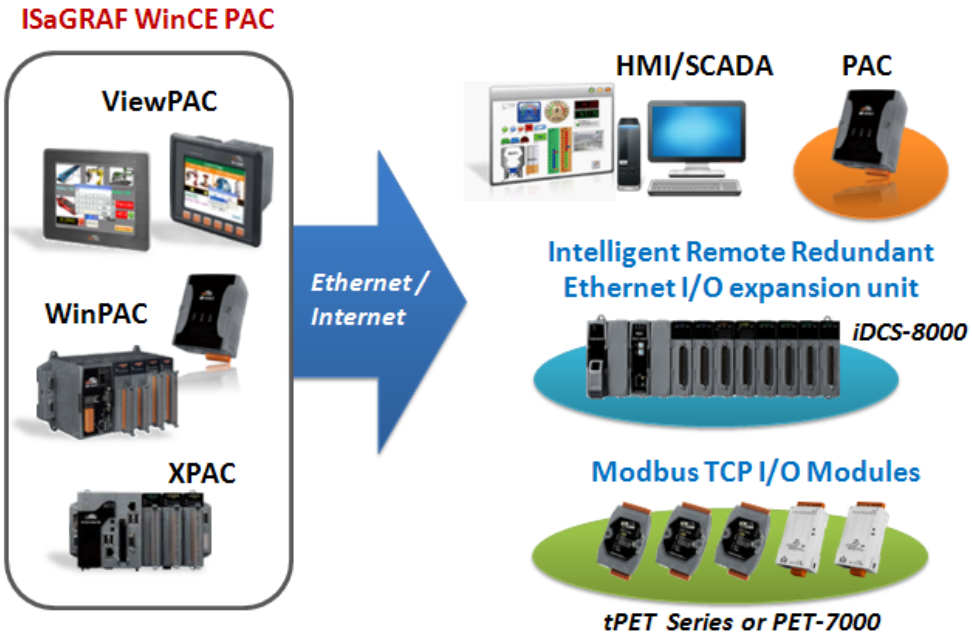
How to test an Ethernet/Internet connection by using the ISaGRAF PAC?

ICP DAS ISaGRAF WinCE-based PAC provides a useful "Ping_IP" function that can be used to check if the connection between the ISaGRAF PAC and the remote Ethernet/Internet devices is working properly? (E.g., ICP DAS's http://www.icpdas.com/en/product/p02.php?root=537&kind=539 or https://www.icpdas.com/en/product/guide+Software+Development__Tools+ISaGRAF#442**) It is convenient for on-site personnel to grasp the running state of equipment quickly and easily to manage the remote Ethernet/Internet devices.**



1.1. Download/Update the ISaGRAF Driver

The "Ping_IP" function is supported by the following ISaGRAF driver versions:

ISaGRAF *WinCE-based* PAC	ISaGRAF Driver Version
XP-8xx7-CE6	Ver. 1.49 or later
XP-8xx7-Atom-CE6	Ver. 1.04 or later
WP-8x47/8x37	Ver. 1.69 or later
WP-5147	Ver. 1.14 or later
VP-25W7/23W7/4137	Ver. 1.61 or later

Download the ISaGRAF Driver:

If the version number of your driver is earlier than the one indicated,

go to

http://www.icpdas.com/en/download/show.php?num=368&nation=US&kind1=&model=&kw=isagraf

to download the latest ISaGRAF Driver (e.g., wp-8x47-1.69.zip) and then update the ISaGRAF PAC by

following the instructions contained in the zip file.

