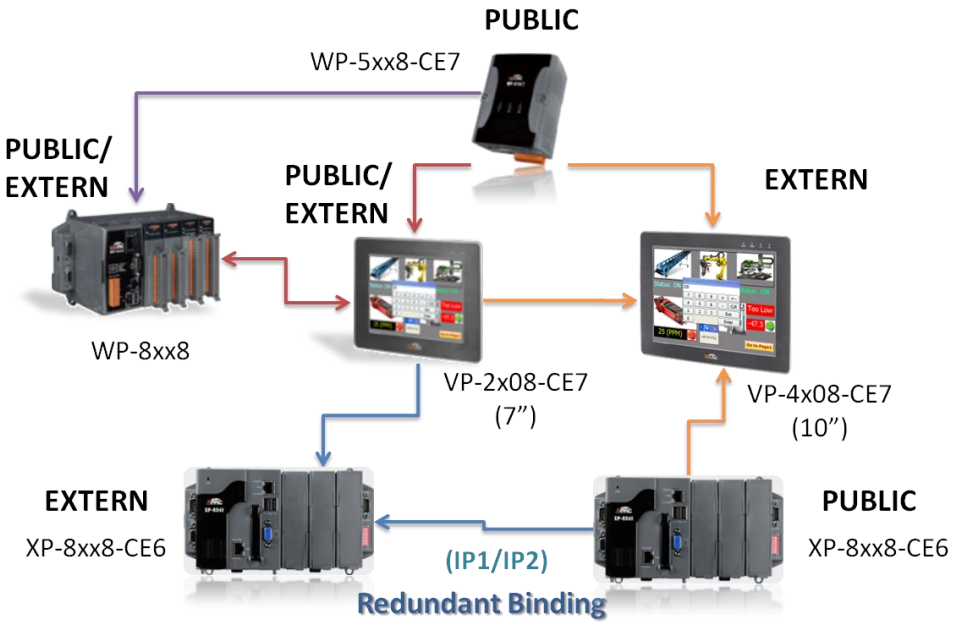
How to Exchange Data between PACs (Data Binding)?

"Binding" function is used to exchange data between ICP DAS Win-GRAF PACs, the data transmission is event triggered. It is much more efficient than polling way. Win-GRAF offers two ways to set up Binding:

- **PUBLIC:** Publish one PAC's own data, or for use of VB .net, C#, C or Soft-GRAF HMI in the same PAC.
- **EXTERN:** To get data from other PAC.

Application Diagram:



Note:

The max. number of "Binding" (EXTRN) can be used by one Win-GRAF PAC:

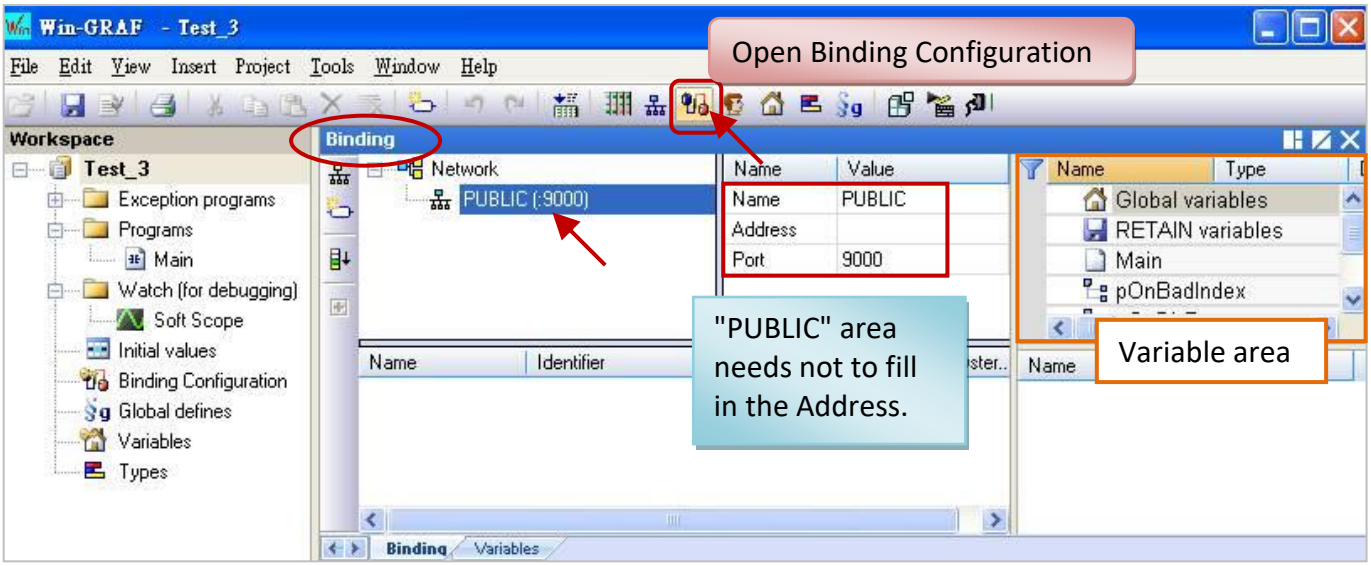
XPAC	XP-8x48-CE6	Max. 32
WinPAC	WP-8x48	Max. 16
	WP-5238-CE7	
ViewPAC	VP-42x8-CE7	Max. 16
	VP-22x8-CE7	

