

APIC MCP Graphical User Interface (GUI)

User Manual

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Introduction

This document provides a brief summary of installation and use of the APIC MCP Graphical User Interface (GUI) for interacting with APIC target hardware.

Use of this software is not required to operate the target hardware but can provide useful status and control information about the state of the target hardware.

This guide is broken into four sections, covering:

1. GUI Installation
2. GUI Overview
3. GUI COM Interface Setup
4. GUI Typical Usage

Installation Instructions

This software has been developed and tested using Windows 7 but should also work with newer releases of the Windows operating system.

1. Obtain a copy of the installer (**setup_ApicMCPGui.exe**) either from the APIC Website (<http://www.apichip.com/download>) or the installer CD. Follow the on-screen instructions to install the MCP GUI.
2. Run the installer (**setup_ApicMCPGui.exe**) and begin following the on-screen instructions to install the MCP GUI. (Illustrated in Figure 1). Click Next to continue.

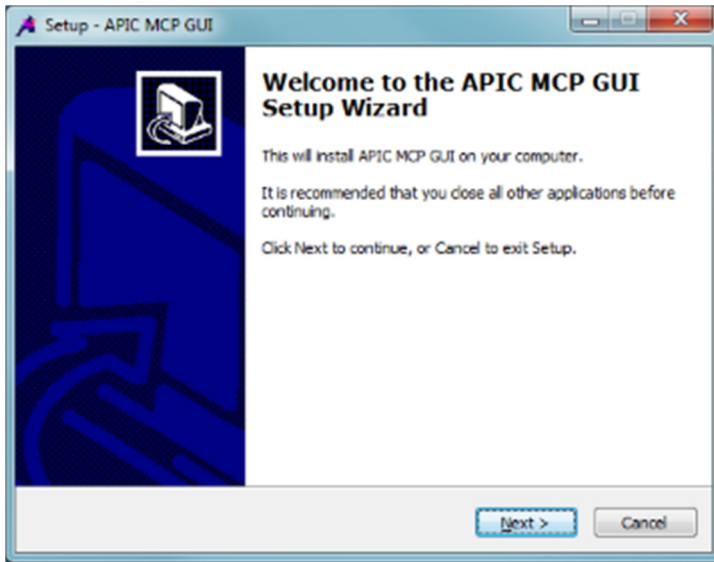


Figure 1- First Page of the APIC MCP GUI Installer

3. Choose the desired installation directory or continue with the default install directory (as illustrated in Figure 2). Click Next to continue.

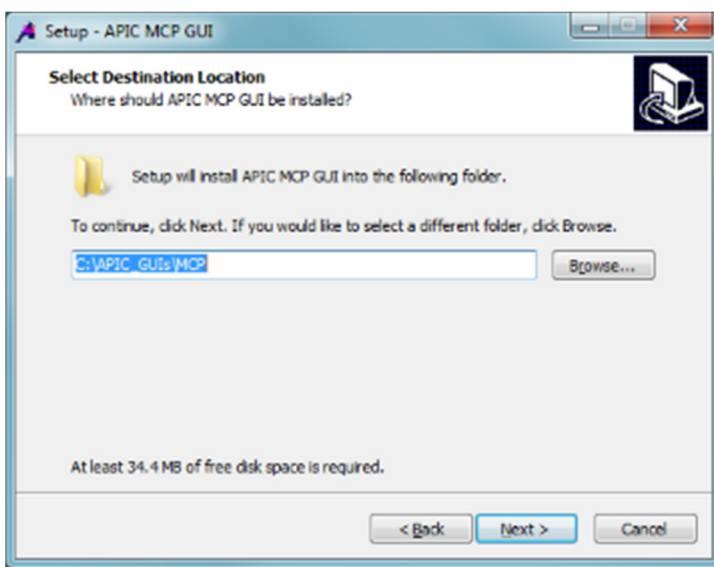


Figure 2 – Choose Installation directory for the APIC MCP GUI Installer

- The next page allows you to change the folder name of the program in your start menu. By default the name is “APIC”, but you can change it to anything you like here (as illustrated in **Figure 3**). Click Next to continue.

