Remove
Permissions for ANONYMOUS LOGON	Allow	Deny
Local Access		70
Remote Access		
1		
	OK	Cancel

cess Permission		?
ecurity Limits		
Group or user names:		
🕵 ANONYMOUS LOGON		
🕵 Everyone		
	Add	Remove
Permissions for Everyone	Allow	Deny
Local Access		
Remote Access		
		-

Step 6: Click on the "Edit Default..." of "Access Permissions" button to set.

Add	Remove Deny

Step 7: Click on the "Edit Limits..." of "Launch and Activation Permissions" button to set.

unch Permission		?
Security Limits		
Group or user names:		
Administrators (ZIBET \Ad	ministrators)	
Everyone		
l.	1	- 1
	Add	Remove
Permissions for Everyone	Allow	Deny
Local Launch		
Remote Launch		
Local Activation		
Remote Activation	~	
20-80	52 - FS/0	
	ОК	Cancel
	OIX	Cancer

Step 8: Click on the "Edit Limits..." of "Launch and Activation Permissions" button to set.

Launch Permission		? 🔀
Default Security		
Group or user names:		
Administrators (ZIBET \Adm	ninistrators)	
SYSTEM		
1	Add	Remove
Permissions for Everyone	Allow	Deny
Localtaunch		
Remote Launch		
Local Activation Remote Activation		
	OK	Cancel

Step 9: Right click on the "NAPOPC_XPE DA Server" of "DCOM Config" button and select "Properties".



Step 10: Select the "Location" tab page and check "Run application on the following computer". And enter the Server IP here.

	PC_XPE DA Se	rver Properties		?>
Gen	eral Location	Security Endpoi	ints Identity	
app	plication. If you	ngs allow DCOM to make more than on ent applications maj	e selection, then [DCOM uses the first
		n on the computer (n on this computer.	where the data is I	located.
	Run applicatio	n on the following c	omputer:	
	192.168.1.91			Browse
-				

Step 11: Select the <u>"Identity"</u> tab page and check "The launching user"

NAPOPC_ST DA Server Properties 🔹 😢 🚨					
General Location Security Endpoints Identity					
Which user account do you want to use to run this application?					
◯ The interactive user.					
The launching user.					
○ This user.					
User: Browse					
Password:					
Confirm password:					
C The system account (services only).					
OK Cancel Apply					

Step 12: Restart XPC



5 Writing Client Program with VB

5.1 **Programming with VB5**

5.1.1 Overview of OPC & VB

Visual Basic language supports COM(Component Object Model). COM implementation from Visual Basic use what is called an "Automation" interface. The OPC Foundation supplies the source code of "Automation Wrapper" DLL which lets VB access OPC Servers and their underlying Groups and items. That's why we have to install the OPC DAC (Data Access Component.) software(see 2 Quick Start). After we install the OPC DAC software, we can use Automation Wrapper connects VB to OPC.

The following figure shows the architecture of object model for the automation wrapper. Because the OPC Server Object contains Group Objects and Items Objects by using Collection, OPC Browse Object can access the item data through the pointer of OPC Server Object.

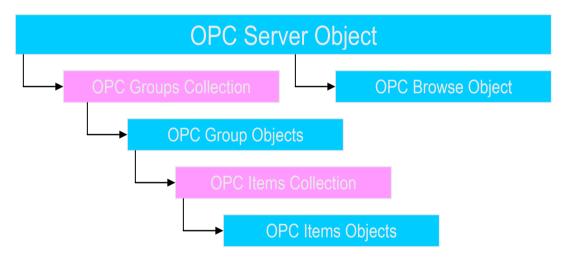


Figure 5-1-1. Object model for the Automation Wrapper

The following figure shows the architecture of OPC Server Object through the Automation Wrapper under COM/DCOM mechanism. The VB program wakes up the remote OPC Server Object through the automation wrapper object by DCOM mechanism.

