

iMP Series

Up to 1500 Watts Intelligent MP series

Total Power: Up to 1500 Watts
Input Voltage: 85-264 Vac
120-300 Vdc
of Outputs: Up to 21



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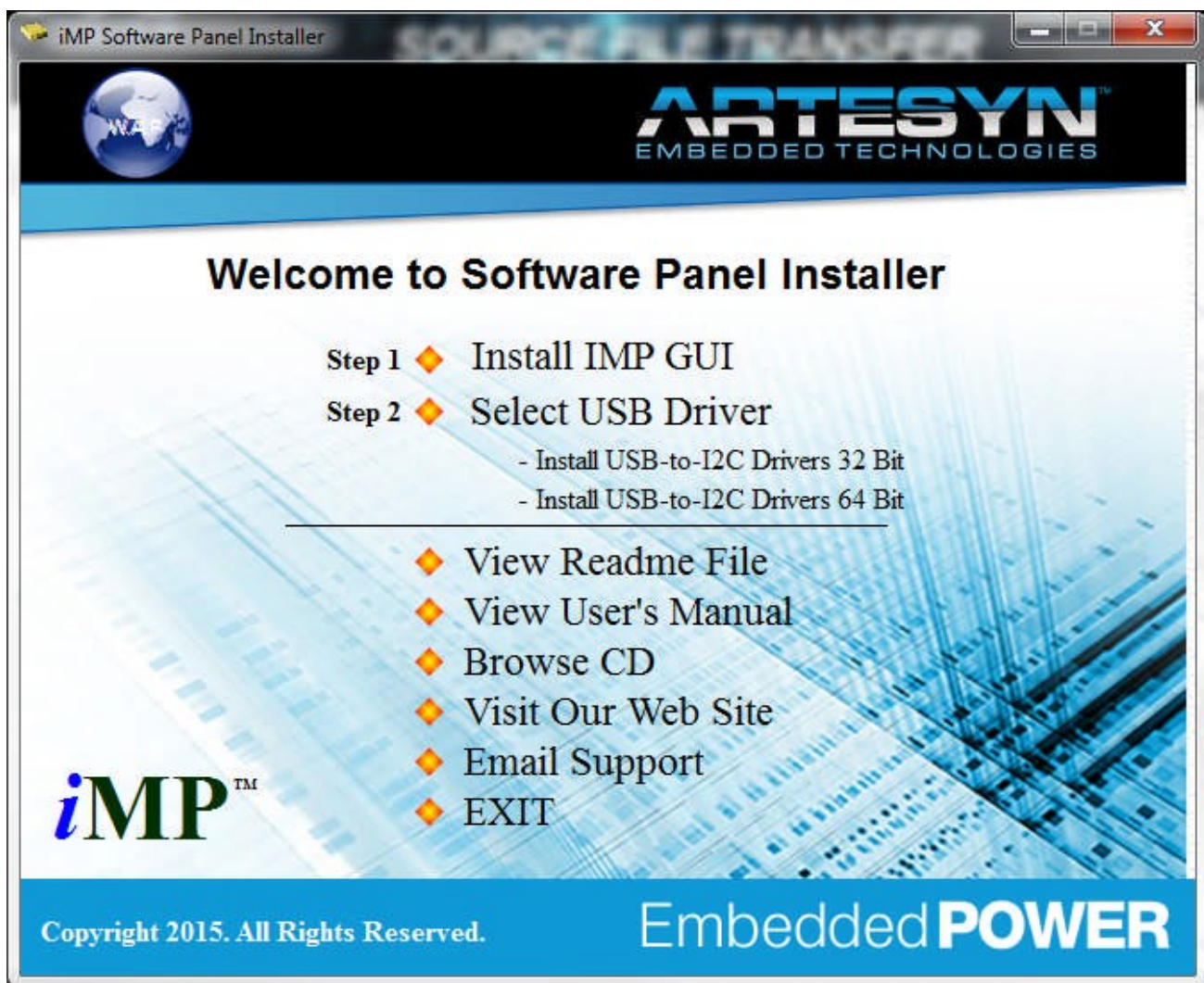
Product Descriptions

iMP GUI Software is designed to make PSU (iMP Power Supply Unit) accessible to the user. It is intended to provide information gathered from the PSU and interactive controls to the basic capabilities of iMP Power supply. The iMP Software must be installed to PC before the user can make use all of the function of this program. Please refer to the system requirement before starting the installation.

Software Installation

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

1. Download the iMP GUI software from this website link: <https://www.artesyn.com/power/impsoftware/>
2. To start install program select "install IMP GUI" in the installer menu.
3. After iMP GUI installation completed, install USB-to-I2C driver in the installer menu.



Getting Started

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 iMP power supply already power up to have proper communication with iMP GUI software.

Launch iMP Software Panel Program

Software Panel Initialization

Once the program has been launched, iMP GUI software will run through initialization process for Panel and USB adapter detection.



GUI Main Window

If the iMP software detect the iMP device it will be display as “iMP Device Detected” with green background. You will have initial reading once communication became successful upon launching the software.

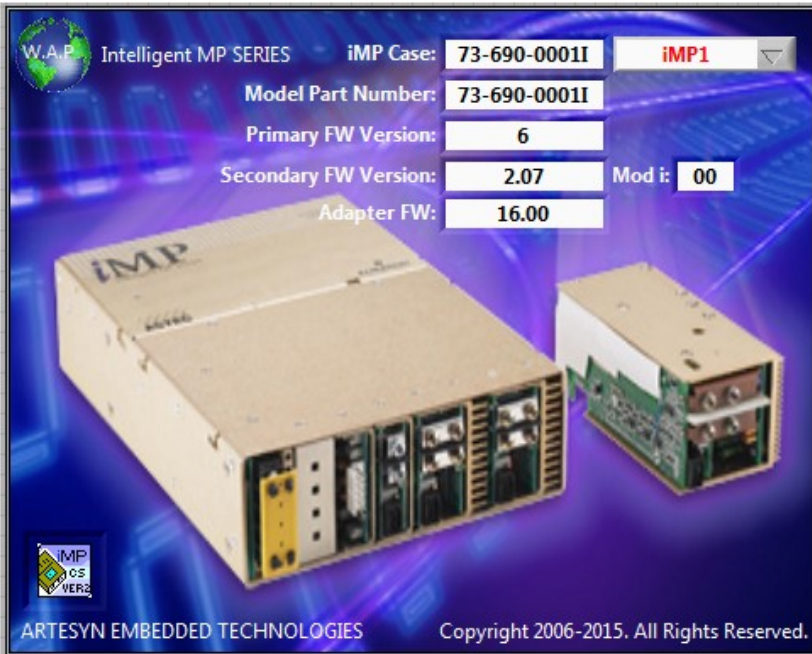
The initial readings to be displayed are the following:

1. iMP Case
2. Model Part Number
3. Primary SW Version
4. Secondary SW Version
5. Mod (Modification number)



The default setup for iMP GUI is “USB iMP I2C Port” using “iMP PMBus Mode”. Once the device is detected, you can continue using the GUI with the default setup.

At SIMULATION Mode iMP Case and Model Part Number can be changed for Setup. (For detailed description of SIMULATION Mode, please refer to iMP User's Manual).

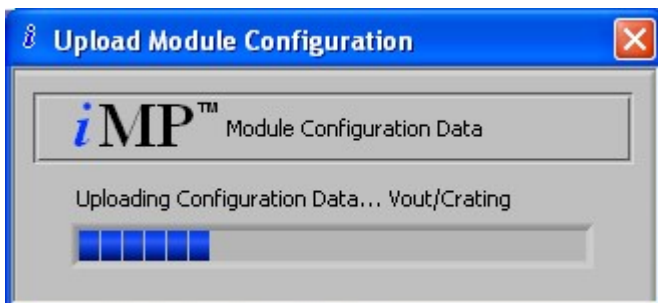


Continuous Reading

Set this button to ON to set the iMP software in real time operation. This means that it will give you continuous reading and update upon using this program.



Wait until the upload process complete then windows will automatically change to Monitoring Panel.