1.2. Download/Restore the ISaGRAF file

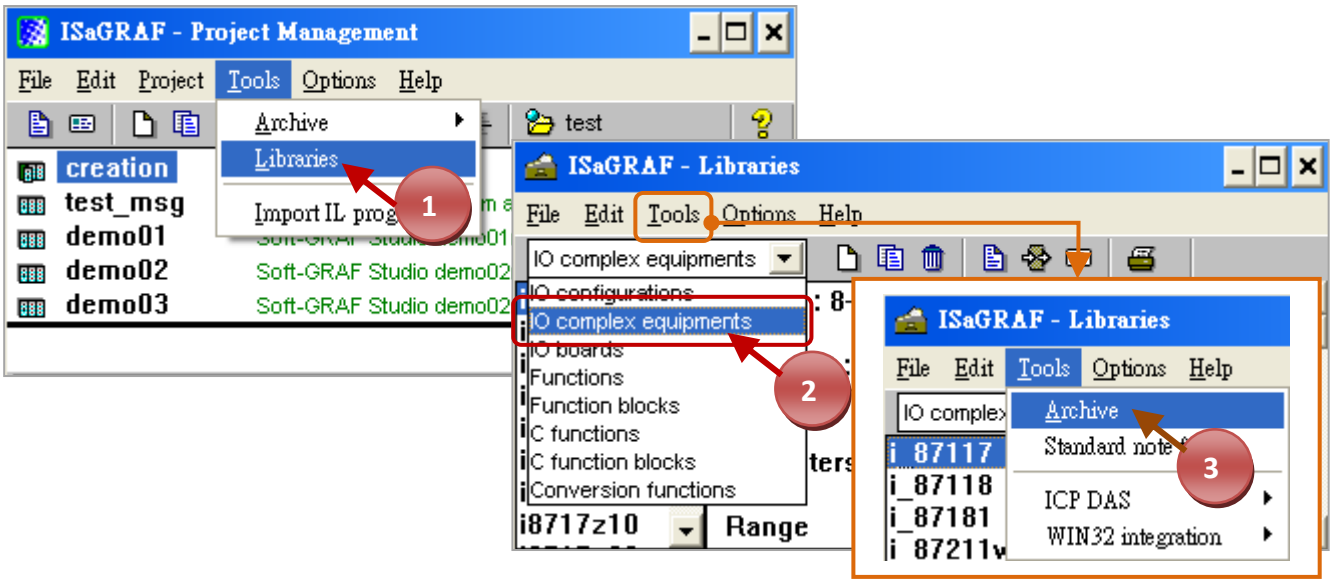
1.2.1. Download the ISaGRAF file

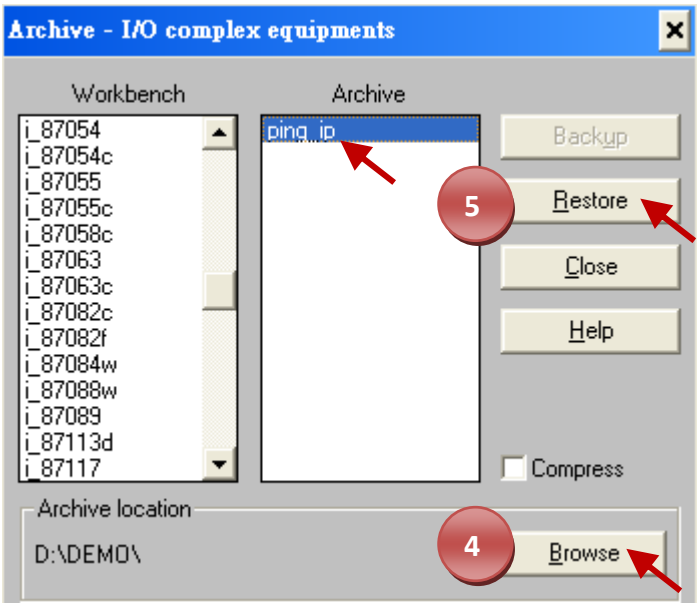
Go to https://www.icpdas.com/en/faq/index.php?kind=280#751 > FAQ-175 to download the "faq175_demo.zip" file.
This file includes this document and the ISaGRAF file ("ping_ip.xia").

1.2.2. Restore the ISaGRAF file

Unzip the file and then restore the ISaGRAF file ("ping_ip.xia") to the PC/ISaGRAF.

1. Click the menu bar "Tools > Libraries" to open the "ISaGRAF – Libraries" window.
2. Select the "I/O complex equipments" option in the drop-down lists.





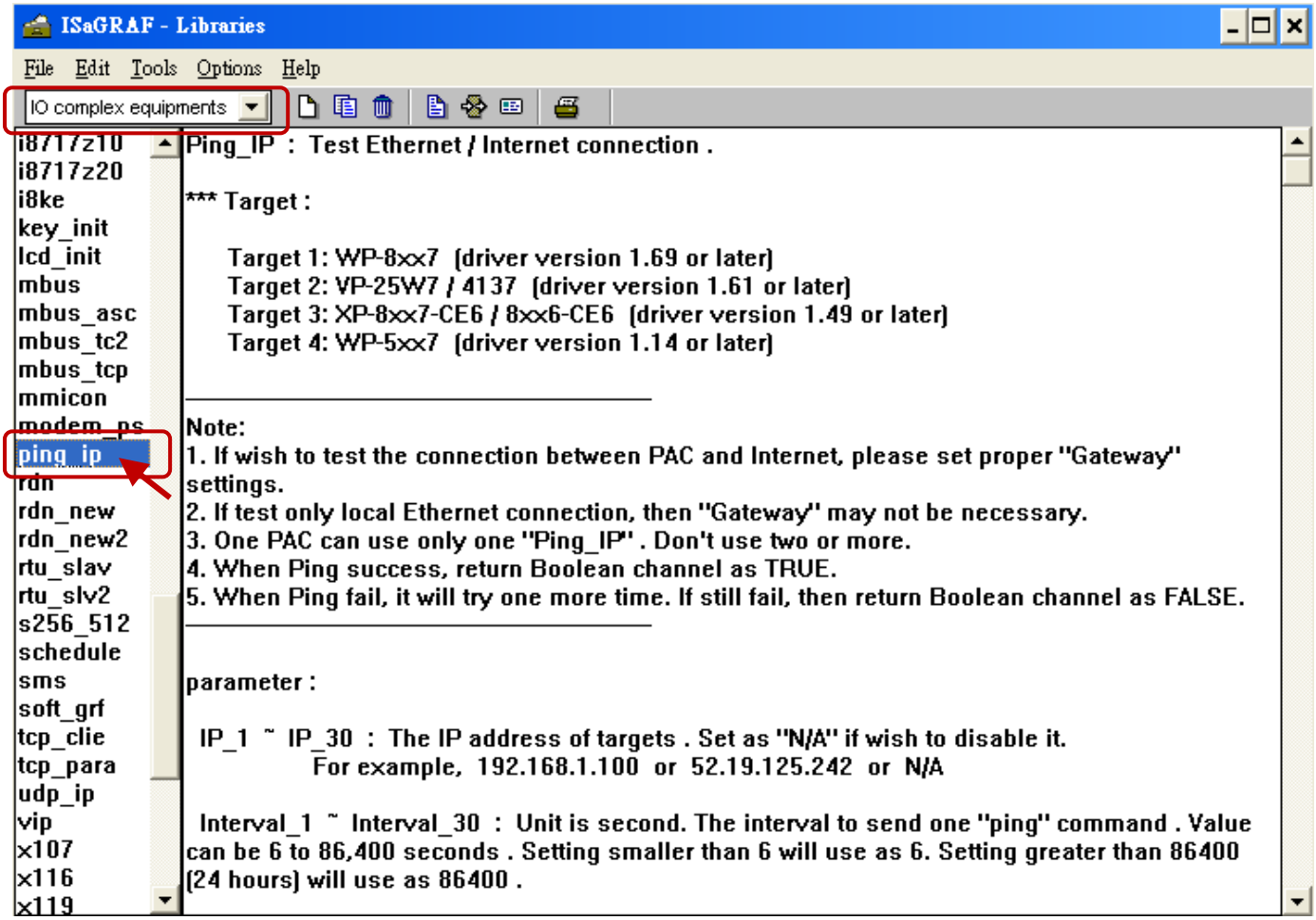
3. Click the menu bar "Tools" > "Archive" to open the "Archive – I/O complex equipments" window.