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1.1. The "PUBLIC" Setting

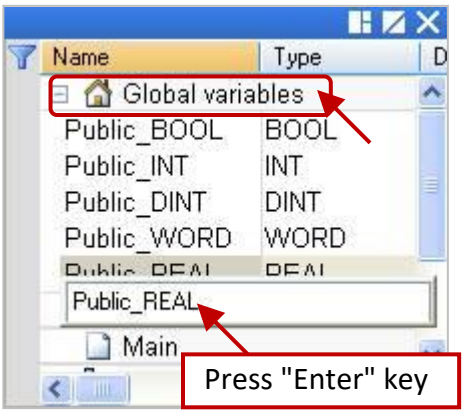
When the PAC sets up the "PUBLIC" area, means to publish its own data.

1. Mouse right-click on the toolbar "Open Binding Configuration" icon to open the "Binding" window.
2. Click "PUBLIC (: 9000)" to configure the data to be published as PUBLIC; "Address" field needs not to fill in; "Port" field is fixed to "9000", do not change it.



3. Before setting the data to become public, first you must create the variables want to become public in the Variable area. Right-click on "Global variables" and press "Ins" key to add the new variables. In the following table, the variables are used for this example. You can set up your own. After finished, the screen is as below.

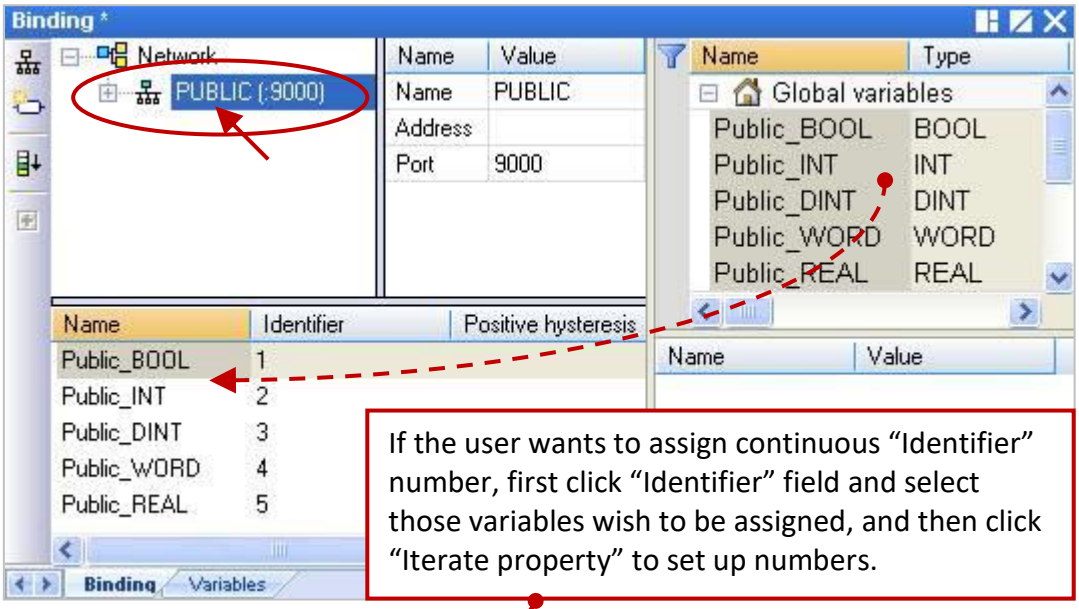
Variables Name	Data Type
Public_BOOL	BOOL
Public_INT	INT
Public_DINT	DINT
Public_WORD	WORD
Public_REAL	REAL

