Universal PMBus™ GUI User's Manual

DOCUMENT REVISION HISTORY

REV	DATE	SOFTWARE DESCRIPTION	S/W REV.	REMARKS
01	06242008	Universal PMBus GUI User's Manual	00.01.00Beta	First Issue
02	02062009	Universal PMBus GUI User's Manual	00.08.00 Beta	For Universal PMBus GUI version 00.008 Beta
03	02142009	Universal PMBus GUI User's Manual	00.09.00	For Universal PMBus GUI version 00.09.00 Beta
04	11272009	Universal PMBus GUI User's Manual	00.11.00	For Universal PMBus GUI version 00.11.00 Beta
05	12292009	Universal PMBus GUI User's Manual	00.12.00	For internal user's manual
06	06092010	Universal PMBus GUI User's Manual	00.16.00	For internal user's manual
07	09092010	Universal PMBus GUI User's Manual	00.17.00	For internal user's manual
08	10182010	Universal PMBus GUI User's Manual	00.20.00	Common User's Manual

TABLE OF CONTENTS

GENERAL INFORMATION

This GUI Software is designed to make PSU accessible to the user using PMBus protocol. It is intended to provide information gathered from the PSU and interactive controls to the basic capabilities of Emerson Power Supply Product which complies in PMBus Protocol. This Software must be installed to PC before the user can make use all of the function of this program. This program can support AC-DC and DC-DC power supplies series. Please refer to the system requirement before starting the installation.

SYSTEM REQUIREMENT:

Minimum Hardware Requirements:

Intel/AMD Dual Core Processor 1.6GHz
1GB RAM (add more RAM if more than 64MB is shared for the video)
ENP USB-to-I2C Adapter

Software Requirements:

Windows XP, Win VISTA (32Bit), Win7 (32Bit)
Dot Net Framework Version 3.5 installed to run the GUI.

INSTALLATION

Note: Make sure that other applications are closed before starting the installation.

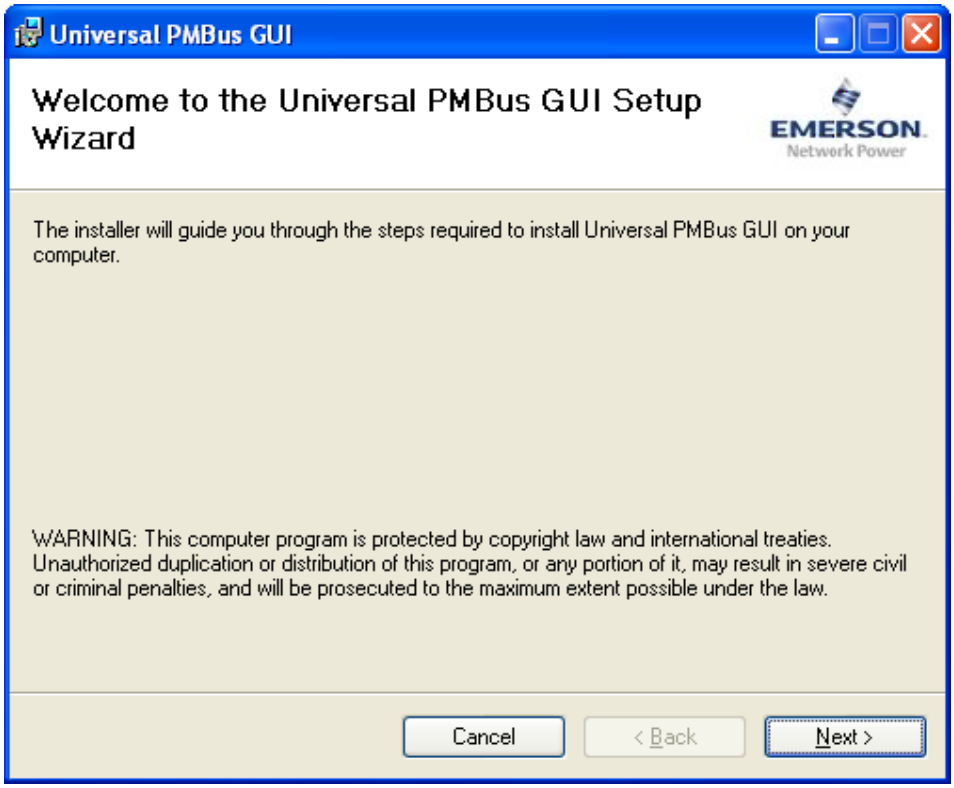
Installation Procedure

Run the installer CD, a pop up window for installation will come out. Select Install software to begin installation.

Once CD is inserted, this installer window panel will appear.

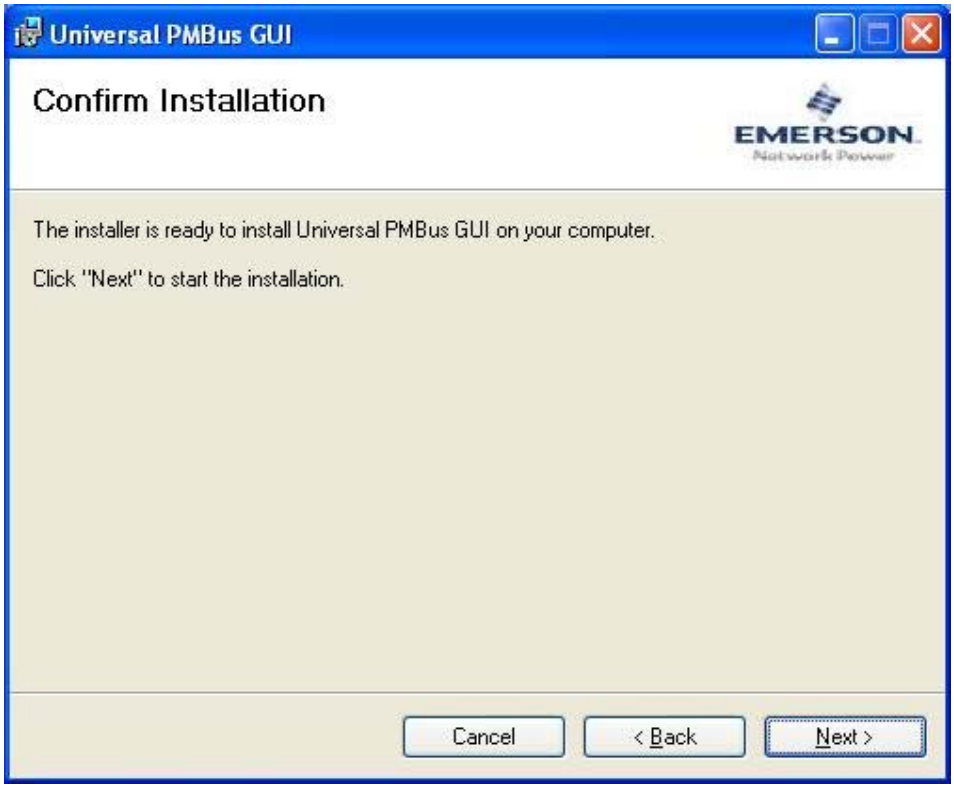
1) Once Install Software was selected, a pop up window wizard will appear to guide you through the installation process.

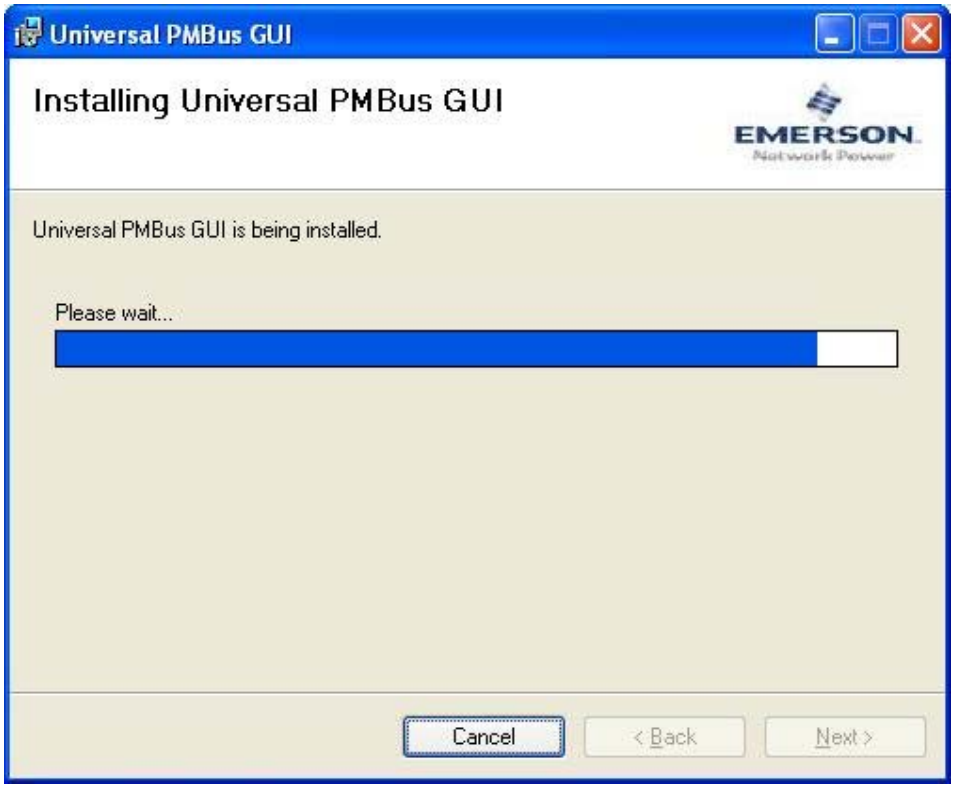
   Figure below is the welcome window for software installation. Just click **"NEXT"** to begin installation.



Note:
If you do not have the **Dot Net Framework Version 3.5** installed, the installation process will prompt you to first install Dot Net Framework Version 3.5. If not, click the "**Install .Net Framework 3.5"** in installer menu window. Once framework installed, proceed the installation of the GUI by selecting the **"Install Software GUI"** in installer menu window.

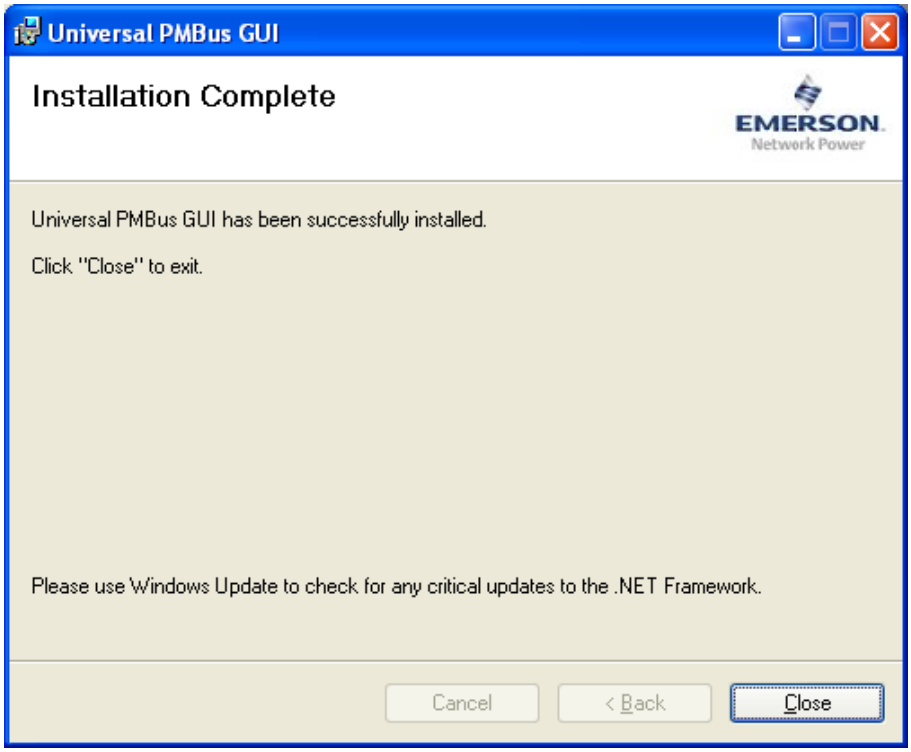
2) This window serves as a confirmation window that installation for GUI is now ready. Click "Next" to start installation.





3) GUI driver and reference file will be installed to your PC. Wait until installation completed.

4) Once installation completed successfully, a pop up wizard will appear that installation completed. See figure below.



Now, you can already start using the Universal PMBus GUI.

GETTING STARTED

GENERAL SETUP

To provide proper communication between the Universal PMBus GUI software and power supply, both PSU must be loaded with correct firmware version compatible with the GUI. The PSU must also be calibrated to make use of all the function correctly and to get correct data from actual PSU.

PSU COMPATIBILITY

PSU Case with PMBus Protocol Compatibility

HARDWARE SETUP

1. Plug Standard USB adapter to your PC using compatible USB cable.
2. Wait until you PC detect it as new Hardware (It only happens when first time use in USB port).
3. If USB adapter is detected by your PC, plug the connecting cable from USB adapter to I2C port of the PSU Case.

Note: Make sure that the Power Supply already power up to have proper communication with Universal PMBus GUI Software.

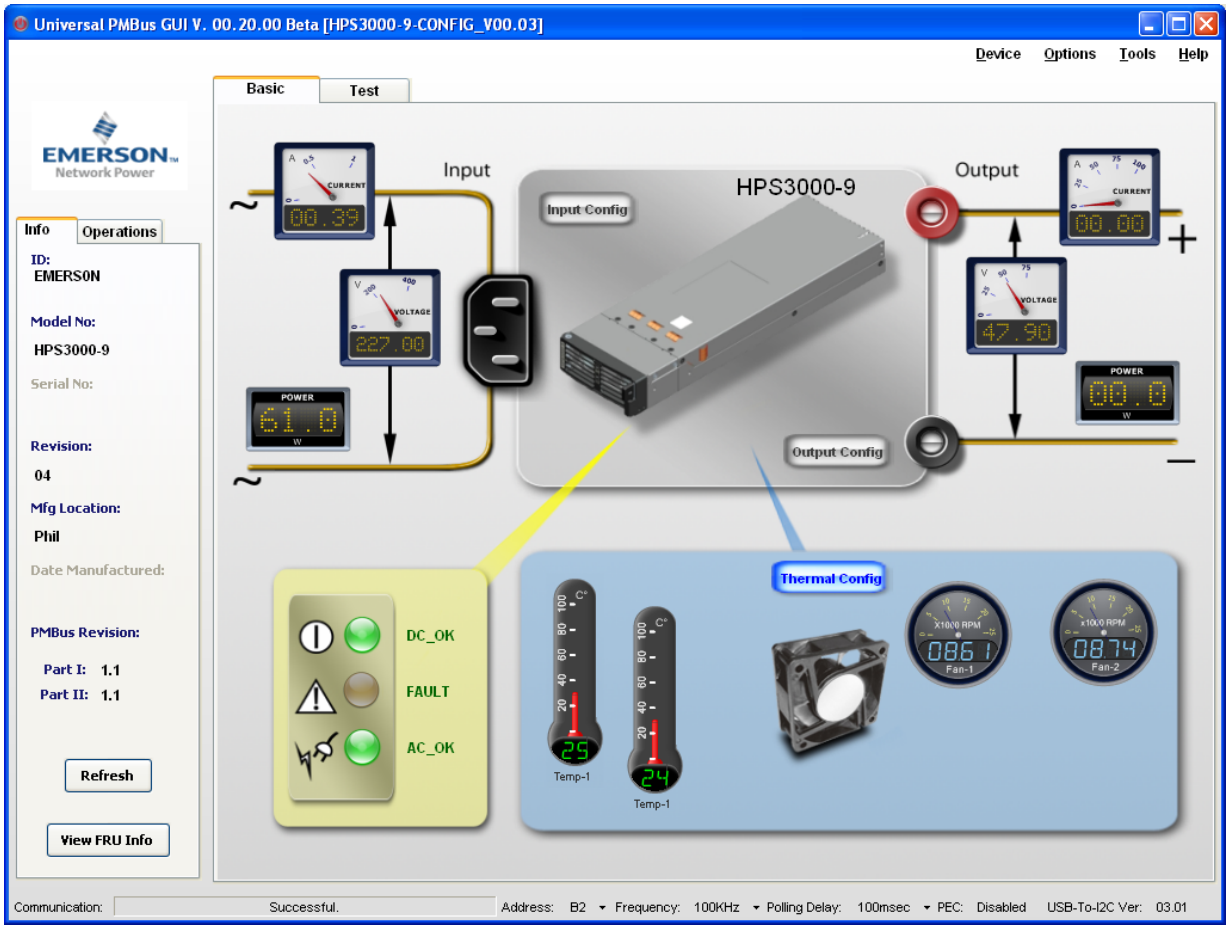
LAUNCHING THE UNIVERSAL PMBUS GUI

Connect the hot PSU device to the I2C-to-USB adapter, then I2C-to-USB adapter to the PC.

On the Start Menu Program or in your desktop, double-click the **Universal PMBus GUI** (red power) icon. A window will appear as seen below shows that the GUI is currently detecting the connected device.

Note: Make sure that power supply and USB to I2C adapter are connected, this is to avoid pro long process of detection then prompt the user above the invalid address.

Once the GUI has automatically detected the device the window will appear as seen below:



As an example this window shows that the HPS3000-9 unit has been detected.

GUI DETAILS

GUI consists of different controls and indicators to support the power supply functionality. Most of the common parameters of the power supply are being displayed in the GUI. Configuration and controls are also made available to support actual interaction with the device. Universal PMBus GUI also has the capability to configure, monitor and upgrade firmware of the power supply.

Here are the lists of GUI features available and functional on this version:

MAIN MENU

This is located at the upper rightmost part of the Universal PMBus GUI. It consists of the following menu.

- **Device** menu for making, editing, importing and exporting device configuration.
- **Option**s Menu – Simulation Mode and Detect Device.
- **Tools** Menu- use to enable advance panel, error log and for firmware update.
- **Help** Menu – was use to view User's Manual, GUI updates and detailed information.

MAIN PANELS

Basic Panel Tab – it display basic parameter of the power supply such as voltage, current, power, flags and temperatures.

Test Panel Tab – this commonly use for debugging power supply debugging of PMBus Command. It is also use for burn-in testing and data logging.

GUI ADD ON FEATURES

Device Configuration – this is design for authorized personnel only. This function was design for editing configuration file to support available power supply.

Error Panel Log – it logs all I2C communication error the GUI encounter while it is in basic panel is currently active.

FRU Reader – it is design to read and access FRU of the power supply.

Advance Panel Tab – this will be use for updating and changing of software configurable Firmware. Most of this feature are for design for field application and design engineer.

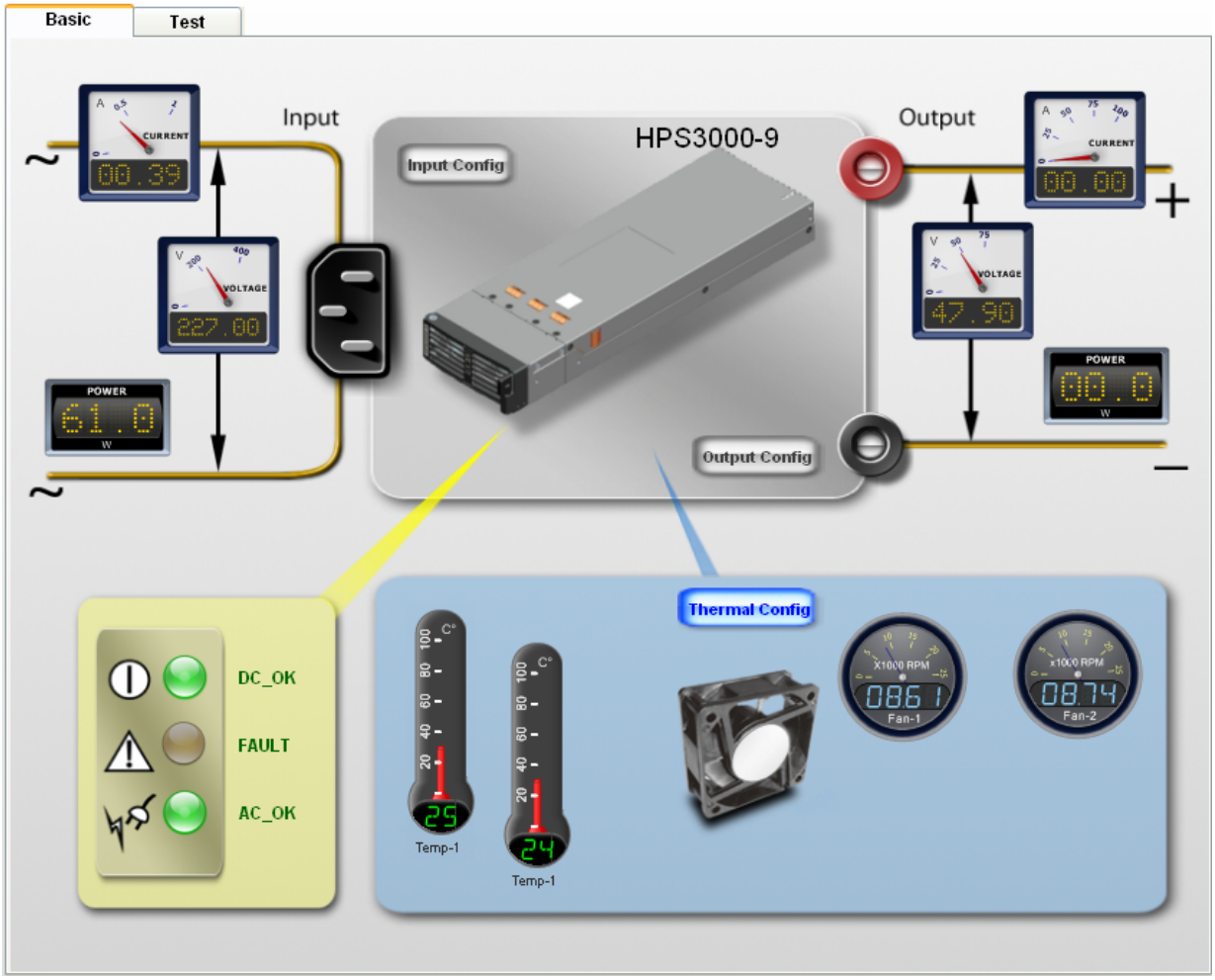
Firmware Update – use for upgrading firmware of power supply.

GUI FEATURES AND DETAILED DESCRIPTION

BASIC TAB

This panel was design to display basic parameters of the power supply. Input, output and thermal parameters are common display to be seen in this section.

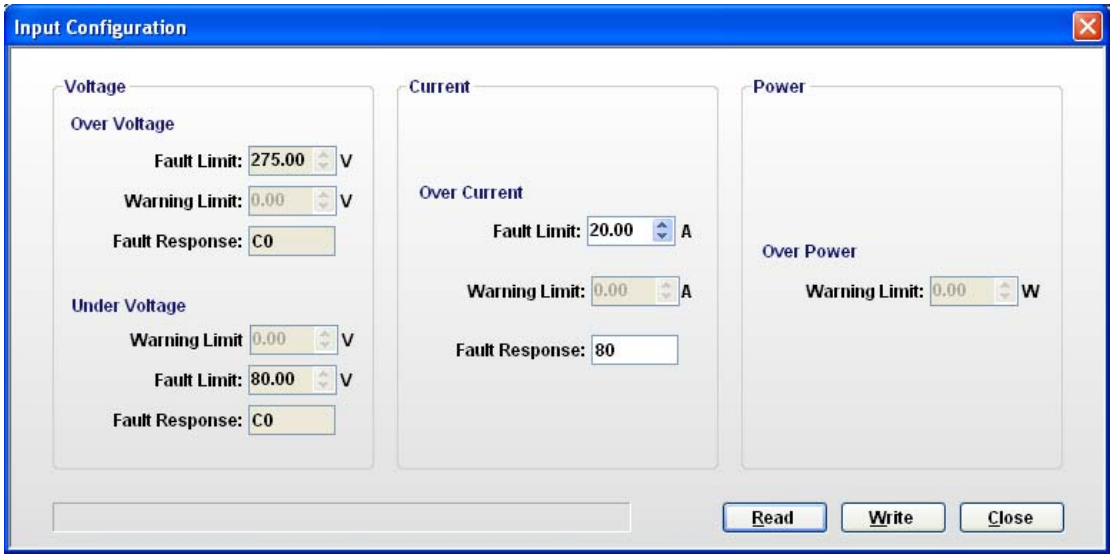
See figure below:



This view contains graphical gauges indicating input and output parameters of the power supply (e.g. ***input and output voltage, current and power***). It also shows the ***temperature*** reading and ***fan speed*** depending on how many temp sensors and fans are installed in the PSU. There is also an LED indicator emulation to provide easy indication of the PSU status.

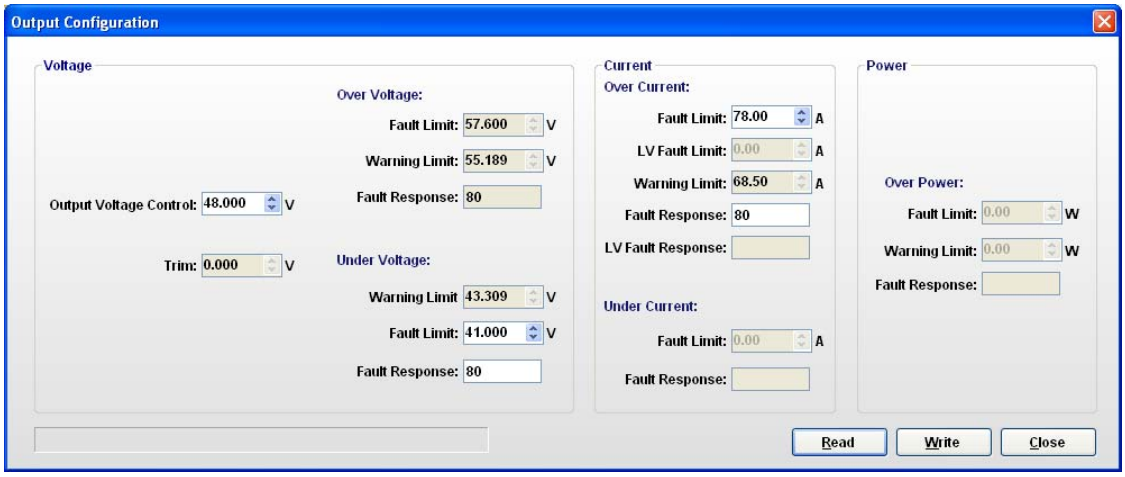
INPUT CONFIGURATION

– appears when the Input **"Config**" button is clicked on the Basic panel. Here you can set the input limits of the power supply.