4. Click "Browse", find out the location of the "ping_ip.xia" file (e.g., "D:\DEMO")

5. Click "ping_ip" and then click the "Restore" button to restore the file to the ISaGRAF Workbench.

1.2.3. Description of the “ping_ip” function

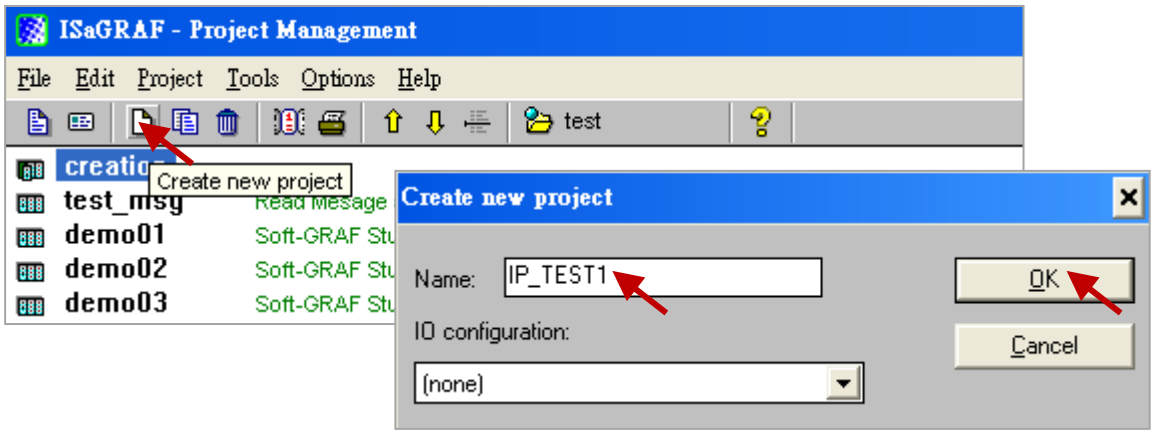
After restoring the “ping_ip.xia” file, users can see more details by selecting the “ping_ip” in the “I/O complex equipments” drop-down option of the “ISaGRAF – Libraries” window. (Refer to Section 1.2.2).



1.3. How do I use the "Ping_IP" function?

1.3.1. Create an ISaGRAF project

Click the “Create new project” tool button to add a project (e.g., “IP_TEST1”).