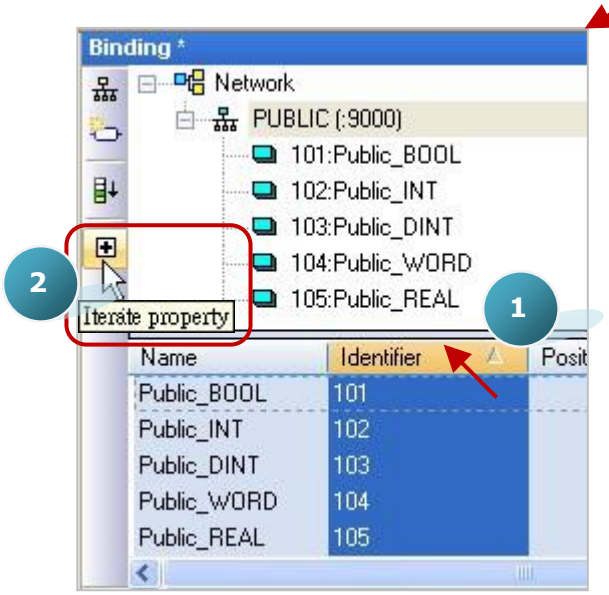


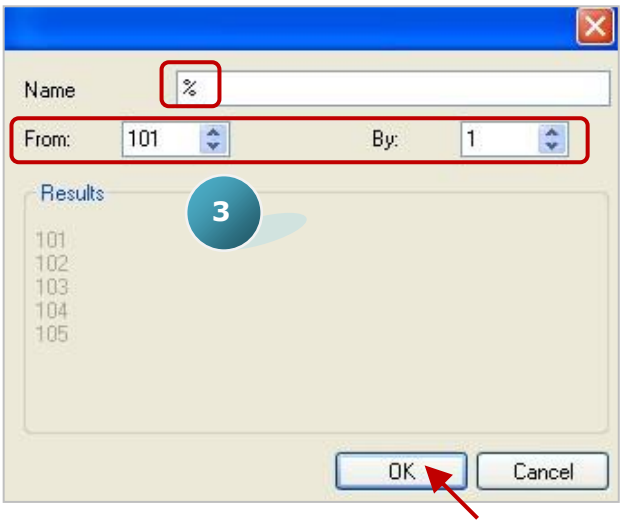
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4. Right-click on the "PUBLIC (: 9000)", and then select the variables that you want to publish, and drag them to the "Name" area. "Identifier" field will automatically generate numbers (if other PAC wants to access the data, need to set the same ID number).

   Note: "PUBLIC" can use up to 8192 variables; "Identifier" number can only be "1 ~ 8192".





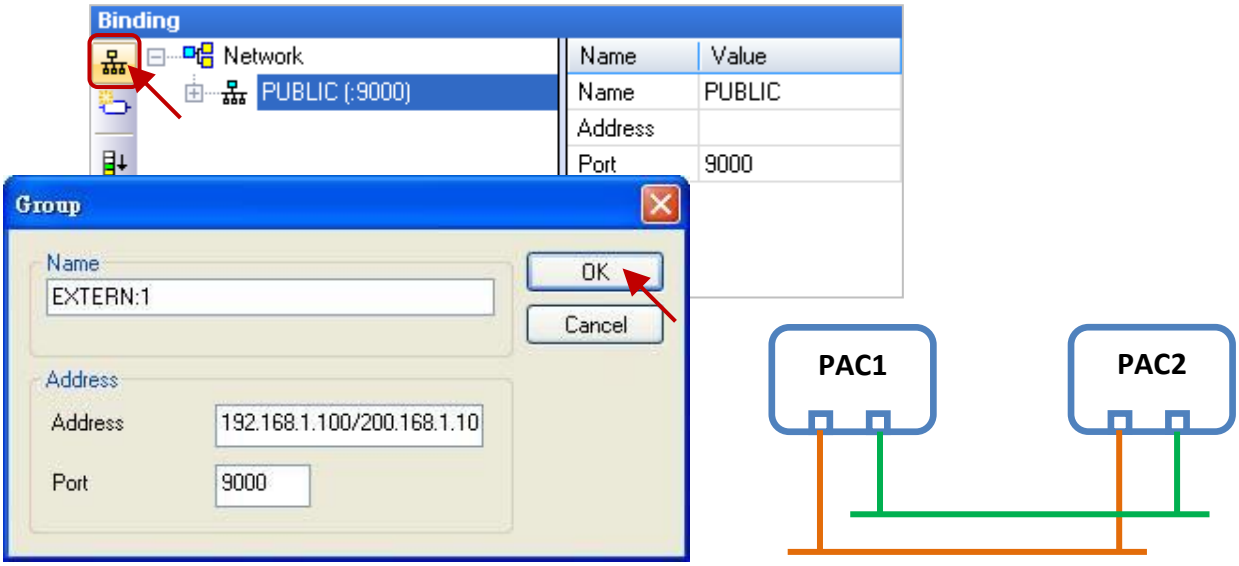


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1.2. The "EXTERN" Setting:

When the PAC sets up the "EXTERN" area, means will get the data from other external PAC.