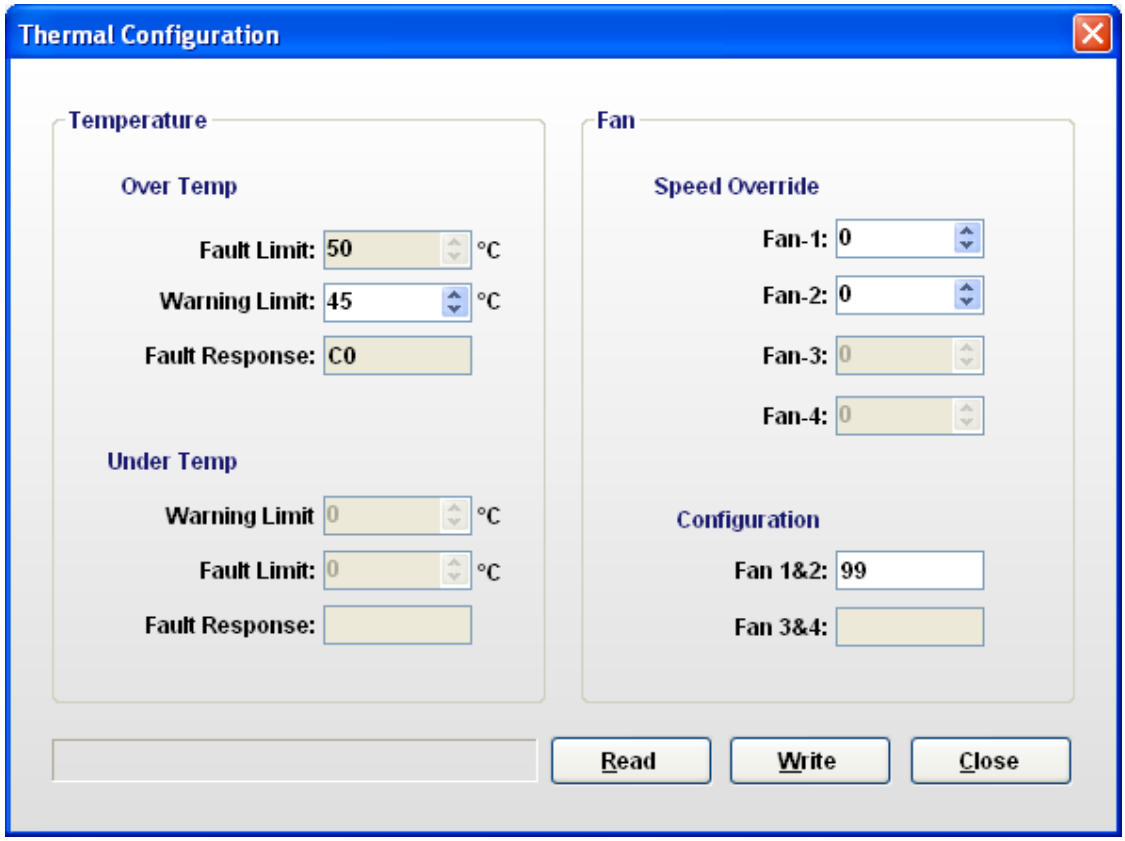
OUTPUT CONFIGURATION

- appears when the Output "**Config**" button is clicked on the Basic folder. Here you can set the output control and limits and of the power supply.



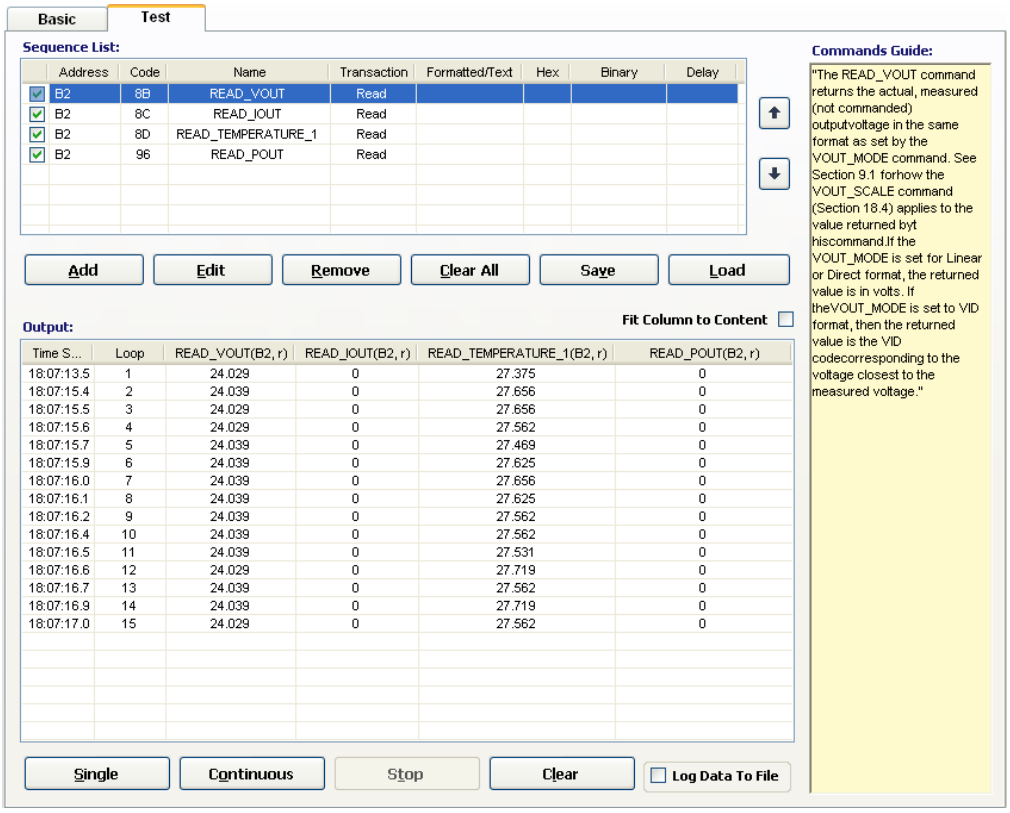
THERMAL CONFIGURATION

– appears when the Thermal "**Config**" button is clicked on the Basic folder. Here you can set the thermal limits and fan configurations of the power supply.



Test Panel

In this section you can set commands and execute them once or continuously. This also allows you to connect to multiple devices because the **Address** column is changeable per command on the **Sequence List** view. You can also arrange the command sequence, save and load it for future use. The output data on the **Output** view, acquired to the power supply device can also be exported to a text file. The **Command Guide** shows corresponding PMBus command information by clicking a row on the **Sequence List** view.



A sequence list can be created by clicking the "**Add**" button. A list of supported commands by the PSU will appear and can be selected to be added to the sequence list. Each command in the sequence list can be edited according to your preference by highlighting the command and clicking "**Edit**". Commands may be removed from the list by using the "**Remove**" and "**Clear All**" button. The sequence list may be saved to a sequence list file by using the "**Save**" button, which can be reused and reloaded by using the "**Load**" button.

The sequence list can be executed either as a Single burst or Continuous execution by using the "**Single**" or "**Continuous**" button. Continuous execution may be paused by using the "**Stop**" button.
The logged results can be cleared using the "Clear" button or can be saved in a text file using the "**Export to File**" button. The text file is formatted in a way that it can also be easily exported to Microsoft Excel™ format.

For more detail about Using Test Panel Section, proceed to Using Test Panel Chapter of this user's manual.

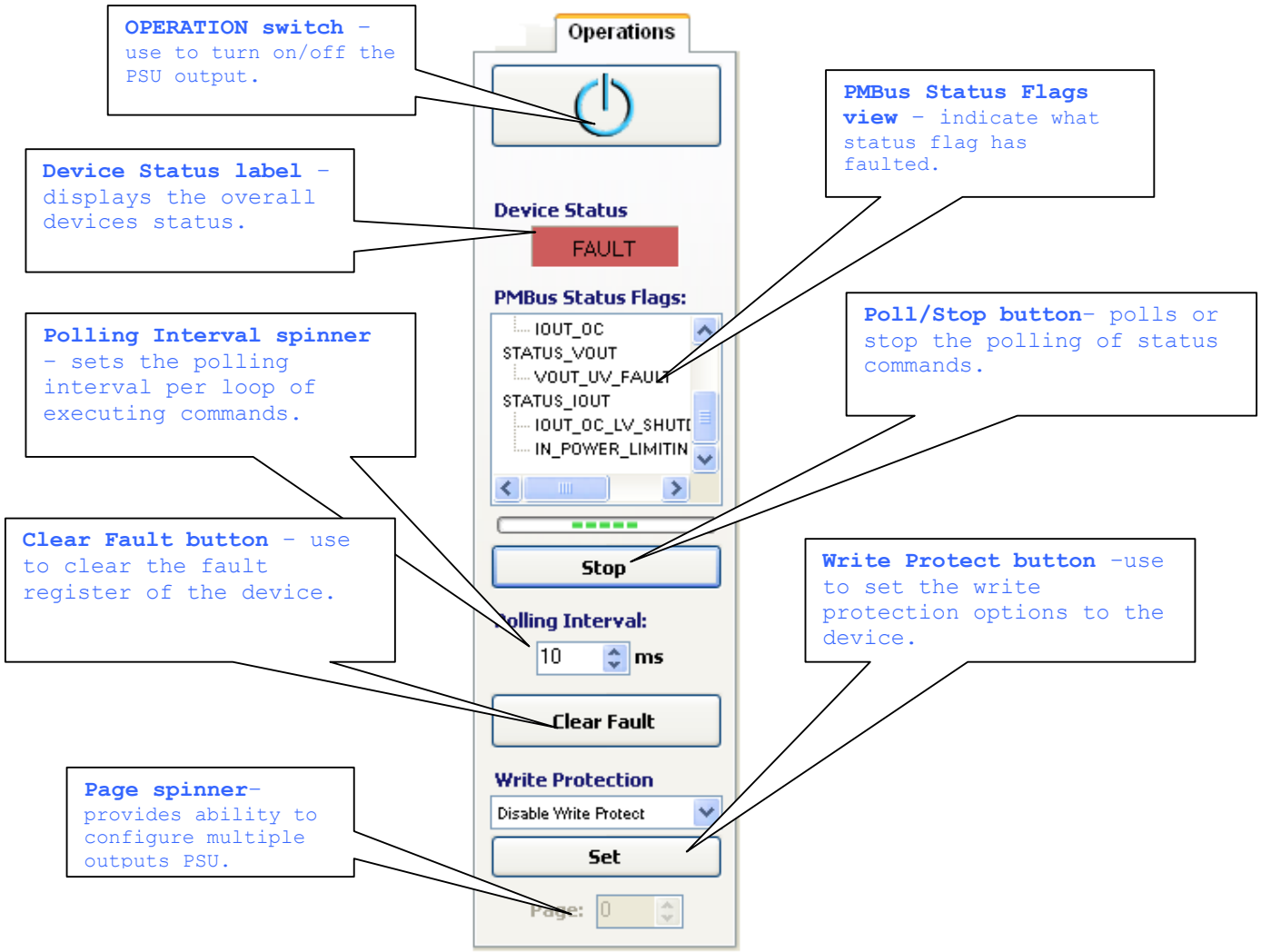
Favorites Panel

Info Tab displays the manufacturing information of the power supply device.

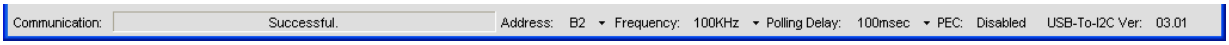
Note: Only supported command codes by the PSU will be displayed in this panel.

Operations Tab

This was design support power supply operations and PMBus Status flags. See detailed description below.



MAIN STATUS



Communication - displays the current USB-to-I2C communication status.

Address – displays the current devices address. The device address be changed by clicking its value and choosing or entering a new value. The address indicated is only applicable for the Basic Panel and Favorites Panel.

Frequency - displays the current USB-to-frequency.

Polling Delay – displays the polling delay of the execution loop.

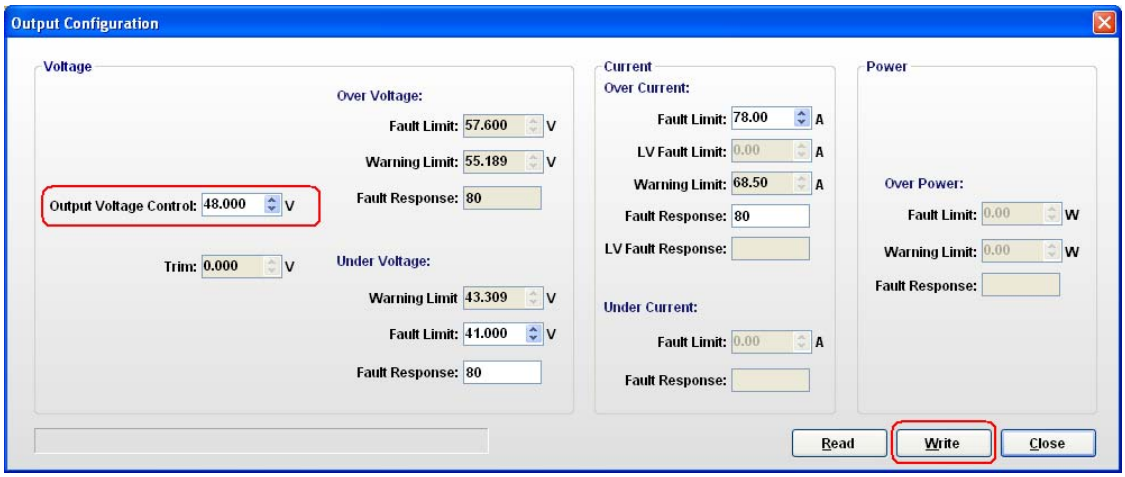
PEC – indicated whether the device is PEC enabled or disabled.

USB-to-I2C Ver – displays the USB-toI2C version.

USING THE BASIC PANEL

ADJUSTING POWER SUPPLY PARAMETERS

1) For example to adjust the output voltage of the power supply device, click the **Output "Config"** button. The Output Configuration dialog window will appear on the screen, as seen below, with the current Output settings of the power supply device.



2) If the VOUT_COMMAND is supported by your device then the "**Output Voltage Control**" is enabled. Change its value with your desired value, and click the "Write" button. The GUI will then write to the power supply device and automatically returns the value written if it is a valid value for the device.

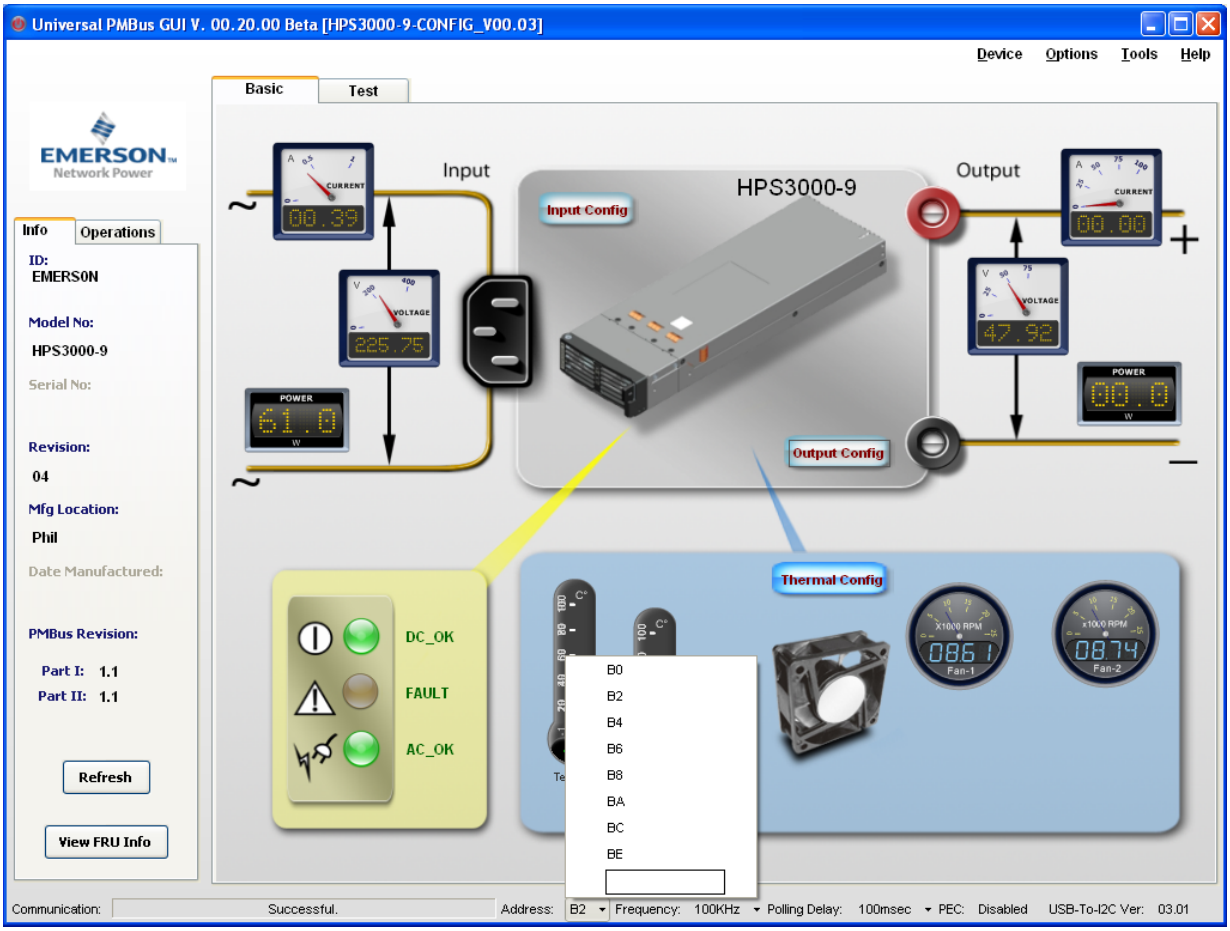
3) You may do the same steps for the other basic power supply parameters.

CHANGING THE ADDRESS

If you have a multi-device connection, you can view other devices' parameter on the Basic Panel.

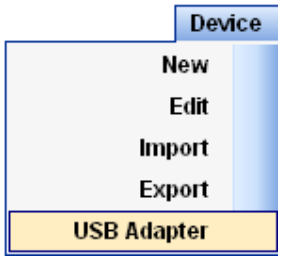
1) Click the Address value in the Status. A list of the addresses will appear on the top of it plus a text field

2) Select from the list or you can enter the desired address if it is not in the list.



CHANGING USB ADAPTER

To change the adapter selected, go to menu then select USB Adapter.

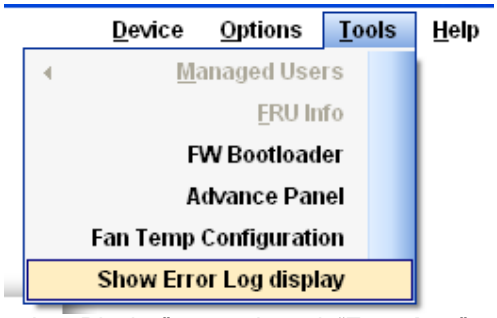


Standard Adapters are the USB adapter that uses HID driver. Communication using this adapter was slow.

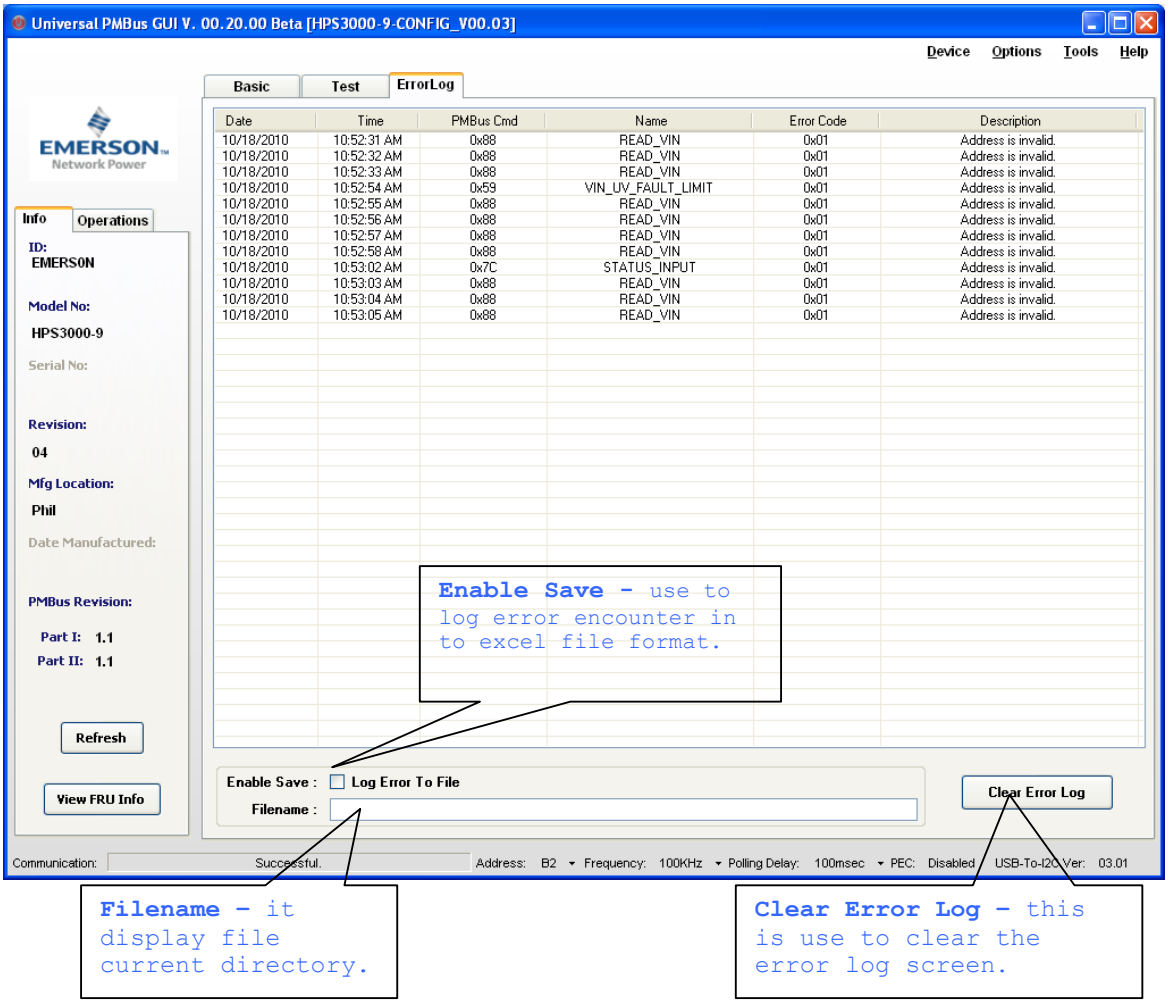
SHOW ERROR LOG DISPLAY

Error log display was also base on basic panel real time display. Once basic panel encounter communication error it will log the error it encounter in Error Panel Display.

To enable the panel, go to Tool Menu then select "Show Error Log Display".



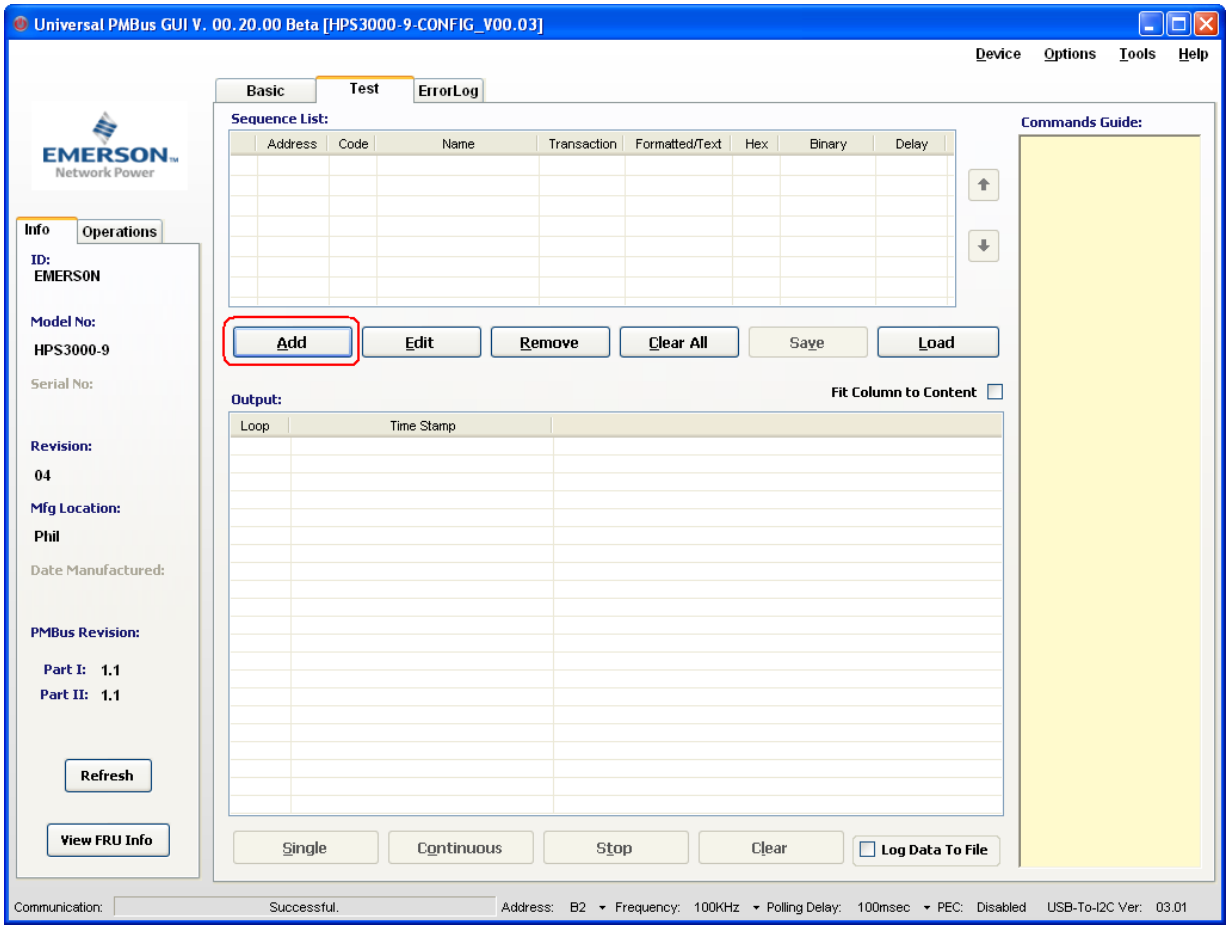
Once "Show Error Log Display" was selected, "**Error Log**" tab will be added in Universal PMBus Panel.



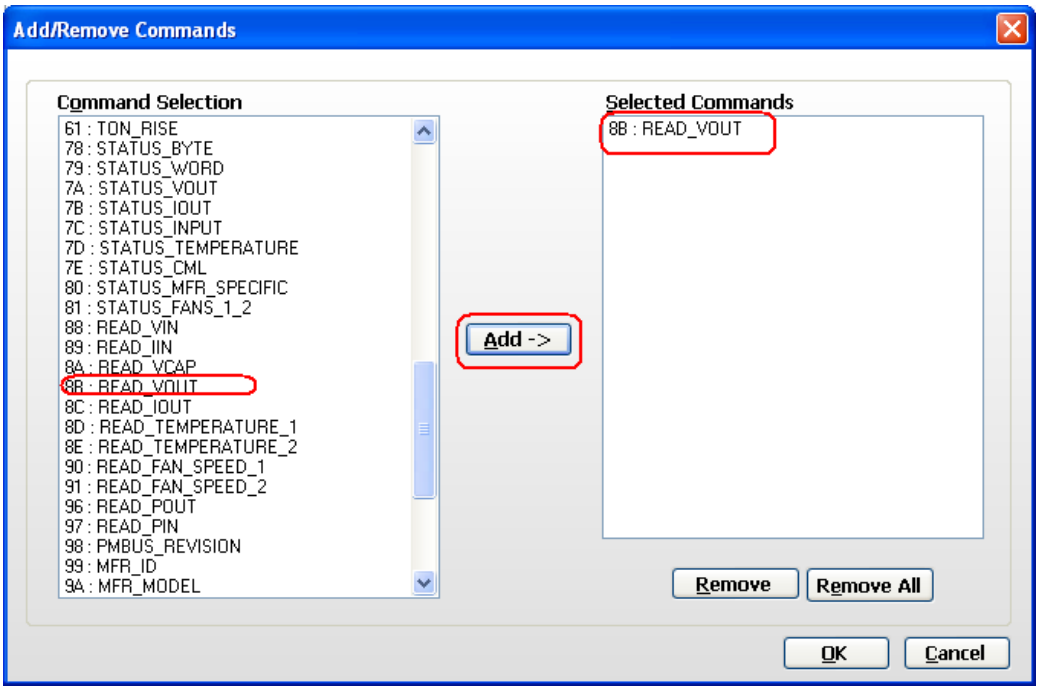
USING THE TEST PANEL

ADDING A COMMAND ON THE SEQUENCE LIST VIEW

1) To add a command on the Sequence List view click the Add button on the Test Panel



2) And the dialog window will appear as seen below.