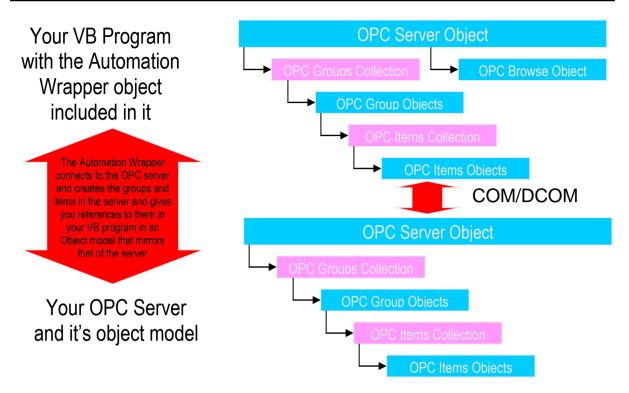


Figure 5-1-2. Architecture of OPC Server Object under COM/DCOM mechanism

5.1.2 Tools You Will Need to Build Your VB Client

If you want to build an OPC client in VB and test it, you will need the following tools.

- Visual Basic 5 or 6 running on Windows 95/98/2000/ME/NT/XP
- An OPC Server At this manual, we use ICP DAS NAPOPC_ST Server as the demo. You can find it at your CD:\\Napdos\Napopcsvr\ or you can download it from the http://www.icpdas.com/download/7000/napopcsvr.htm
- The OPC Automation Wrapper You can find it from <u>http://www.icpdas.com/download/7000/napopcsvr.htm</u>

5.1.3 Building Your VB Client – Step By Step

At this section, we just focus on the key steps of building the VB client. If you want to know more information about OPC Automation 2.0 and the VB demo, please refer to the opcda20_auto.pdf in the C:\ICPDAS\NAPOPC_ST\Manual and the VB demo source code in the C:\ICPDAS\NAPOPC_ST\Client\VB5.

Step 1:

- Install OPCDAC on your PC
- Start a new VB project

- In VB, click on Project -> References on the VB menu bar
- The OPC Automation Wrapper appears on the dialog as "OPC Automation 2.0" – select it as shown here

allable Ref	erences:		OK
	ic For Applications ic runtime objects and procedures	<u>^</u>	Cancel
	ic objects and procedures		Browse
	mation 2.0 er COM Component 1.0 Type Library		
ABManag aboutloo aboutloo Acrobat Acrobat I Acrobat I Active DS	US Protocol 1.0 Type Library er 1.0 Type Library 1.0 Type Library ex 1.0 Type Library istiller Type Library un Control Library	Priority	Help
J			
OPC Auton	ation 2.0		
Loca	tion: C:\WINDOWS\System32\OP	CDAAuto.dll	

Step 2:

First, you have to design your UI(User Interface). You can refer to the UI demo of VB program shown as below. Next, you need to declare some variables at the General Declarations area of VB code window. The most important types of variables are OPCServer, OPCGroup, and OPCBrowser. As the declaration, we can use several functions to read/write item values through Server and Group variables.

3 NAPOPC Test (2			
OPC Server	::::::::::	::::::::			
Combo1		Connec	st :	Disconn	iect
Tag Selected: Tag	· · · · · · · · · · · ·				
⊡ Sample Noc	nple Node nple Node				
Tag Value	Read	Loop Read		· · · · · · · · · · · · · · · · · · ·	· · · ·

'Declare a new OPC Server object Public Server As OPCServer 'Declare a new OPC Group object Public Group As OPCGroup 'Declare a new Browser object Public browser As OPCBrowser

Step 3:

You can call GetOPCServers() to scan the OPC Servers at your PC as the following codes.

'Declare a Variant Variable Dim Servers As Variant 'Create a new OPC Server object Set Server = New OPCServer 'Call GetOPCServers to scan the OPC Servers on your PC Servers = Server.GetOPCServers("") 'Show the servers on the Combo box Dim lastIndex As Integer lastIndex = 0 For I = LBound(Servers) To UBound(Servers) cbServerList.AddItem Servers(I) If Servers(I) = lastServer Then lastIndex = I - 1 Next I cbServerList.ListIndex = lastIndex MousePointer = vbDefault

Step 4:

Next, you'll go ahead and add the code rights after you get your connection to the NAPOPC_ST Server. Please refer to the FillItems and Branch subroutine of VB demo program.

'Generate the tree of tags Private Sub FillItems() 'Populate the sub branches in the browser tree Public Sub Branch(Count As Integer, node1 As node)

Step 5:

Now, you can add the code for the "Read" button and "Write" button. Please refer to the btnRead_Click and btnWrite_Click subroutine of VB demo program. In these two functions, the *anItem.Read* and the *anItem.Write* are two key methods.

'Read the OPCItem value after the read button press Private Sub btnRead_Click() 'Write the value in the text box after the write button press Private Sub btnWrite_Click()

Step 6:

You can build the project and you will see the UI as below.