Click "SETUP CONFIGURATION" to enter in the iMP Monitoring Panel.

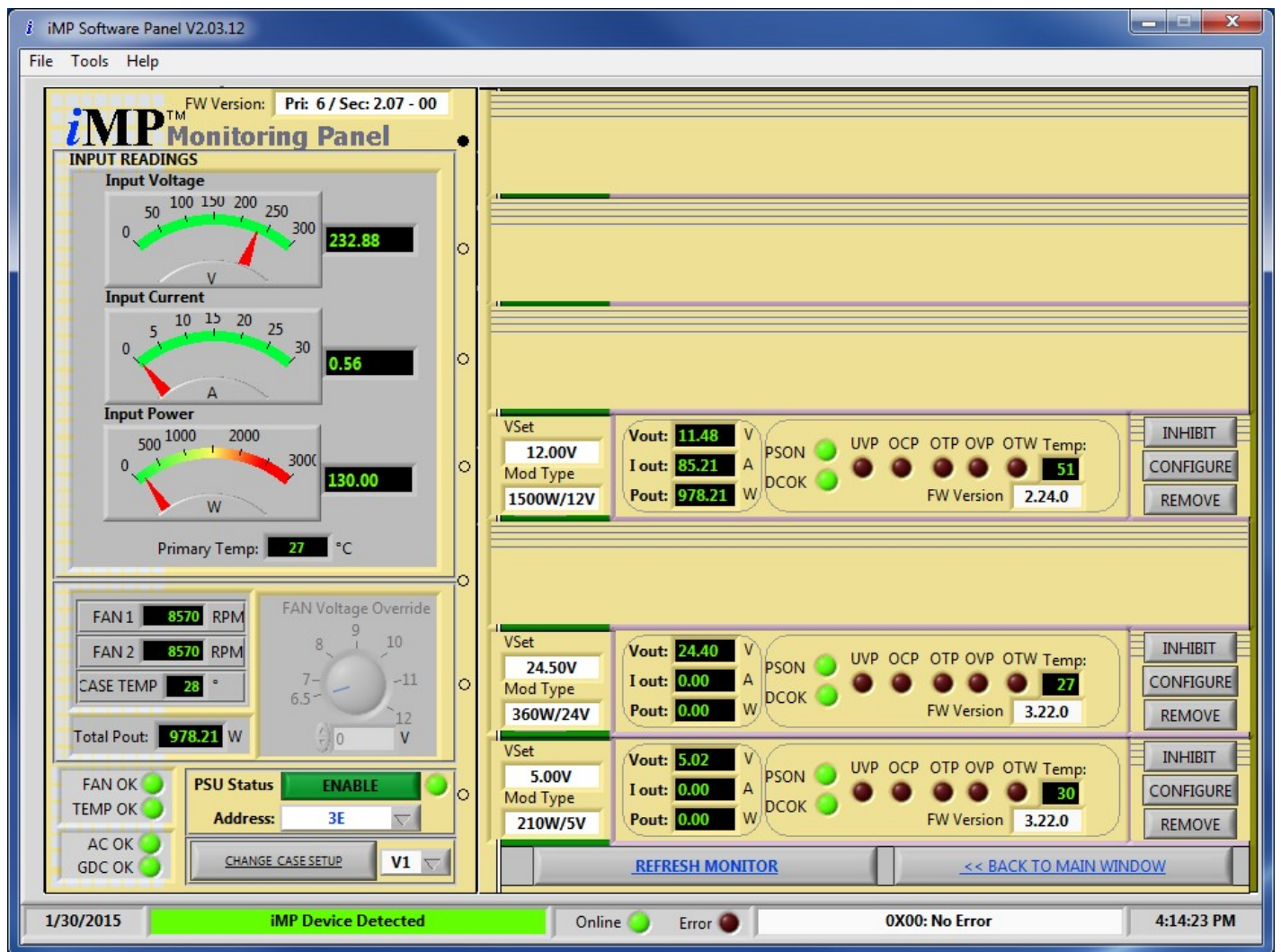


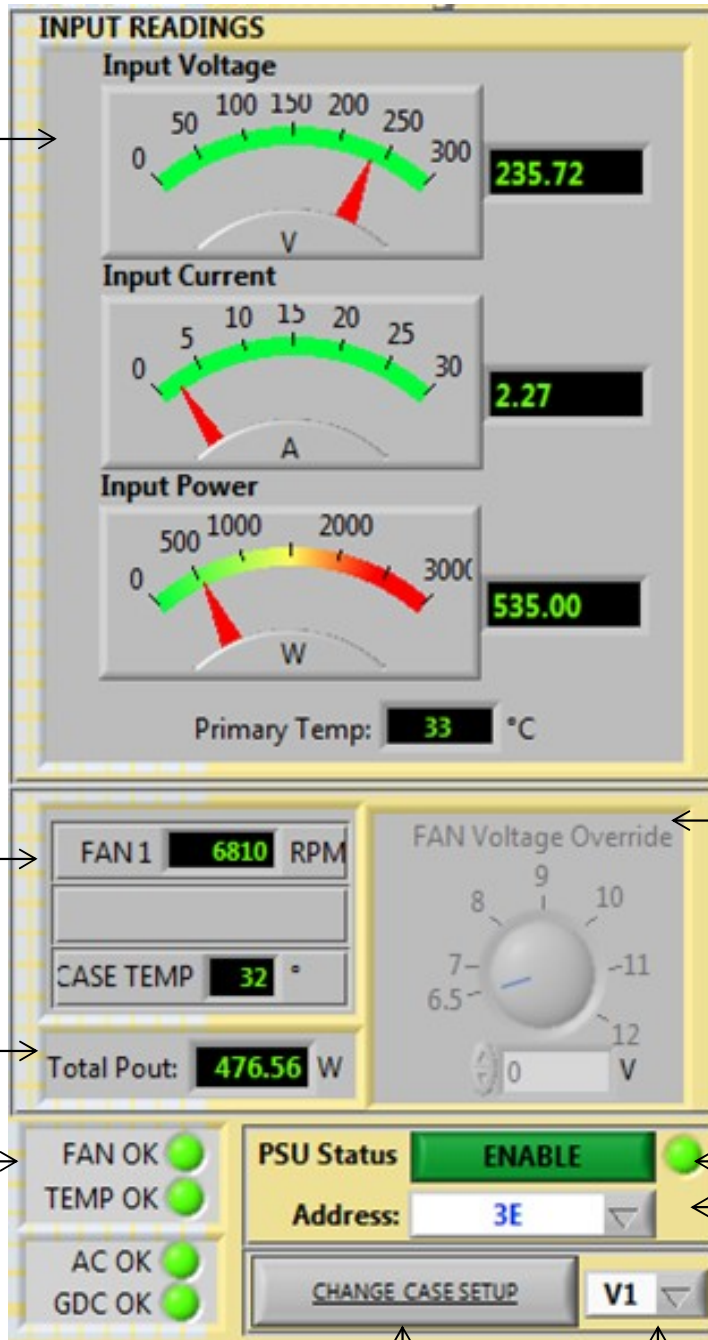
Monitoring Panel

This panel represents the whole iMP power supply. This window will only appear after the “SETUP CONFIGURATION” button was clicked.

It contains information provided by the PSU. This monitoring panel consists of the following sub panels:

1. Input Readings
2. PSU Case Status
3. Module Status





Input Readings

Case Ambient Temperature and FAN Speed

Total Output Power

PSU Status Flag:
Green LED if Good condition,
Red if Fault Condition

Change CASE Setup Button:
This will send you to the next window for PSU case configuration. Function of this button is almost the same on "CONFIGURE" buttons in configure and remove panel. (Please refer to Page 10 for details).

VFAN Voltage:
This will set the FAN override flag in the PSU Configuration Register and overrides the PSU fan control with the requested fan voltage.

PSU Status:
This is used to Turn ON and OFF the iMP PSU.

Address:
This function was commonly use in redundancy test. The user changes the address to corresponding MCU address of the PSU connected.

