

Instruction on *How to Use Labview EXO*

Username and Password

The initial file is called *ESIII EXO Gas Phase.vi*, you can also first open *Login (Start Here!).vi*, which is the file that requires user name and password. If approved, the *ESIII EXO Gas Phase.vi* will be opened automatically.

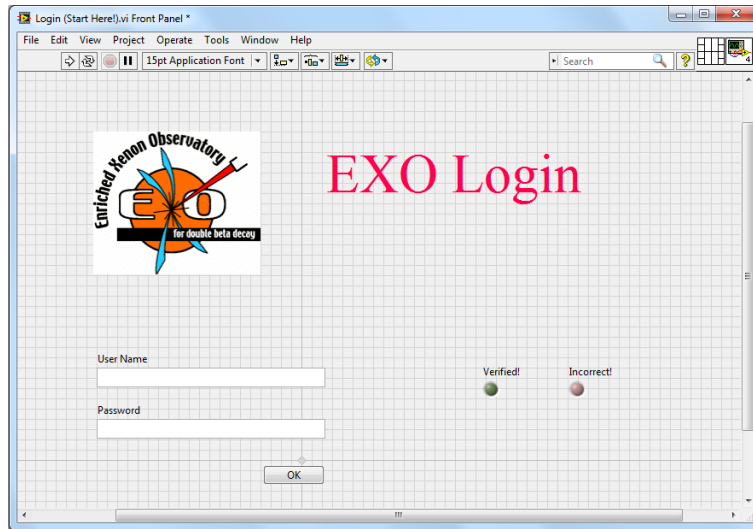


Fig.1. Login (Start Here!).vi

The user name and password I created are both **yang** and **yang**. User name and password can be modified or added by doing the following:

- Open the block diagram of *Login (Start Here!).vi*:

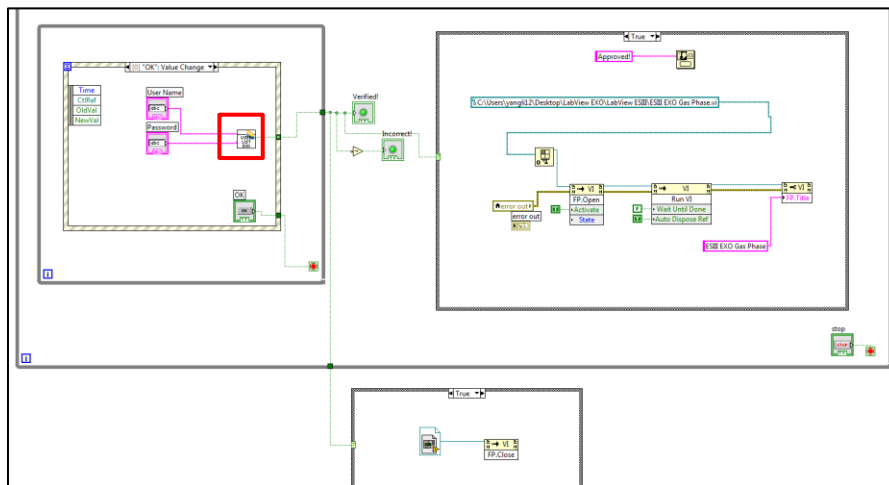


Fig.2. Block Diagram of *Login (Start Here!).vi*

- Double click the function that is enclosed by red rectangle in Fig.2, then you get:

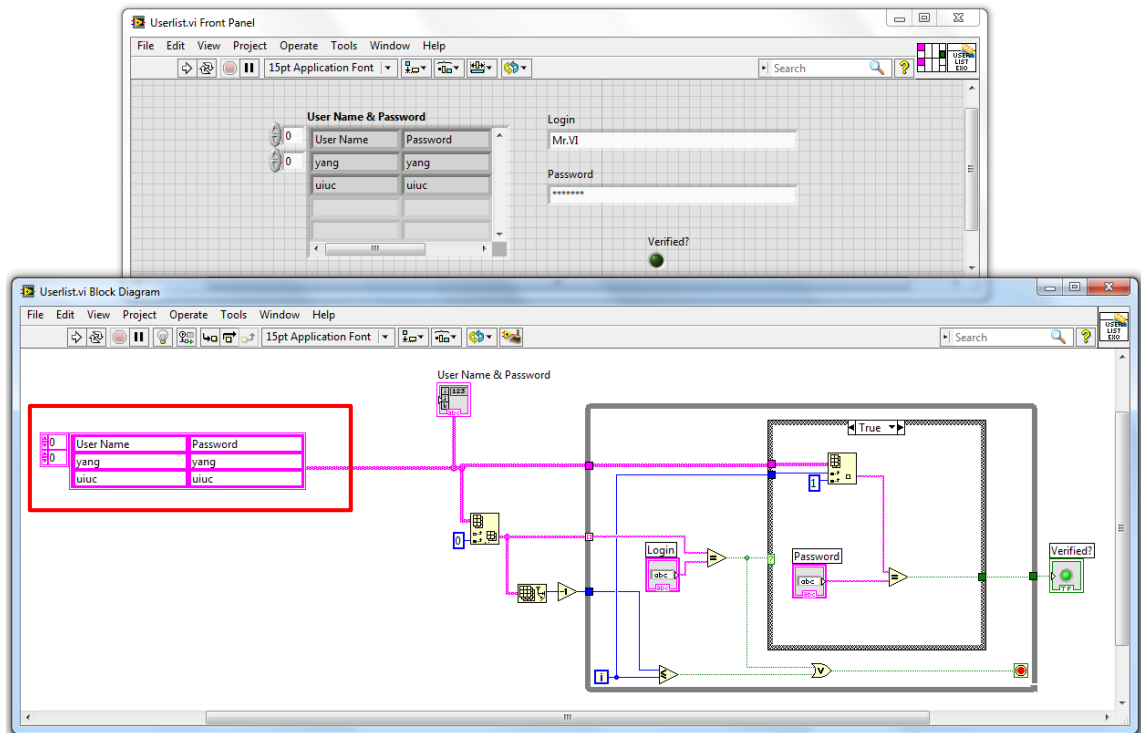


Fig.3. Front Panel (Above) and Block Diagram (Below) of Userlist.vi

- In the pink table, enclosed by red rectangle in Fig.3, you can add the user name and password as you want. After editing, save the file. Then you are done!

Main Program

When you enter the file, ESIII EXO Gas Phase.vi, you will see this following front panel.

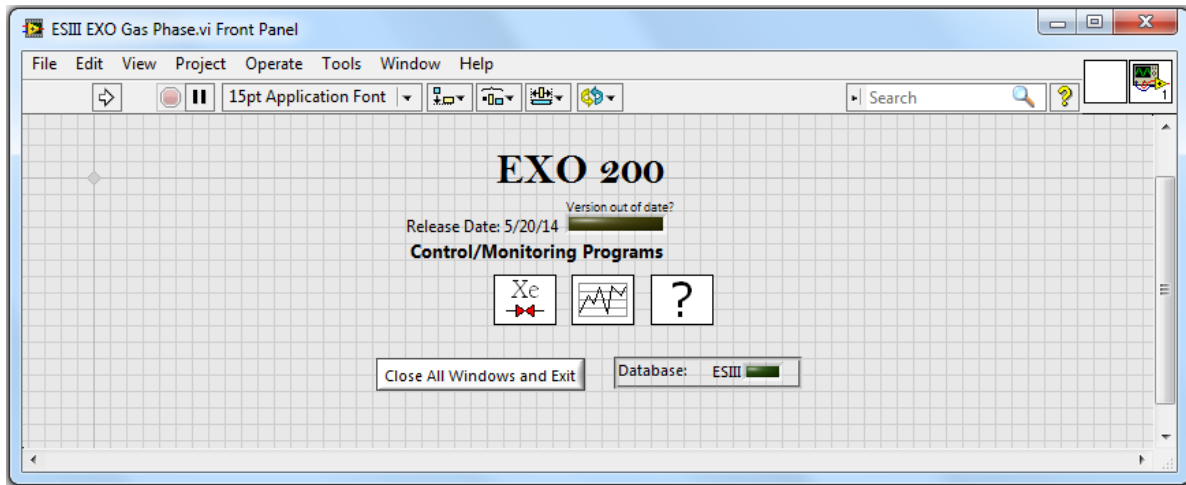
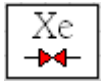


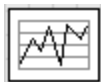
Fig.4. Front Panel of ESIII EXO Gas Phase.vi

It has three options you can choose:

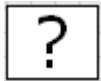


, to open the EXO system, record data, and write data into database in MySQL.