)PC Server NAPOPC.Svr	•	Connect	Disconnect
Tag Selected: Ta	 9g	-	-
fag Value	Read	Loop Read	

Step 7:

After you click on the "Connect" button, you will see the OPC Server tree list. You can choose one of them and click on the "Read" button. You will see the item value at the "Tag Value" field as below. You can also type the value you want to write in the text box and click on the "Write" button. (Refer to 4.1 Client Demo Program)

🖏 NAPOPC T	est Client		
OPC Server		,	
NAPOPC.Svr	•	Connect	Disconnect
Tag Selected:	17188EG_TCP.IO.V	1	
	B02 B03 B04 T1 T2 V1 V2 V3		
Tag Value -199.3	Read	Loop Read	
Counter: 0	Write	Stop Loop	Exit

5.2 **Programming with .Net**

5.2.1 Limitations about .Net client programming

1. OPC DA component 2.0 must be installed. (In this case, OPC DA Component 1.0 can't be used)

- Development was done on a Windows XP SP1 system using Microsoft Development Environment 2003 version 7.1.3091 with .Net Framework 1.1 version 1.1.4322 and any new release version of .Net will need to modify these codes.
- 3. Testing was done on following operation system, any others might not work
 - Windows 98 second edition 4.10.2222A
 - Windows 2000 professional 5.00.2195 service pack 4
 - Windows XP professional version 2002 service pack 1

5.2.2 Tools – You Need to Build Your .Net Client

If you want to build an OPC VB .Net or VC# client and test it, you will need following tools.

- Visual Basic .Net 2003 or newer version running on Windows 98/2000/XP
- OPC Automation 2.0

You can install NAPOPC_ST DA Server(From CD:\\Napdos\napopcsvr or download it from <u>http://opc.icpdas.com/download.htm</u>). The NAPOPC_ST DA Server installation will install OPC Automation 2.0 automatically.

An OPC Server

At this manual, we use ICPDAS NAPOPC_ST Server as the demo. You can find it at your CD:\\Napdos\napopcsvr\ or download it from the <u>http://opc.icpdas.com/download.htm</u>

OPC .Net wrapper named "OPCNetWrapper.dll". After you install NAPOPC_ST DA Server (From <u>http://opc.icpdas.com/</u> download htm.) you can find it in Poot\\ ICPDAS\ NAPOPC_ST\ Cliont

<u>download.htm</u>), you can find it in Root\\ ICPDAS\ NAPOPC_ST\ Client\ OPC_NetClientDemo\VBOPCClient_Demo

OPCNETWrapper.pdf

After you install NAPOPC_ST DA Server (From <u>http://opc.icpdas.com/</u> <u>download.htm</u>), you can find it in Root\\ICPDAS\NAPOPC_ST\Manual

5.2.3 Building Your VB.Net Client – Step By Step

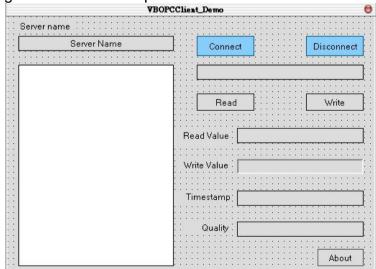
Step 1:

- Install OPC DA Component 2.0 on your PC
- Start a new VB.Net project with "Windows Application Program"
- In VB.Net, click Project -> Add References on the VB.Net menu bar
- Click Browse... to select "OPCNetWrapper.dll" as shown below

Component Name	Version	Path	
Accessibility.dll	1.0.5000.0	C:(WINDOWS\Microsoft.NET\F	Select
adodb	7.0.3300.0	C:\Program Files\Microsoft.NE	
CRVsPackageLib	9.1.5000.0	C:\Program Files\Common File	
CrystalDecisions.CrystalRepor	9.1.5000.0	C:\Program Files\Common File	
CrystalDecisions.ReportSource	9.1.5000.0	C:\Program Files\Common File	
CrystalDecisions.Shared	9.1.5000.0	C:\Program Files\Common File	
CrystalDecisions.Web	9.1.5000.0	C:\Program Files\Common File	
CrystalDecisions.Windows.For	9.1.5000.0	C:\Program Files\Common File	
CrystalEnterpriseLib	9.1.5000.0	C:\Program Files\Common File	
CrystalInfoStoreLib	9.1.5000.0	C:\Program Files\Common File	
CrystalKeyCodeLib	9.1.5000.0	C:\Program Files\Common File	
CrystalPluginMgrLib	9.1.5000.0	C:(Program Files)Common File 💌	
ected Components:			
mponent Name	Туре	Source	Remoy
CNetWrapper.dll	File	C:(Documents and Settings\step	-