Module Output Index:
This is use to read the second output of the Dual Output module. The monitoring panel will show only the modules, which are categorized as dual output. Single output display will be visible only when V1 is selected.

Module Monitoring



Below sub panel shows the output characteristics of the module attached on the case slots. It displays the voltage, current, and power output as well as the fault condition of every module. When the module is not detected on the slot, the module panel will display empty slot.



- Vout: Shows module output voltage
- Iout: Shows module output current
- Pout: Shows module computed output power
- PSON: PS Turn ON/OFF Flag (Green LED lights ON if Good condition)
- DCOK: DC OK Flag(Green LED lights ON if Good condition)
- UVP: Under Voltage Protection (Red LED lights ON if Fault condition)
- OTP: Over Temperature Protection (Red LED lights ON if Fault condition)
- OVP: Over Voltage Protection (Red LED lights ON if Fault condition)
- OTW: Over Temp Warning (Red LED lights ON if Fault condition)
- UVP: Under Voltage Protection (Red LED lights ON if Fault condition)
- Temp: Shows module temperature reading
- SW Version: Shows Module current version

This shows the current operating condition of the module attached to the case slot. It only serves as display for Voltage range and Power rating for the corresponding module.

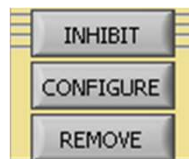
Vset: Display Current Voltage Setting of the Module

Mod Type: Power rating and Voltage Range of the module



Configure and Remove Panel

This is used to proceed to the Module configuration window. Remove button is used to hide the module display from the panel and disabling the module from the PSU configuration. It also include inhibit button to disable module output.



Change CASE Setup Button

This will send you to the next window for PSU case configuration. Function of this button is almost the same on "CONFIGURE" buttons in configure and remove panel.



Refresh Monitor

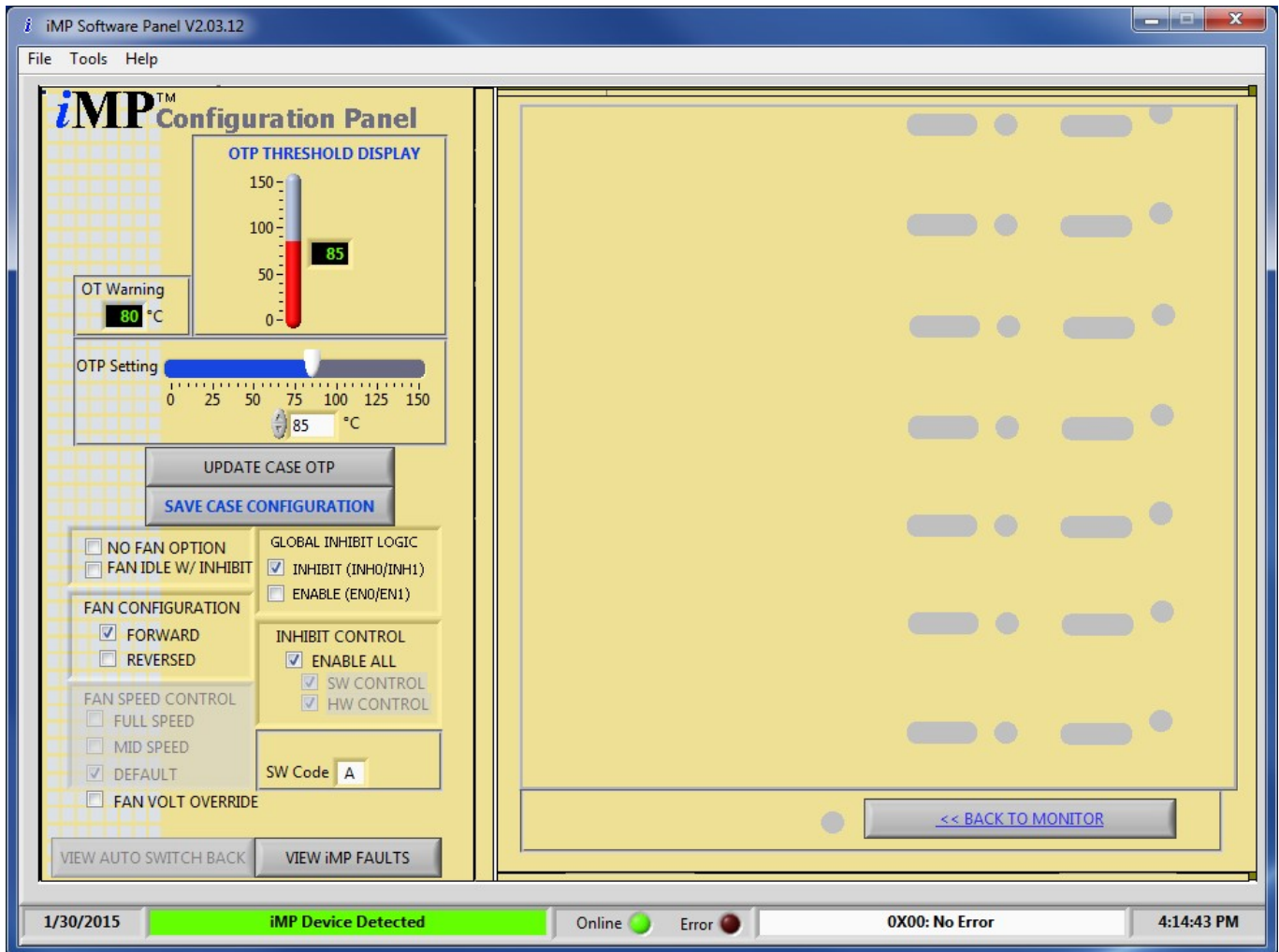
This is use to Reinitialized detection of the PSU. This will read all the current configuration of the PSU then display it in monitoring Panel. Function of this button is almost the same function of the Continuous Reading button



Configuration Panel

PSU Case Configuration Panel

This is used to configure PSU Case. This screen will be display after “CHANGE CASE SETUP” button was clicked as indicated on Page 9. To return to the preview window, click “BACK TO MONITOR” button.



Description and Priority for Case Configuration Panel

OTP Settings

This is used to set the Over Temperature Limit of the Case. Press Update Case OTP to include new setting to EEPROM. (Note: Need Log-in name and password to update case OTP.)

No Fan Option

If this flag is set, FAN Fault detection for the PSU is disabled (useful for the PSU without fans).

Fan Idle with Inhibit

At standby, fans operates at quiet mode by default. If this flag is set, the fans will be turned off at standby mode.

FAN Configuration (Direction)

Fan speed is based on the hottest temperature reading and reaches the maximum speed at 50 degrees Celsius. If reverse direction is set, reverse fan airflow is assumed and fan speed reaches the maximum speed at 40 degrees Celsius.

Fan Speed Control

- Full Speed: if this flag is set, fan speed is set to maximum.
- Mid Speed: if this flag is set, fan PWM duty is set to half.
- Min Speed: this is the speed of the fan by default.

Fan Voltage Override

This is use to select the type of Fan Override. If Fan Voltage Override was selected, speed of the fans can be varies by changing the voltage value in monitoring panel. If Fan Voltage is not selected then Fan Speed Override will be enabled.

Global Inhibit Logic

- INHIBIT (INH0/INH1): if this flag is set PSU Control signal is set to High.
- ENABLE (EN0/EN1): if this flag is set PSU control signal is set to Low.

Inhibit Control

- Enable all: if this flag is set, PSU status will be functional. It means that the PSU can be enabled or disabled through the use of PSU Status button (see function in the Monitoring Panel section). SW Control and HW Control can be also enabled and disabled if this flag is set.
- SW Control (Software Inhibit): if this flag is set, Inhibit through software will be available.
- HW Control (Hardware Inhibit): if this flag is set, Inhibit through switch or hardware will be available.

Save Case Configuration

This is use to store all contents of the Operating Memory in User Configuration Memory Location of the IVS Case. It is used to stored PSU configuration to its Permanent Memory. Once Power Supply power been recycled, it will use its stored configuration setup.