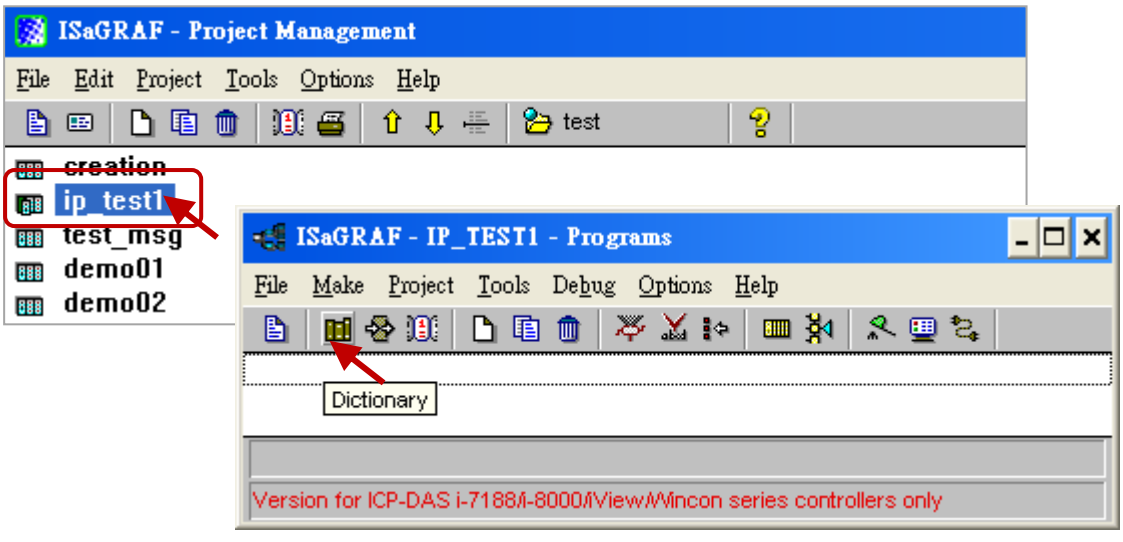


1.3.2. The ISaGRAF variables table

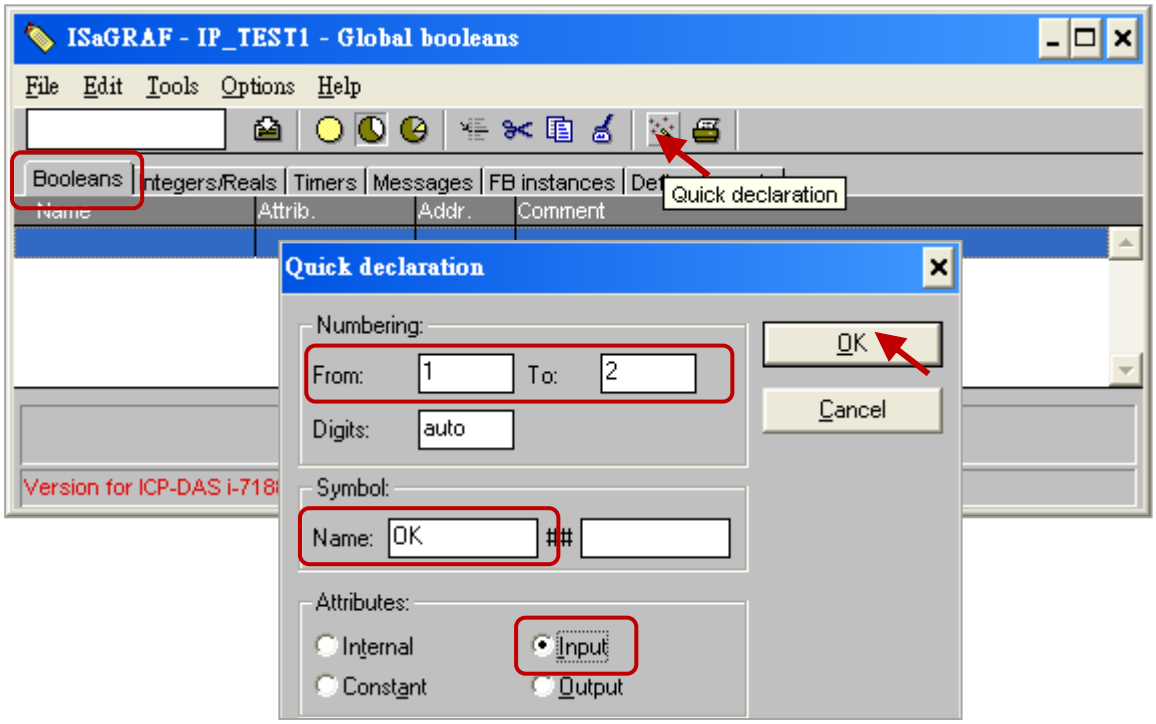
We would like to use two Boolean variables (i.e., "OK1", “OK2”) to show the connection status between the ISaGRAF PAC and Ethernet/Internet devices.

Name	Type	Attribute	Description
OK1	Boolean	Input	To test the IP1. “True”means the connection is OK; “False” refers to cable problem or connection failed.
OK2	Boolean	Input	To test the IP2. “True” means the connection is OK; “False” refers to cable problem or connection failed.

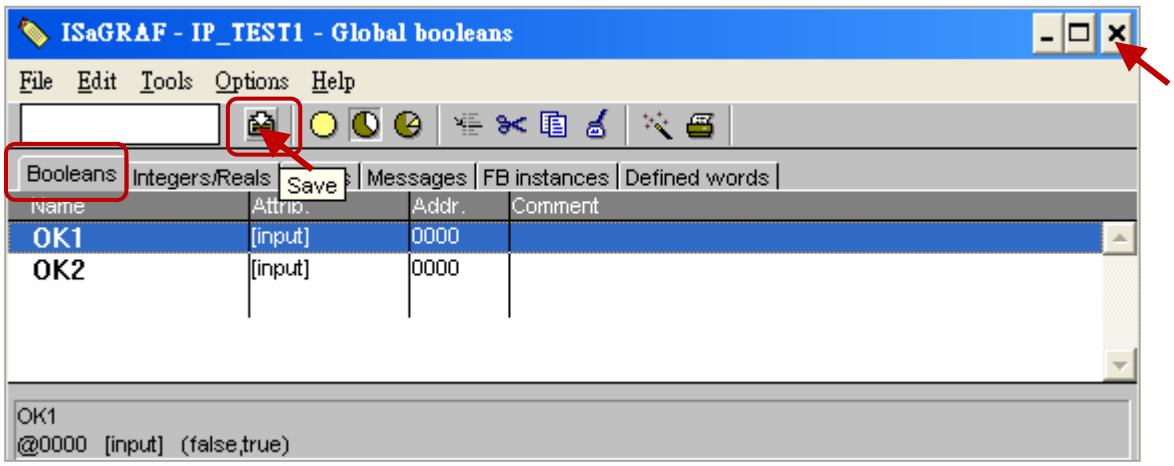
1. Mouse double-click the “IP_TEST1” project and then click the “Dictionary” tool button.



2. Click the “Quick declaration” tool button to quickly declare boolean variables (i.e., "OK1", “OK2”), enter a number (i.e., “from 1 to 2”) in the “Numbering” field, enter a name (i.e., “OK”) in the “Symbol” field and select the “Input” attribute, then click the “OK” button to finish the setting.