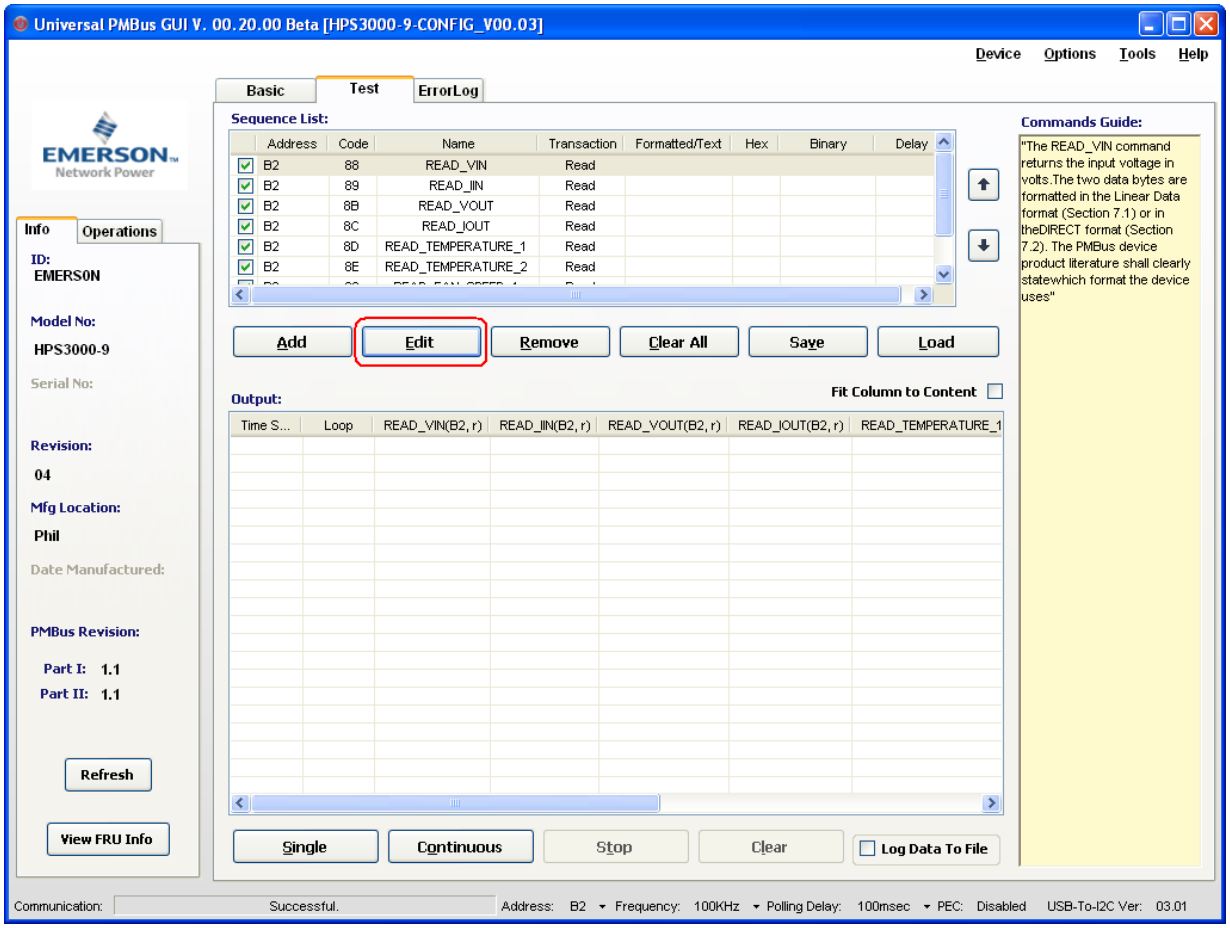
3) Select the desired command/s in the **Command Selection** list and press the **Add->** button. The command/s you selected will appear on the **Selected Commands** list.

4) You can remove command/s from the **Selected Commands** list by clicking the **Remove** button or by clicking the **Remove All** to remove them all.

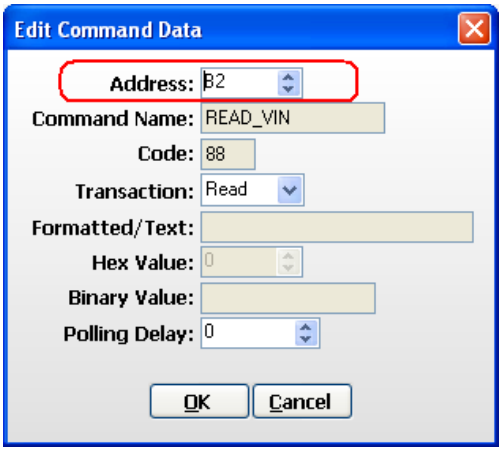
5) To add it to the **Sequence List** view in the **Test Panel**, click the **OK** button.

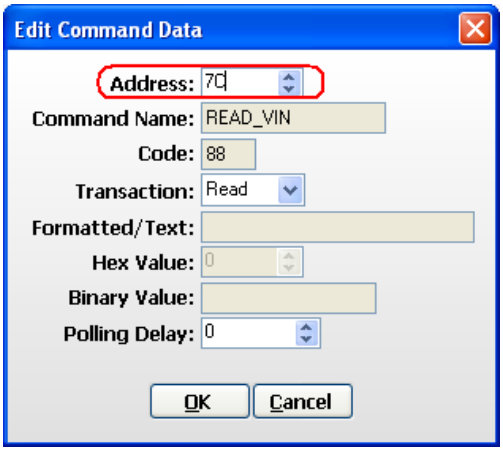
EDITING A COMMAND FROM THE SEQUENCE LIST VIEW

1) Click the Edit button from the Test Panel.

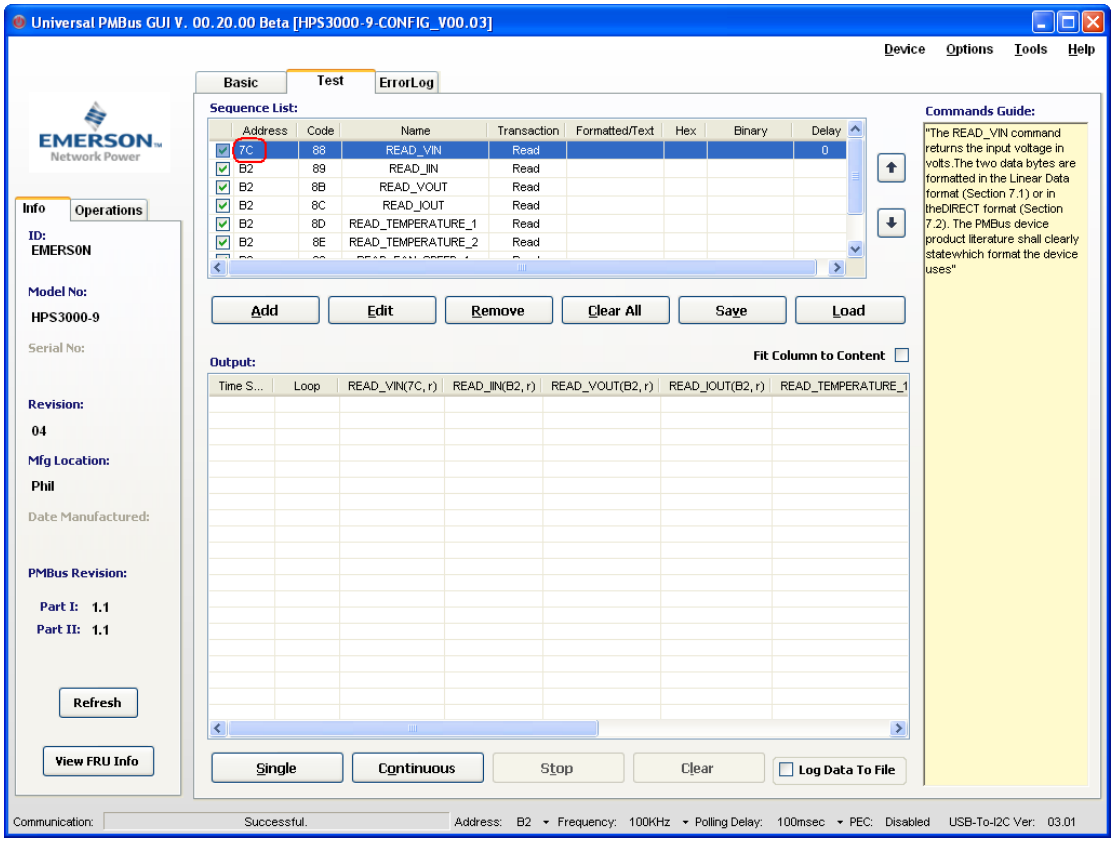


2) The dialog will appear as seen below. Change the **Address** value, say from **7E** to **7C**. Then press the OK button.



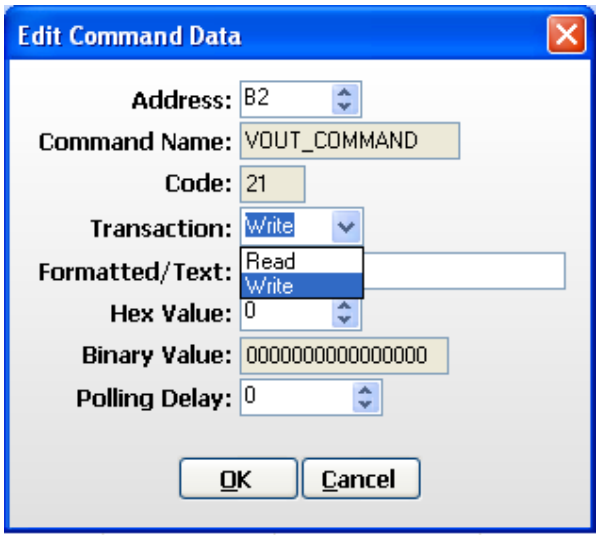


3) The address of the command is now changed to 7C as seen below.

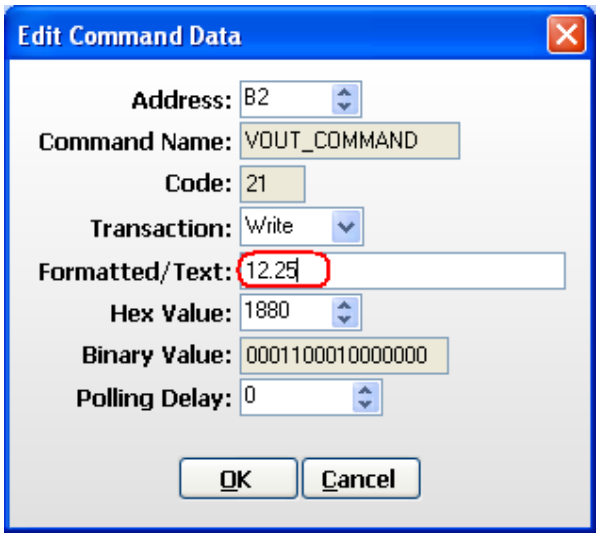


WRITING DATA TO THE DEVICE IN THE SEQUENCE LIST VIEW

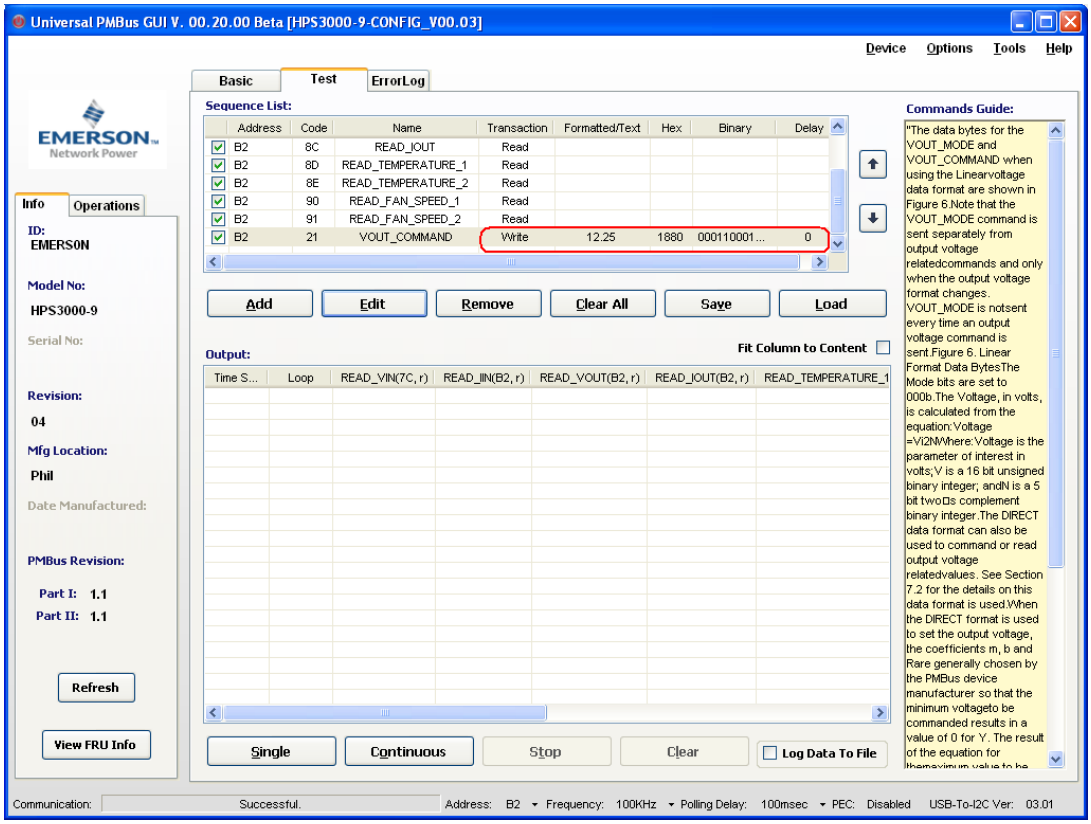
1) The commands in the **Sequence List** view are read transactions by default. We can make a command a write transaction. For example we want to make the VOUT_COMMAND write a 12.25 to the power supply device to change its output voltage to 12.25V, we need to click the **Edit** button. On the **Edit Command Data** dialog window change the transaction from **Read** to **Write**.



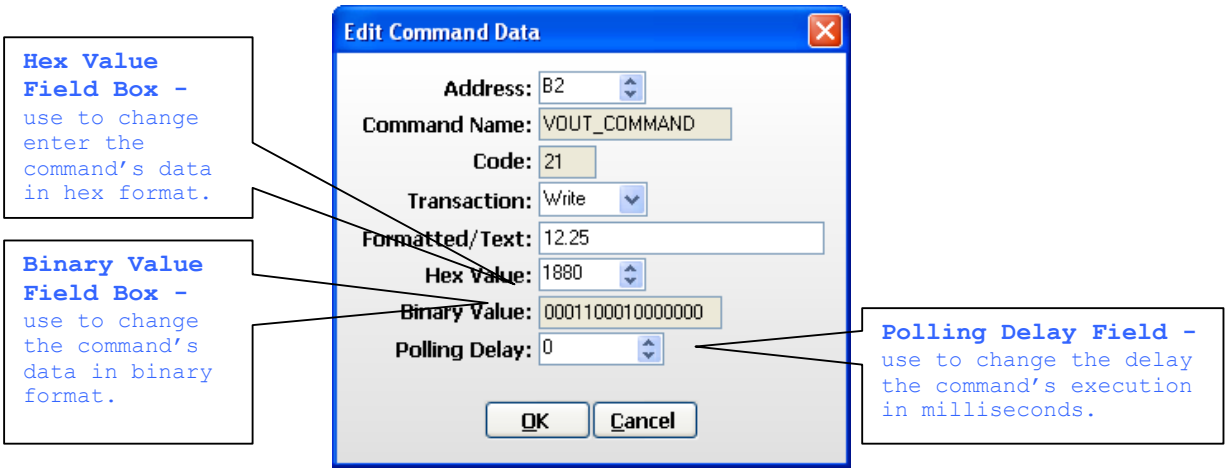
2) Then change or type the **Formatted/Text** field value to **12.25** then click the **OK** button.



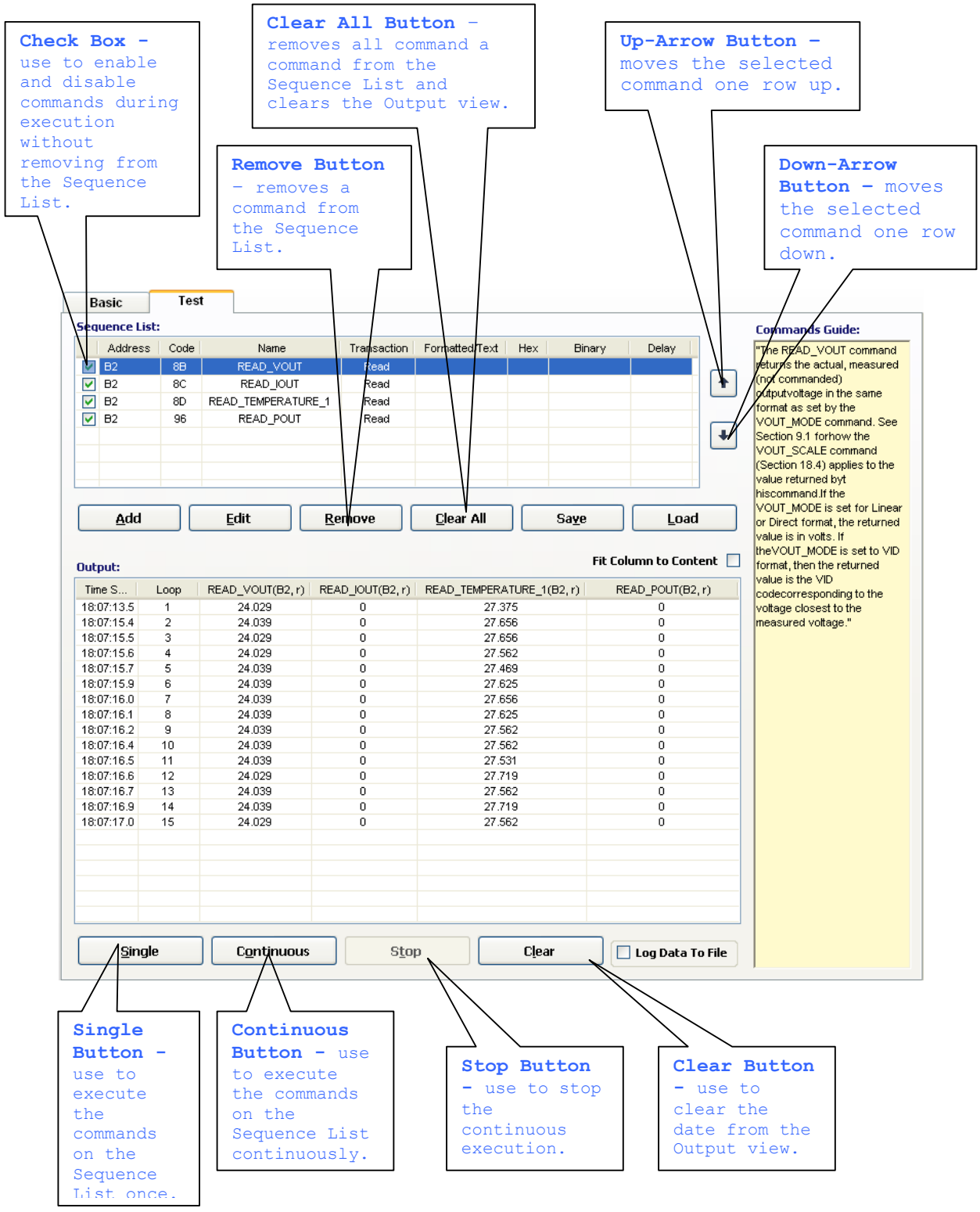
3) The command is now a write transaction and it will write 12.25 to the power supply device when a the **Single** or **Continuous** button is clicked.



A. OTHER EDIT COMMAND DATA DIALOG CONTROL PARAMETERS



B. CONTROLS FOR DISABLING, REMOVING AND ARRANGING THE COMMANDS ON THE TEST PANEL

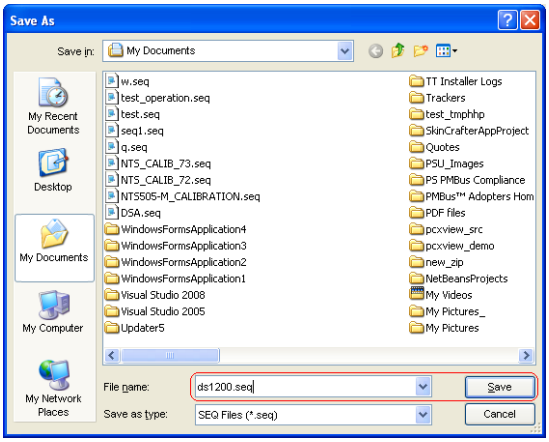


SAVING THE COMMAND SEQUENCE

The command sequence you made can be saved for future use or for use with the other power supply device model.

1) Click the **Save** button and the **Save** dialog will appear as seen below.

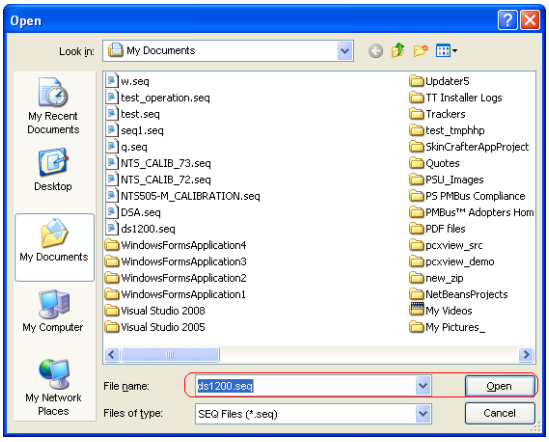
2) On the **Save** dialog, enter the desired filename of the sequence with an extension of .**seq**. Then click the Save button on the **Save** dialog. For example the command sequence we have will be saved as ds1200.seq.



C. LOADING THE COMMAND SEQUENCE FILE.

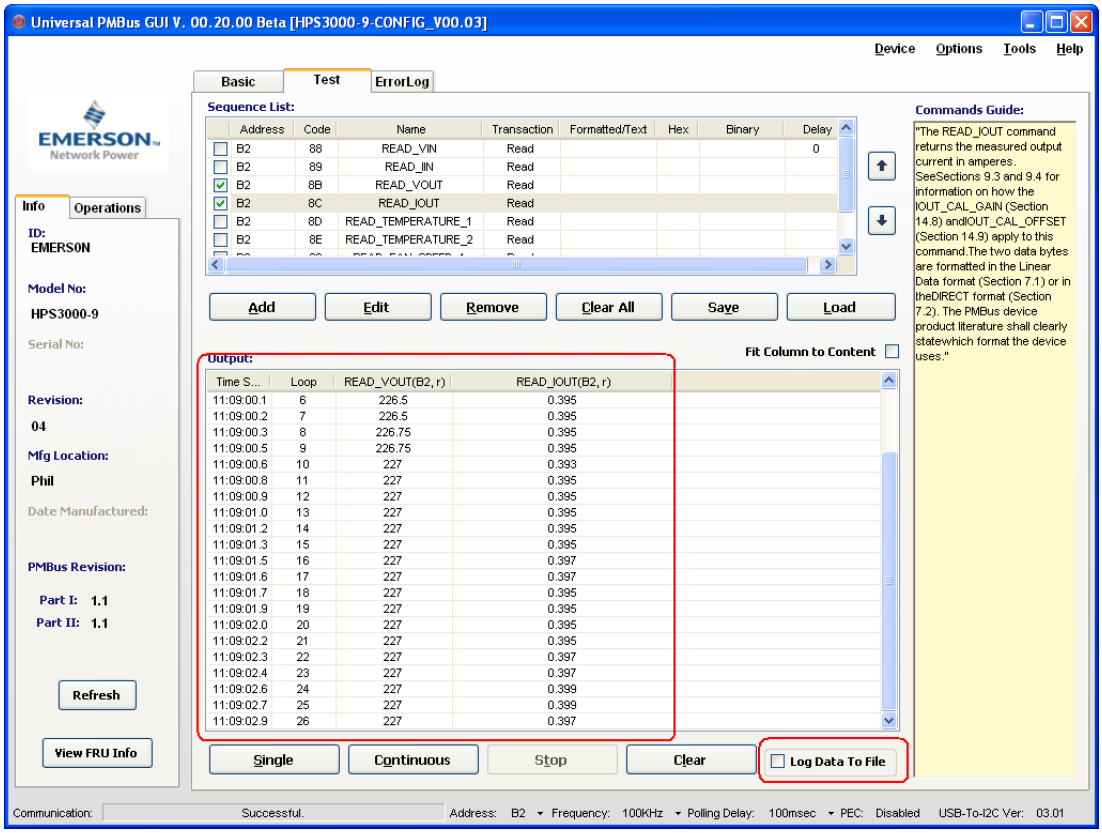
1) Click the **Load** button and the **Open** dialog will appear as seen below.

2) On the **Open** dialog window, enter the filename of the command sequence for example to load. Then click the **Open** button to load the file. Here the **ds1200.seq** will be opened.

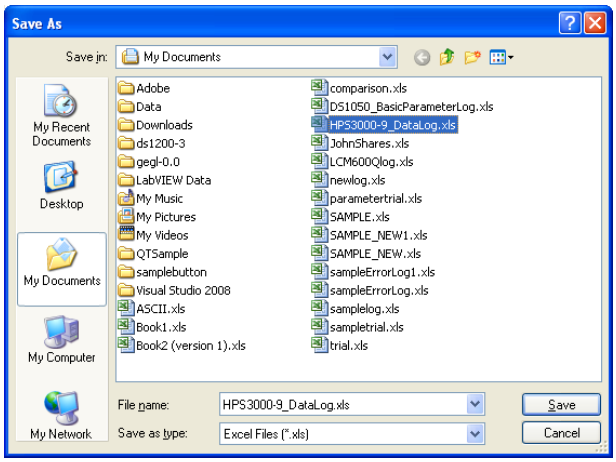


LOG THE OUTPUT DATA TO TEXT FILE

Data can be directly log to file in excel format. To enable this feature in Universal PMBus GUI, select the "**Log Data To File**" to set logging in active. Below are some of the steps to enable log to file.