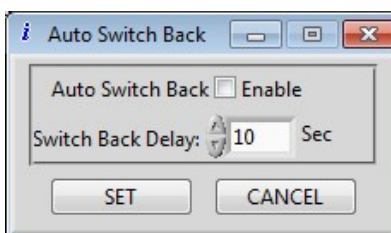
View Switch Back Status button

This feature was use for changing the automatic switch back delay of output index dictated by the case to V1 from any state of V2 and V3. It will only applicable on Case with multiple output of module attached on it (144W and 36W). It also supports case with firmware version of 2.19 and above.



Auto Switch Back Panel

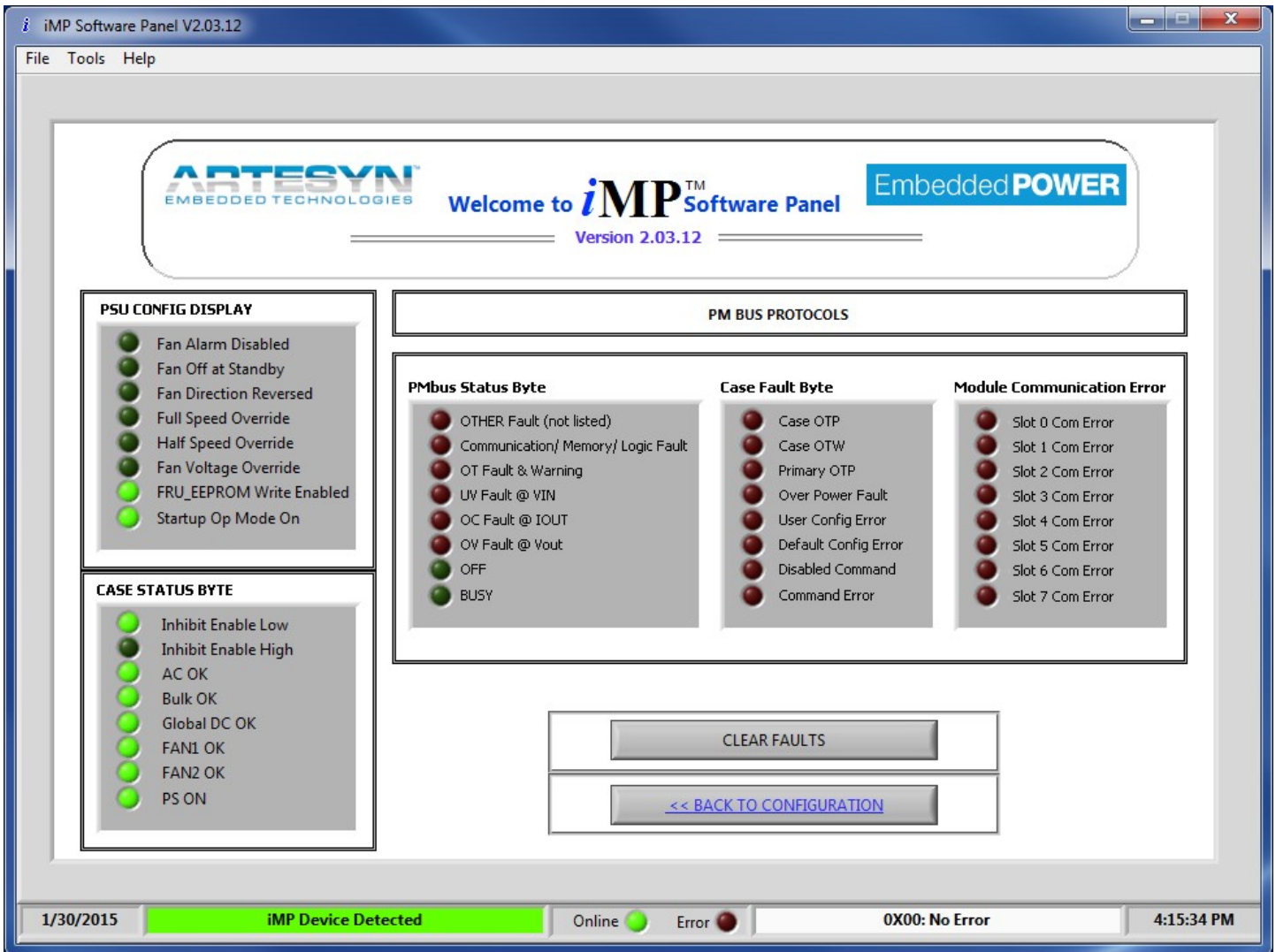
this panel consist of Auto Switch Back enabling and the delay. You can set the setting you desired by pressing the set button then return to monitoring panel. Change the output index from V1 to V2 and wait till V2 return to V1 again.



View iMP Faults button



This is used to view the PSU faults (applicable on PSU with PMbus version only).

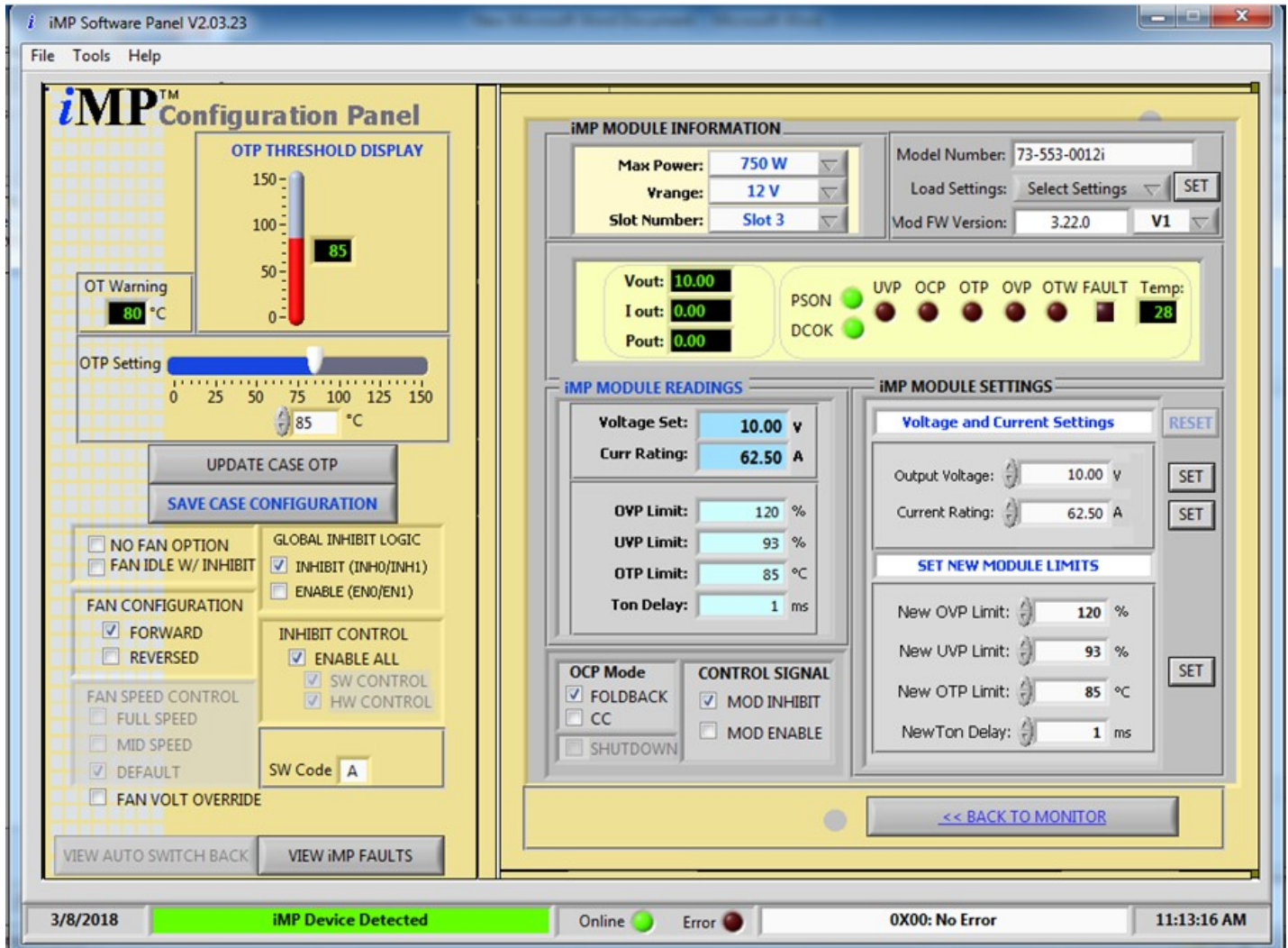


This window is used to see the current configuration of the PSU and the faults given by the PSU and output modules. Faults being display in the windows are errors and fault conditions happen before. This window serves as history of fault for the iMP while the PSU is ON.

