How to use the ISaGRAF PAC to communicate with a far away Modbus TCP server or a ftp server by the 3G or 2G wireless GPRS ?

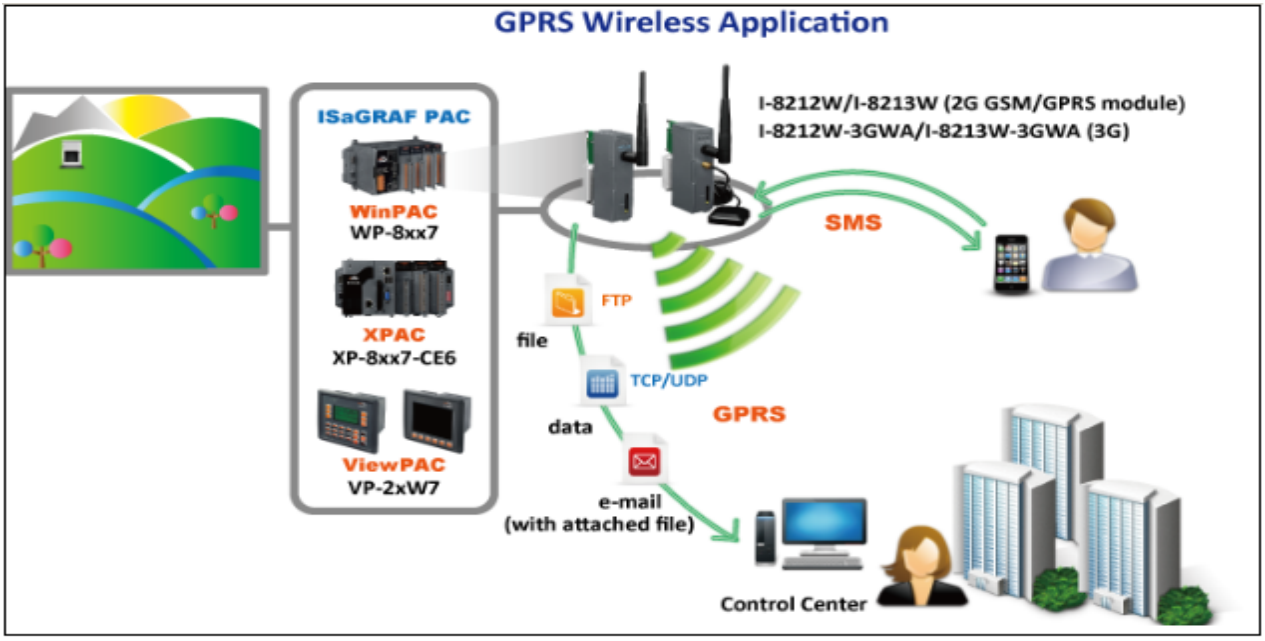
The ISaGRAF WinCE PAC – WP-8147 / WP-8447 / WP-8847, WP-8137 / WP-8437 / WP-8837, VP-25W7 / VP-23W7 and XP-8347-CE6 / XP-8747-CE6 support the 3G and 2G wirless communication. They can deliver the application data to a far away PC or Workstation which has a Modbus TCP server (or called Modbus TCP slave) or ftp server running inside. User must purchase one of the following I/O modules to plug in the PAC to implement the 3G or 2G wireless communication (require a SIM card provided by a local telecom company also).

Web :
http://www.icpdas.com/en/product/guide+Wireless__Communication+3G_4G__Products+Modem#596

I-8212W : 2G GPRS / GSM .
I-8213W : 2G GPRS / GSM plus GPS .
I-8212W-3GWA : 3G GPRS / GSM .
I-8213W-3GWA : 3G GPRS / GSM plus GPS .

The following PAC 's ISaGRAF driver support the above 2G and 3G wireless communication.
XP-8xx7-CE6 : V1.24 or later , WP-8xx7 : Ver1.44 or later , VP-25W7/23W7 : V1.36 or later

If the ISaGRAF driver of your ISaGRAF PAC is older than the above item, please visit the following web site to download it and update it to your PAC.
http://www.icpdas.com/en/download/show.php?num=368&nation=US&kind1=&model=&kw=isagraf



This paper is the ISaGRAF FAQ-153 in the https://www.icpdas.com/en/faq/index.php?kind=280#751 > FAQ-153 . Please also refer to the https://www.icpdas.com/en/faq/index.php?kind=280#751 > FAQ-143 for more technical information to setup the 2G , 3G GPRS / GSM hardware and software.