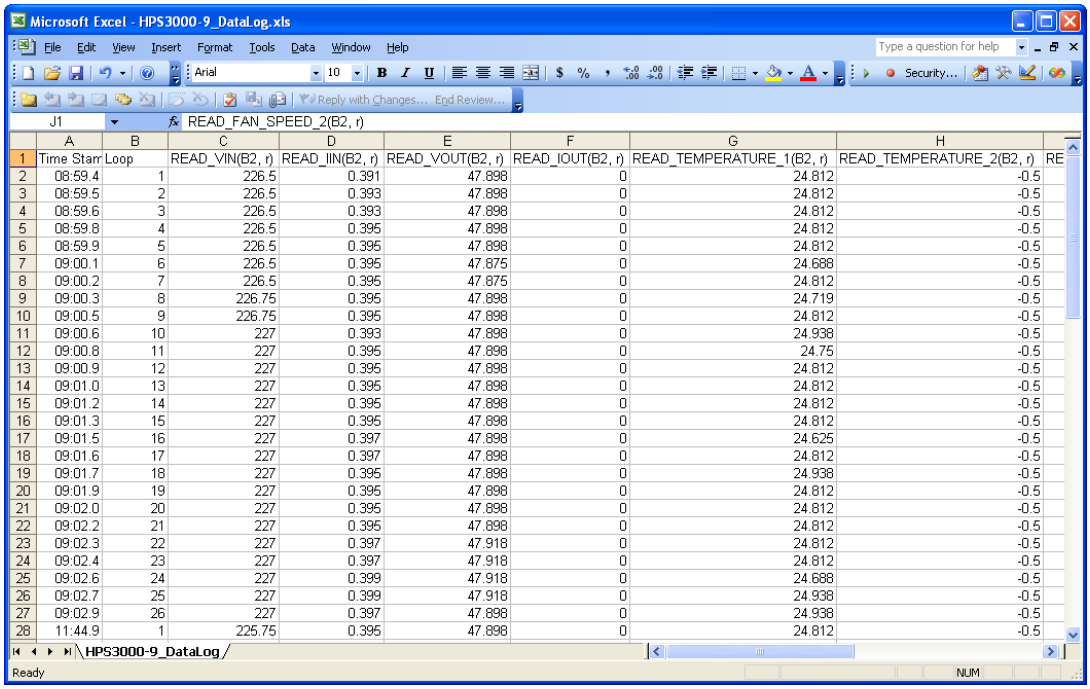


1) Click on the "**Log Data To File**" checkbox and a **Save** dialog will be appear on the screen.



2) Enter the desired filename and then click the **Saved** button.
   Every time Test Panel read from the device it will automatically log data on the Output list and directly to the file.

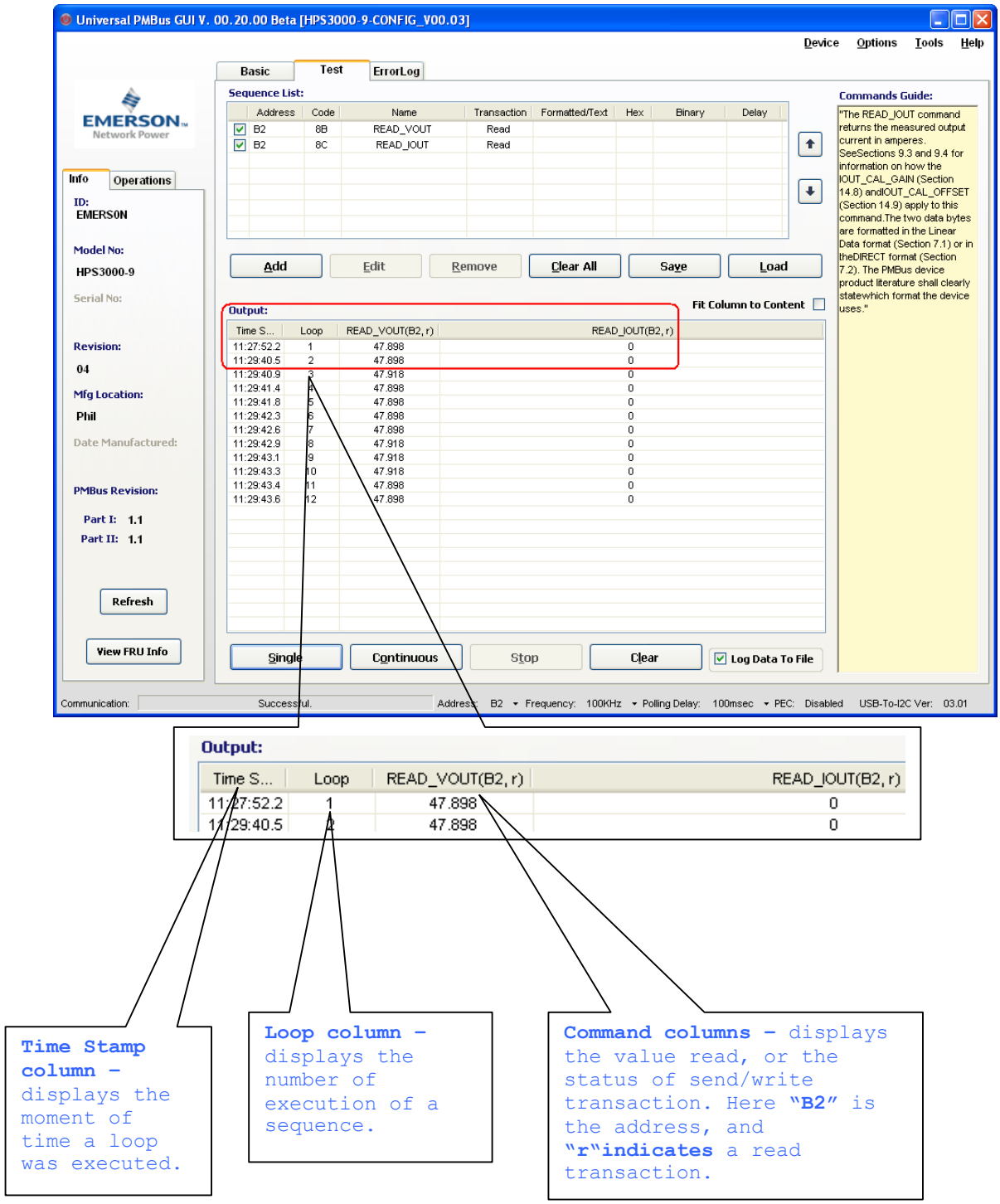
3) Press Stop Button then Go to the Location of file to open the Log file.



	A	B	C	D	E	F	G	H	
1	Time Stam	Loop	READ_VIN(B2, r)	READ_IIN(B2, r)	READ_VOUT(B2, r)	READ_IOUT(B2, r)	READ_TEMPERATURE_1(B2, r)	READ_TEMPERATURE_2(B2, r)	RE
2	08:59.4	1	226.5	0.391	47.898	0	24.812	-0.5	
3	08:59.5	2	226.5	0.393	47.898	0	24.812	-0.5	
4	08:59.6	3	226.5	0.393	47.898	0	24.812	-0.5	
5	08:59.8	4	226.5	0.395	47.898	0	24.812	-0.5	
6	08:59.9	5	226.5	0.395	47.898	0	24.812	-0.5	
7	09:00.1	6	226.5	0.395	47.875	0	24.688	-0.5	
8	09:00.2	7	226.5	0.395	47.875	0	24.812	-0.5	
9	09:00.3	8	226.75	0.395	47.898	0	24.719	-0.5	
10	09:00.5	9	226.75	0.395	47.898	0	24.812	-0.5	
11	09:00.6	10	227	0.393	47.898	0	24.938	-0.5	
12	09:00.8	11	227	0.395	47.898	0	24.75	-0.5	
13	09:00.9	12	227	0.395	47.898	0	24.812	-0.5	
14	09:01.0	13	227	0.395	47.898	0	24.812	-0.5	
15	09:01.2	14	227	0.395	47.898	0	24.812	-0.5	
16	09:01.3	15	227	0.395	47.898	0	24.812	-0.5	
17	09:01.5	16	227	0.397	47.898	0	24.625	-0.5	
18	09:01.6	17	227	0.397	47.898	0	24.812	-0.5	
19	09:01.7	18	227	0.395	47.898	0	24.938	-0.5	
20	09:01.9	19	227	0.395	47.898	0	24.812	-0.5	
21	09:02.0	20	227	0.395	47.898	0	24.812	-0.5	
22	09:02.2	21	227	0.395	47.898	0	24.812	-0.5	
23	09:02.3	22	227	0.397	47.918	0	24.812	-0.5	
24	09:02.4	23	227	0.397	47.918	0	24.812	-0.5	
25	09:02.6	24	227	0.399	47.918	0	24.688	-0.5	
26	09:02.7	25	227	0.399	47.918	0	24.938	-0.5	
27	09:02.9	26	227	0.397	47.898	0	24.938	-0.5	
28	11:44.9	1	225.75	0.395	47.898	0	24.812	-0.5	

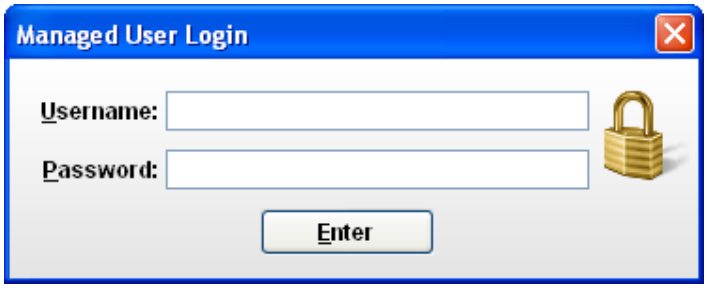
Note: *Don't open file if Test Panel Data Logging is still ongoing. It will cause error. If you want to review data you can directly see data in the Output Log display of the test Panel. You can only review the file once test already completed.*

OUTPUT VIEW INFORMATION

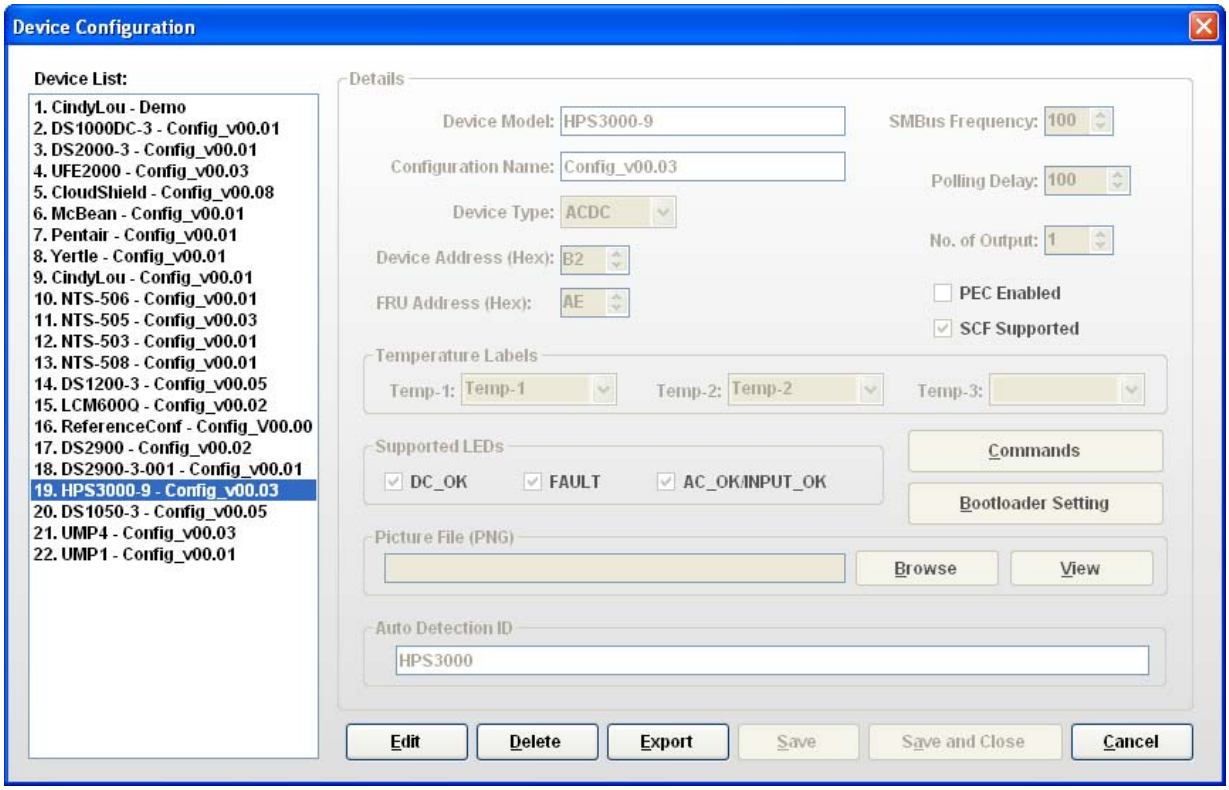


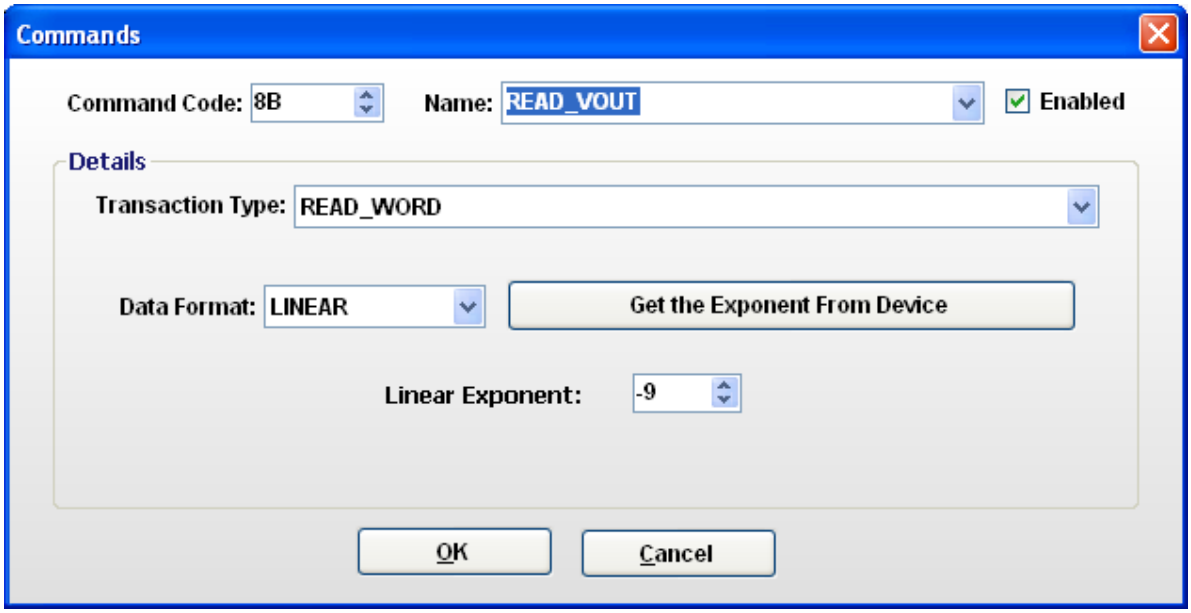
Configuration File Update (Authorized personnel only)

This section was designed for authorized personnel only. It is also password protected for security protection to change any setting and update supported PSU and configuration file.



This will show the list of supported Power Supply model. Display and supported command can be change and update in this section.

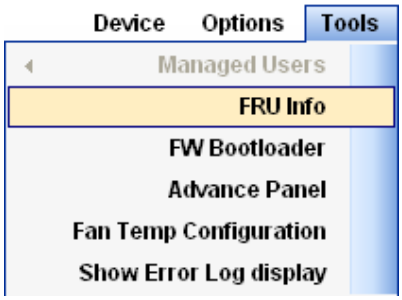




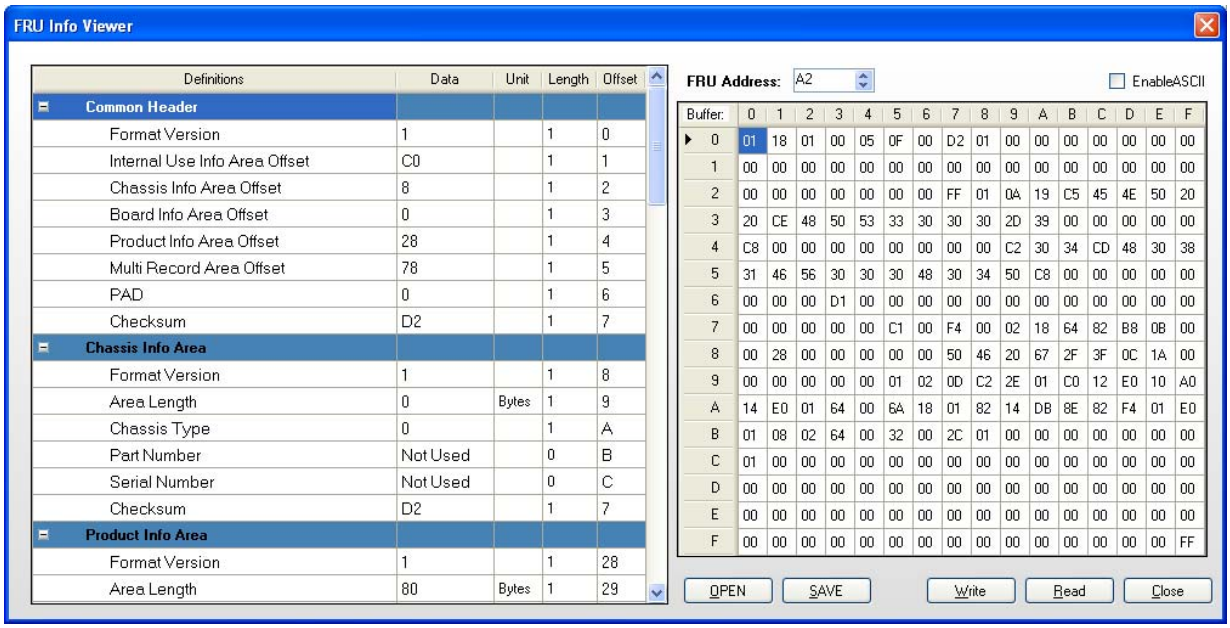
ACCESSING FRU Information

Emerson power supply product has the capability to store product information. It is being stored in **EEPROM** (Electrically Erasable Programmable Read-Only Memory) of the power supply. **FRU** (Filed Replaceable Unit) information can be access through Universal PMBus GUI.

Go to Tools then Select FRU Info to launch FRU Viewer.



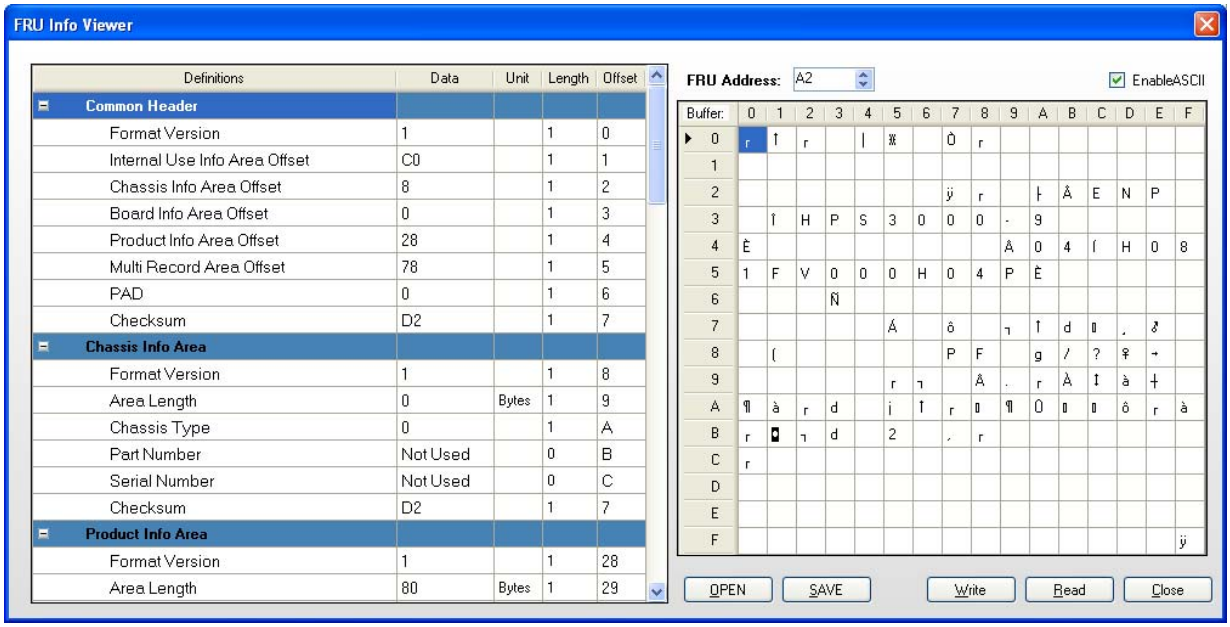
FRU can be view in Hex format or in ASCII format.



Definitions	Data	Unit	Length	Offset
Common Header				
Format Version	1		1	0
Internal Use Info Area Offset	C0		1	1
Chassis Info Area Offset	8		1	2
Board Info Area Offset	0		1	3
Product Info Area Offset	28		1	4
Multi Record Area Offset	78		1	5
PAD	0		1	6
Checksum	D2		1	7
Chassis Info Area				
Format Version	1		1	8
Area Length	0	Bytes	1	9
Chassis Type	0		1	A
Part Number	Not Used		0	B
Serial Number	Not Used		0	C
Checksum	D2		1	7
Product Info Area				
Format Version	1		1	28
Area Length	80	Bytes	1	29

Buffer:	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	01	18	01	00	05	0F	00	D2	01	00	00	00	00	00	00	00
1	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
2	00	00	00	00	00	00	00	FF	01	0A	19	C5	45	4E	50	20
3	20	CE	48	50	53	33	30	30	30	2D	39	00	00	00	00	00
4	C8	00	00	00	00	00	00	00	00	C2	30	34	CD	48	30	38
5	31	46	56	30	30	30	48	30	34	50	C8	00	00	00	00	00
6	00	00	00	D1	00	00	00	00	00	00	00	00	00	00	00	00
7	00	00	00	00	00	C1	00	F4	00	02	18	64	82	B8	0B	00
8	00	28	00	00	00	00	00	50	46	20	67	2F	3F	0C	1A	00
9	00	00	00	00	00	01	02	0D	C2	2E	01	C0	12	E0	10	A0
A	14	E0	01	64	00	6A	18	01	82	14	DB	8E	82	F4	01	E0
B	01	08	02	64	00	32	00	2C	01	00	00	00	00	00	00	00
C	01	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
D	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
E	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
F	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	FF

To Enable ASCII Format, click "**EnableASCII**" checkbox.



FRU Information view also has the capability to store FRU data into file with "***.EEP**" extension.

OPEN – it will load *.EEP file which are stored in local drive.

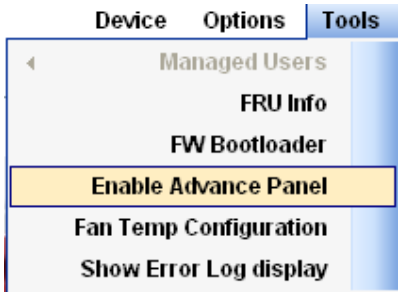
SAVE – save FRU information into file (*.EEP format).

Write – it will write the *.EEP file being loaded into the power supply EEPROM.

Read – extract FRU information from actual unit.

Advance Panel Section (Authorized personnel only)

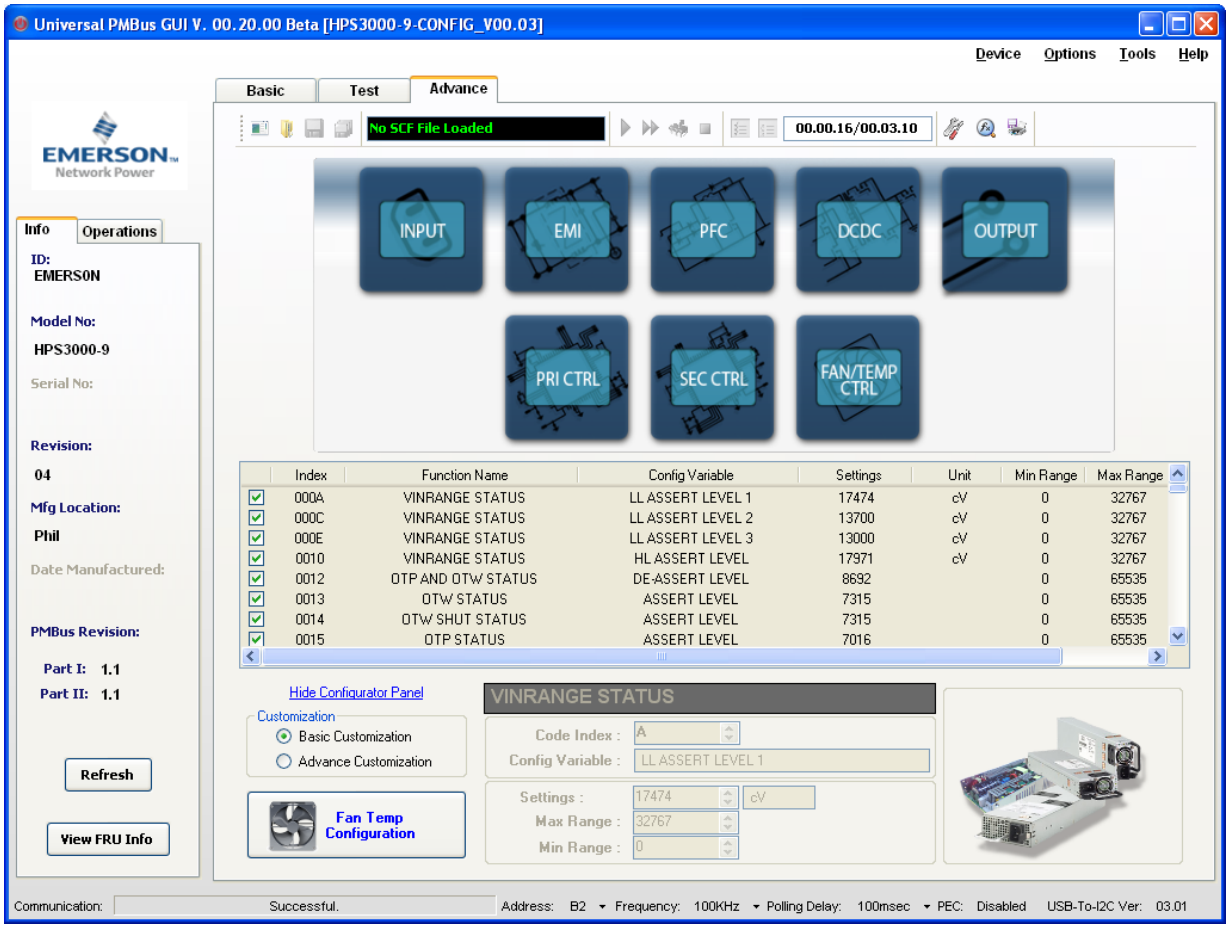
Universal PMBus GUI also has the feature for Software Configurable Firmware.



This section was designed for authorized personnel only and has the knowledge on firmware configurable operation. It is also password protected for security protection to change any setting in the power supply that may cause destroying the unit.

There are two login available for Advance Panel Section.