Click "CLEAR FAULT" button to clear the fault flags set in PM bus Status byte, Case Fault Byte, and on Module Communication Error.

Module Configuration Panel

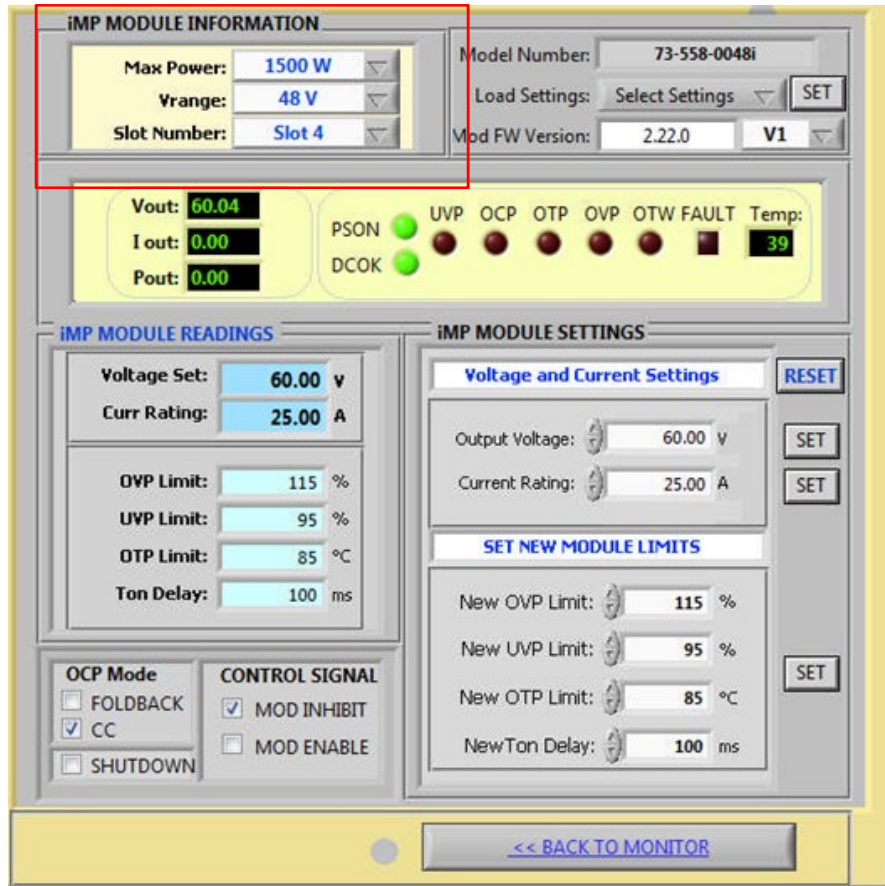
To be able to adjust voltage setting and current limit of the module, the user must configure the smart module in Module Configuration Panel. Smart module limit can be also set in this panel. Click “Configure” Button in the Module Monitoring display to go through it. Make sure to follow instruction to configure module correctly.



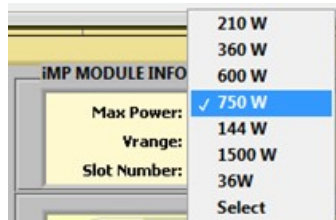
This window is used mainly for Module configuration. The user can set new output voltage and current rating for the smart module. Other limits such as OVP, UVP, OTP limit, and Turn-ON delay can be set in this window. The user can also change OCP Mode and Control Signal.

Module Information

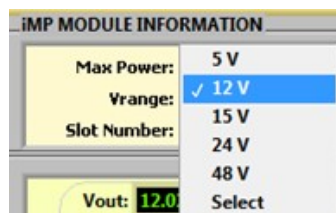
It displays Voltage range and Power rating of the current module being configured. This window is used as reference for module being configure. It also sometimes serves as control if the user wants to go on the other slot location. By selecting slot number, module configuration will automatically update the panel to corresponding module.



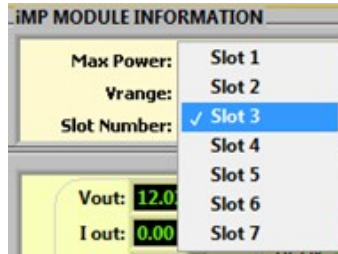
- **Max Power:** it serves as display for Power rating of current smart module attached to the PSU case slot. This function becomes a control for non-smart module setup only.



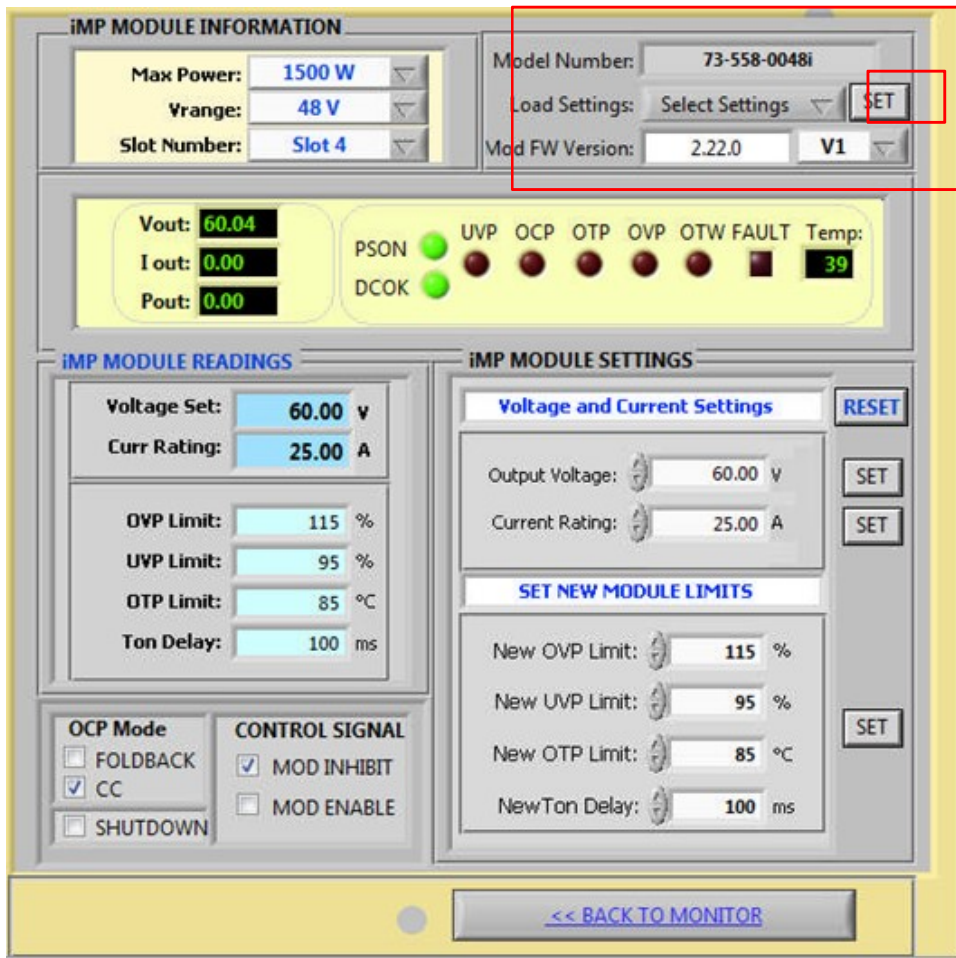
- **Vrange:** this serve as display for Power rating of current module attached to the PSU case slot.