Step 2:

First, you must Import following declarations "ICPDAS.OPC", "ICPDAS.OPCDA" and "ICPDAS.OPC.NET". Second, you could design your UI (User Interface). You can refer to the UI of VB.Net program shown as below. Third, you need to declare some variables at the General Declarations area of VB.Net code window. The most important types of variables are ICPDAS_OPCServer, ICPDAS_SynclOGroup, and ServerTreeBrowser. As the declaration, we can use several functions to read/write tag values through Server and Group variables.



'Declare a new ICPDAS_OPCServer object Dim Svr As ICPDAS_OPCServer 'Declare two new ICPDAS_SynclOGroup objects Dim ReadWriteGroup, Grp As ICPDAS_SyncIOGroup 'Declare a new ServerTreeBrowser object Dim TagTree As ServerTreeBrowser 'Declare two new RefreshGroup objects Dim AsyncRefrGroup, rGrp As RefreshGroup 'Declare a new TagDef object Dim TagData As TagDef 'Declare a new String variable for OPC Server ProgID Dim ServerName As String

Step 3:

You can set ServerName as "NAPOPC.Svr.1" and pass it to ICPDAS_OPCServer for connecting.

'Set a ProgID to ServerName ServerName = "NAPOPC.Svr.1" 'Create a new OPC Server object Svr = New ICPDAS_OPCServerr 'Connect to NAPOPC DA Server Svr.Connect (ServerName)

Step 4:

Now, you'll go ahead and add the code rights after you get your connection to the NAPOPC_ST Server. Please refer to following TagReadWrite and DataChangeHandler subroutine of VB demo program.

'Handles of data change callbacks Public Sub DataChangeHandler (ByVal sender As Object, ByVal e As DataChangeEventArgs)

Private Sub TagReadWrite (ByVal lgrp As ICPDAS_SyncIOGroup, ByVal lrgrp As RefreshGroup, ByVal iTree As ServerTreeBrowser, ByVal tagId As String)

Step 5:

Now, you can add codes for the "Read" button, "Write" button and "TreeView" AfterSelect function. Please refer to the btnRead_Click, btnWrite_Click and tvTags_AfterSelect subroutine of VB.Net demo program. In these three functions, the *Grp.Read*, the *Grp.Write and the* TagTree.TagName are three key methods.

'Read the OPCTag value after the read button press
Private Sub btnRead_Click ()
'Write the value in the text box after the write button press
Private Sub btnWrite_Click ()
'The action after selecting the tag
Private Sub tvTags_AfterSelect ()

Step 6:

You can build the project and you will see the UI as below.

	VBOPCClient_Demo	0
Server name		
NAPOPC.Svr.1	Connect	Disconnect
		Disconnect
5		
	Read	Write
	Read Value	
	Write Value	
	Timestamp	
	Quality	
		About
2		About

Step 7:

After you click on the "Connect" button, you will see the OPC Server tree list. You can choose one of them and click on the "Read" button. You will see the tag value at the "Read Value" field as below. You can also type the value you want to write in the "Write Value" and click on the "Write" button. (Refer to 4.2 .Net Client Demo Program)

	VBOPCClient_Demo	
Server name		
NAPOPC.Svr.1	Connect Discon	nect
Ch14 Ch15	8411_1.8054_S0.DOs.Ch00	j
⊟ ● 8054_S0	Read	
DIs Ch00 Ch01	<u>Neau</u> write	;
Ch02 Ch03	Read Value False	
Ch04 Ch05 Ch06	Write Value	
Ch07		
E Dos Ch00 Ch01	Timestamp2004/7/7 下午 07:09:50)
Ch02 Ch03	Quality BAD	
Ch04 Ch05		
Ch06 Ch07	Abo	out

5.2.4 Building Your VC#.Net Client – Step By Step

Step 1:

- Install OPC DA Component 2.0 on your PC
- Start a new VC#.Net project with "Windows Application Program"
- In VC#.Net, click Project -> Add References on the VC#.Net menu bar
- Click Browse... to select "OPCNetWrapper.dll" as shown below