Normally, it should give you the link to open EXO1.vi, but since EXO1.vi is not completed due to the liquid level measurement part, I changed the link to Data write draft.vi, which is used to generate data, and write into MySQL. **When the EXO1.vi is done, the link should be changed back to EXO1.vi again.**



, to open the ESIII plot.vi, read data from database, and display in the plot.




, to give information about EXO and this software.

The Database ESIII LED will be lighted, if the connection with database is good.

Data Record and Write into Database



When click on , the following program will be run, if EXO1.vi is done.

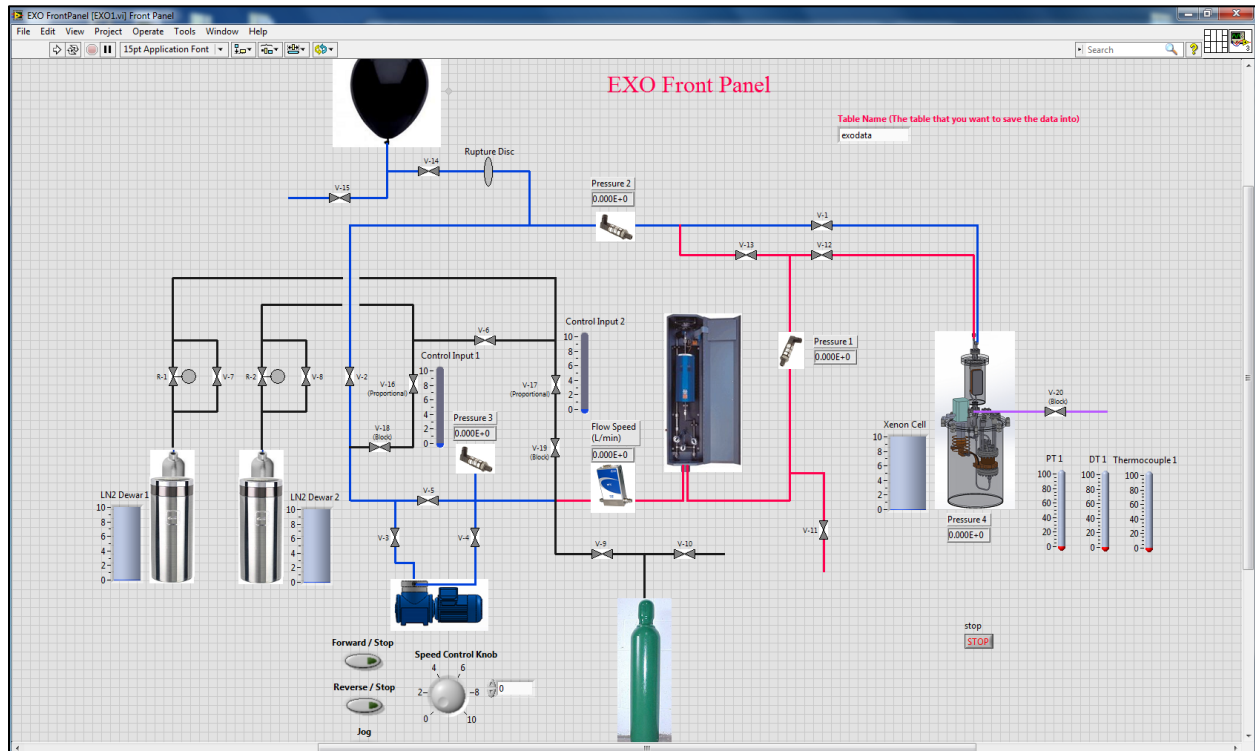


Fig.5. Front Panel of EXO1.vi

Remaining parts need to be completed:

- Liquid Level Measurement Part

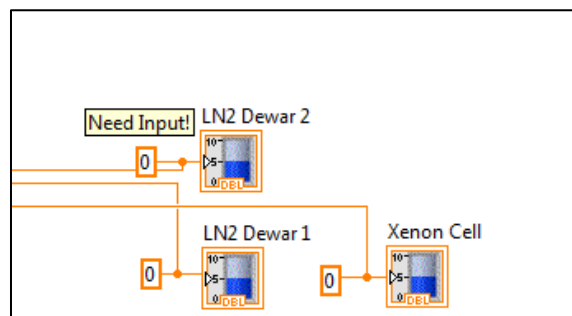


Fig.6. Part 1 of EXO1.vi

Programming of liquid level (Xe, Liquid Nitrogen) measurement is needed. The measurement programming is stated in Manual of Controller 286, and RS232 Connection is needed to talk to computer.

- Field Point Signal Input Part

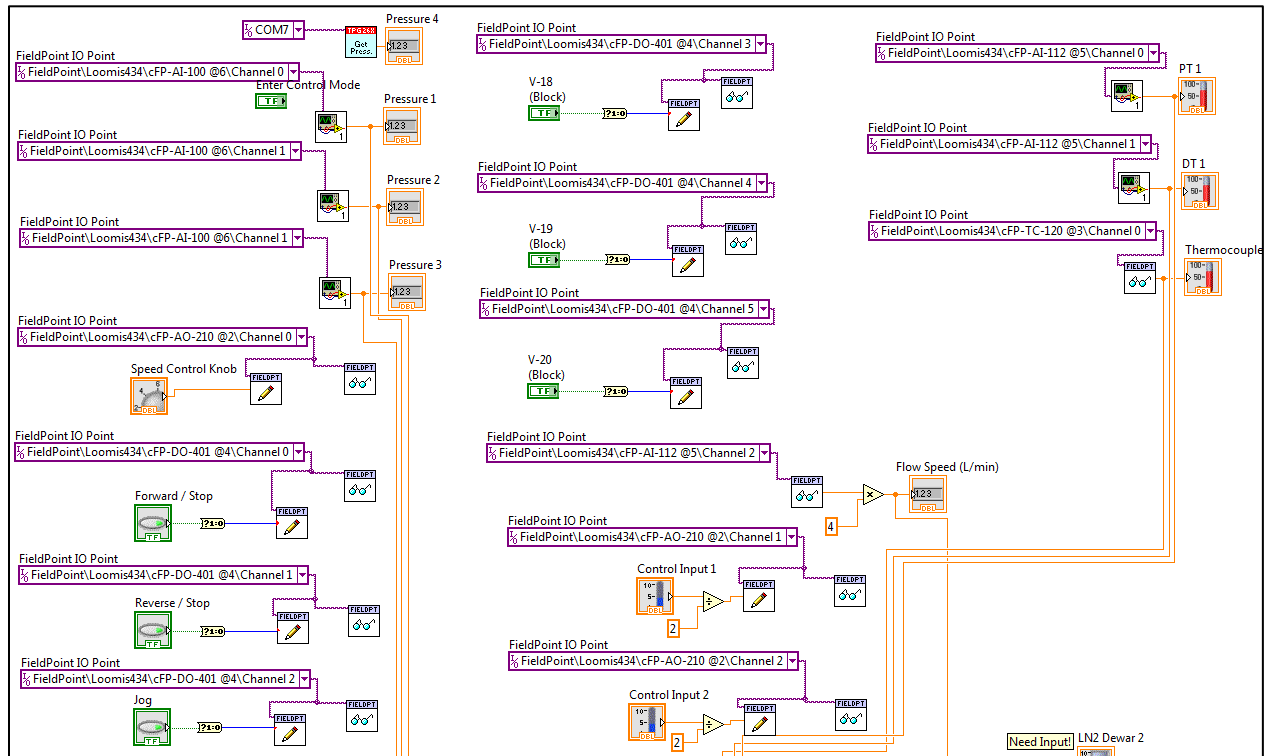


Fig.7. Part 2 of EXO1.vi

All the purple blocks show the input requirement by fieldpoint. Signal can be temperature by PT 100 & DT 670 & thermal sensors, pressure by pressure transducer & Pressure gauge (PFEIFFER.Inc.), and control signal to the pump, etc.