5. Click the "Insert Master/Port" icon in the left side, it will show the "Group" window. Follow the description below to set up this window, and then click "OK“ button.



Name: Can be modified to the desired name.

Address: Enter the IP address of the PAC which data will be obtained (e.g., "192.168.1.100"). User can enter two IP Addresses (e.g., "192.168.1.100/200.168.1.100"; that PAC must use two Ethernet Ports), so that when one IP address occurs any problem, it will try to link the second IP address.

Port: Fixed to use "9000", do not change it.

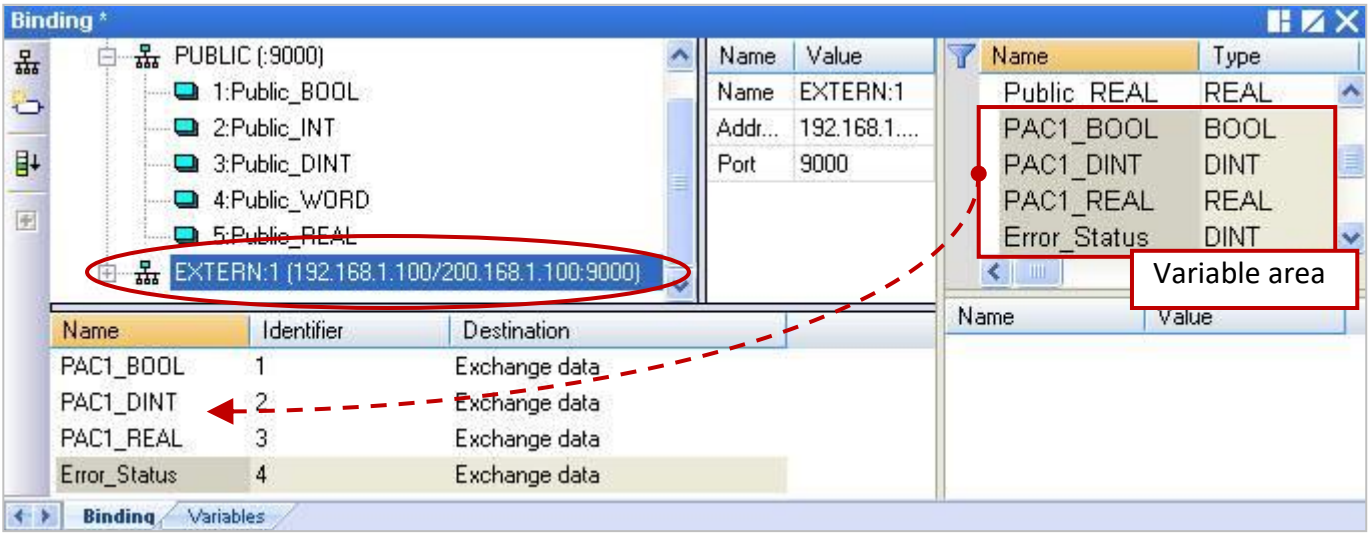
6. In the variable area, set up the data type you want to get. (Refer Step 3 - Right click on "Global variables" and press "Ins" key to add the variables). The variables that listed in the table are used for this example. You can set up your own. After finished, the screen is as below.

Variables Name	Data Type
PAC1_BOOL	BOOL
PAC1_DINT	DINT
PAC1_REAL	REAL
Error_Status	DINT