Component Name	Version	Path	
Accessibility.dll	1.0.5000.0	C.(WINDOWS)Microsoft.NET/F	Select
adodb	7.0.3300.0	C:\Program Files\Microsoft.NE	-
CRVsPackageLib	9.1.5000.0	C1Program Files\Common File	
CrystalDecisions.CrystalRepor	9.1.5000.0	C:\Program Files\Common File	
CrystalDecisions.ReportSource	9.1.5000.0	C1Program Files\Common File	
CrystalDecisions.Shared	9.1.5000.0	C:\Program Files\Common File	
CrystalDecisions.Web	9.1.5000.0	C:\Program Files\Common File	
CrystalDecisions.Windows.For	9.1.5000.0	C:\Program Files\Common File	
CrystalEnterpriseLib	9.1.5000.0	C:\Program Files\Common File	
CrystalInfoStoreLib	9.1.5000.0	C:\Program Files\Common File	
CrystalKeyCodeLib	9.1.5000.0	C:(Program Files)Common File	
CrystalPluginMorl ib	9.1.5000.0	C:\Program Files\Common File *	
lected Components:			
omponent Name	Туре	Source	Remove
PCNetWrapper.dll	File	C3Documents and Settings(step	-
			Rem

Step 2:

First, you must using directive as following declarations:

"ICPDAS.OPC","ICPDAS.OPCDA" and "ICPDAS.OPC.NET". Second, you could design your UI (User Interface). You can refer to the UI of VC#.Net program shown as below. Third, you need to declare some variables at the General Declarations area of VC#.Net code window. The most important types of variables are ICPDAS_OPCServer, ICPDAS_SynclOGroup, and ServerTreeBrowser. As the declaration, we can use several functions to read/write tag values through Server and Group variables.

	VCSOPCClient_Demo 6
Server name	
NAPOPC.Svr.1	Connect Disconnect
	Read
	Read Value
	Write Value
	Timestamp
	Quality
	About
'Declare a new ICPDAS_OPCServ	/er object
ICPDAS OPCServer	Svr = null;

'Declare two new ICPDAS_SynclOGroup objectsICPDAS_SyncIOGroupReadWriteGroup, Grp;'Declare a new ServerTreeBrowser objectServerTreeBrowserTagTree;'Declare two new RefreshGroup objectsRefreshGroupAsyncRefrGroup, rGrp;'Declare a new TagDef objectTagDefTagData;'Declare a new String variable for OPC ServerServerName;

Step 3:

You can set ServerName as "NAPOPC.Svr.1" and pass it to ICPDAS_OPCServer for connecting.

'Set a ProgID to ServerName ServerName = "NAPOPC.Svr.1;" 'Create a new OPC Server object Svr = new ICPDAS_OPCServer (); 'Connect to NAPOPC DA Server Svr.Connect (ServerName);

Step 4:

Now, you'll go ahead and add the code rights after you get your connection to the NAPOPC_ST Server. Please refer to following TagReadWrite and DataChangeHandler subroutine of VC# demo program.

'Handles of data change callbacks public void DataChangeHandler (object sender, DataChangeEventArgs e)

public void TagReadWrite (ICPDAS_SyncIOGroup grp, RefreshGroup rgrp, ServerTreeBrowser iTree, string tagId)

Step 5:

Now, you can add codes for the "Read" button, "Write" button and "TreeView" AfterSelect function. Please refer to the btnRead_Click, btnWrite_Click and tvTags_AfterSelect subroutine of VC#.Net demo program. In these three functions, the *Grp.Read*, the *Grp.Write and the* TagTree.TagName are three key methods.

'Read the OPCTag value after the read button press
private void btnRead_Click (object sender, System.EventArgs e)
'Write the value in the text box after the write button press
private void btnWrite_Click(object sender, System.EventArgs e)
'The action after selecting the tag
private void tvTags_AfterSelect(object sender,

System.Windows.Forms.TreeViewEventArgs e)

Step 6:

You can build the project and you will see the UI as below.