In order to make the Labview Block Diagram concise, sub vi's are used, including PressureTransducer.vi, TemperatureMeasurementDT.vi, and TemperatureMeasurementPT.vi. So remember to include the three kinds of sub vi's in the same folder with the main program vi's.

The three sub vi's are three function fitted from the data given by their companies. Go to the product website for more information:

PT 100: <http://www.lakeshore.com/Documents/F038-00-00.pdf>

DT 670: <http://www.lakeshore.com/Documents/F003-01-00.pdf>

Pressure Transducer: The response data is given in a sheet, shipped together with the transducers.

As to the control of the recirculation pump, below is the control methods:

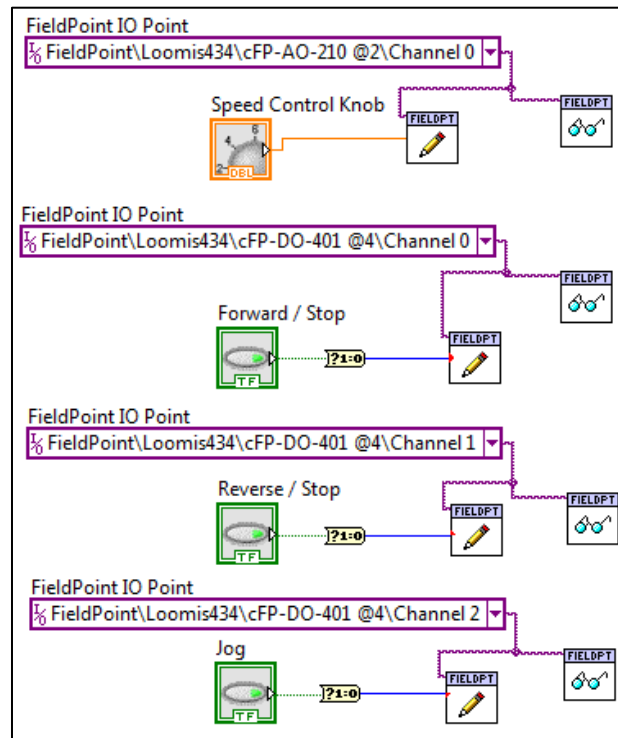


Fig.8. Control of the Recirculation Pump

The first part (the top one) is used to control the speed of pump. The pump can be run with speed from 20 to 60 Hz, and the voltage signal (0 to 10 V) will be used to control its speed from 0 to its maximum, with a proportional relationship.

The below three parts are used to control its Forward/Stop, Reverse/Stop, and Jog, with just digital output signal by fieldpoint.



Currently, I make the link with Data write draft.vi. When the EXO1.vi is completed, you can change the link to EXO1.vi. The procedure is shown below:

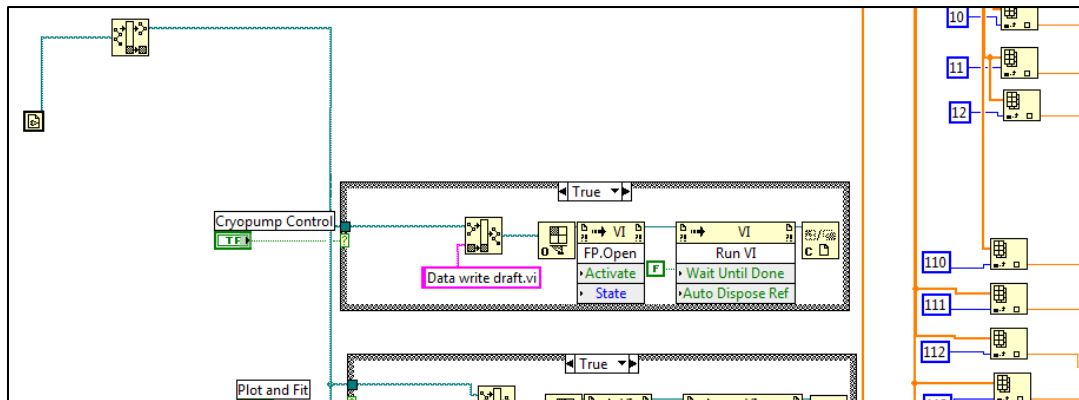


Fig.9. One Part of Block Diagram of ESIII EXO Gas Phase.vi

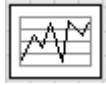
Change the words in the pink rectangle into the file name (EXO1.vi), then run it again, you will