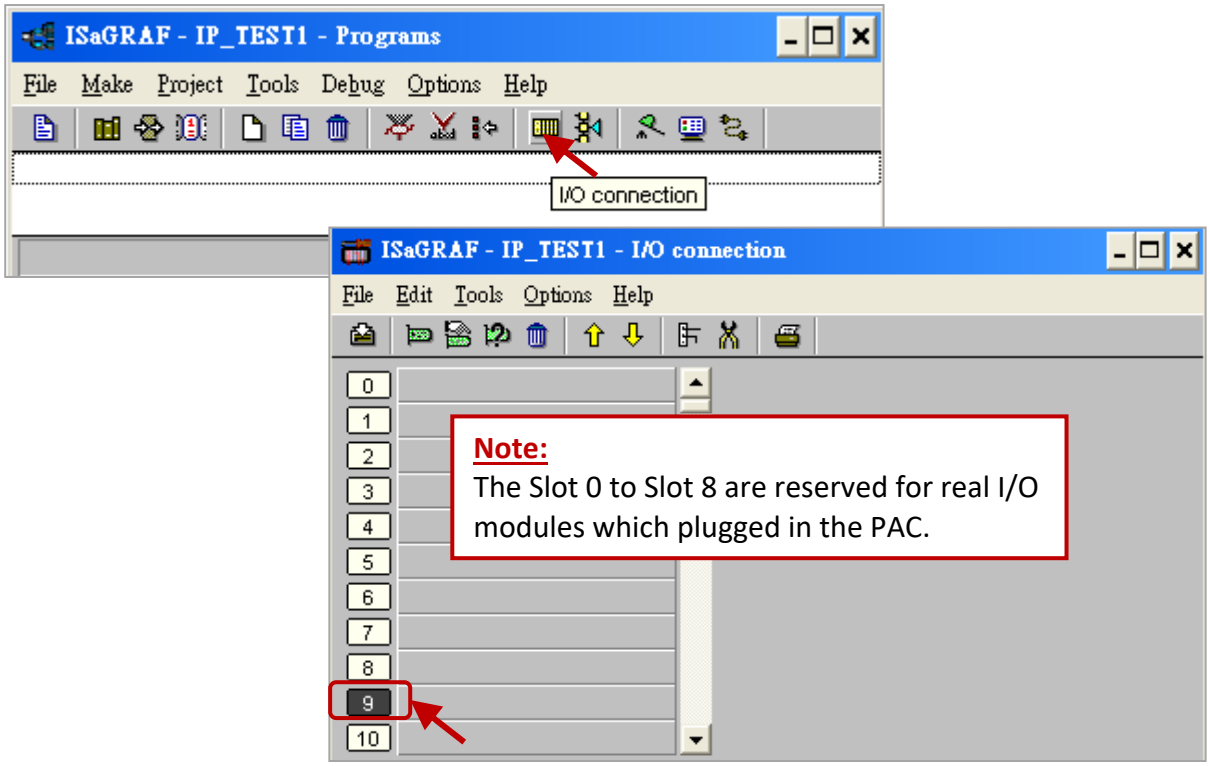


3. Click the “Save” button to save the settings and click the “X” (on the top-right corner) to close the window.



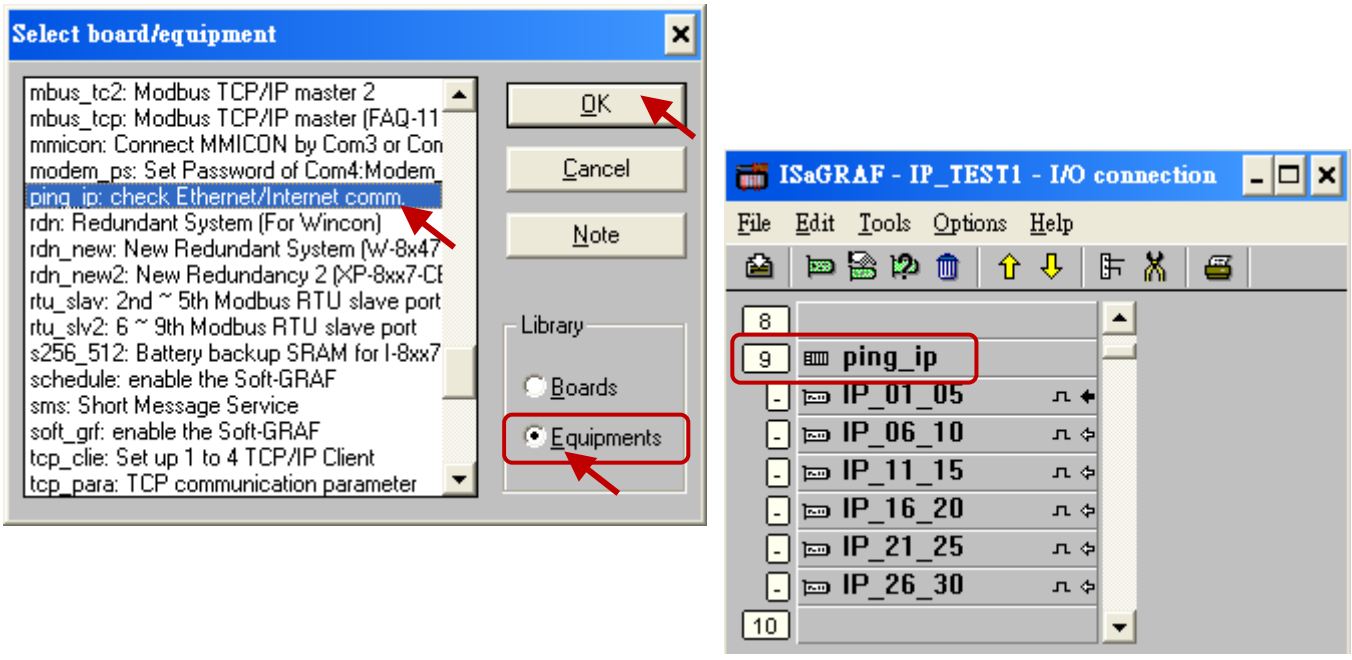
1.3.3. I/O Connection – add the "ping_ip" function

1. Click the "I/O Connection" tool button and then double-click the "Slot 9" in the setting window.



2. Click the "Equipments" option and select the "ping_ip" function, then click "OK" to end the setting.

   Note: One PAC can use only one "ping_ip" function. It provides six IP groups and each group can set five IP addresses.