VCSOPCCLiext_Demo		
Server name		
NAPOPC.Svr.1	Connect Disconr	act
		icce
5		
	Read	
	Read Value	
	Write Value	
	Timestamp	
	Quality	
		-
	Abo	ut

Step 7:

After you click on the "Connect" button, you will see the OPC Server tree list. You can choose one of them and click on the "Read" button. You will see the tag value at the "Read Value" field as below. You can also type the value you want to write in the "Write Value" field and click on the "Write" button. (Refer to 4.2 .Net Client Demo Program)

VC	CSOPCCLiest_Demo
Server name NAPOPC.Svr.1	Connect Disconnect
B● MTCP_8054 B● DI	MTCP_8054.D0.D01
DI1 DI2 DI3 DI4 DI5 DI6 DI7 DI8 D01 D02 D03 D04	Read Write Read Value True Write Value
D05 D06 D07	Timestamp2004/7/8 下午 04:50:47
D08	Quality GOOD
	About

6 Changes List

6.1 New features of NAPOPC version 3.0

The new features of NAPOPC_ST version 3.0 are briefly described in this chapter.

6.1.1 New IO Kernel

NAPOPC_ST version 3.0 uses new IO kernel "IOCtrI.DLL" and "DCON_PC.DLL" to elevate IO communication performance. Also, the new IO kernel architecture allows customers only to update "module.ini" for getting new module support.

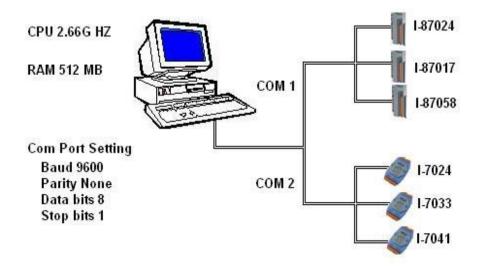
6.1.2 Customized Module/Device Polling Time

NAPOPC version 3.0 allows customers to optimize their communication by setting "Pending Time" in "Device Dialog ". Customers have chance to spread more time resource to other modules which are connected with each other. Please refer to "3.1 Optimize Your Communication" in detail.

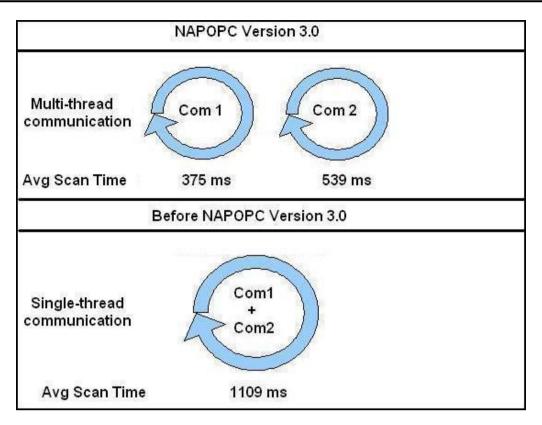
6.1.3 Multi-Thread Communication

NAPOPC version 3.0 uses multi-thread architecture to organize module and device communication. Before NAPOPC version 3.0, NAPOPC uses singlethread to deal with module and device communication. Therefore, if NAPOPC connects many modules and devices, accessing time will increase observably. By NAPOPC version 3.0, customers have chances to group modules and devices into several parts, and connect via different COM port. One COM port works in one thread. All TCP communications belong to one thread.

Here is an example to show the difference of average scan time between NAPOPC version 3.0 and before NAPOPC version 3.0.



Under the same architecture, the average scan time in NAPOPC version 3.0 is 375 ms and 539 ms separately. Before NAPOPC version 3.0, the average scan time is 1109 ms.



6.1.4 Miscellaneous

- Remove "import/export CSV file" function
- Remove "debug logging" function

6.2 New features of NAPOPC version 3.09

6.2.1 Support <u>Remote Procedure Call with Quicker/UPC</u>

NAPOPC version 3.09 supports RPC(<u>Remote Procedure Call</u>) communication with Quicker and UPC(ICP DAS Universal Protocol Converter). Based on RPC service, NAPOPC can synchronize OLE data with Quicker and UPC automatically. The behavior of changing data between "Quicker/UPC" and NAPOPC is not polling from NAPOPC but sending from "Quicker/UPC". This mechanism can transfer data effectively and shorten response time.

6.2.2 Switch of Single-Thread and Multi-Thread

NAPOPC version 3.09 supports "Communication Mechanism" option at "Options/ Configurate Initial Status". This option lets user define the communication behavior of NAPOPC. Generally, "Multi-Thread" is the best choice for high performace. However, for some particular OPC clients which can not work smoothly under "Multi-Thread" communication, user can choose "Single-Thread" instead.