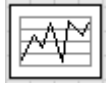
find the EXO1.vi will be linked with

Xe
—●—

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Data Readout and Plot



When click on , the plot program, ESIII Plot.vi will be run.

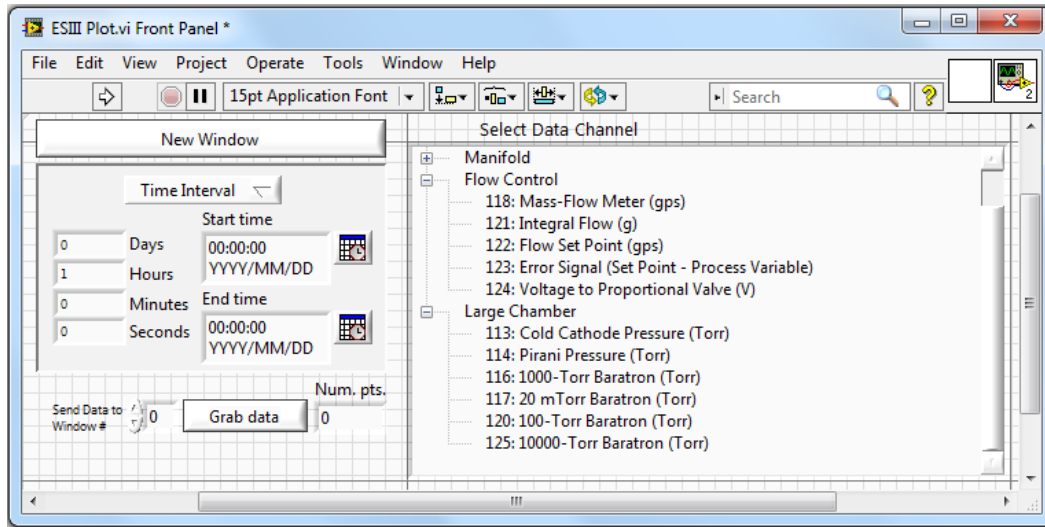


Fig.10. ESIII Plot.vi

Before you select the data channel and plot the data, you should first click the *New Window* button, to have the following window:

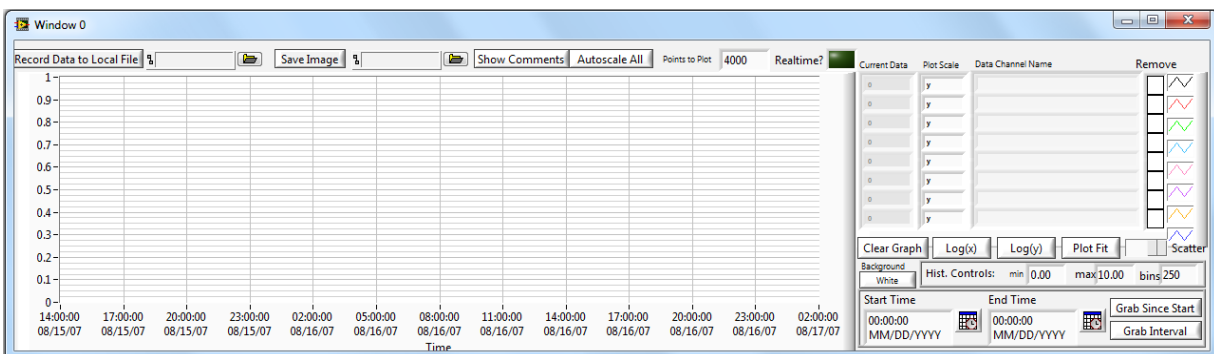


Fig 11. Plot Window

Then, select the *Data Channel*, and the *Start Time* and *End Time*, then hit *Grab data*. The plot will be displayed in Fig 9.