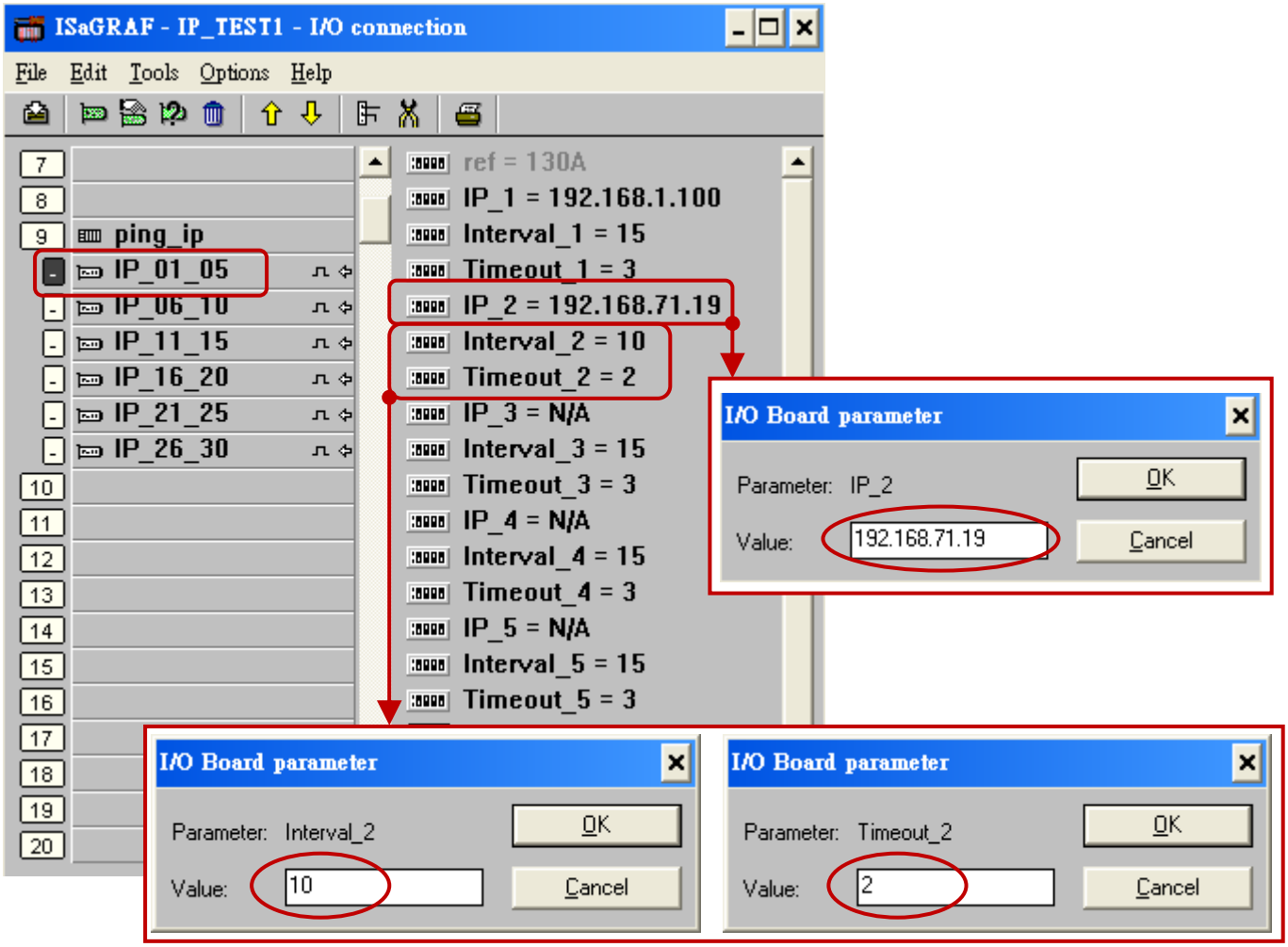
3. Click the “IP_01_05” and double-click the “IP_2” to set the IP address (e.g., “192.168.71.19”), then try to set the “Interval_2” to “10” and set the “Timeout_2” to “2”.

IP_1 ~ IP_30: The IP address of targets. Mouse double-click the “IP_x” can modify it (Default: the "IP_1" is “192.168.1.100”) and set it to “N/A” means this IP address is NO used.

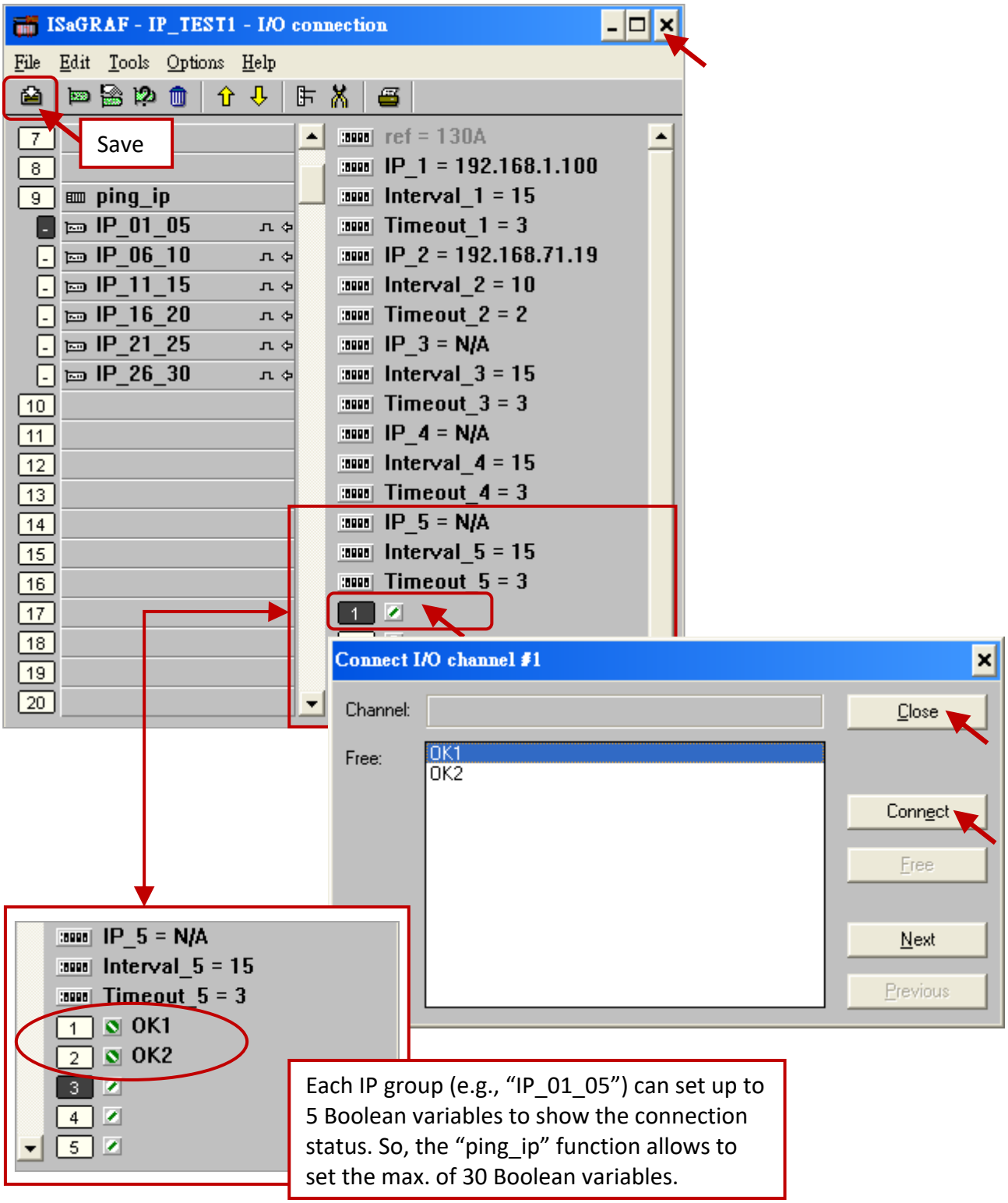
Interval_x: The interval to send one "ping" command. The unit is second and the default value is 15 seconds. It can be set to “6” to “86,400” seconds (i.e., 24 hours). This value will be “6” If the setting is less than “6”; this value will be “86,400” if the setting is greater than “86,400”.