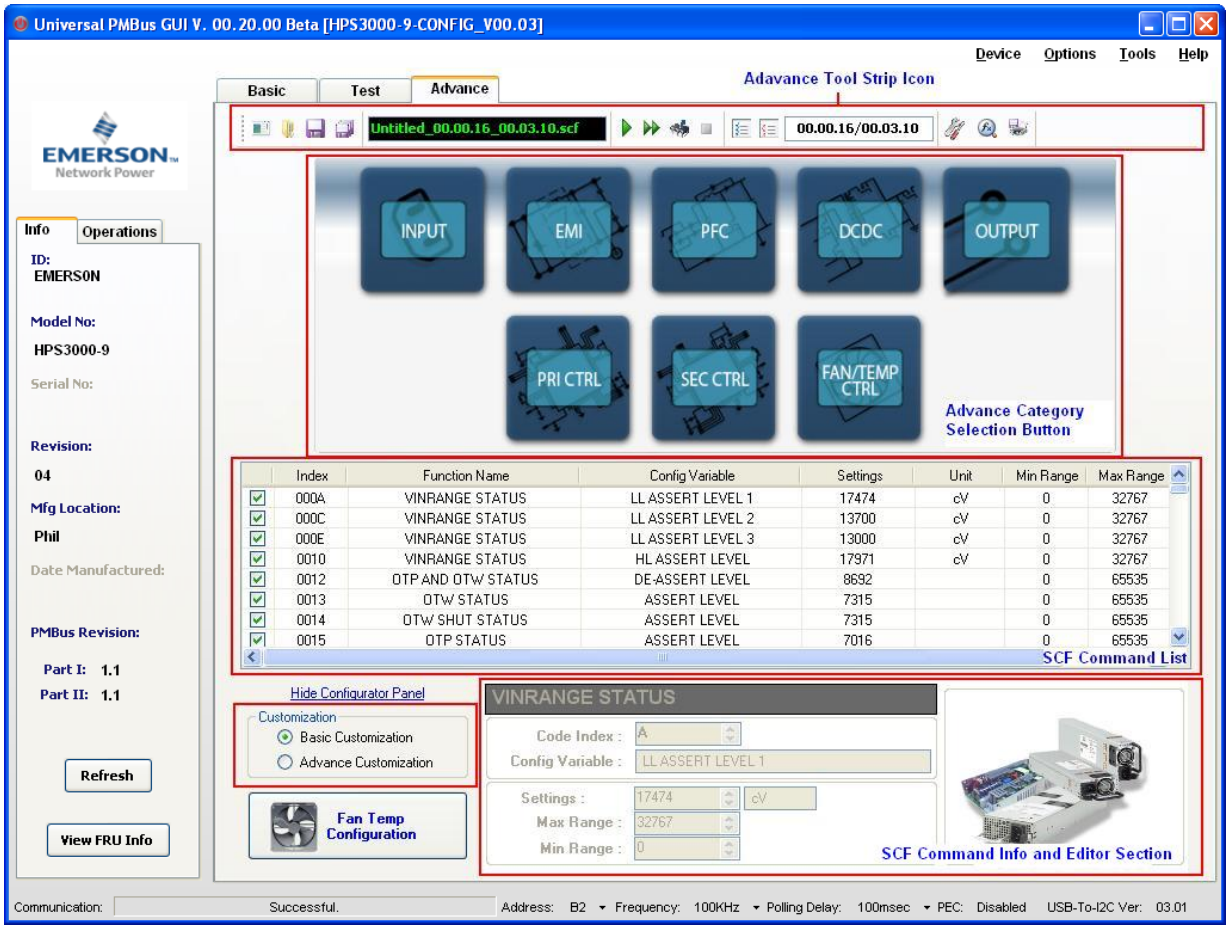
1. Authorized personnel
2. SCF Administrator



This new features of power supplies will help changing any parameter without changing the firmware. Only selected power supply has this capability. For more information about this new feature, please contact our technical support team.

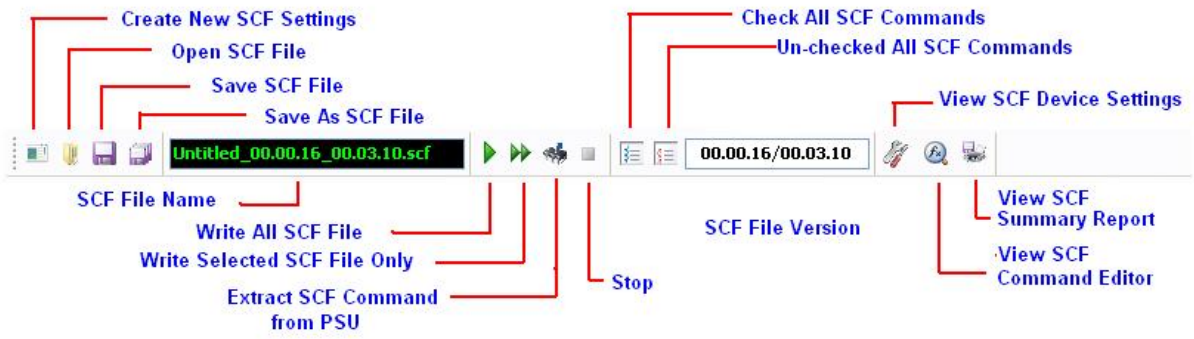
Advance Main Panel Section contains the following:

1. Advance Tool Strip Icon
2. Advance Category Selection Button
3. SCF Command List
4. SCF Command Info and Editor Section
5. Customization option
6. Fan Temp Configuration



Advance Tool Strip Icon

This icons design to be use for Creating, loading and saving generated SCF Files. Uploading and updating SCF Command also available in this selection icon. See figure below for the corresponding details for each icon.



Create New SCF Setting – this is use to create new SCF command settings. New SCF command format will be base on the enable command in the main database.

Once this button was click, "Untitled.scf" will be its initial file name.

Open SCF File – if existing SCF file is available, the user can load it and use for writing setting into the actual power supply.

Save SCF File / Save As SCF – Use to save or save as the new and existing SCF Command file.

SCF File Name – it indicate the name of the file being loaded or the name of newly created SCF file.

Write All SCF File – It will write All SCF command in the file either selected or unselected.

Write Selected SCF Command Only – It will write selected SCF command only.

Extract Command setting from PSU – This icon was use to read all the SCF command setting from the actual PSU. Extracted command will only base on SCF file command index or from the main SCF command database if no SCF command file loaded.

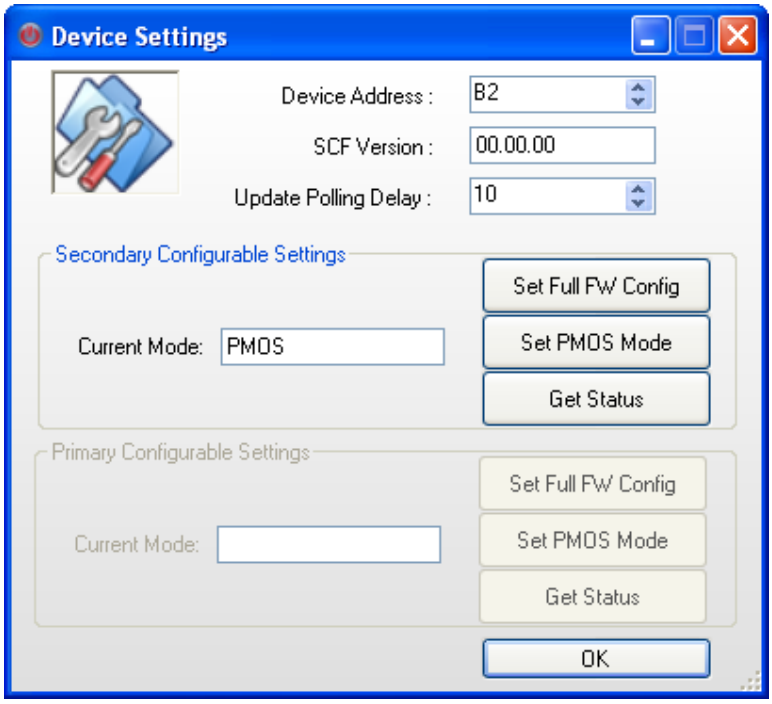
Stop – this icon was use to stop update and the extraction of scf command settings from power supply.

Check All SCF commands– It will check all SCF command from the file. This function will be useful for selecting SCF command from existing file which only has a fewer checked command. Selecting this

function will check all the SCF commands then the user can unchecked few SCF commands that will not be included in the update.

Un-check All SCF commands– It will uncheck all SCF command from the file. This function will be useful de-selecting SCF command from existing file which only has a lot of command checked. Selecting this function will uncheck all the SCF command then the user can checked few commands that will be included in the update.

SCF Device Setting – This is use to open the window for Device setting panel. This panel was use to set the device address and the PSU configuration status.



This device setting has the capability to change the configurable setting of the primary and secondary controller. It can be done manually through this section.

Write All SCF Command from the file already has the capability to change the configuration setting of the primary and secondary controller automatically.

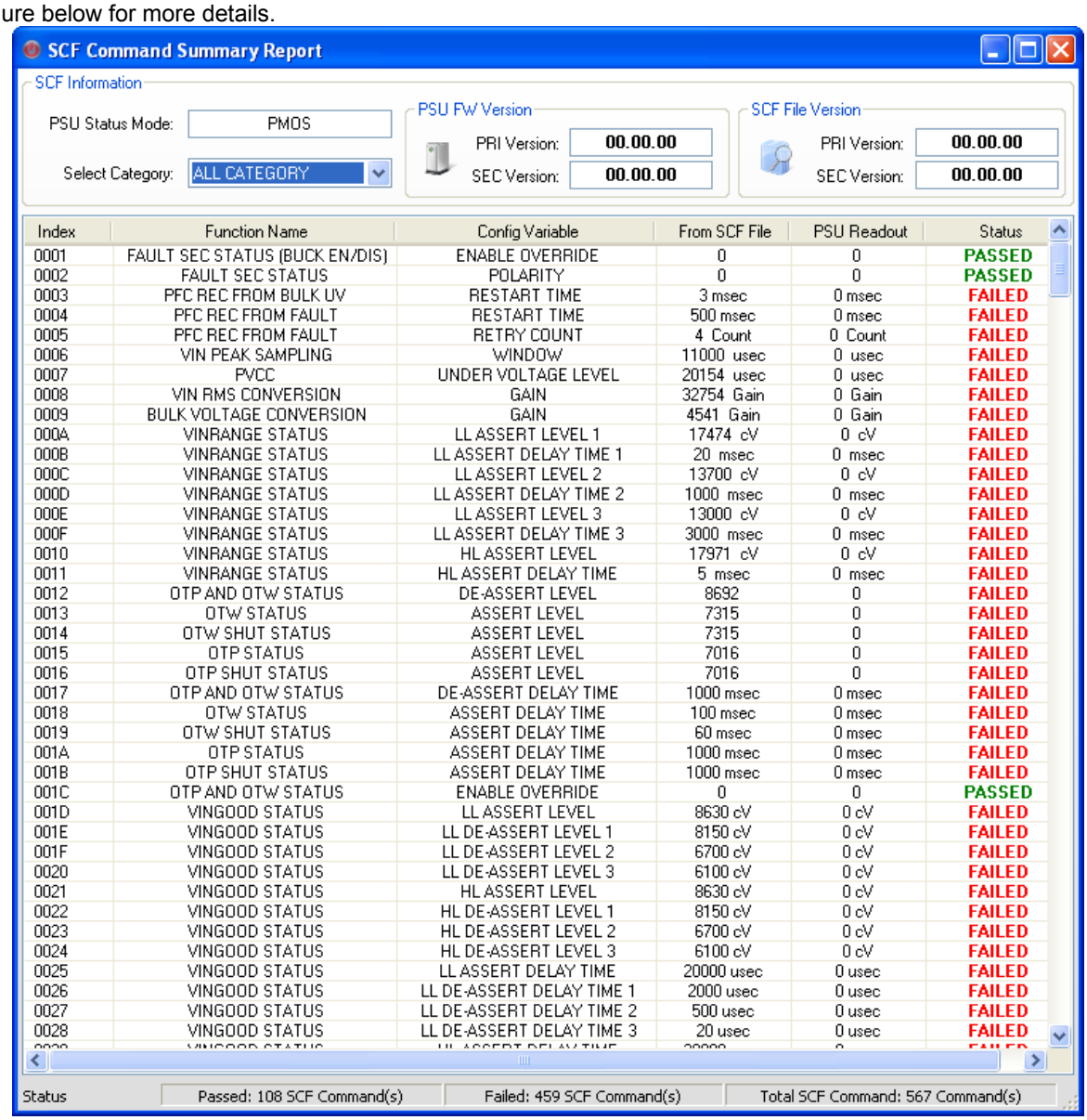
View SCF Command Editor – was use to view the advance command editor window. This section was for firmware engineer who are knowledgeable on SCF command setting and configuration.

Note: This function will be accessible for admin user only.
This icon will be disabled if the User Login use is for Normal Users Only.

SCF Command Editor will be discussed in details in next section of this user's manual.

View SCF Summary Report – was use to view the update report between the loaded file and the actual read configuration from the actual PSU.

See figure below for more details.



Index	Function Name	Config Variable	From SCF File	PSU Readout	Status
0001	FAULT SEC STATUS (BUCK EN/DIS)	ENABLE OVERRIDE	0	0	PASSED
0002	FAULT SEC STATUS	POLARITY	0	0	PASSED
0003	PFC REC FROM BULK UV	RESTART TIME	3 msec	0 msec	FAILED
0004	PFC REC FROM FAULT	RESTART TIME	500 msec	0 msec	FAILED
0005	PFC REC FROM FAULT	RETRY COUNT	4 Count	0 Count	FAILED
0006	VIN PEAK SAMPLING	WINDOW	11000 usec	0 usec	FAILED
0007	PVCC	UNDER VOLTAGE LEVEL	20154 usec	0 usec	FAILED
0008	VIN RMS CONVERSION	GAIN	32754 Gain	0 Gain	FAILED
0009	BULK VOLTAGE CONVERSION	GAIN	4541 Gain	0 Gain	FAILED
000A	VINRANGE STATUS	LL ASSERT LEVEL 1	17474 cV	0 cV	FAILED
000B	VINRANGE STATUS	LL ASSERT DELAY TIME 1	20 msec	0 msec	FAILED
000C	VINRANGE STATUS	LL ASSERT LEVEL 2	13700 cV	0 cV	FAILED
000D	VINRANGE STATUS	LL ASSERT DELAY TIME 2	1000 msec	0 msec	FAILED
000E	VINRANGE STATUS	LL ASSERT LEVEL 3	13000 cV	0 cV	FAILED
000F	VINRANGE STATUS	LL ASSERT DELAY TIME 3	3000 msec	0 msec	FAILED
0010	VINRANGE STATUS	HL ASSERT LEVEL	17971 cV	0 cV	FAILED
0011	VINRANGE STATUS	HL ASSERT DELAY TIME	5 msec	0 msec	FAILED
0012	OTP AND OTW STATUS	DE-ASSERT LEVEL	8692	0	FAILED
0013	OTW STATUS	ASSERT LEVEL	7315	0	FAILED
0014	OTW SHUT STATUS	ASSERT LEVEL	7315	0	FAILED
0015	OTP STATUS	ASSERT LEVEL	7016	0	FAILED
0016	OTP SHUT STATUS	ASSERT LEVEL	7016	0	FAILED
0017	OTP AND OTW STATUS	DE-ASSERT DELAY TIME	1000 msec	0 msec	FAILED
0018	OTW STATUS	ASSERT DELAY TIME	100 msec	0 msec	FAILED
0019	OTW SHUT STATUS	ASSERT DELAY TIME	60 msec	0 msec	FAILED
001A	OTP STATUS	ASSERT DELAY TIME	1000 msec	0 msec	FAILED
001B	OTP SHUT STATUS	ASSERT DELAY TIME	1000 msec	0 msec	FAILED
001C	OTP AND OTW STATUS	ENABLE OVERRIDE	0	0	PASSED
001D	VINGOOD STATUS	LL ASSERT LEVEL	8630 cV	0 cV	FAILED
001E	VINGOOD STATUS	LL DE-ASSERT LEVEL 1	8150 cV	0 cV	FAILED
001F	VINGOOD STATUS	LL DE-ASSERT LEVEL 2	6700 cV	0 cV	FAILED
0020	VINGOOD STATUS	LL DE-ASSERT LEVEL 3	6100 cV	0 cV	FAILED
0021	VINGOOD STATUS	HL ASSERT LEVEL	8630 cV	0 cV	FAILED
0022	VINGOOD STATUS	HL DE-ASSERT LEVEL 1	8150 cV	0 cV	FAILED
0023	VINGOOD STATUS	HL DE-ASSERT LEVEL 2	6700 cV	0 cV	FAILED
0024	VINGOOD STATUS	HL DE-ASSERT LEVEL 3	6100 cV	0 cV	FAILED
0025	VINGOOD STATUS	LL ASSERT DELAY TIME	20000 usec	0 usec	FAILED
0026	VINGOOD STATUS	LL DE-ASSERT DELAY TIME 1	2000 usec	0 usec	FAILED
0027	VINGOOD STATUS	LL DE-ASSERT DELAY TIME 2	500 usec	0 usec	FAILED
0028	VINGOOD STATUS	LL DE-ASSERT DELAY TIME 3	20 usec	0 usec	FAILED

Command Summary report gives the information of the passed and failed command during update. It can also useful as reference before updating the SCF command.

The user can just use the **Extract Command from the PSU** then go to this report afterwards. This report will give the details between the file and the actual setting from the PSU. It will give the user heads up which SCF command needed update.

Advance Category Selection Button

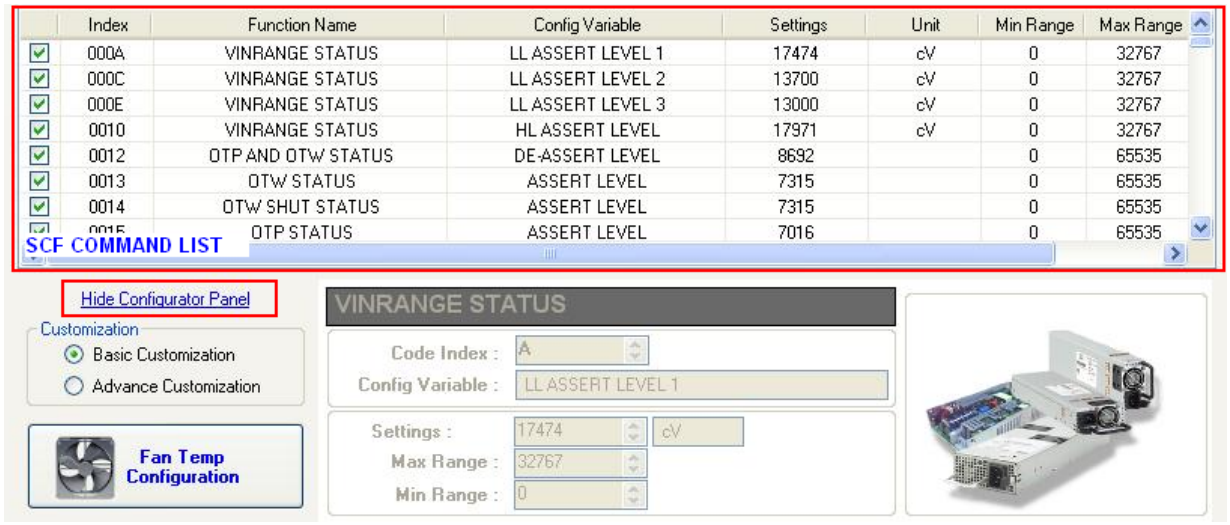
This was set of buttons are commonly use to display selected SCF Command base on specific category. If no button was selected all SCF Command base on selected Customization will be displayed on command list.

Button appearance will change once it is selected. This is to inform the user which category is currently active.

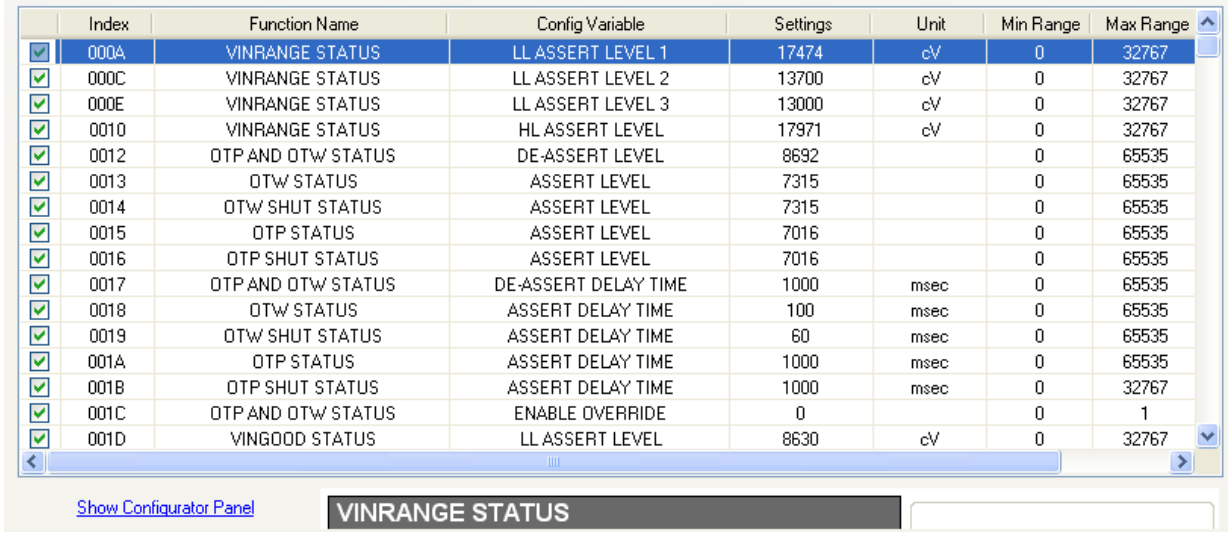
Advance category consists of eight categories, this are as follows:

1. INPUT
2. EMI
3. PFC
4. DCDC
5. OUTPUT
6. PRI CTRL
7. SEC CTRL
8. FAN/TEMP CTRL

SCF Command List - it display the current SCF Command selected or available in the database. Display on this list was base on the category button selected. Default display will be all SCF command base on selected customization.



Hide Configurator Panel - click this link label if you like to expand the size of SCF Command List. It will hide the lower level section of the advance panel to optimize the space for SCF Command List. See Figure below.



Show Configurator Panel - click this like to show the SCF Command Info and Editor Section.

Customization – this is use to set a reference for displaying commands list.

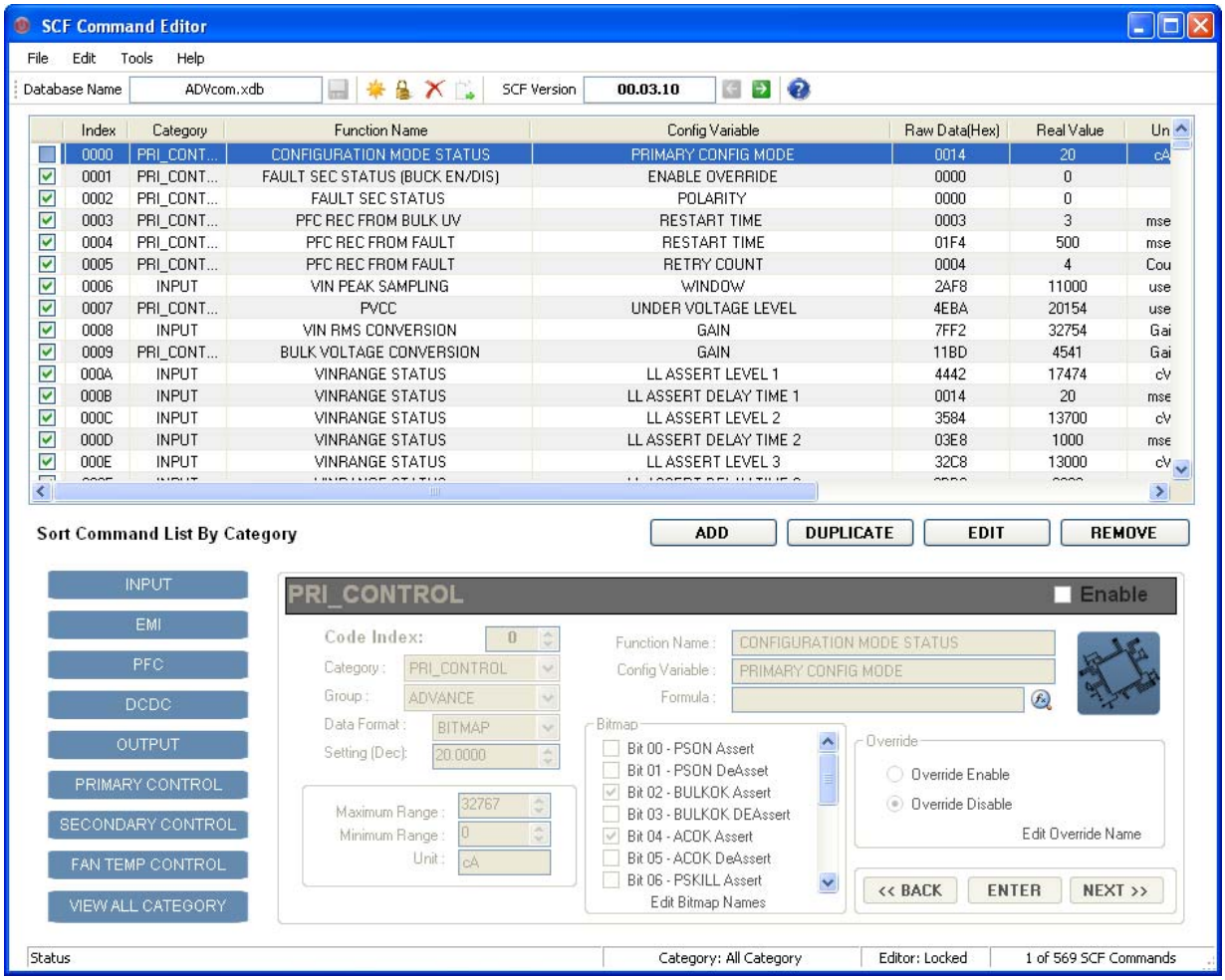
If ***Basic Customization*** was selected, all basic command in any category will be displayed on the command list.

If ***Advance Customization*** was selected, all commands (Basic or Advance) in any category will be displayed in the command list.

Fan Temp Configuration – this is use for configuring fan and temperature settings. As of the moment this feature was still disable. It is still ongoing for finalization.

Advance Command Editor Section

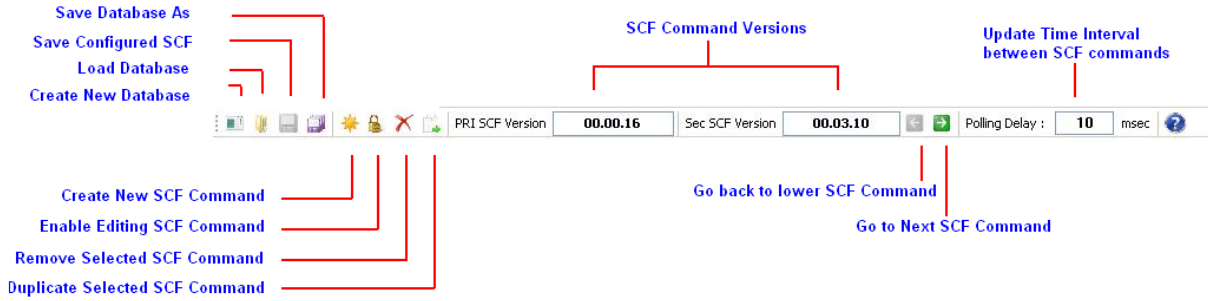
This section was design for admin users and the firmware engineer who can add, update or change any SCF commands.



Command Editor was design for adding and configuring settings and limits of the SCF command.
This section will explain how to create new SCF command from empty setting and configuration or base on the existing command. Code index, category, data format, setting and ranges are some of the details need to be place on this section.

It has also the capability to use formula, defined by the admin or firmware engineer. This formula will be use by the GUI as reference for computing raw data then load it to actual power supply.

Advance Command Editor Tool Strip Icon



This toolbar will be the key for creating and saving SCF command. Access for editing and entering data also included in this section.

Command Editor Toolbar Section:

Name of the Main Database – This is main database of the SCF command. Initial name of this database was set to "**ADVcom.xdb**". It can be found the current directory of the Universal PMBus GUI. This database will be the default database name.