Note:

- In the *Select Data Channel* section, each selection is given in the following format:

000: AAAAAA...

From the block diagram you can know, **only the first three numbers will be used to grab the data from database. The first three numbers give you the Column Number.**

For example, 001 will give you the data in Column 1. So, feel free to do some annotation after the *Colon*.

- When you hit *Save Image* Button (In Fig.9), the *window.vi* will report error:

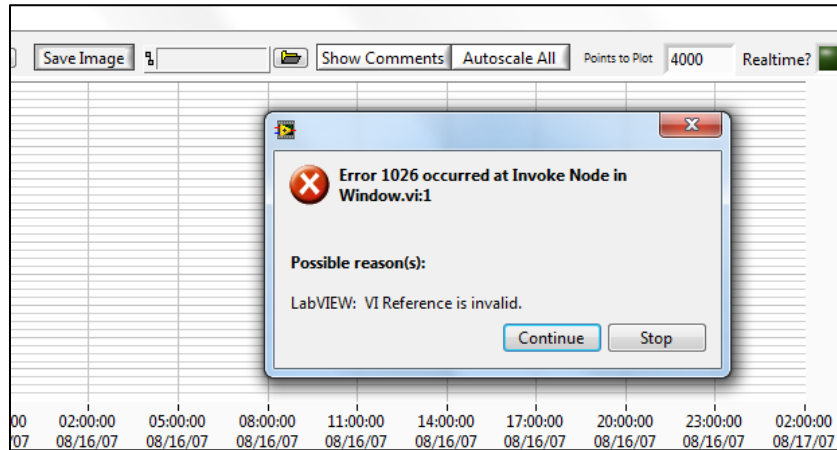


Fig.12. Error When Trying to Save Image

You just need to ignore the error, and hit *Continue*, then you can save the image.

- There is one problem remaining. If you choose Real Time display, which is shown below:

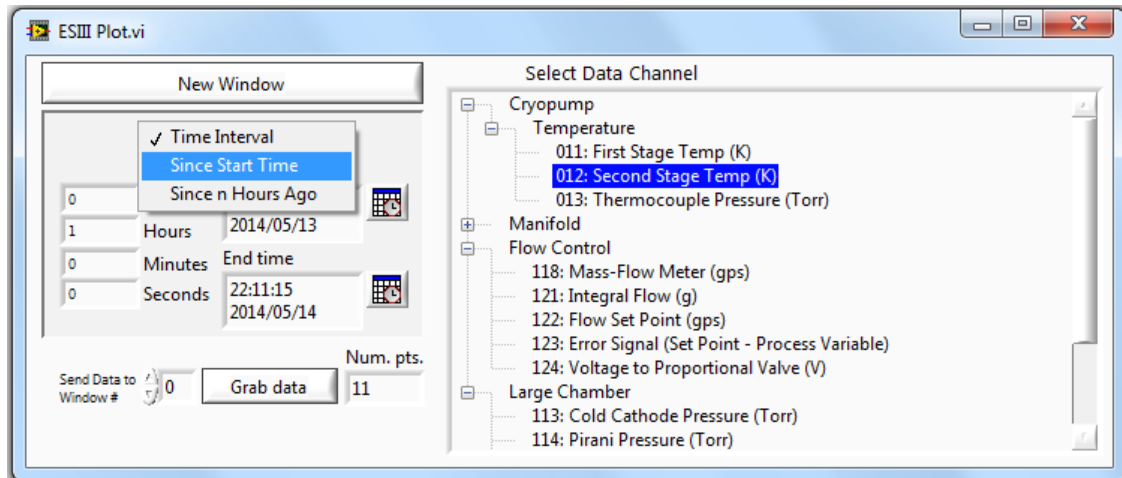


Fig.13. Three Display Ways

The plot will be empty, i.e. no data will be plot. This is a problem, which I still failed to find out the reason.

There are some other files, and I keep them in the folder, even though they are not used. The reason is either these files may be used if some modifications on the Labview files are done, or they are by Stanford University and might be indispensable parts.

If there is still something I fail to cover, please contact me:

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