ISaGRAF PAC : http://www.icpdas.com/en/product/guide+Software+Development__Tools+ISaGRAF

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Note : This document is only about the information to communicate with the far away Modbus TCP server via 3G or 2G wireless communication. For other information, please refer to the following links.

For delivering files to a ftp server via 3G or 2G wireless communication, refer to https://www.icpdas.com/en/faq/index.php?kind=280#751 > FAQ-143 and FAQ-151 .

For communicating with a UDP server or a ftp server via 3G or 2G wireless communication, refer to https://www.icpdas.com/en/faq/index.php?kind=280#751 > 143 (the section 1.4.2 and 1.4.3) .

For sending an email (without or with one attached file) via 3G or 2G wireless communication, refer to https://www.icpdas.com/en/faq/index.php?kind=280#751 > FAQ-143 and FAQ-067 .

For receiving the location and time information from the GPS module, refer to https://www.icpdas.com/en/faq/index.php?kind=280#751 > 143 (the section 1.5) .

For sending a short message to a cell. phone , refer to the https://www.icpdas.com/en/faq/index.php?kind=280#751 > FAQ-111 .

1.1 : Setup the I-8212W / I-8212W-3GWA / I-8213W / I-8213W-3GWA

The https://www.icpdas.com/en/faq/index.php?kind=280#751 > FAQ-143 's section 1.1 and 1.2 shows the steps to setup the GPRS / GSM module, please refer to them first. And refer to its section 1.3 for the way to make a dial-up and hang-up.

Note : Recommend to purchase a SIM card which provides unlimited connection time however with a limited fee to save the money for making wireless communication.

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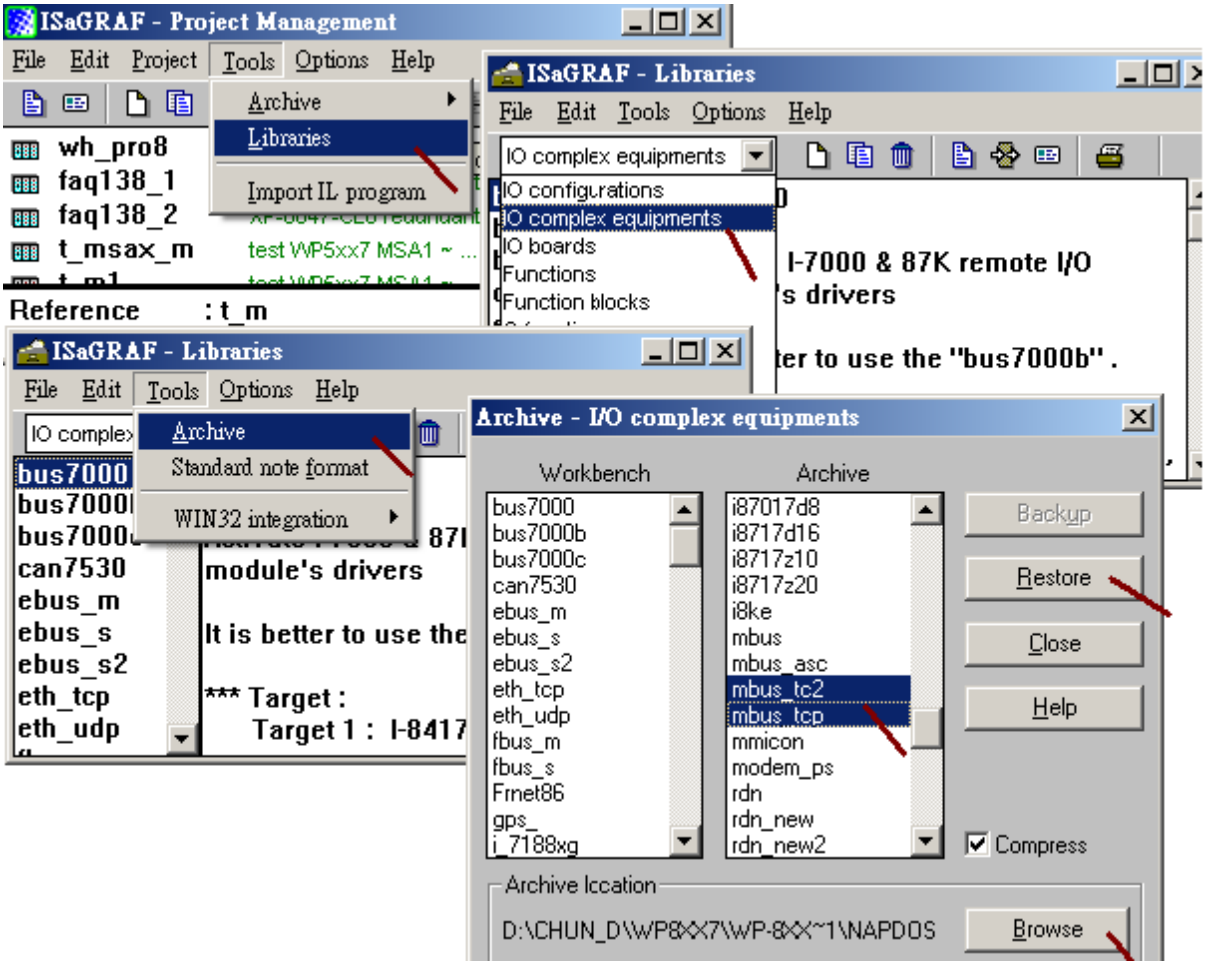
1.2 : Example project FAQ153_1 – communicate with a far away Modbus TCP server