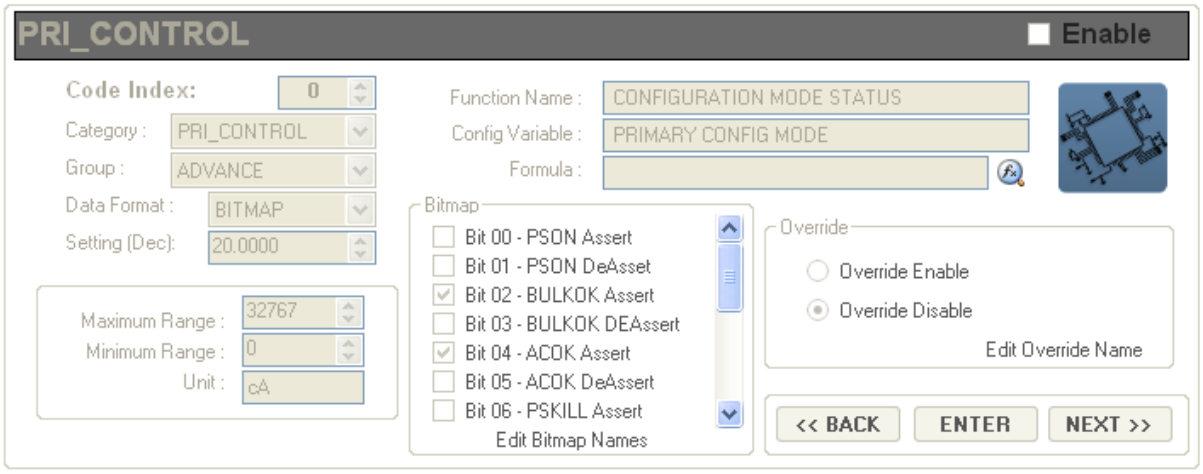
Create New SCF Database - This is use to create new database which contain one SCF command only.

Load SCF Database – This is use to load database from directory. If any SCF database available as reference for SCF Command, it can also be loaded. This icon will also enable backward compatibility for any old SCF commands.

Save Configured SCF - This is use to save the created SCF command into the active database (e.g. **ADVcom.xdb**). If this icon was grayed, it means that the SCF command created already save into the database.

Create New SCF Command - This is use to create an empty SCF command base on auto selected code index search by the GUI. The user can still change the code index to its design location.

Enable Editing SCF Command - This is use for enabling command editor section. SCF editor entry section was disabled as default setting. The user can only view existing command but don't have the access to change the settings.



Remove Selected SCF Command - This is use to remove the selected SCF command from the database. If the user wants to remove the SCF command permanently from the database, the user should clicked save.

Duplicate Selected SCF Command – it can be use to create a copy of the selected SCF command from the database. It will be much easier for the user to create a new SCF command which almost the same on the previous command rather than start from empty setting. Duplicate will create a copy of SCF command with different code index.

SCF Versions – This version will be use as reference for SCF Command update to the actual power supply. It can only be edited in this section. SCF File on advance main panel should match on these versions before the user can continue SCF Update into actual power supply.

Go back to previous SCF command – This is use to move 1 step backward on SCF command.

Go to next SCF command – This is use to move 1 step forward on SCF command.

Polling Delay – This will be use as standard time delay interval between commands during SCF Update in advance main panel.

Help – this is use to open help file (Still on going for development).

SCF Command List

SCF command can be view in this list. All the information of the SCF command was listed on this section. Command index, category, function name, config variable, raw data, real value, unit ranges, group and formula are parameter that can be seen in this list.

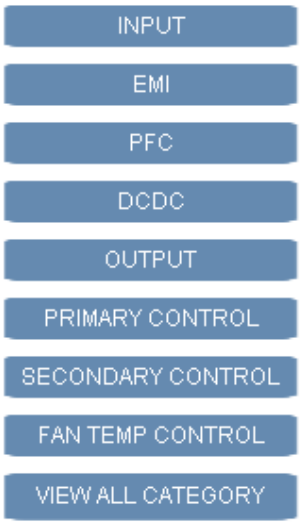
SCF Command display can also be sorted through the category button.

	Index	Category	Function Name	Config Variable	Raw Data(Hex)	Real Value	Unit	DataFormat	Min Range	Max Range	Formula	Group
☐	0000	PRI_CONT...	CONFIGURATION MODE STATUS	PRIMARY CONFIG MODE	0014	20	cA	BITMAP	0	32767		ADVANCE
☑	0001	PRI_CONT...	FAULT SEC STATUS (BUCK EN/DIS)	ENABLE OVERRIDE	0000	0		BOOLEAN	0	1		ADVANCE
☑	0002	PRI_CONT...	FAULT SEC STATUS	POLARITY	0000	0		BOOLEAN	0	1	N/A	ADVANCE
☑	0003	PRI_CONT...	PFC REC FROM BULK UV	RESTART TIME	0003	3	msec	DECIMAL	0	32767		ADVANCE
☑	0004	PRI_CONT...	PFC REC FROM FAULT	RESTART TIME	01F4	500	msec	DECIMAL	0	32767		ADVANCE
☑	0005	PRI_CONT...	PFC REC FROM FAULT	RETRY COUNT	0004	4	Count	DECIMAL	0	32767		ADVANCE
☑	0006	INPUT	VIN PEAK SAMPLING	WINDOW	2AF8	11000	usec	DECIMAL	0	32767		ADVANCE
☑	0007	PRI_CONT...	PVCC	UNDER VOLTAGE LEVEL	4EBA	20154	usec	DECIMAL	0	65535		ADVANCE
☑	0008	INPUT	VIN RMS CONVERSION	GAIN	7FF2	32754	Gain	DECIMAL	0	32767		ADVANCE
☑	0009	PRI_CONT...	BULK VOLTAGE CONVERSION	GAIN	11BD	4541	Gain	DECIMAL	0	32767		ADVANCE
☑	000A	INPUT	VINRANGE STATUS	LL ASSERT LEVEL 1	4442	17474	cV	DECIMAL	0	32767		BASIC
☑	000B	INPUT	VINRANGE STATUS	LL ASSERT DELAY TIME 1	0014	20	msec	DECIMAL	0	32767		ADVANCE
☑	000C	INPUT	VINRANGE STATUS	LL ASSERT LEVEL 2	3584	13700	cV	DECIMAL	0	32767		BASIC
☑	000D	INPUT	VINRANGE STATUS	LL ASSERT DELAY TIME 2	03E8	1000	msec	DECIMAL	0	32767		ADVANCE
☑	000E	INPUT	VINRANGE STATUS	LL ASSERT LEVEL 3	32C8	13000	cV	DECIMAL	0	32767		BASIC
☑	000F	INPUT	VINRANGE STATUS	LL ASSERT DELAY TIME 3	0BB8	3000	msec	DECIMAL	0	32767		ADVANCE
☑	0010	INPUT	VINRANGE STATUS	HL ASSERT LEVEL	4633	17971	cV	DECIMAL	0	32767		BASIC
☑	0011	INPUT	VINRANGE STATUS	HL ASSERT DELAY TIME	0005	5	msec	DECIMAL	0	32767		ADVANCE
☑	0012	FANTEMP...	OTP AND OTW STATUS	DE-ASSERT LEVEL	21F4	8692		DECIMAL	0	65535		BASIC
☑	0013	FANTEMP...	OTW STATUS	ASSERT LEVEL	1C93	7315		DECIMAL	0	65535		BASIC
☑	0014	FANTEMP...	OTW SHUT STATUS	ASSERT LEVEL	1C93	7315		DECIMAL	0	65535		BASIC
☑	0015	FANTEMP...	OTP STATUS	ASSERT LEVEL	1B68	7016		DECIMAL	0	65535		BASIC
☑	0016	FANTEMP...	OTP SHUT STATUS	ASSERT LEVEL	1B68	7016		DECIMAL	0	65535		BASIC
☑	0017	FANTEMP...	OTP AND OTW STATUS	DE-ASSERT DELAY TIME	03E8	1000	msec	DECIMAL	0	65535		BASIC
☑	0018	FANTEMP...	OTW STATUS	ASSERT DELAY TIME	0064	100	msec	DECIMAL	0	65535		BASIC
☑	0019	FANTEMP...	OTW SHUT STATUS	ASSERT DELAY TIME	003C	60	msec	DECIMAL	0	65535		BASIC
☑	001A	FANTEMP...	OTP STATUS	ASSERT DELAY TIME	03E8	1000	msec	DECIMAL	0	65535		BASIC
☑	001B	FANTEMP...	OTP SHUT STATUS	ASSERT DELAY TIME	03E8	1000	msec	DECIMAL	0	32767		BASIC
☑	001C	FANTEMP...	OTP AND OTW STATUS	ENABLE OVERRIDE	0000	0		BOOLEAN	0	1		BASIC
☑	001D	INPUT	VINGOOD STATUS	LL ASSERT LEVEL	21B6	8630	cV	DECIMAL	0	32767		BASIC
☑	001E	INPUT	VINGOOD STATUS	LL DE-ASSERT LEVEL 1	1FD6	8150	cV	DECIMAL	0	32767		BASIC
☑	001F	INPUT	VINGOOD STATUS	LL DE-ASSERT LEVEL 2	1A2C	6700	cV	DECIMAL	0	32767		ADVANCE
☑	0020	INPUT	VINGOOD STATUS	LL DE-ASSERT LEVEL 3	17D4	6100	cV	DECIMAL	0	32767		ADVANCE

Advance Editing buttons also available to be use for creating and editing SCF command. This is located below the SCF command list. This buttons also have the same function in the toolbar section.

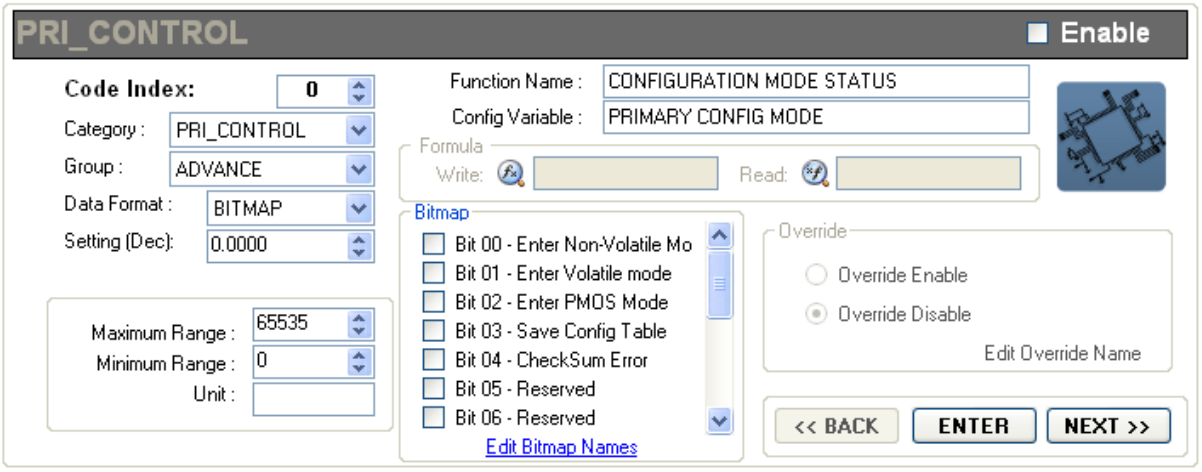
SCF Status Bar – this will display which category is currently active and how many SCF command already available. It also show if editing mode is locked or enabled.

Sort Category Button – This button was use to view list of command base on category.

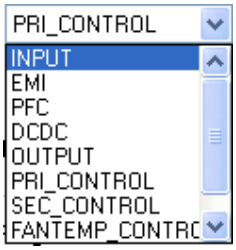


SCF Command Data Entry Section – most of the SCF Command information should be entered in this section. The user can select which code index to assign a new SCF command. These include the category, group, data format of the SCF command, ranges, and the default value. Function name and Config variable name also are part of information that should be entered.

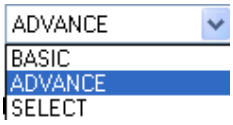
It also has the capability to translate the **formula** of this command to convert the user data into raw data.



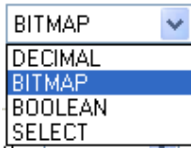
Code Index – this SCF command location where SCF command data should be entered in actual PSU.



Category – this consist of eight categories.

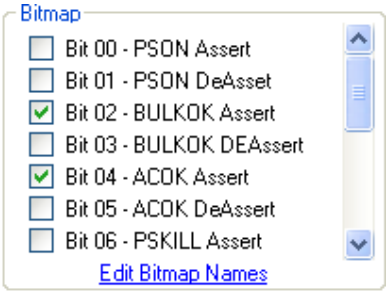


Group – this consist only two groups (Basic and Advance)



Data Format – this consist of 3 groups (Decimal, Bitmap and Boolean).

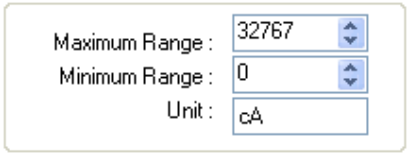
Decimal – only contain a numeric value.
Bitmap – consist of specific function in each bit of the two byte data.



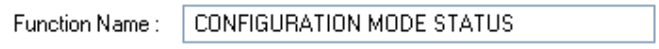
Click Edit Bitmap Name to change description in each bit.

Boolean – this commonly use for override. It only has two states which are Enable and disable status.

Setting – this is the default value that should be entered in the database.



Unit and Ranges – see SCF documentation for proper ranges and units.



- Make sure to enter correct function name base on code index. Please refer on SCF documentation.

- Please refer on SCF documentation.

FORMULA

This formula was use to convert data from and to actual power supply.

Write Formula: This formula will be use to convert readable user setting to raw data format to be written on the actual power supply.

Read Formula: This formula will be use to convert raw data from power supply into data readable to user.

Note: To enter a **formula** in this editor, the user should follow the correct syntax for the program to detect the data being entered is a formula. Use f = as indicator as start of the formula and x will be the variable to convert. Example: **f = (x +32) / 5**.

This formula support bracket, perform basic mathematical expression, calculate trigonometric and special function on real, imaginary and complex number.
Here are the lists of supported mathematical calculation:

• Addition: +
• Subtraction: -
• Multiplication: *
• Division: /
• Power: ^

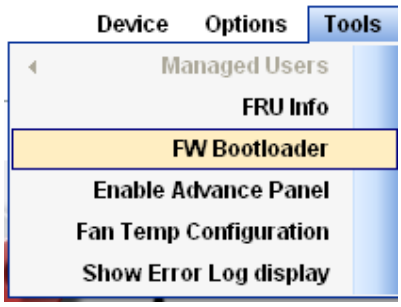
• Absolute Value: abs(x)
• Cosine: cos(x)
• Sinus: sin(x)
• Tan: tan(x)
• (Radians) Inverse Cosine: acos(x)
• (Radians) Inverse Sinus: asin(x)
• (Radians) Inverse Tan: atan(x)
• (Radians) Hyperbolic Cosine: cosh(x)
• (Radians) Hyperbolic Sinus: sinh(x)
• (Radians) Hyperbolic Tan: tanh(x)
• Logarithm to e: log(x)
• Logarithm to 10: log10(x)
• Degrees to Radians function: rad(x)
• Radians to Degrees function: deg(x)
• Constant Pi: pi
• Constant E: ee

- Real: re(x)
- Imaginary: im(x)
- Modulus: mod(x)
- Conjugate: conj(x)

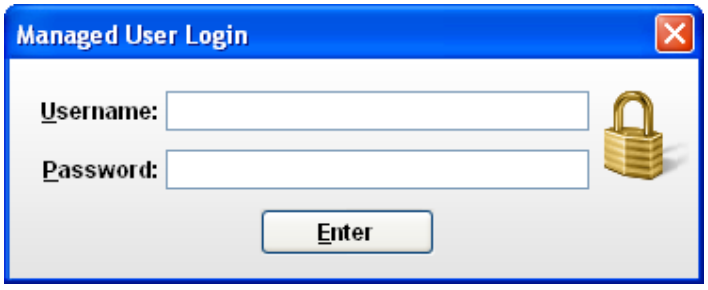
Once all data are entered correctly, don't forget to press "**ENTER"** button then save.

Firmware Update (Authorized personnel only)

Another Universal PMBus GUI capability is the Bootloader. This feature of GUI was design for power supply firmware update.

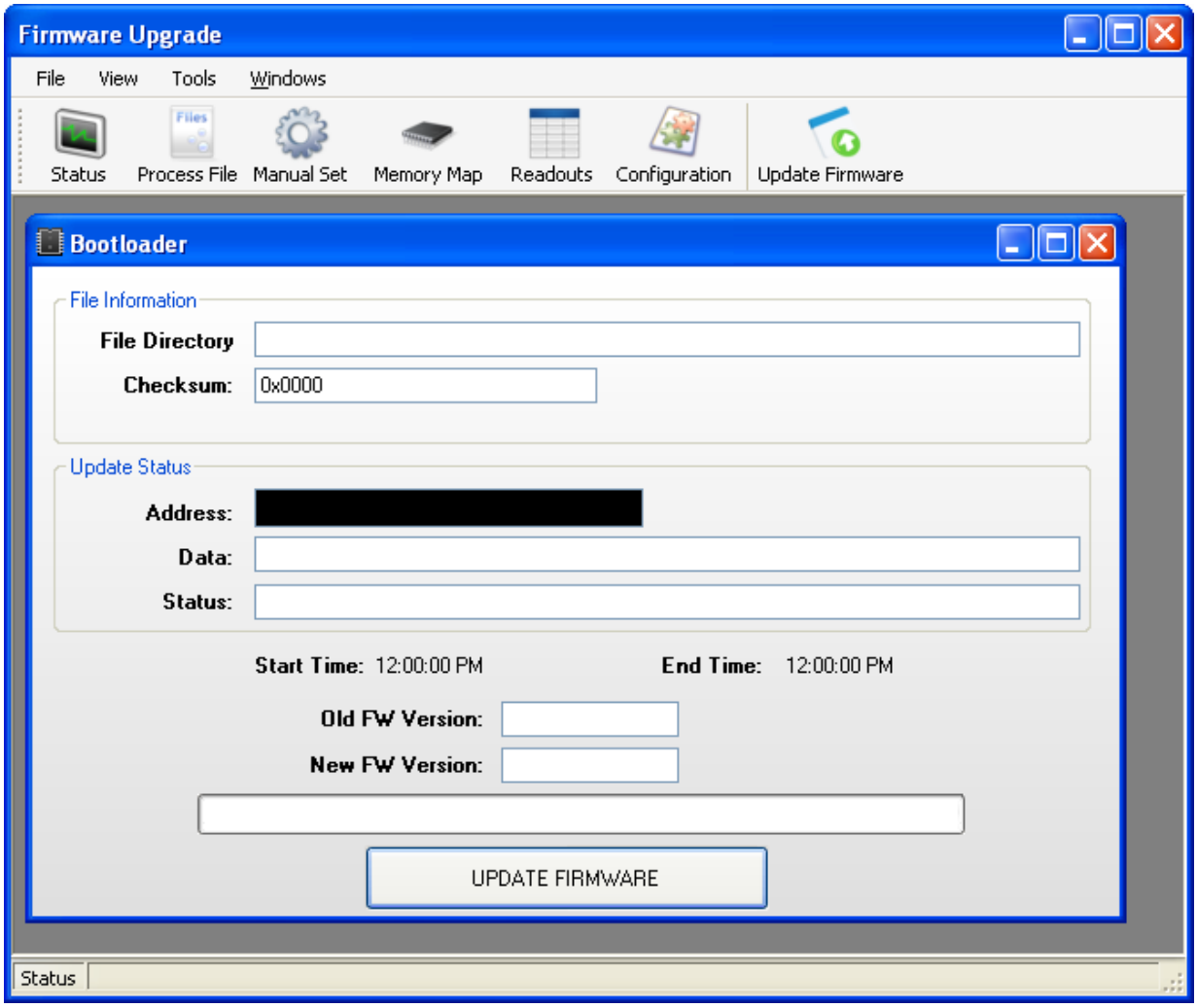


Authorized personnel only can access this feature. It is also password protected.



There are two login available for Advance Panel Section.

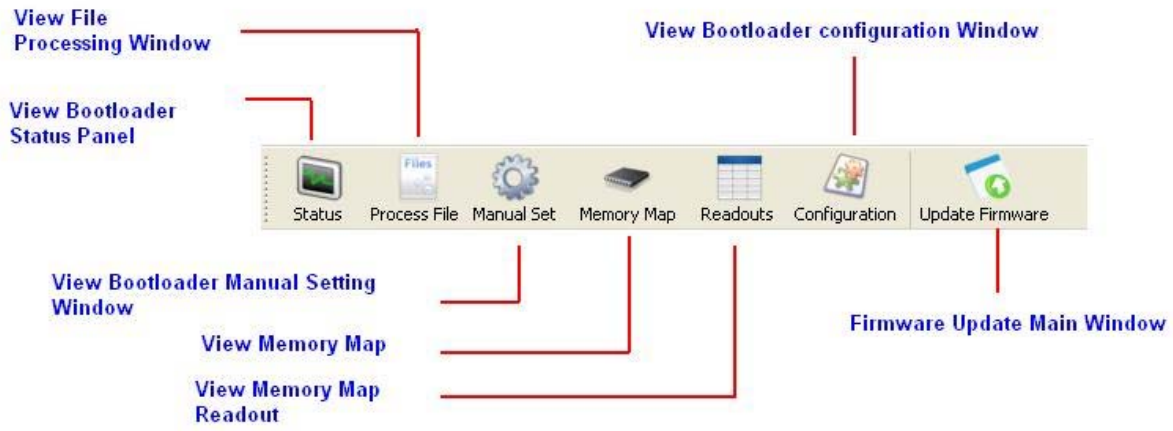
1. Authorized Personnel
2. Bootloader Administrator



This GUI feature will enable user to update the firmware of power supply anywhere.

For more information if your power supply is supported with this feature, please contact our technical support team.

Firmware Upgrade Tools Strip Icons



Definitions:

Status – This icon was use to display the Status Window.

Process File – This icon was use to display the File Processing window. This is use to convert SRecord file to Hex File and SRecord File to Checksum Updated SRecord File. This Icon is accessible only for Bootloader Administrator.

Manual Set – This icon was use to display the Bootloader Manual Setting window. This Icon is accessible only for Bootloader Administrator.

Memory Map – This icon was use to show the Memory Allocation panel for SRecord and Hex File data.

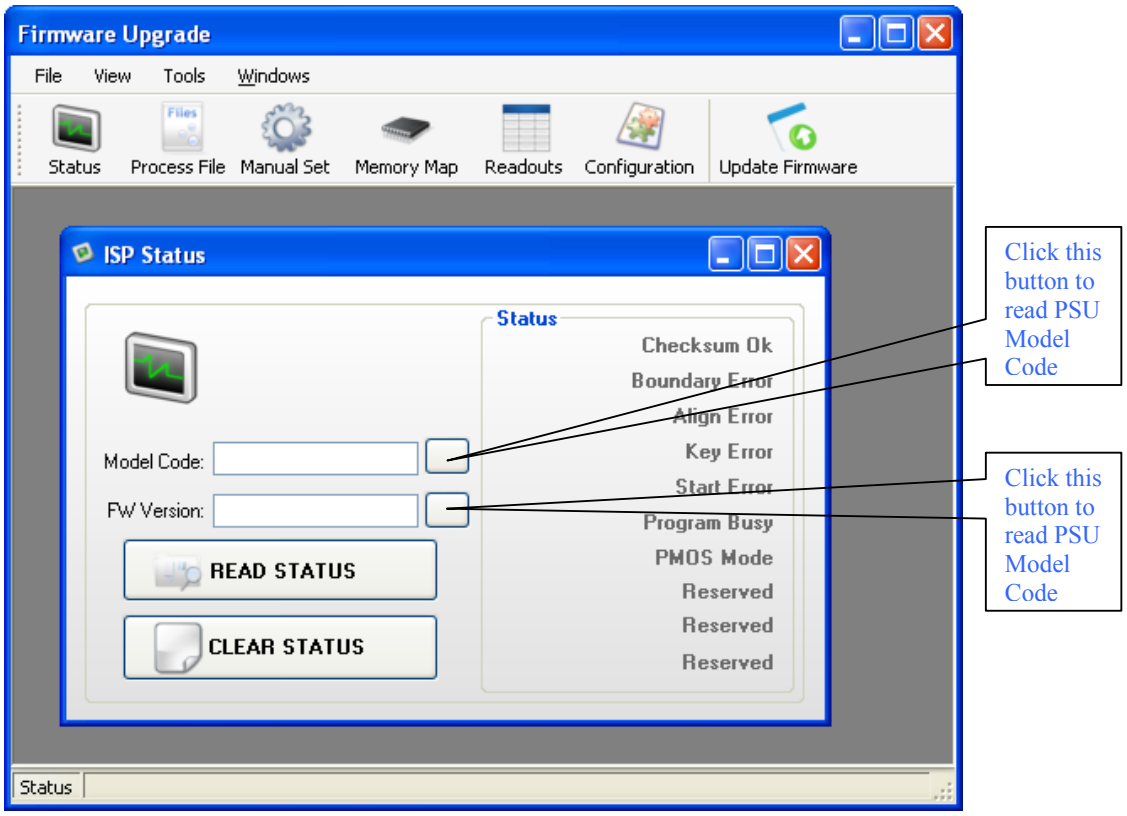
Readouts – This icon was use to show the Actual Data from PSU. This Icon is accessible only for Bootloader Administrator.

Configuration – This icon was use to display the Bootloader Configuration and Settings. Only the Bootloader Administrator has the rights to change these settings.

Update Firmware – This icon was use to show or focus the main window of Firmware Update Panel.

Firmware Bootloader Application window

Status Window:



This section was design for detecting PSU status before and during firmware upgrade. It is also capable to read the model code and firmware version of the power supply.

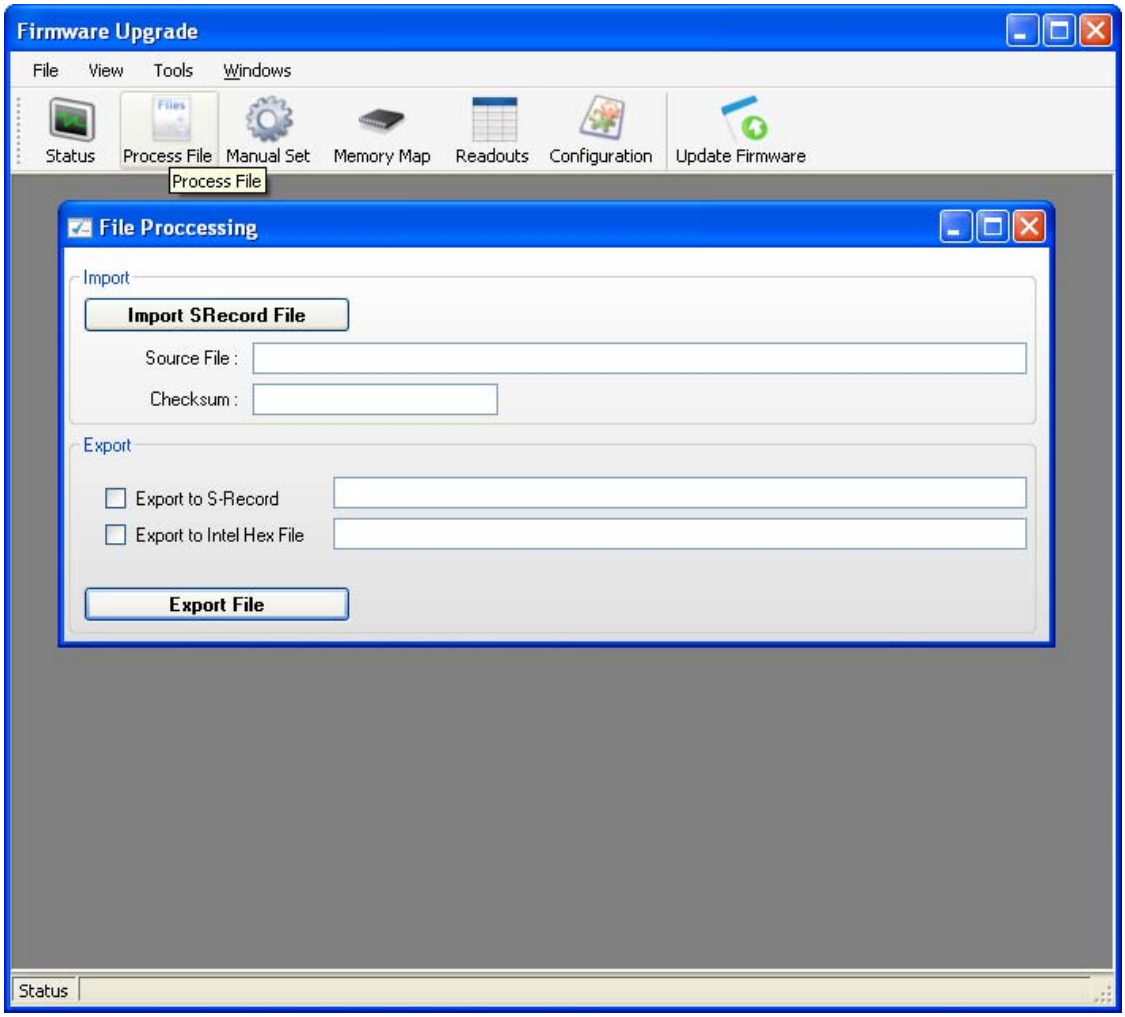
READ STATUS – This will read the current status, error and faults of the power supply.