- **Slot Number:** the user can use this function to get through on other module configuration with exiting the configuration window.



Preset and Firmware Version Display Panel



- **Module Number:** Display the part number of the module

Model Number: 73-558-0048i

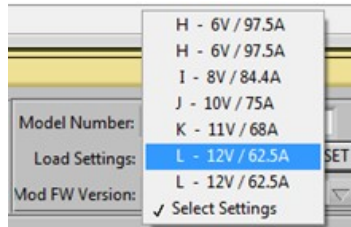
- **Module FW Version:** Firmware version of the module being configured.

Mod FW Version: 2.22.0

- Load Settings**

This is the Pre-defined setting being stored inside the smart module. It will set the calibrated value of voltage and current setting (Factory Default).

Click "SET" to load the pre-defined value inside the smart module.



- Module Output Index**

This is use to change the current display of the Multiple output module. If V1 is selected then the module will read and display settings of the first output. If V2 is selected then it will read and display setting of the second output. If module is a single module output then this function is disabled.



iMP Module Readings

This is the uploaded data setting from the smart module. Data display in this panel was extracted from the smart module when “Continuous Reading” switch was set to ON. It is also updated after “Refresh Monitor” button was set.

Module readings also get updated every time the user set new value and limits in Module settings.

It display current Module configuration of the module attached to the PSU case slot. It updates every time the user set new limit to the module. This is the reading coming from stored data inside the smart module.

These values are only readings of the configured module and only used as reference, if the data being set in the module settings are being stored inside the module EEPROM after it is being set.

iMP MODULE INFORMATION

Max Power: 1500 W
Vrange: 48 V
Slot Number: Slot 4

Model Number: 73-558-0048i
Load Settings: Select Settings SET
Mod FW Version: 2.22.0 V1

Vout: 60.04
I out: 0.00
Pout: 0.00

PSON DCOK UVP OCP OTP OVP OTW FAULT Temp: 39

iMP MODULE READINGS

Voltage Set: 60.00 v
Curr Rating: 25.00 A

OVP Limit: 115 %
UVP Limit: 95 %
OTP Limit: 85 °C
Ton Delay: 100 ms

iMP MODULE SETTINGS

Voltage and Current Settings RESET

Output Voltage: 60.00 v SET
Current Rating: 25.00 A SET

SET NEW MODULE LIMITS

New OVP Limit: 115 %
New UVP Limit: 95 %
New OTP Limit: 85 °C
New Ton Delay: 100 ms SET

CONTROL SIGNAL

OCP Mode
 FOLDBACK
 CC
 SHUTDOWN

MOD INHIBIT
 MOD ENABLE

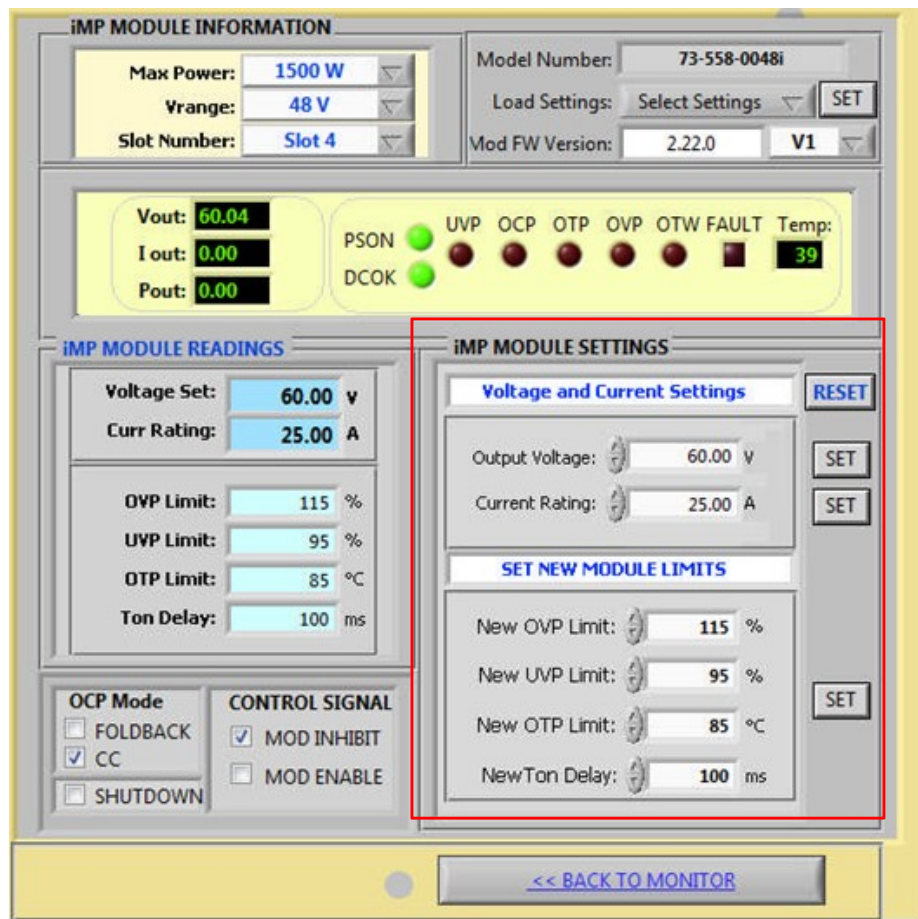
<< BACK TO MONITOR

iMP Module Settings

This sub panel is used to configure module settings and fault limits. The user can initially put value but it will only be set after “SET” button was pressed.

To check if the value is being set to the module is accepted, see iMP Module Readings for the updated value.

Some values that will be inputted will be restricted dependent on the current voltage and power rating of the module being configured. Make sure to input values that are within the desired limits of module. Refer to module specification for output load limit value.



- **Output Voltage**

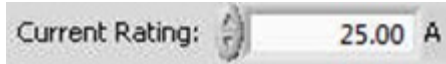


This is the value to be input in module as new voltage setting. Click “SET” to update the voltage of the output module.

Voltage Range	Adjustment Ranges (V)
5V	1.8 - 6.1
12V	5.4 - 13.2
15V	12.6 - 22.0
24V	21.6 - 39.6
48V	37.8 - 60.0

- Current Rating**

This is the value to be input in module as new current setting. Need actual external load connected to the output module to be configured – for re-calibration. Click “SET” to set new maximum current of the output module.



Current Rating Limitation Table					
Voltage	Voltage Range	210Watts	360Watts	750Watts	1500Watts
2.00 V	1.8 - 2.09	35.00A	60.00A	150.00A	300A
2.20 V	2.10 - 2.59	35.00A	60.00A	150.00A	300A
3.00 V	2.6 - 3.14	35.00A	60.00A	150.00A	300A
3.30 V	3.15 - 4.14	35.00A	60.00A	150.00A	300A
5.00 V	4.15 - 5.09	35.00A	60.00A	150.00A	300A
5.20 V	5.10 - 5.34	35.00A	60.00A	144.00A	300A
5.50 V	5.35 - 6.10	34.00A	58.00A	136.00A	300A
6.00 V	5.40 - 6.99	23.00A	42.00A	97.50A	140A
8.00 V	7.0 - 8.99	20.00A	36.00A	84.37A	140A
10.00 V	9.0 -10.49	18.00A	32.00A	75.00A	140A
11.00 V	10.5 - 11.49	17.00A	31.00A	68.00A	136A
12.00 V	11.5 - 13.2	17.00A	30.00A	62.50A	125A
14.00 V	12.6 - 14.49	14.00A	21.00A	53.5A	107.00A
15.00 V	14.5 - 16.49	14.00A	20.00A	50.00A	100.00A
18.00 V	16.5 - 18.99	11.00A	19.00A	41.60A	83.3A
20.00 V	19.0 -22.0	10.50A	18.00A	37.50A	75A
24.00 V	21.6 - 25.99	8.50A	15.00A	30.00A	62.5A
28.00 V	26.0 - 28.99	6.70A	11.00A	26.80A	53.5A
30.00 V	29.0 - 31.49	6.50A	11.00 A	25.00A	50.0A
33.00 V	31.5 - 34.49	6.20A	10.90A	22.70A	35.8A
36.00 V	34.5 - 39.6	5.80A	10.00A	20.80A	35.8A
42.00 V	37.8 - 44.99	4.20A	7.50A	16.00A	35.7A
48.00 V	45.0 - 50.99	4.00A	7.50A	15.60A	31.2A
54.00 V	51.0 - 56.99	3.70A	6.00A	13.90A	27.7A
60.00 V	57.0 - 60	3.50A	6.00A	12.50A	25.0A