Note : Please refer to https://www.icpdas.com/en/faq/index.php?kind=280#751 > FAQ-113 for more information about enable the Modbus TCP master function to communicate with a Modbus TCP server (or called Modbus TCP slave).

If user is not familiar with the ISaGRAF, recommecnd to study the section 1.1 and 1.2 and section 2.1 of the ISaGRAF User's manual. This manual is put in the product box of the ISaGRAF-256-E (or ISaGRAF-32-E) . Or visit web site
http://www.icpdas.com/en/download/show.php?num=333&nation=US&kind1=&model=&kw=isagraf

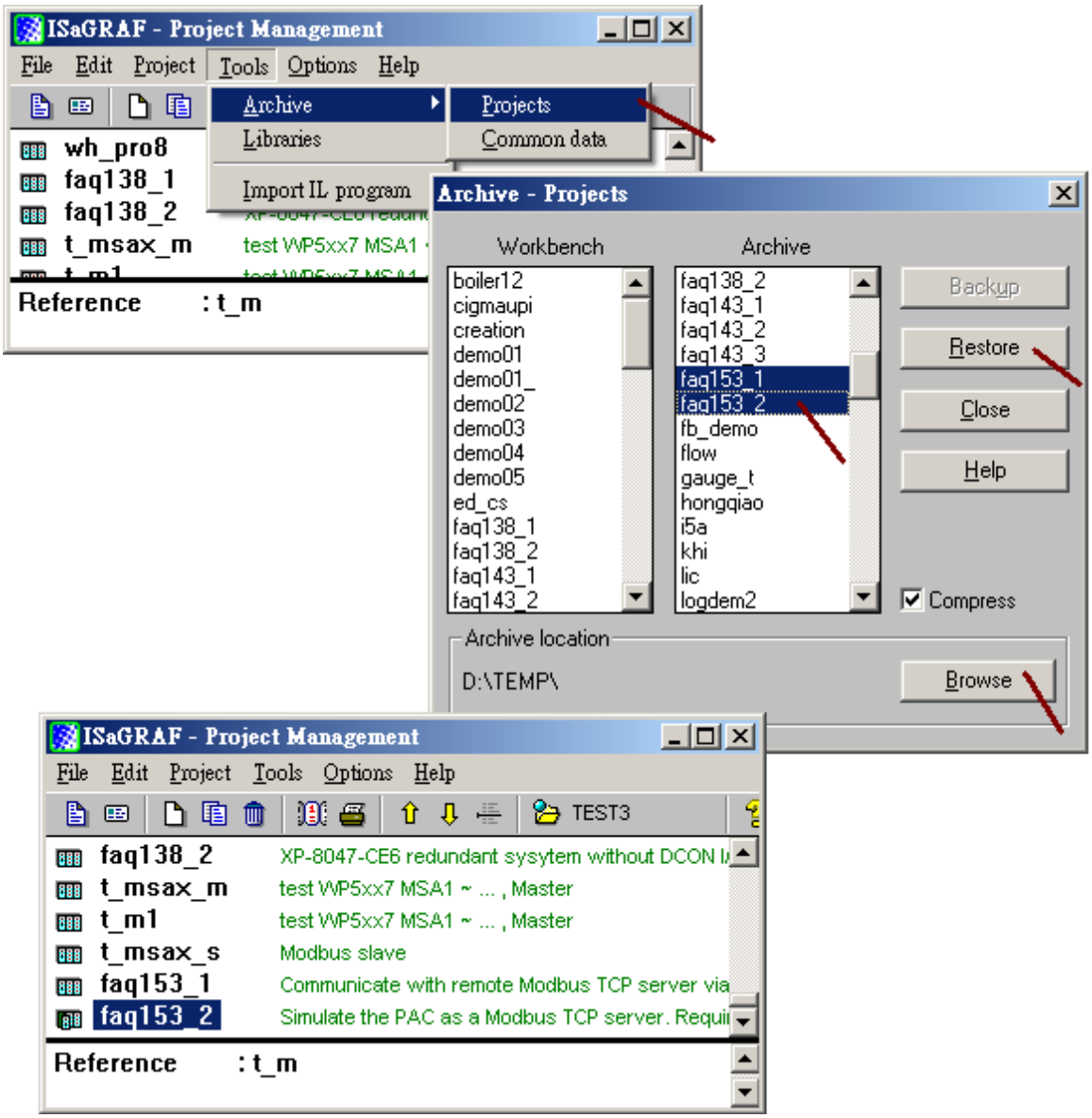
User may download the "faq153_demo.zip" from
https://www.icpdas.com/en/faq/index.php?kind=280#751 > FAQ-153 . It contains two example programs - "faq153_1.pia" and "faq153_2.pia". And contain two ISaGRAF I/O lib – "mbus_tcp.xia" and "mbus_tc2.xia" . Please follow the below steps to restore them.