- It will also indicate the current mode of the PSU (PMOS Mode or ISP Mode)
- PMOS Mode is the normal mode of the PSU.
- ISP Mode is the Bootloader mode.

CLEAR STATUS – will reset the current status and error of the PSU. PSU Mode will not be affected. If the PSU is in ISP Mode it will remain in ISP Mode.

Process File Window:

This window was use by firmware engineers to convert actual SRecord files into Hex File or Checksum Updated SRecord File. This function will be enabled for ***Bootloader Administrator*** login only.



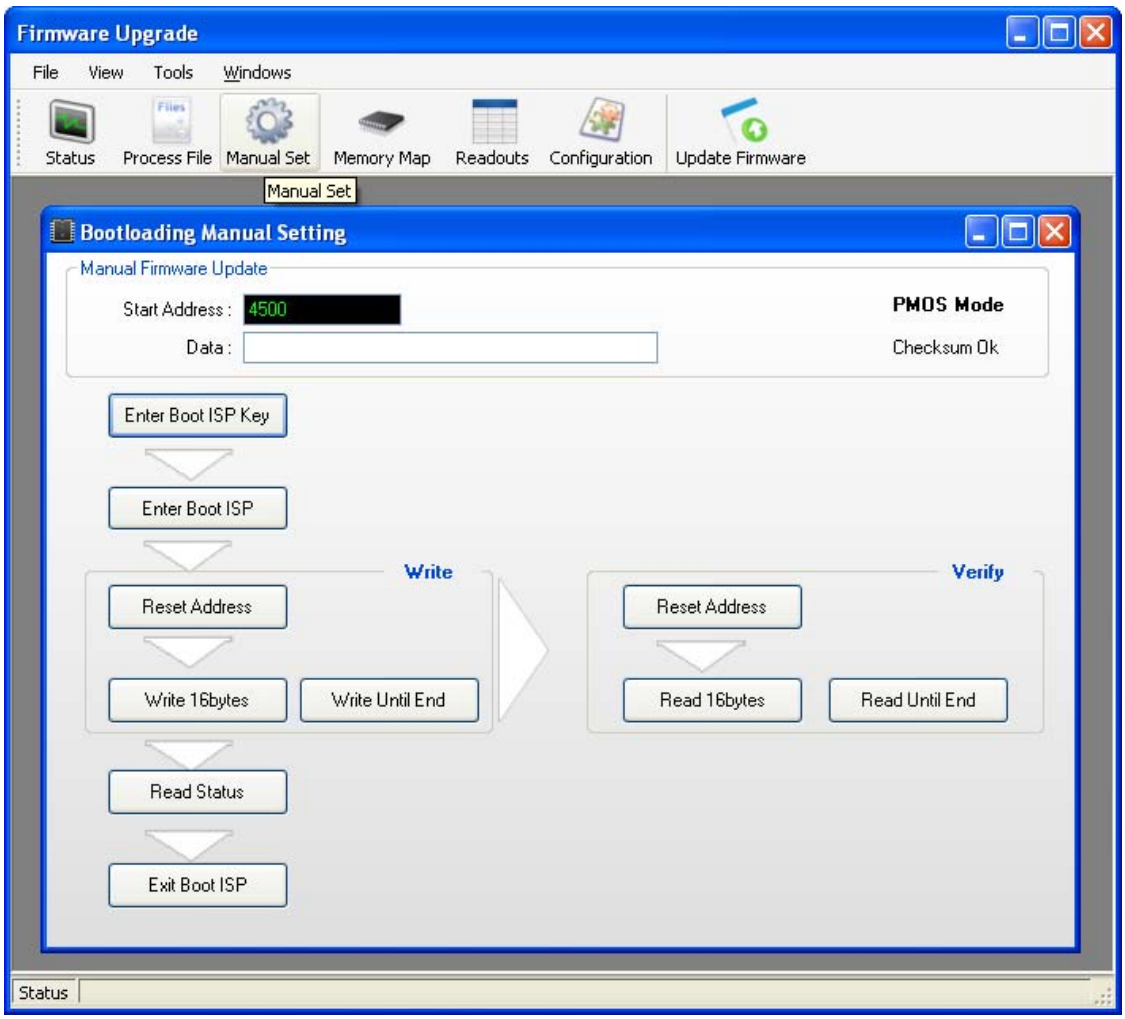
Import SRecord File – this is use to load a reference file to be process and convert into hex or SRecord checksum updated file.

Export File – this is use to initiate file conversion, either to SRecord or Hex file or choose both format.

Manual Set Window:

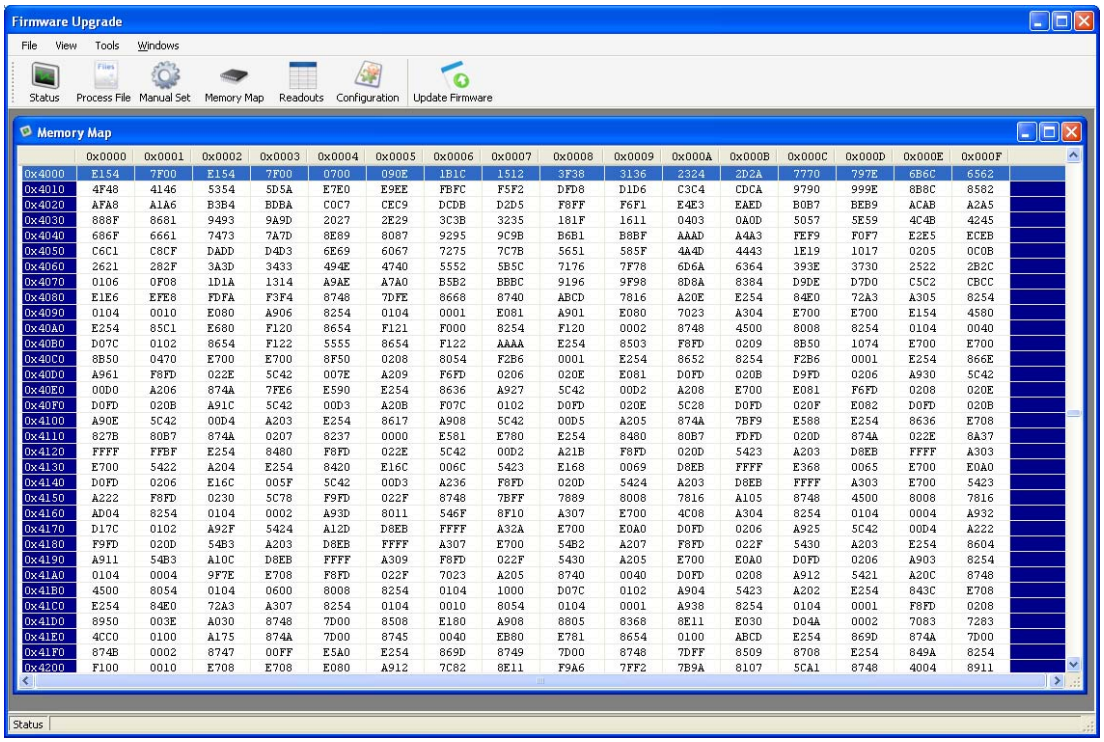
This window was commonly use by firmware engineer for debugging and testing of Bootloader. It can also be use for updating the firmware of the PSU in step by step manner.

This function will be enabled for ***Bootloader Administrator*** login only.



Memory Map Window:

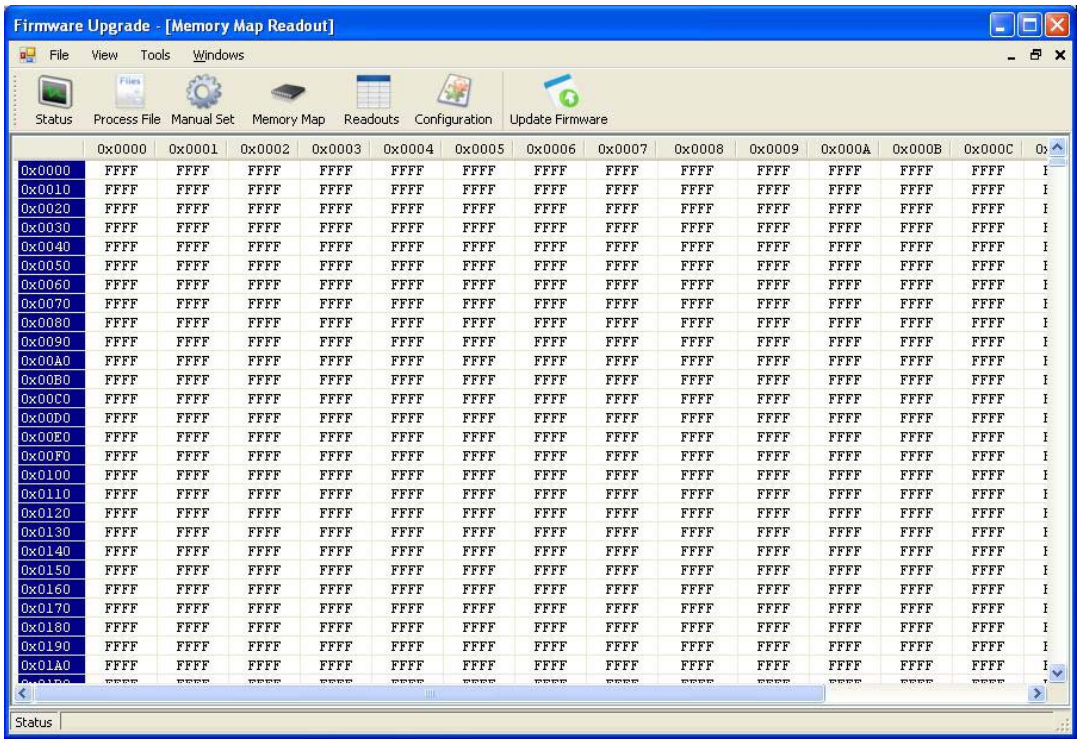
This show the list of data for firmware upgrade base from loaded SRecord or Hex file.



	0x0000	0x0001	0x0002	0x0003	0x0004	0x0005	0x0006	0x0007	0x0008	0x0009	0x000A	0x000B	0x000C	0x000D	0x000E	0x000F
0x4000	E154	7F00	E154	7F00	0700	090E	1B1C	1512	3F38	3136	2324	2D2A	7770	797E	6B6C	6562
0x4010	4F48	4146	5354	5D5A	E7E0	E9EE	FBFC	F5F2	DFD8	D1D6	C3C4	CDCA	9790	999E	8B8C	8582
0x4020	AFA8	A1A6	B3B4	BDBA	C0C7	CEC9	DCDB	D2D5	F8FF	F6F1	E4E3	EAED	B0B7	BEB9	ACAB	A2A5
0x4030	888F	8681	9493	9A9D	2027	2E29	3C3B	3235	181F	1611	0403	0A0D	5057	5E59	4C4B	4245
0x4040	686F	6661	7473	7A7D	8E89	8087	9295	9C9B	B6B1	B8BF	AAAD	A4A3	FEF9	F0F7	E2E5	ECEB
0x4050	C6C1	C8CF	DADD	D4D3	6E69	6067	7275	7C7B	5651	585F	4A4D	4443	1E19	1017	0205	0C0B
0x4060	2621	282F	3A3D	3433	494E	4740	5552	5B5C	7176	7F78	6D6A	6364	393E	3730	2522	2B2C
0x4070	0106	0F08	1D1A	1314	A9AE	A7A0	B5B2	BBBC	9196	9F98	8D8A	8384	D9DE	D7D0	C5C2	CBCC
0x4080	E1E6	EFE8	FDFA	F3F4	8748	7DFE	8668	8740	ABCD	7816	A20E	E254	84E0	72A3	A305	8254
0x4090	0104	0010	E080	A906	8254	0104	0001	E081	A901	E080	7023	A304	E700	E700	E154	4580
0x40A0	E254	85C1	E680	F120	8654	F121	F000	8254	F120	0002	8748	4500	8008	8254	0104	0040
0x40B0	D07C	0102	8654	F122	5555	8654	F122	AAAA	E254	8503	F8FD	0209	8B50	1074	E700	E700
0x40C0	8B50	0470	E700	E700	8F50	0208	8054	F2B6	0001	E254	8652	8254	F2B6	0001	E254	866E
0x40D0	A961	F8FD	022E	5C42	007E	A209	F6FD	0206	020E	E081	D0FD	020B	D9FD	0206	A930	5C42
0x40E0	00D0	A206	874A	7FE6	E590	E254	8636	A927	5C42	00D2	A208	E700	E081	F6FD	0208	020E
0x40F0	D0FD	020B	A91C	5C42	00D3	A20B	F07C	0102	D0FD	020E	5C28	D0FD	020F	E082	D0FD	020B
0x4100	A90E	5C42	00D4	A203	E254	8617	A908	5C42	00D5	A205	874A	7BF9	E588	E254	8636	E708
0x4110	827B	80B7	874A	0207	8237	0000	E581	E780	E254	8480	80B7	FDFD	020D	874A	022E	8A37
0x4120	FFFF	FFBF	E254	8480	F8FD	022E	5C42	00D2	A21B	F8FD	020D	5423	A203	D8EB	FFFF	A303
0x4130	E700	5422	A204	E254	8420	E16C	006C	5423	E168	0069	D8EB	FFFF	E368	0065	E700	E0A0
0x4140	D0FD	0206	E16C	005F	5C42	00D3	A236	F8FD	020D	5424	A203	D8EB	FFFF	A303	E700	5423
0x4150	A222	F8FD	0230	5C78	F9FD	022F	8748	7BFF	7889	8008	7816	A105	8748	4500	8008	7816
0x4160	AD04	8254	0104	0002	A93D	8011	546F	8F10	A307	E700	4C08	A304	8254	0104	0004	A932
0x4170	D17C	0102	A92F	5424	A12D	D8EB	FFFF	A32A	E700	E0A0	D0FD	0206	A925	5C42	00D4	A222
0x4180	F9FD	020D	54B3	A203	D8EB	FFFF	A307	E700	54B2	A207	F8FD	022F	5430	A203	E254	8604
0x4190	A911	54B3	A10C	D8EB	FFFF	A309	F8FD	022F	5430	A205	E700	E0A0	D0FD	0206	A903	8254
0x41A0	0104	0004	9F7E	E708	F8FD	022F	7023	A205	8740	0040	D0FD	0208	A912	5421	A20C	8748
0x41B0	4500	8054	0104	0600	8008	8254	0104	1000	D07C	0102	A904	5423	A202	E254	843C	E708
0x41C0	E254	84E0	72A3	A307	8254	0104	0010	8054	0104	0001	A938	8254	0104	0001	F8FD	0208
0x41D0	8950	003E	A030	8748	7D00	8508	E180	A908	8805	8368	8E11	E030	D04A	0002	7083	7283
0x41E0	4CC0	0100	A175	874A	7D00	8745	0040	EB80	E781	8654	0100	ABCD	E254	869D	874A	7D00
0x41F0	874B	0002	8747	00FF	E5A0	E254	869D	8749	7D00	8748	7DFF	8509	8708	E254	849A	8254
0x4200	F100	0010	E708	E708	E080	A912	7C82	8E11	F9A6	7FF2	7B9A	8107	5CA1	8748	4004	8911

Memory Map Readout Window:

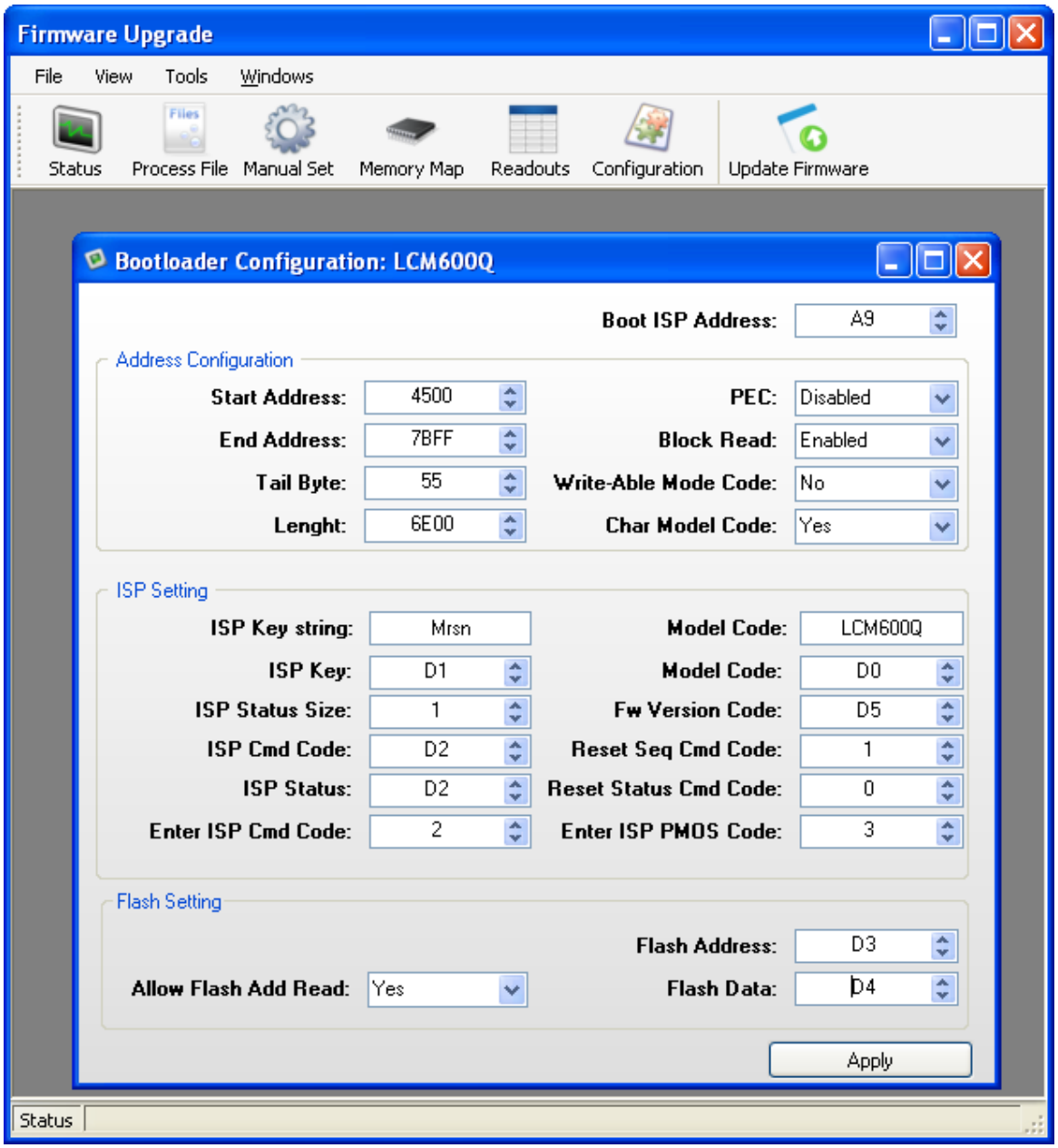
This window will only be available for Manual Bootloading; it will automatically display the actual firmware data from power supply.



Configuration Window:

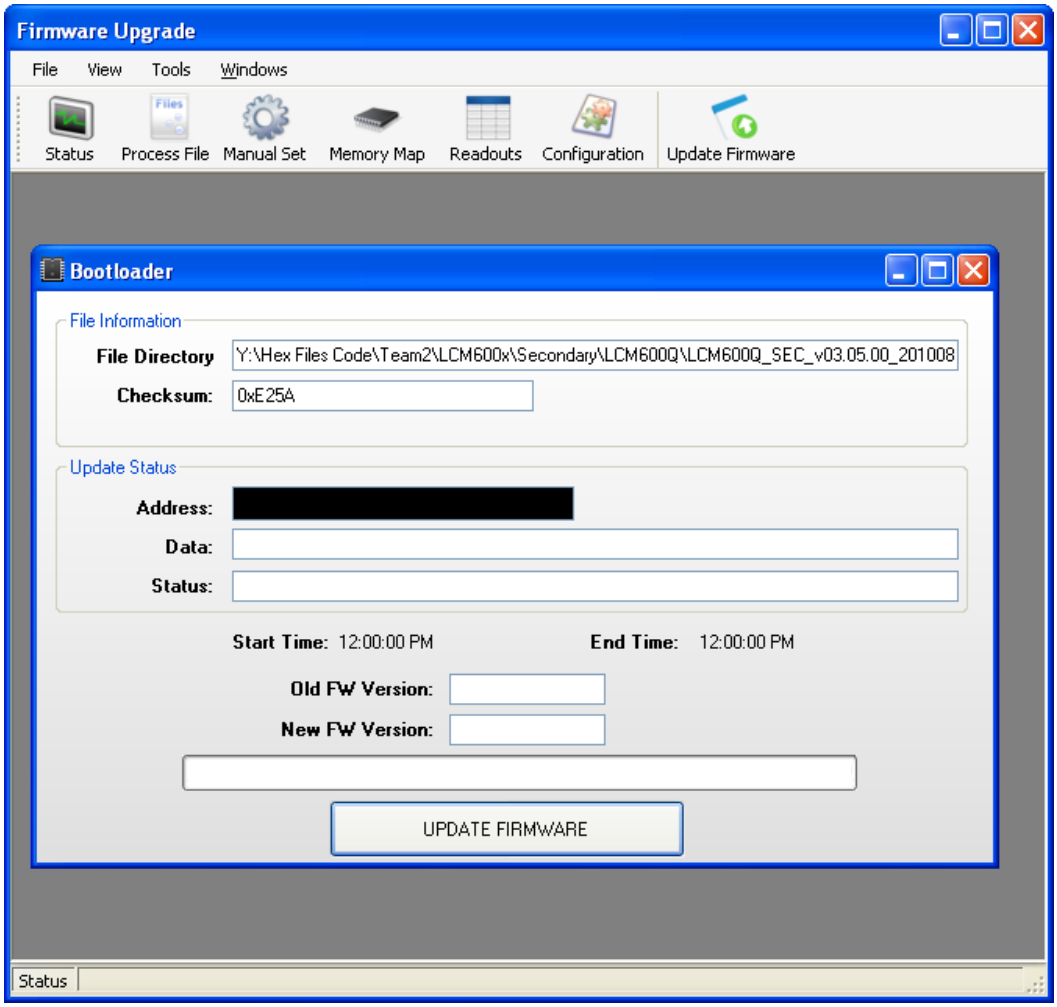
This window was use to update settings of Bootloader configuration. Firmware engineers and GUI administrator are the only allowed personnel to change this configuration.

This function will be enabled for ***Bootloader Administrator*** login only.



Update Firmware Window:

This is the main window for Firmware Bootloading. Firmware update can be done in two ways. One is by automatic update which is done through this panel and other is by manual firmware update. See next section to learn how to update power supply firmware.

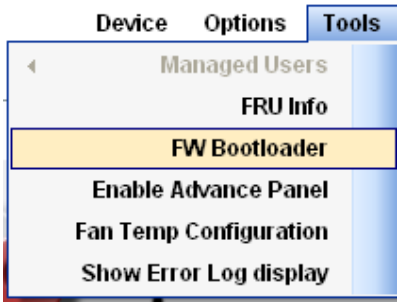


AUTOMATIC FIRMWARE UPDATE

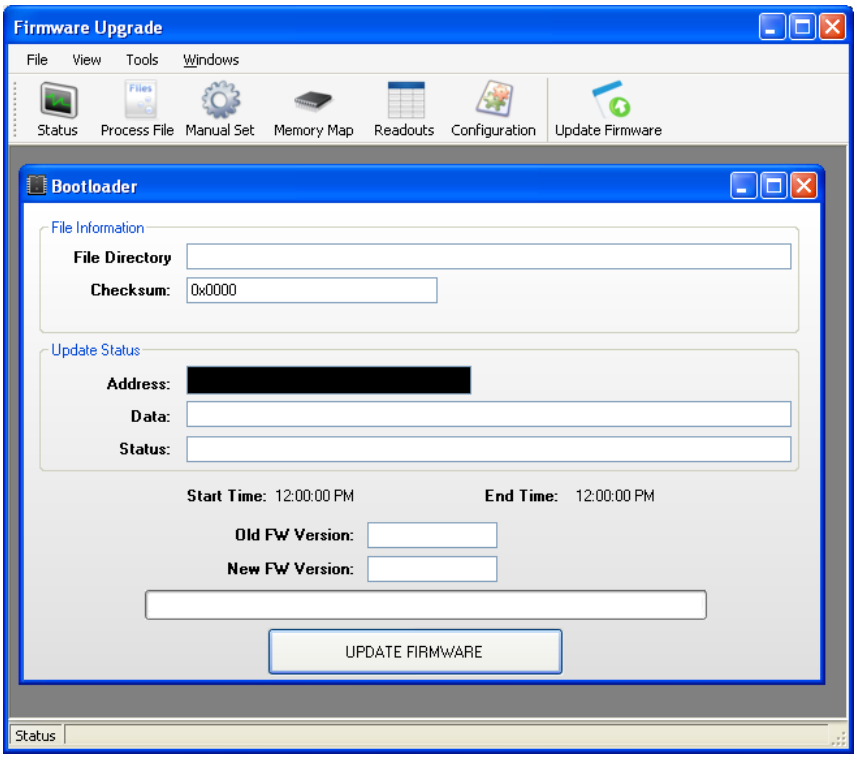
This is the default way of upgrading power supply firmware. It takes a few minutes to update power supply using USB to I2C standard adapter and take few seconds in HI-Speed USB to I2C Adapter.

Procedure for PSU firmware update:

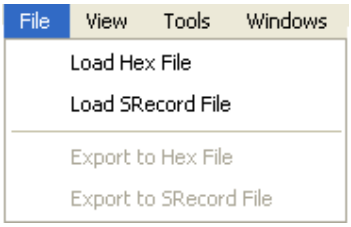
1. Open Firmware Update window. Go to Menu then select Tools and go to FW Bootloader.