Current Rating Limitation Table (Cont'd)						
Voltage	Voltage Range	144Watts (Dual Outputs)		36Watts (Triple Outputs)		
		V1	V2	V1	V2	V3
2.00 V	1.8 - 2.09	10.00A	10.00A	--	--	2A
2.20 V	2.10 - 2.59	10.00A	10.00A	--	--	2A
3.00 V	2.6 - 3.14	10.00A	10.00A	--	--	2A
3.30 V	3.15 - 4.14	10.00A	10.00A	--	--	2A
5.00 V	4.15 - 5.09	10.00A	10.00A	--	--	2A
5.20 V	5.10 - 5.34	10.00A	10.00A	--	--	2A
5.50 V	5.35 - 6.10	10.00A	10.00A	--	--	2A
6.00 V	5.40 - 6.99	10.00A	10.00A	--	--	2A
8.00 V	7.0 - 8.99	10.00A	4.00A	1A	1A	1A
10.00 V	9.0 - 10.49	10.00A	4.00A	1A	1A	1A
11.00 V	10.5 - 11.49	10.00A	4.00A	1A	1A	1A
12.00 V	11.5 - 13.2	10.00A	4.00A	1A	1A	1A
14.00 V	12.6 - 14.49	9.00A	4.00A	1A	1A	1A
15.00 V	14.5 - 16.49	8.00A	4.00A	1A	1A	1A
18.00 V	16.5 - 18.99	--	--	--	0.5A	0.5A
20.00 V	19.0 - 22.0	--	--	--	0.5A	0.5A
24.00 V	21.6 - 25.99	4.00A	2.00A	--	0.5A	0.5A
28.00 V	26.0 - 28.99	3.00A	2.00A	--	0.5A	0.5A
30.00 V	29.0 - 31.49	--	--	--	--	--
33.00 V	31.5 - 34.49	--	--	--	--	--
36.00 V	34.5 - 39.6	--	--	--	--	--
42.00 V	37.8 - 44.99	--	--	--	--	--
48.00 V	45.0 - 50.99	--	--	--	--	--
54.00 V	51.0 - 56.99	--	--	--	--	--
60.00 V	57.0 - 60	--	--	--	--	--

Note: If New Current Rating value to be set is higher than the existing current rating, select from Load Settings (Pre-defined setting, refer to Page 12) with higher current rating. This will require recalibration using actual external load, then perform above procedures.

- **New OVP Limit**

This is the value to be input in module will be new Over Voltage Limit.

Single Output					
GUI Range	5V Range	12V Range	15V Range	24V Range	48V Range
Actual Range	2-5.5V	6-12V	14-20V	24-36V	42-60V
OVP LIMIT	122% to 134%	110% to 120%	110% to 120%	110% to 120%	110% to 120%
Dual Output					
GUI Range	5V Range	12V Range	15V Range	24V Range	48V Range
Actual Range	2-6V	12-15V	Not Available	24-28V	Not Available
OVP LIMIT	122% to 134%	110% to 120%	Not Available	110% to 120%	Not Available
Triple Output					
GUI Range	5V Range	12V Range	15V Range	24V Range	48V Range
Actual Range	2-6V	12-15V	14-20V	24-28V	Not Available
OVP LIMIT	110% to 120%	110% to 120%	110% to 120%	110% to 120%	Not Available
The OVP limits are from specification, no OVP I2C adjustment feature provided					

- **New UVP Limit**

This is the value to be input in module will be new Under Voltage Limit.

Range: 99.6% Maximum.

- **New OTP Limit**

This is the value to be input in module will be new Over Temperature Limit.

Range: 20°C to 90°C.

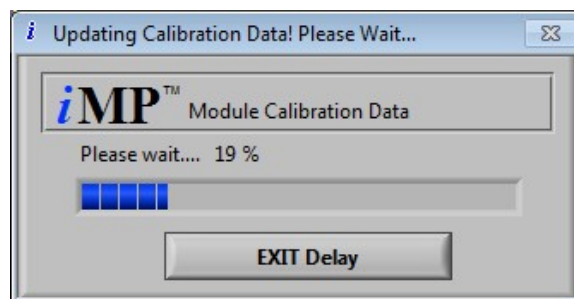
- **New Ton Delay**

This is the value to be input in module as new Turn-ON delay.

Range: 0 mSec to 255 mSec.

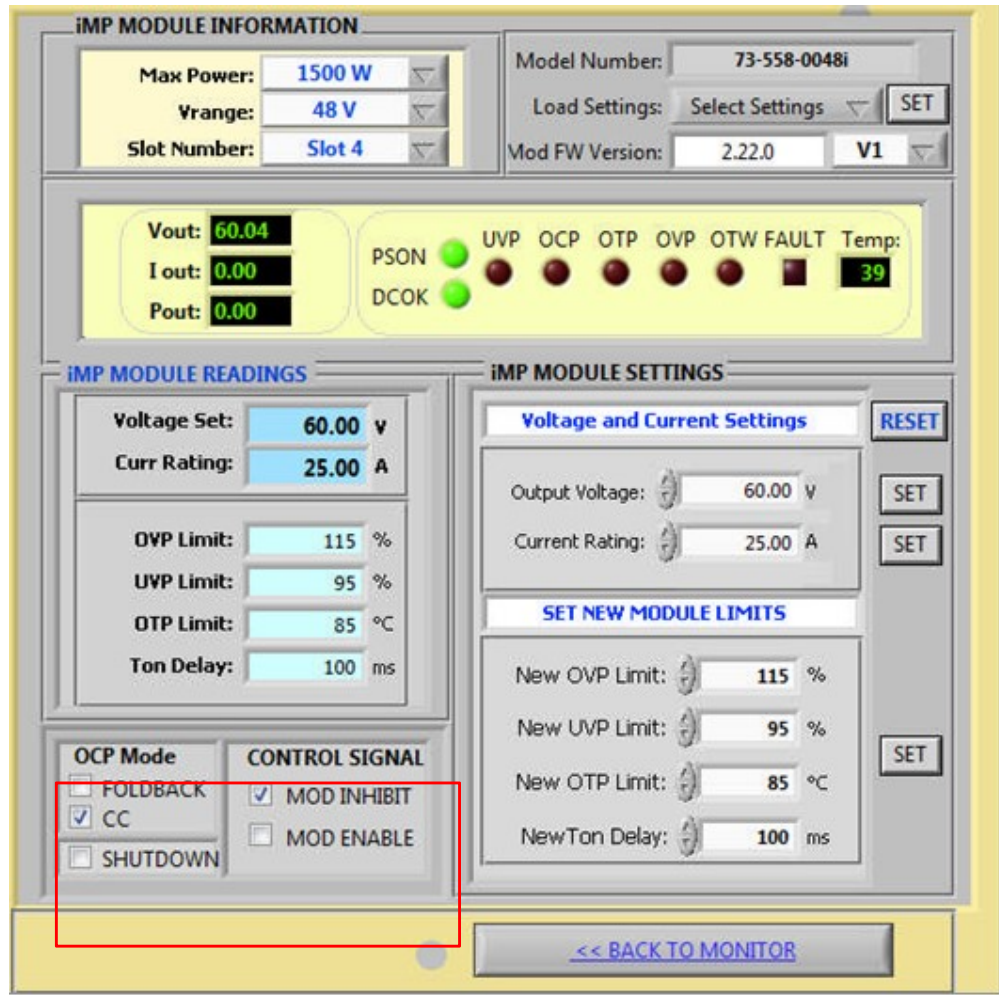
Click "SET" to set new limits to the output module. To configure OVP, UVP, OTP limit, and Ton Delay there is only one command button available for all.