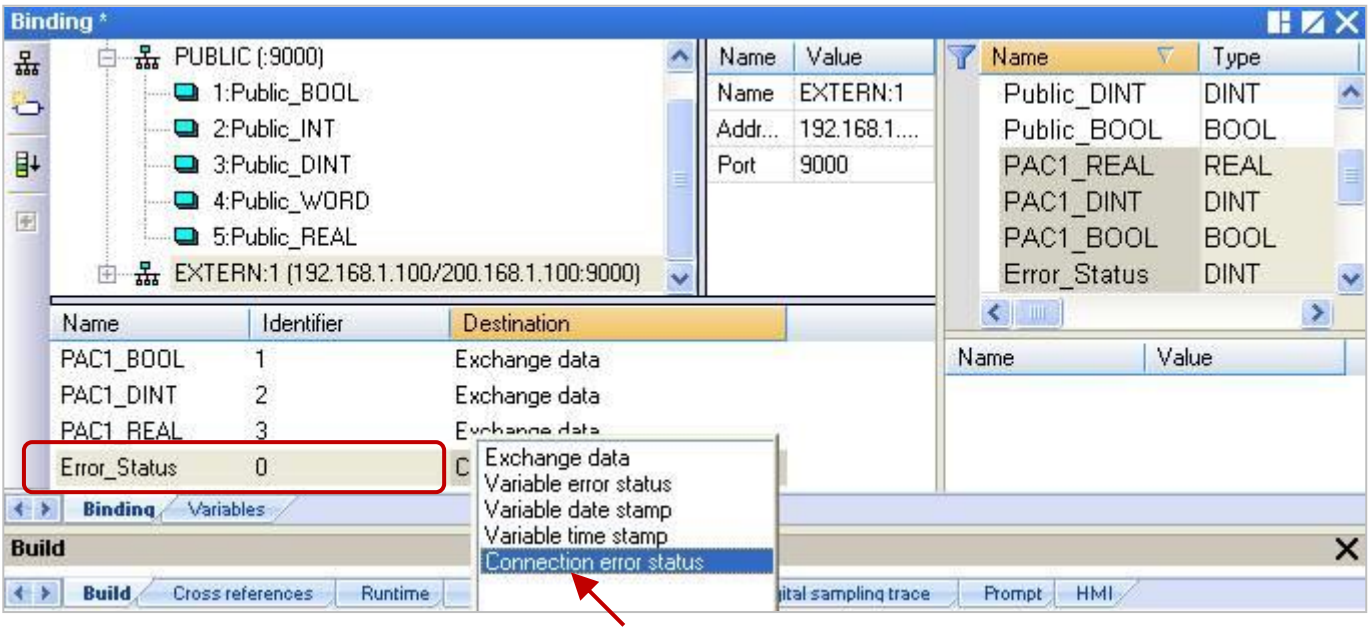
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7. Please drag the variables you need into the "Name" area of the "EXTERN:1".

Note: "Identifier" field will automatically generate numbers, please change them to the same as the opened IDs of the PAC that you want to get data from.



8. As the picture below, "Error_Status" variable is used to determine the communication status of the PAC, please set this ID to "0" and then double-click "Destination" field and set it to "Connection error status".



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Note:

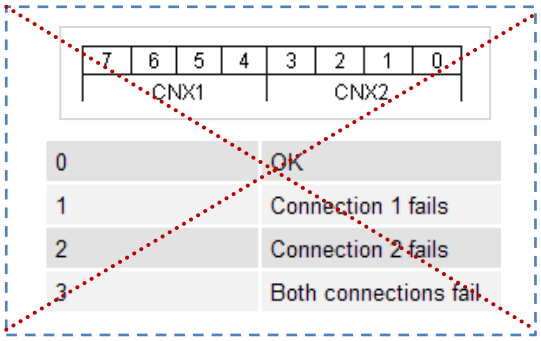
a. If "EXTERN" set up two IP addresses (step 5), then the "Error_Status" will return two communication statuses. As the following table, use 8 bits to indicate the connection status. The bit 0 ~ 3 represents the first IP connection status (If all bits are “1”, the value is 15); the bit 4 ~ 7 represents the second IP connection status (If all bits are “1”, the value is 240). As long as the value is not equal to “0”, it means that there are connection errors.

IP2 Connection Status				**IP1** Connection Status				**Status Description**
2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0	
0				0				Connection OK
0				≠0 (1 ~ 15)				IP1 Connection error
≠ 0 (16 ~ 240)				0				IP2 Connection error
≠ 0				≠ 0				IP1 and IP2 Connection error

b. The return value of the "Error_Status" is an integer value. The following division operation provides a way to determine this value. Dividing this value by 16, the quotient represents the IP2 connection status, and the remainder represents the IP1 connection status. If the values are not equal to “0”, it means that there is any connection error. For example: If "Error_Status" = 16, divided by 16, the quotient = 1 (≠ 0, IP2 Connection error) and the remainder = 0 (IP1 Connection OK); If "Error_Status" = 3, divided by 16, the quotient = 0 (IP2 Connection OK) and the remainder = 3 (≠ 0, IP1 Connection error);

Notice:

Please ignore the description of the "Connection status" and "Variable status" in the "Networked applications - Dual binding on redundant ETHERNET" of the "HTML Help" that opened when press "F1" key. That explanation is wrong and does not comply with the ICP DAS Win-GRAF PAC. Please ignore it.



Click the link for more Win-GRAF FAQ:
https://www.icpdas.com/en/faq/index.php?kind=273#840

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