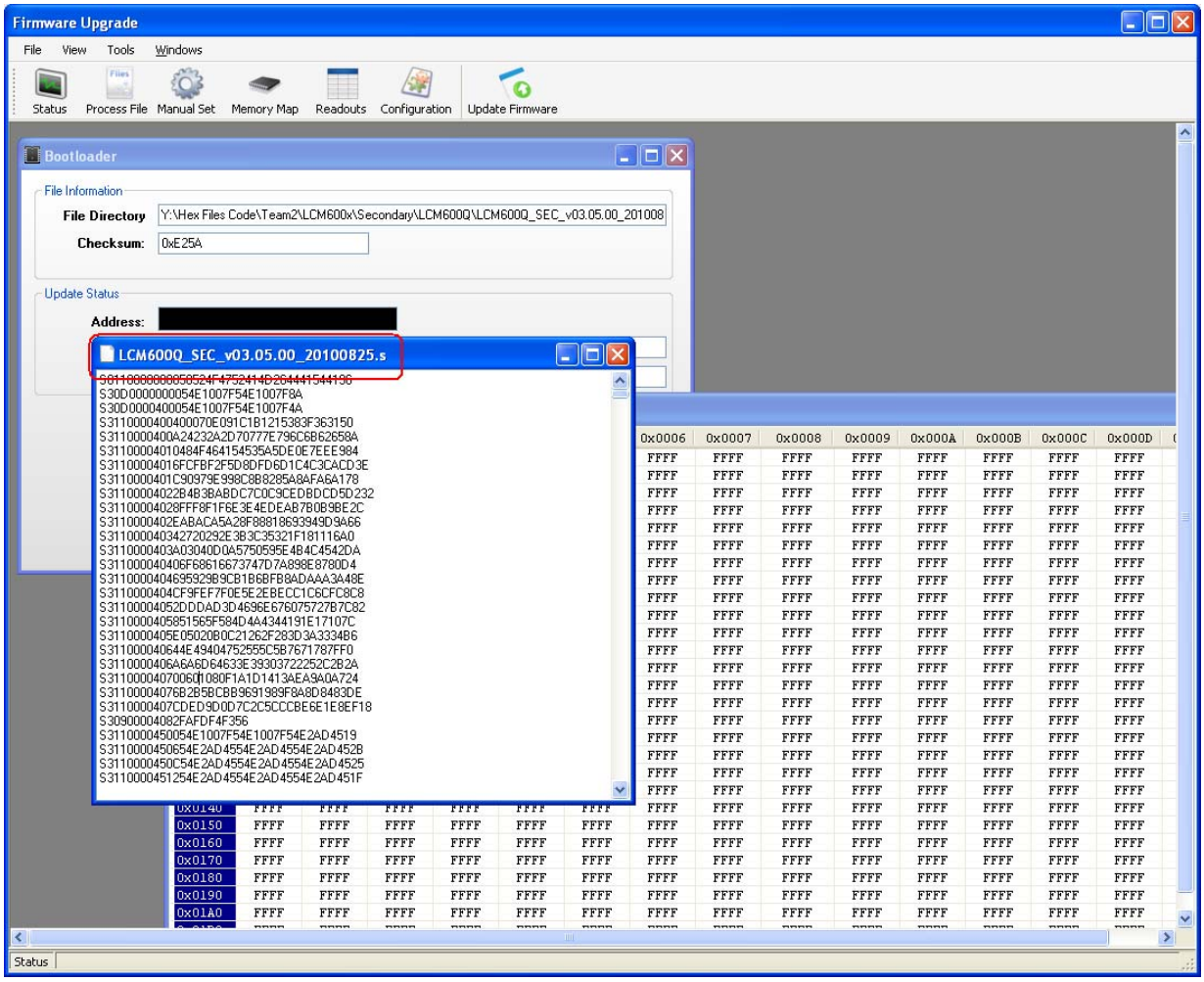
2. Firmware Update Window will appear with the default Bootloader window inside.



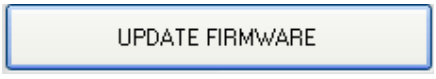
3. Load the Bootloading file (either **SRecord** or **Hex File**).
   Go to file then choose Bootloading file format to load.



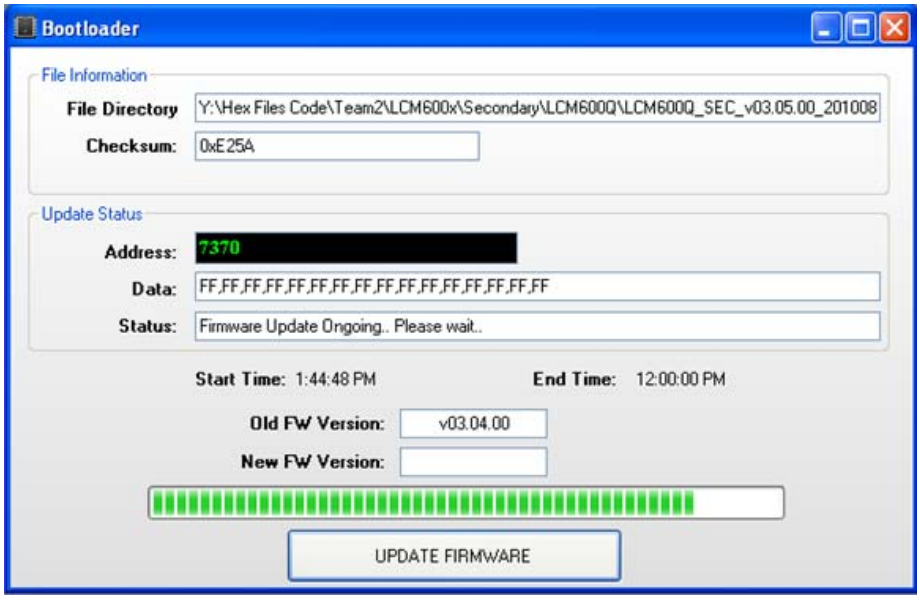
4. Once file is loaded, Memory map will and open the open loader file.



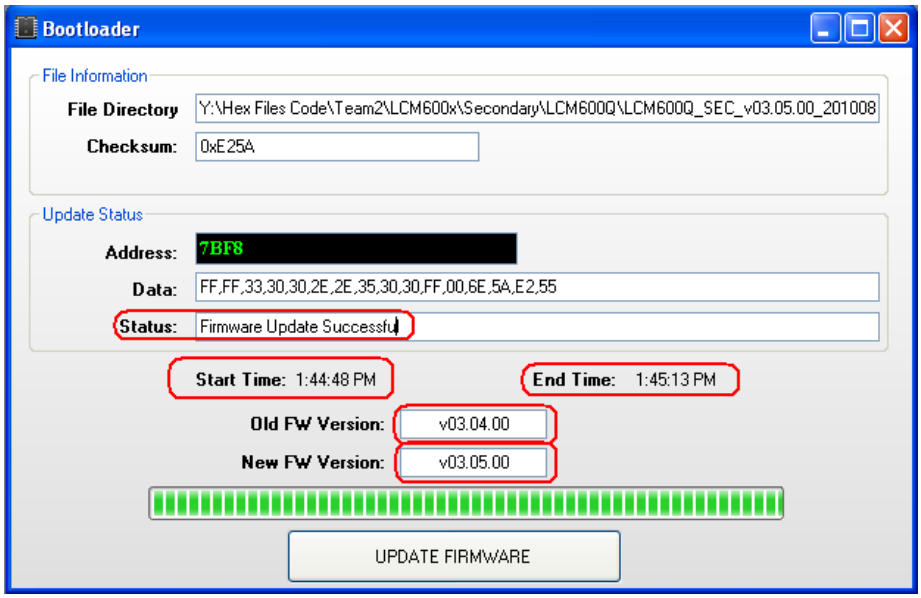
5. Click "**UPDATE FIRMWARE**" to start firmware update.



6. Wait while firmware Update is ongoing.



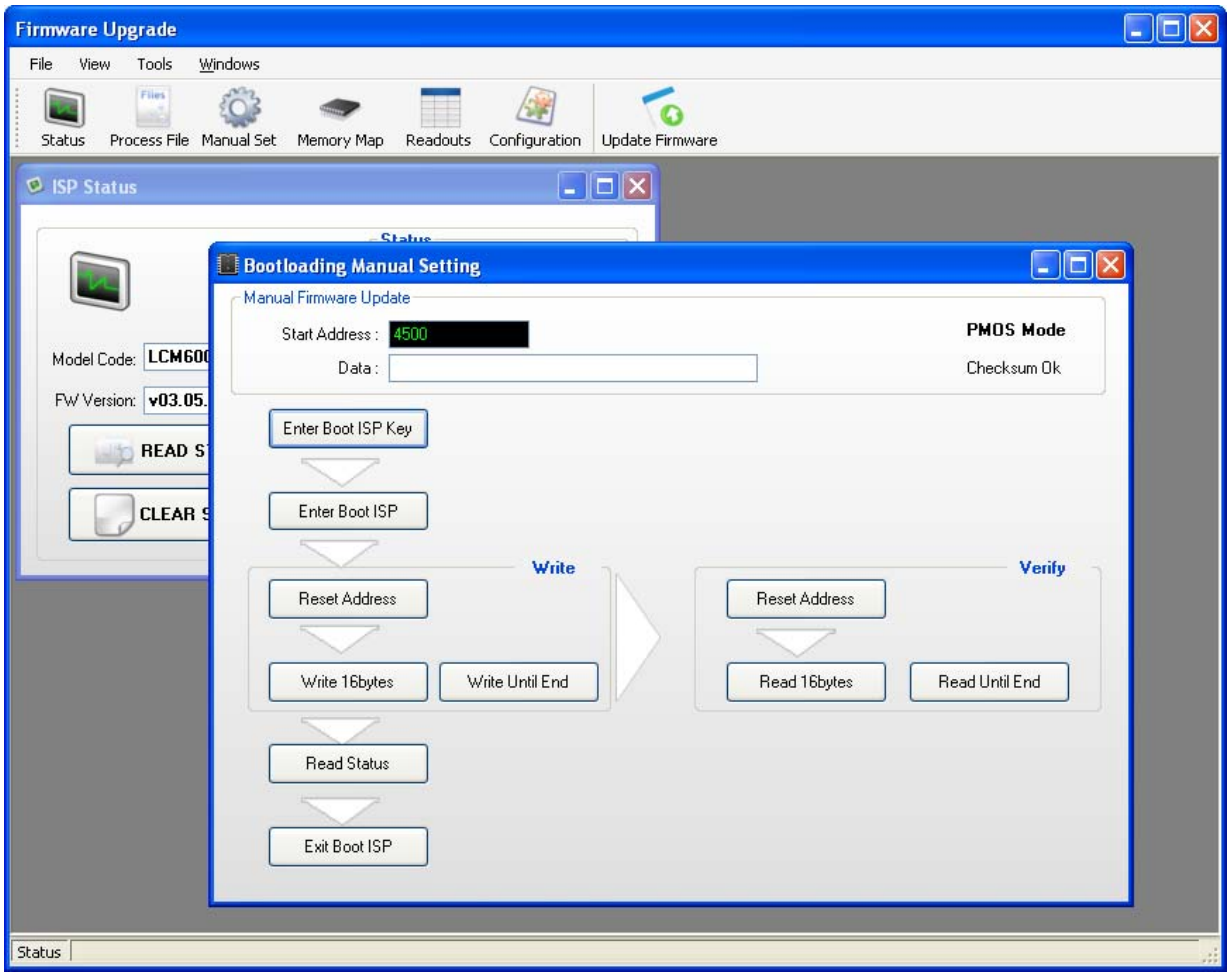
7. Wait until Status indicate that "**Firmware Update Successful**".



Once update completed, End time will be indicated including the old and new firmware version of the power supply.

MANUAL FIRMWARE UPDATE

Manual firmware update was design primarily for Bootloader debugging and to be use by power supply design engineer. It is much more complicated than using Automatic firmware update. It has a step by step procedure to attain successful firmware update.

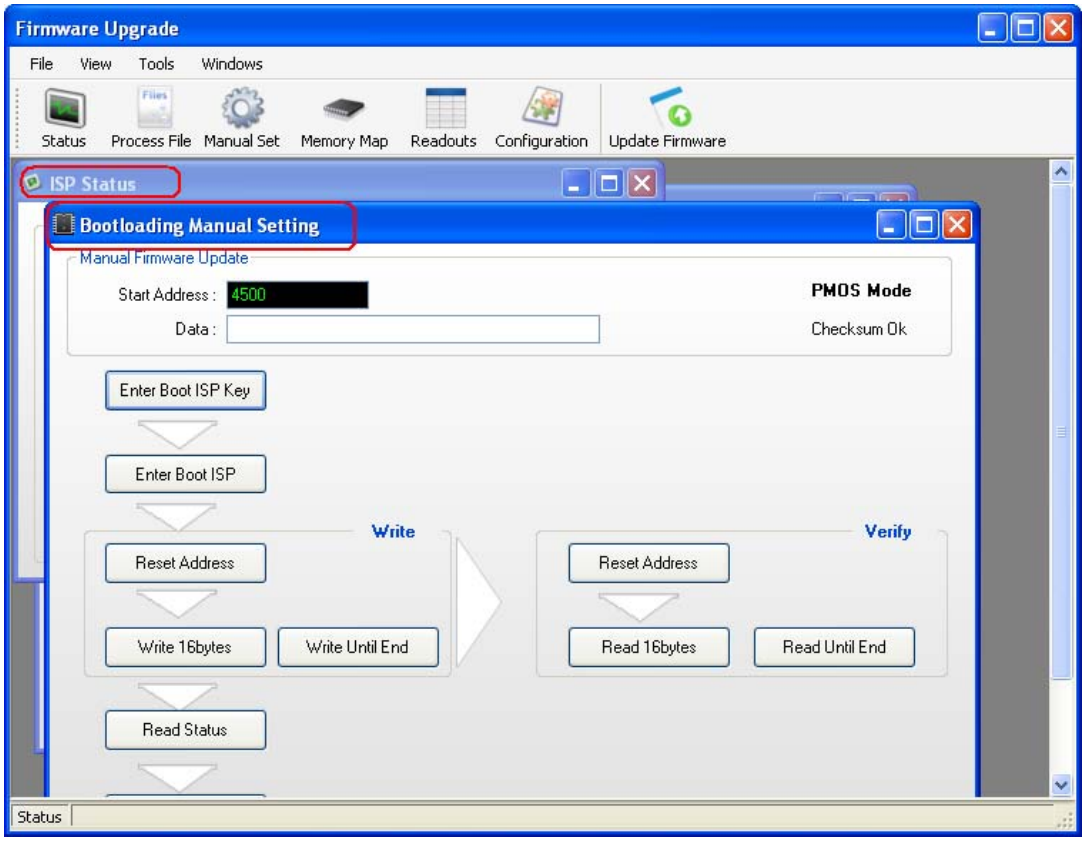


Checking of Model code and Firmware version are needed to be done manually using ISP Status window. See procedure below on how to upgrade power supply firmware using manual Bootloading.

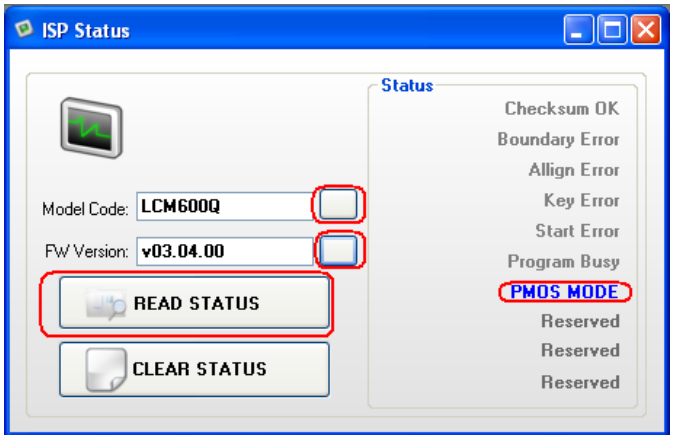
Procedure for Manual Firmware Update

7. Click "Manual Set" Button located at the top section of the Firmware Upgrade window.

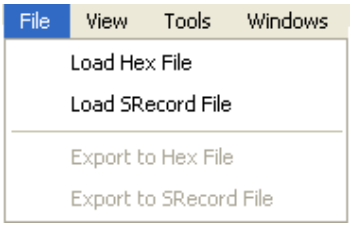
8. ISP Status and Bootloading Manual Setting window will appear.



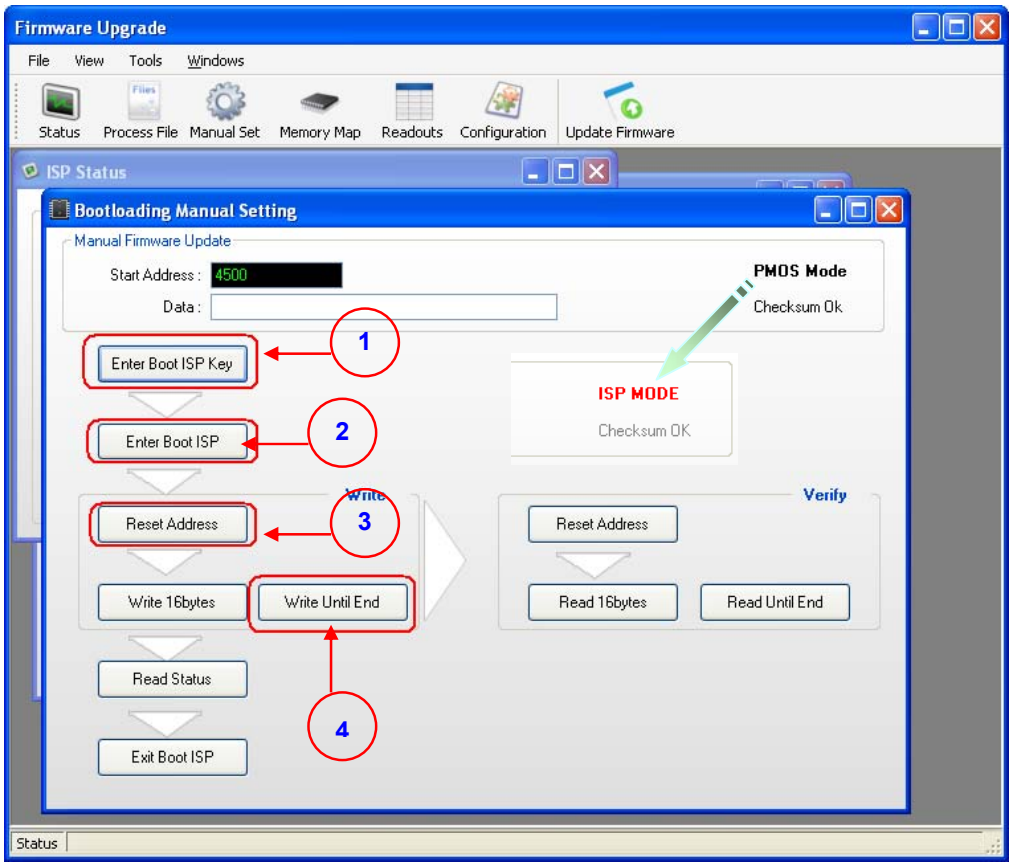
9. Go to ISP Status and click buttons to read Model Code and Firmware Version.



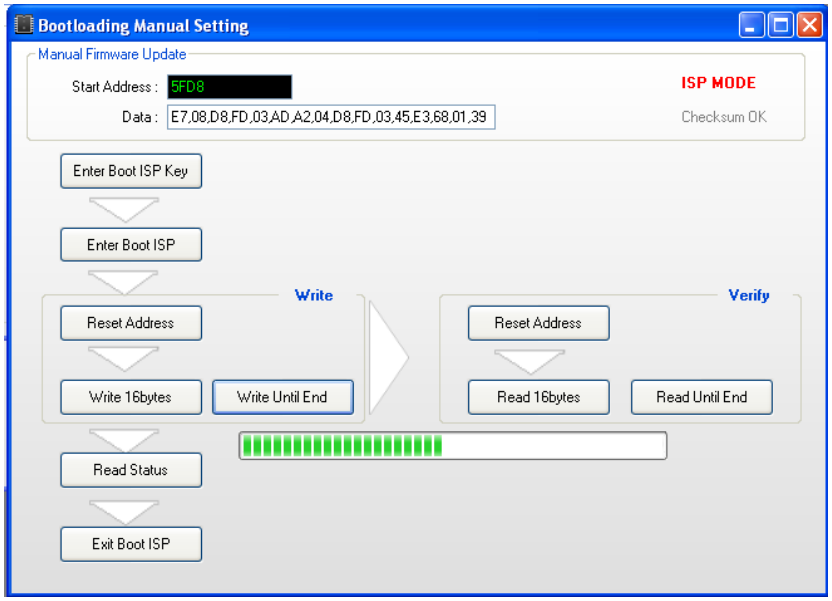
10. Click Read Status Button to verify the current status of the Bootloader.
11. Go to Bootloader Manual Setting window to start firmware upgrade.
12. Load Bootloader file 1st.



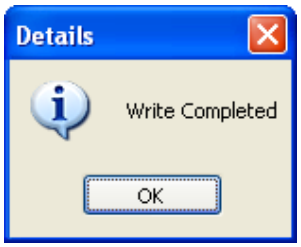
13. Once Bootloader already loaded, click "**Enter Boot ISP Key**" (1), then click "**Enter BOOT ISP**" (2) and wait until "**PMOS Mode** to change into **ISP Mode**. If Bootloader status already in the ISP Mode. "Reset Address" then press "**Write Until End**" button.



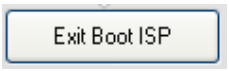
14. Wait until firmware Update Completed.



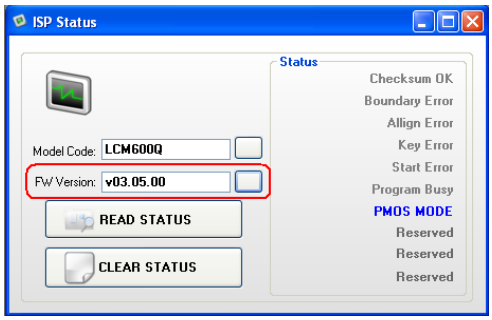
15. Wait until write already completed.



16. Click Exit Button to return in **PMOS Mode**.



17. Go to status window then check FW Version if already updated. Once Confirmed that version already update then firmware upgrade already successful.



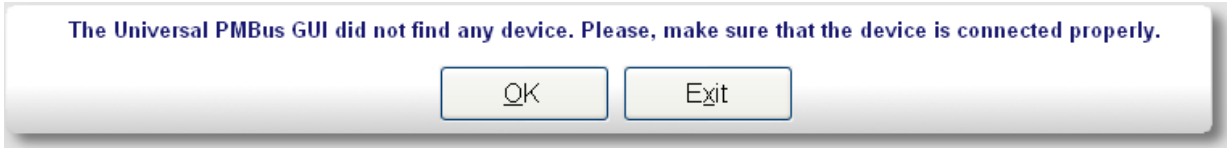
TROUBLE SHOOTING GUIDE

USB-I2C Hardware Not Detected

Cause 1: USB to I2C adapter not connected to USB port of the computer.
Solution 1: Make sure that it is already connected before launching the Universal PMBus GUI.

Cause 2: USB to I2C adapter set in the GUI did not match the actual adapter connect to computer.
Solution 2: Go to device menu then Select the correct USB Adapter.

Universal PMBus GUI Did not find any Device



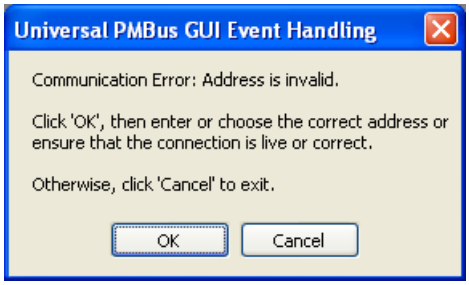
Cause 1: Power Supply not connected in the USB to I2C Adapter.
Solution 1: Make sure that USB to I2C adapter cable was connected to power supply.

Cause 2: Power Supply not powered up.
Solution 2: Make sure all connections are connected and the Unit was powered up.

Cause 3: No configuration file available for the power unit connected to the GUI.
Solution 3: Make sure that the GUI already had the configuration for the power supply unit to test.

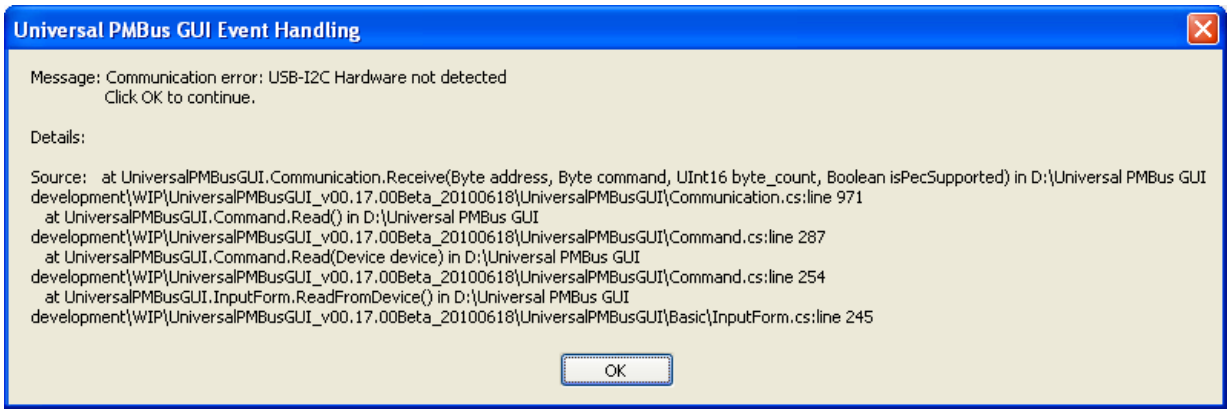
Cause 2: MFR MODEL of the power supply under test was different from the MFR MODEL being set in the configuration file.
Solution 3: Verify if the MFR MODEL of the power supply is already updated.

Communication Error: Address is invalid



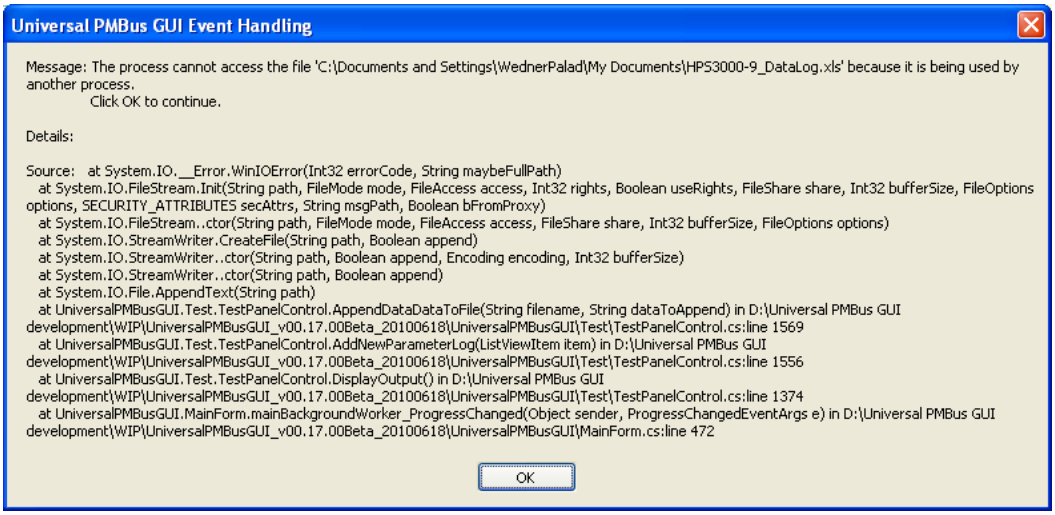
Cause 1: This error occurred when wrong address was set or adapter connection to power supply unit was disconnected.
Solution 1: Make sure that device address was correctly set and make sure that the I2C adapter was connected the power supply to avoid this error.

Communication Error: USB-I2C Hardware not detected



Cause 1: This error occurred when USB-to-I2C adapter was disconnected while Universal PMBus GUI is currently active.
Solution 1: Make sure to connect the USB-to-I2C adapter to avoid this error.

Data Log Accessing File Error



Cause 1: Opening data log file while Continuous reading in Test Panel currently active.
Solution 1: Accessing file is prohibited while data logging is still ongoing.

For Technical Support and Information

Technical support: TechSupport.EmbeddedPower@emerson.com
Visit us: http://www.powerconversion.com
:http://www.emerson.com/en-US/about_emerson/emerson_business/Pages/Network_Power.aspx

Author: Wedner A. Palad
: EMERSON Network Power