Update Module configuration pop up window will appear every time "SET" command button been accessed. Let the update configuration complete before attempting to do other task.



Below Panel contains Configuration flag that Control Module Operation such as OCP Mode and Control Signal. This is used to change Module Operation. This change will only take effect after PSU Power Cycling.

- OCP Mode: This is applicable for Module Version 3.xx and up.
- Control Signal: If Inhibit mode is set, Module output is disabled if the inhibit signal is high.
- Shutdown function: this is only applicable in 1500W module. It will disable the module instantly when it reach OCP.



Software Panel Menu Function

Additional program and iMP function can be viewed and use through the help of Menu function. This is the additional feature of the iMP Software Panel Program. Current setup of the PSU can be saved and uploaded through the use of “File Menu” option.

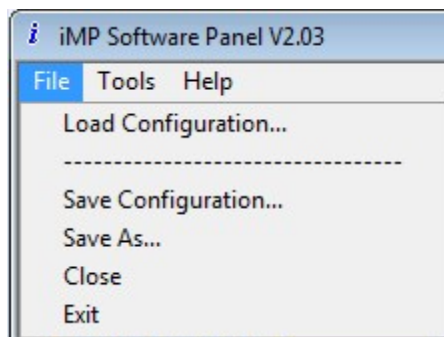
Other function such as “Display Current Setup”, “Graphical Display”, “FRU reader”, and “Communication settings” are some added features for this program. It also has Context help menu to provide proper description of each display and function inside the Software Panel program.

Access security of this program is one of the added features also. It also provides security for some function that is not to be change and unsafe to be configured. It also has the revision history being placed in the “Program Information”. For detailed description of Menu function, please refer to iMP User’s Manual.

File Menu of Option

This is the first function in the menu option for Software panel. In this function, you can load the previous setup being done and save the current setup of the PSU.

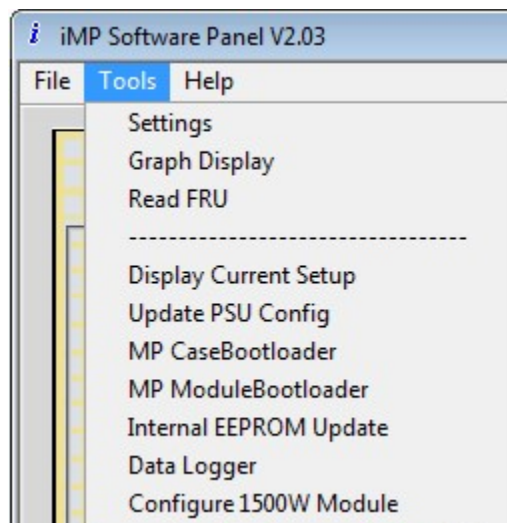
Click “File Menu” to view its function available for Software Panel.

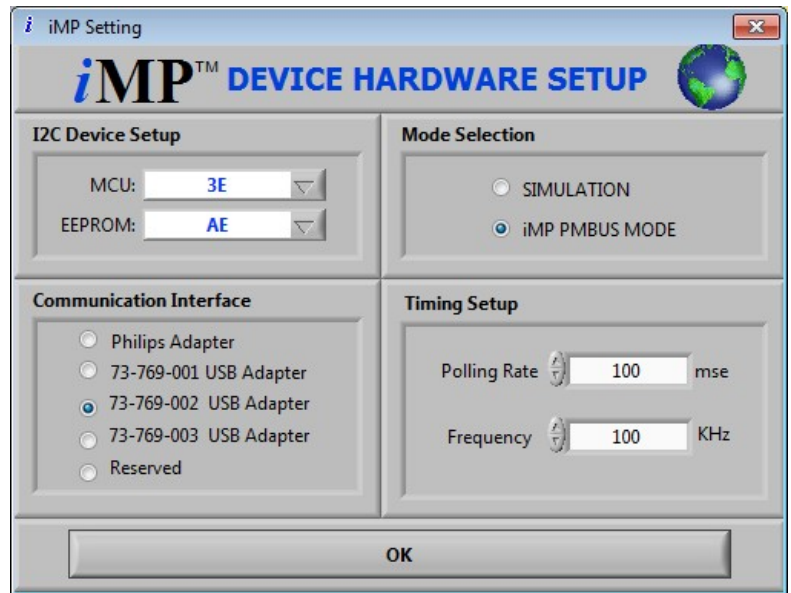
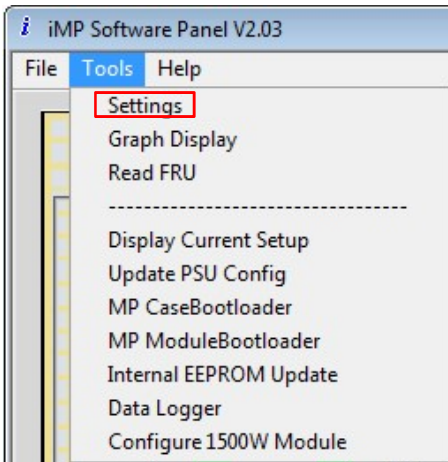


Tools Menu of Option

This is the function related to the iMP Software Panel operation. Some functions are related to the software program and other are dependent to this section to be able to run properly.

Click “Tools Menu” then select function you want to perform.





• Settings

There are different firmware versions and format used in iMP PSU. To be able to make the iMP software program to communicate with those formats, the user must change the setting of the iMP software. To go through the settings window, click on “Tools Menu” then select “Settings” to configure communication interface and select firmware format being used by the PSU.

The setup window is being used to change the Mode of I2C format, communication interface, address, and polling rate. Refer to description below for further information.

• I2C Device Setup

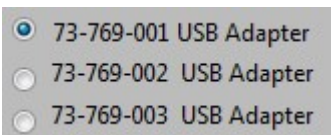
MCU: Microcontroller address of the PSU Case (Currently set to default: 3E).

EEPROM: Storage address for PSU case (Currently set to default: AE).

• Communication Interface

USB I2C Standard Port: USB adapter made by other manufacturer. (Preferred: USB to I2C adapter by Philips)

USB iMP I2C PORT: USB adapter to be use is the ASTEC USB to I2C adapter. (Default)



The default setting is 73-769-001 adapter. Users need to choose the right option according to their adapter used.

• Mode Selection

SIMULATION: use for manual configuration without the actual unit. If hardware is not detected (USB adapter) the program will automatically set to this mode.

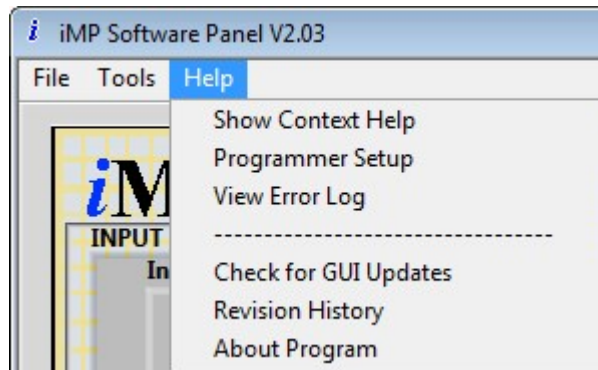
iMP PMbus Mode: this is the currently standard firmware format use by the new release product of iMP Power Supply. This is the default setup for Mode selection. (Default)

Timing Setup: this is the polling rate of the iMP Software panel. Time interval of each reading. (default: 100ms)

Help Menu of Option

Help menu option are used for supporting all the instruction and information about the iMP Program. It also has the information about the history of the Software structure and revision for iMP Software Panel.

Click "Help" Menu then select function you want to perform.



PMBus™ Command List

The iMP series is compliant with the industry standard PMBus™ protocol for monitoring and control of the power supply via the I²C interface port. For PMBus command list, please refer to document “TRN iMP I2C Protocol”.

Record of Revision and Changes

Issue	Date	Description	Originators
1.0	03.13.2018	First Issue	E. Wang

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