Timeout_x: The timeout settings of the "ping" command. The unit is second and the default value is 3 seconds. It can be set to “2” to “30” seconds. This value will be “2” If the setting is less than “2”; this value will be “30” if the setting is greater than “30”.

Note: The "Interval_x" value should be at least the triple of the "Timeout_x" value. Or the PAC will use the triple of the "Timeout_x" value.
For example, if set the “Timeout_1” to “10” and set the “Interval_1” to “20”, the PAC will use “30” (i.e., 10 x 3 = 30) as the “Interval_1” value.



4. Mouse double-click the I/O Tag1 to open the “Connect I/O channel #1” window, and it will show the “Input” variables that you declare before. Click the “Connect” twice to connect the “OK1” and “OK2” to the “channel #1” and “channel #2”, then click “Close” to exit the window.
5. Finally, click the “Save” tool button to save the settings and click the “x” on the top-right corner to exit the window.

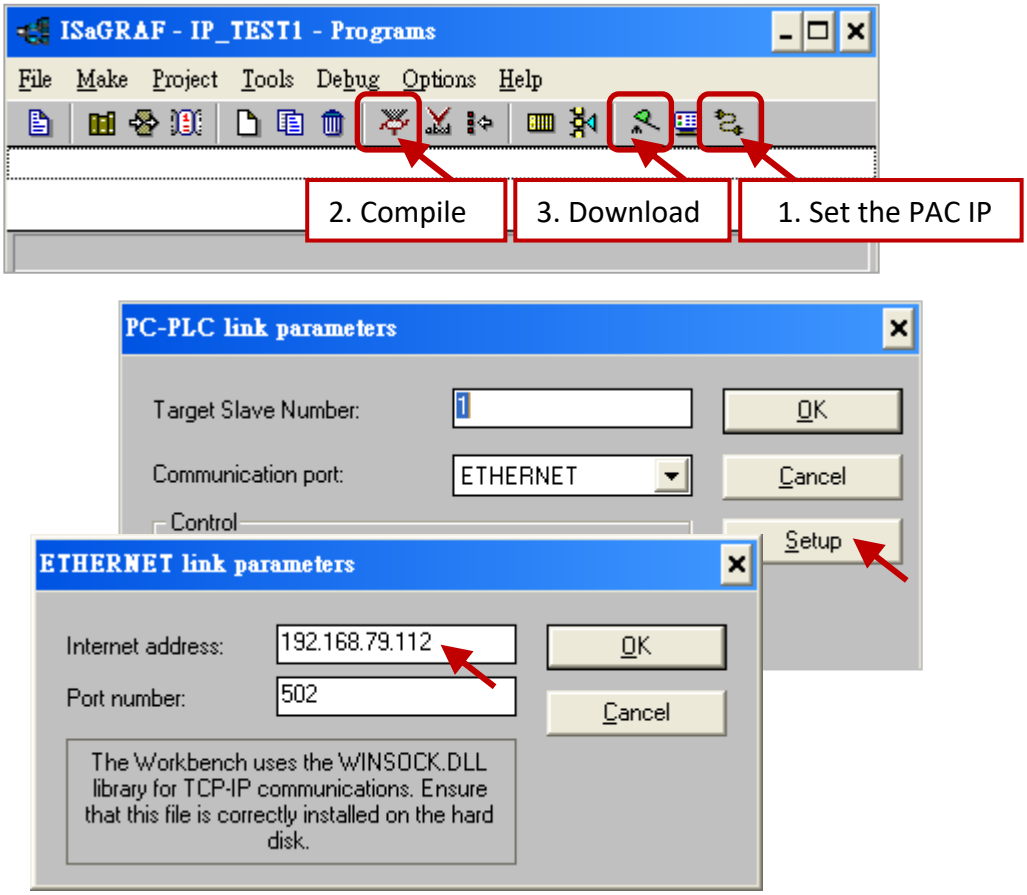


1.4. How to test the "ping_ip" function?

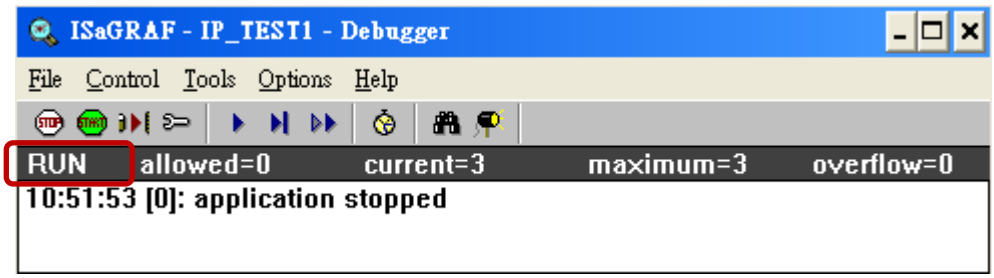