I/O complex-equipment – mbus_tcp , mbus_tc2 : (If your PC / ISaGRAF have them already, no need to restore them)



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Restore the example programs - faq153_1 and faq153_2 :



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Prepare a Modbus TCP server for tesing :

The “faq153_2” program is for simulating a Modbus TCP server on the internet. It requires a fixed internet IP address which registered from the telecom company. If user found one existing Modbus TCP server on the internet, then no need this “faq153_2” .

If user has a registered fixed Internet IP address, then there is one another way to prepare a Modbus TCP server for tesing. First find a PC, setting its fixed IP address. For instance, the following IP fixed address belongs to one company in Taiwan . Then run a Modbus TCP server program, for example- “Modbus poll” and then configure its NET-ID as 1 and create 6 words (with network address number 1 to 6) inside it.

IP : 61.218.42.10

Mask : 255.255.255.0

Gateway : 61.218.42.1

To simulate a Modbus TCP server by using the “faq153_2” program, find one ISaGRAF PAC (Can be i-8437 / i-8837, iP-8447 / iP-8847, uP-7186EG, WP-8xx7, VP-2xW7or XP-8xx7-CE6).Then setting well its fixed internet IP address and Mask and Gateway. Then download this “faq153_2” to the PAC. Then it becomes a Modbus TCP server with 6 words (with network address number 1 to 6) inside.

Remember to plug well the ethernet cable in the PAC and make sure it can communicate with the Internet (You may run a “ping 61.218.42.10 -t” on one another PC to test it first).