6.3 New features of NAPOPC_ST version 3.11

6.3.1 Rename NAPOPC to be NAPOPC_ST

For better integration, we rename NAPOPC DA Server to be NAPOPC_ST DA Server. We change some UI display such as icon, logo, and denomination.

6.3.2 Bug Fix

- Fix "Unsupported_Device" bug when searching RU87PN
- Fix modbus tags showing error when tag property length is 4 bytes

6.4 Features of NAPOPC_ST version 3.20

The new features of NAPOPC_ST version 3.20 are briefly described in this section.

6.4.1 Support ET-7000 Search

NAPOPC_ST version 3.20 supports "ET-7000 Search" option at "Add/Search Modules". This option lets NAPOPC_ ST can search not only the modules communicating via COM port but also ET-7000 modules via Ethernet automatically.

6.4.2 Support ZB-2K I/O

NAPOPC_ST version 3.20 supports "ZB-2K" I/O modules at "Select Device" dialog. User can easily choose ZB-2K module ID to add ZB-2K module. And then use "Generate Tags" function to generate ZB-2K properties automatically.

6.4.3 Support FRnet Module

NAPOPC_ST version 3.20 supports "FRnet" I/O modules at "Select Device" dialog. User can easily choose FRnet module ID to add FRnet module. And then use "Generate Tags" function to generate FRnet properties automatically.

Note: If you want to use FRnet modules in NAPOPC_ST, please download FRB driver and install it first. Download link: http://www.icpdas.com/download/frnet/index.htm

6.4.4 Support Account Selection

NAPOPC_ST version 3.20 supports "Recent File Source" selection at "Options/Configurate Initial Status" dialog. User can choose "Administrator Account" or "Current User Account" to decide registry location for some DCOM application scenario.

6.4.5 UI Modification

For more protocol support, NAPOPC_ST version 3.20 modifies "Select Device" user interface. NAPOPC_ST version 3.20 separates three groups of "DCON", "FRnet", and "Modbus" from one property sheet to clarify the user interface of device settings. Also, it limits the dialog size to an allowable boundary.

6.5 Features of NAPOPC_ST version 3.30

The new features of NAPOPC_ST version 3.30 are briefly described in this section.

6.5.1 Support FRnet module via RPC communication

NAPOPC_ST version 3.30 supports "FRnet" I/O modules via RPC communication. User can easily create RPC device to synchonize "FRnet" I/O modules plugged in WinPAC(See 1.6.2 Adding A New RPC Controller).

6.5.2 Support host watchdog setting for I-7000 module

NAPOPC_ST version 3.30 supports "WatchDog" settings for I-7000 module when it enables watchdog function. If user enables I-7000 watchdog function by "DCON Utility", NAPOPC_ST can enable and give an appropriate timeout value for I-7000 module to support this function(See 1.6.1 Adding A New I-7K/I-8K/I-87K/ZB-2K I/O Module).

Note: The "Communication Mechanism" must be "Multi-Thread".

6.5.3 Support usage of USB hardkey to enhance functionality

NAPOPC_ST version 3.30 supports usage of USB hardkey to enhance functionality. User can purchase USB hardkey to enhance the functionality of NAPOPC_ST DA Server by "License Manager" (See 1.16 License Manager).

7 Reference

FAQ.txt

The frequently asked questions and answers. http://opc.icpdas.com/faq_st.htm

GetStart.PDF

This manual can be downloaded from below link. <u>http://www.icpdas.com/download/7000/manual.htm</u> It describes the following topics:

- 1. Connecting modules
 - 2. The 7000 Utility user's manual.
 - 3. Introduction to NAP7000P
 - 4. Introduction to NAP7000X
 - 5. Dual Watchdog
 - 6. FAQ for 7000

OPCNetWrapper.PDF

This document describes how to use OPC .NET wrapper for .NET programming.

OPCOvw.PDF

The OPC overview - written by the OPC Foundation.

OPCCommn.PDF

The OPC common interface - specifications by the OPC Foundation.

OPCDA20_Cust.PDF

The OPC DA v2.0 custom interface - specifications by the OPC Foundation.

OPCDA20_Auto.PDF

The OPC DA v2.0 automation interface - specifications by the OPC Foundation.

OPC Foundation Web Site

http://www.opcfoundation.org/