Before testing, you must download the ISaGRAF project (e.g., "IP_TEST1") to the PAC.

1.4.1. Download the ISaGRAF project

1. Click the menu bar "Debug > Link setup" or  tool button to set the download IP (i.e., PAC IP).
2. Click the menu bar "Make > Make application" or  tool button to re-compile this project.

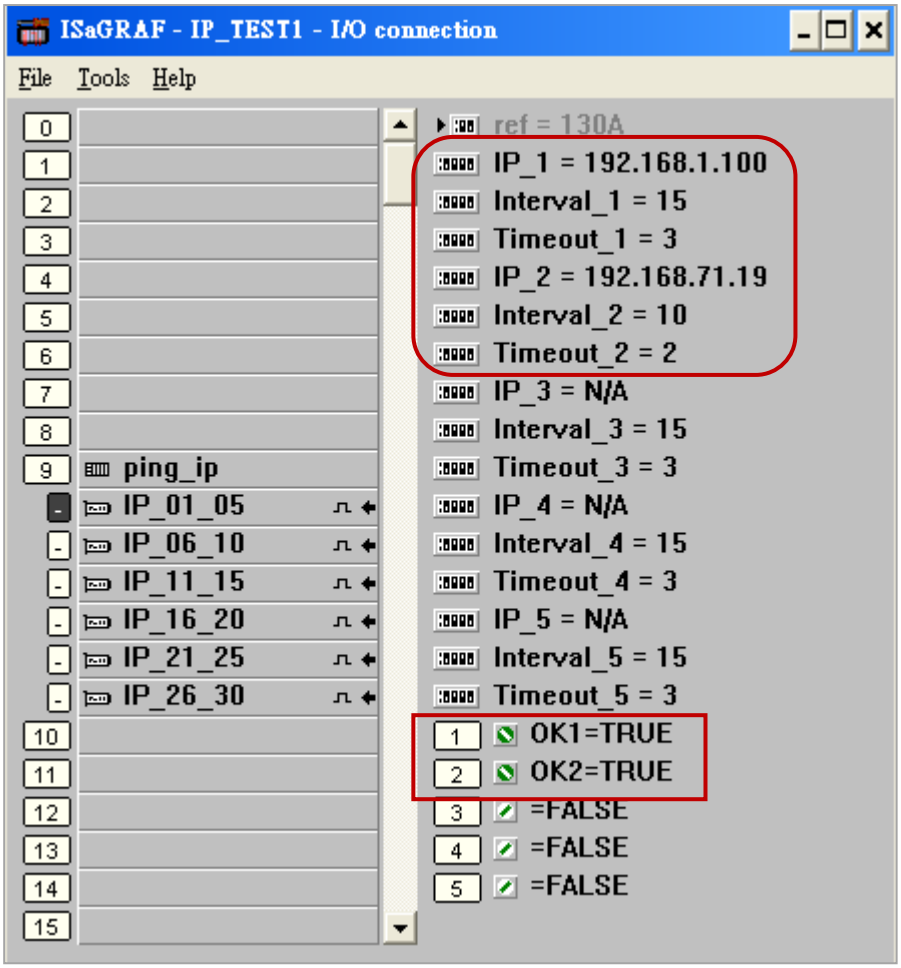


3. Click the menu bar "Debug > Debug" or  tool button to download the "IP_TEST1"project. After downloading this project, the "Debugger" window will show as the figure below.

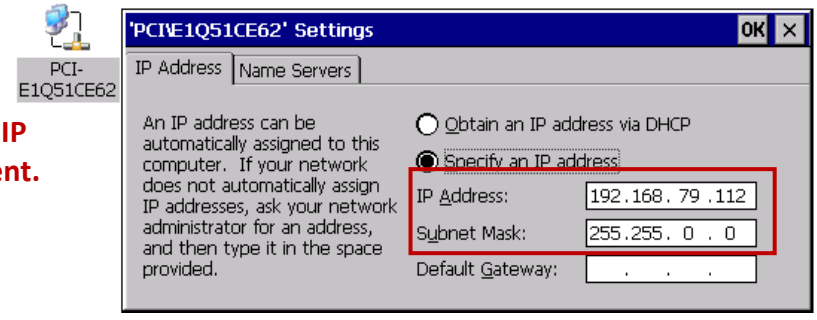


1.4.2. Test the ISaGRAF project

1. After downloading the project to the PAC, open the "I/O connection" window (refer to Section 1.3.3). As the figure below, if the return value for the variable ("OK1" or "OK2") is "TRUE" that means the connection is successful and "FALSE" refers to the connection failed.



Note:
If testing the connection between the PAC and local Ethernet devices, the PAC IP must be set on the same network segment.



If testing the connection between the PAC and Internet devices, the PAC must set the correct "Gateway" IP.