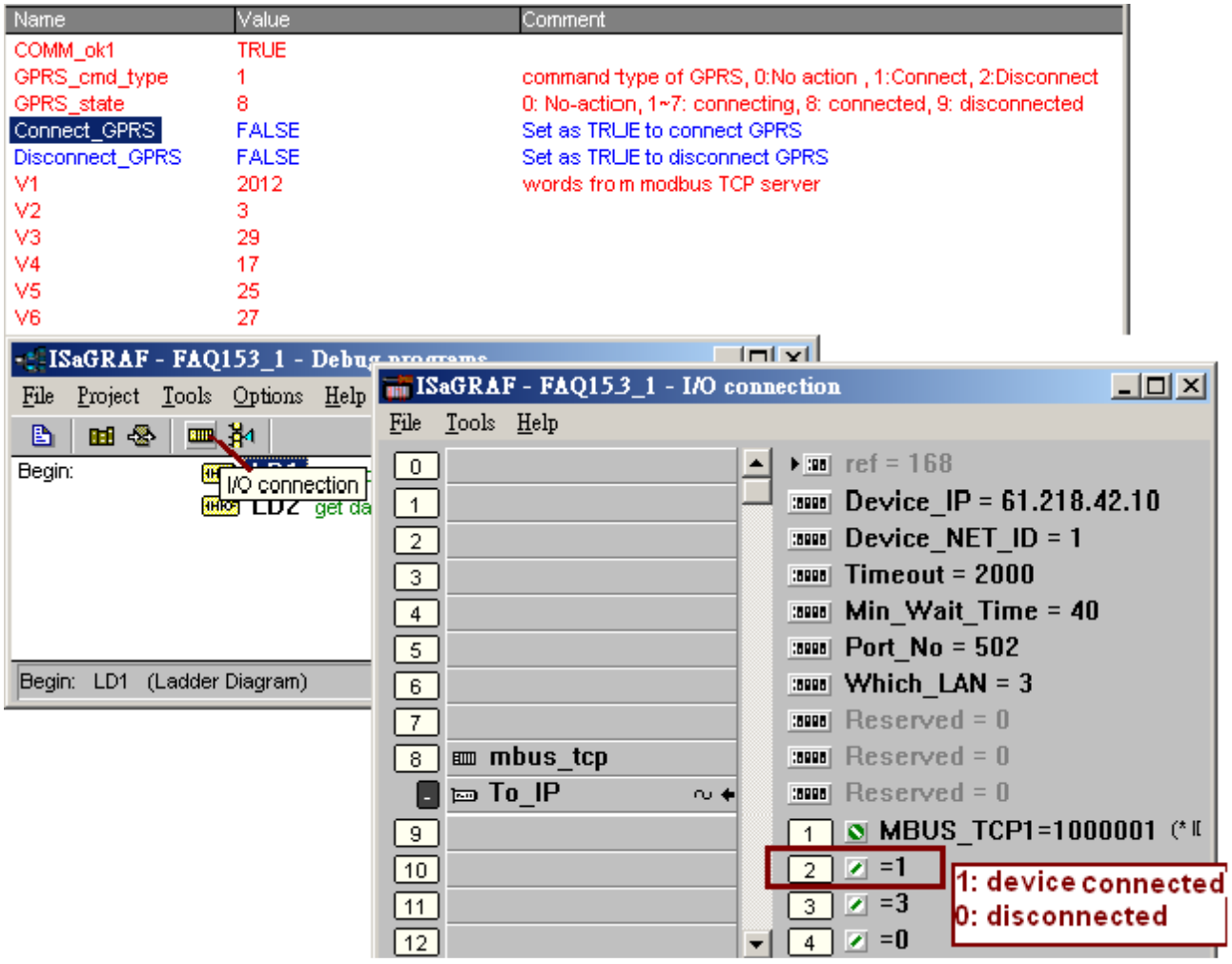
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Test the example program - faq153_1 :

First find one ISaGRAF PAC (can be one of the WP-8xx7, VP-2xW7, XP-8xx7-CE6). Then install the GPRS / GSM module in its slot 0 (for the XP-8xx7-CE6, there is no slot 0, so install it in its slot 1). Then follow the steps listed in the section 1.1 of this paper to setup the GPRS / GSM module well. Then download the "faq153_1" to the PAC.

If everuthing is well, the below figure will show up when connecting the PC / ISaGRAF with the PAC. To dial-up the GPRS, set the boolean variable "Connect_GPRS" as TRUE. Then you will see its value changing back to False automatically. The "GPRS_cmd_type" becomes 1 and the "GPRS_state" will slowly change from 1, 2, ... 6, ... to become 8 (means dial-up succeed, internet connected) or 9 (dial-up fail, can not connect the internet). When the internet is connected, the channel 2 's value of the "Mbus_tcp" - "To_IP" on the IO connection dialog becomes 1 (means the Modbus TCP server is connected). Then you will see the value of the V1 to V6 is correct which are read from the Modbus TCP server .

To hang-up the GPRS connection, set the "Disconnect_GPRS" as TRUE, it changes back to False automatically. Then the "GPRS_cmd_type" will becomes 2 and some seconds later, the "GPRS_state" becomes 9 . (Note: If the "GPRS_cmd_type" is 1, and the connection is not well, the PAC will try to dial-up automatically in about one minute later. So if you don't want to to re-dail again and again , just set the "Disconnect_GPRS" to TRUE once to hang-up the connection)



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