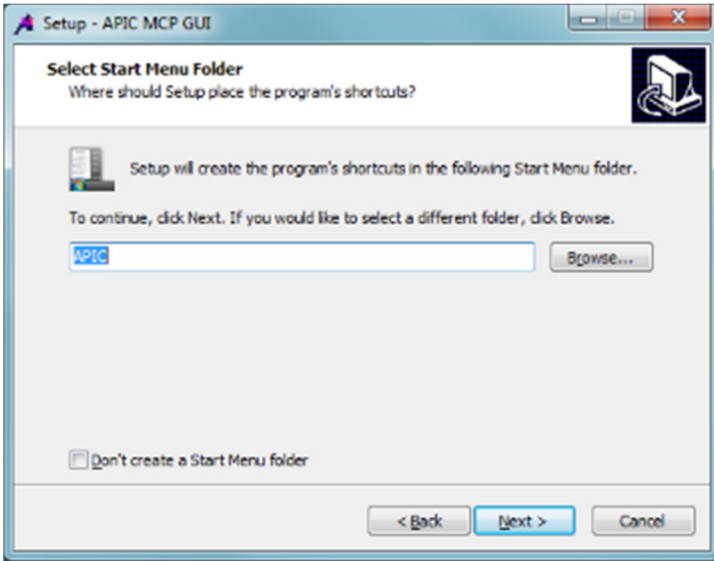


Figure 3 - Link naming option page in MCP GUI Setup program

- The next screen, illustrated in **Figure 4**, allows you to create an optional desktop shortcut to the program. If desired, click the “Create a desktop icon” checkbox and click Next to continue.

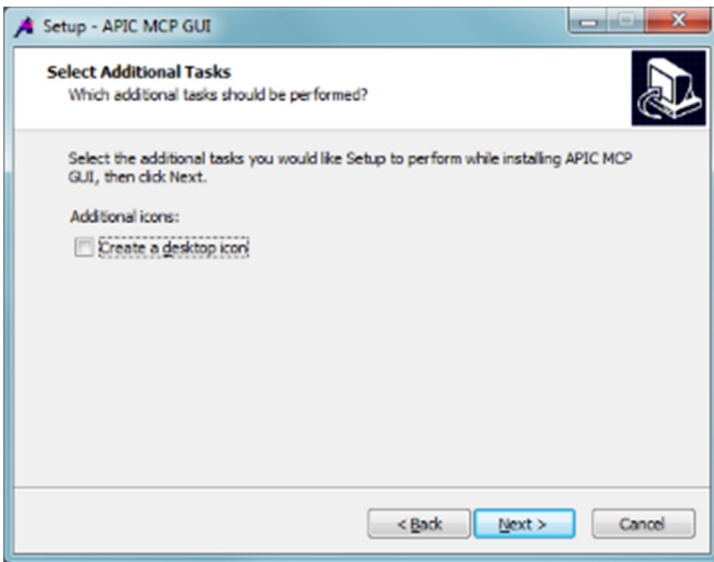


Figure 4 - Desktop Icon creation screen in the MCP GUI Setup program

- The summary screen illustrated in **Figure 5**, allows you to review the chosen options prior to installing the software. Clicking Install will install the program with these options.

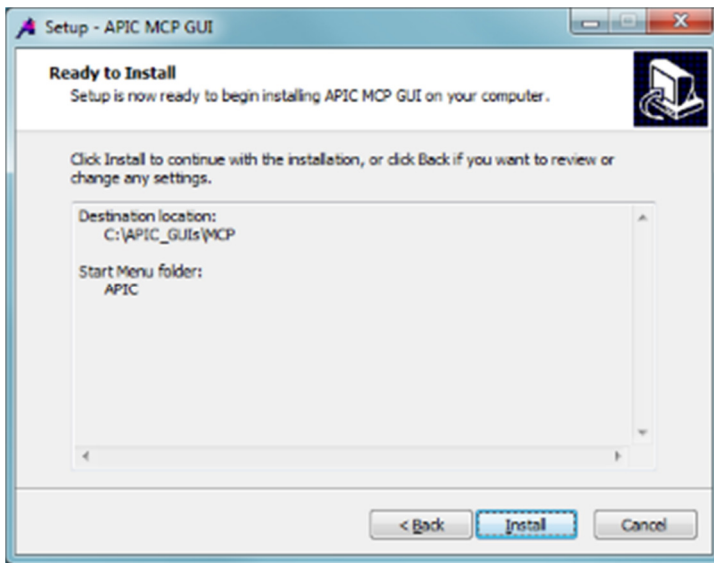


Figure 5 - Summary of MCP Installation Options

7. The final installation screen, illustrated in Figure 6, gives the option to launch the program after installation. The program will launch when you click the Finish button, by default. Click the Finish button to finish the installation.

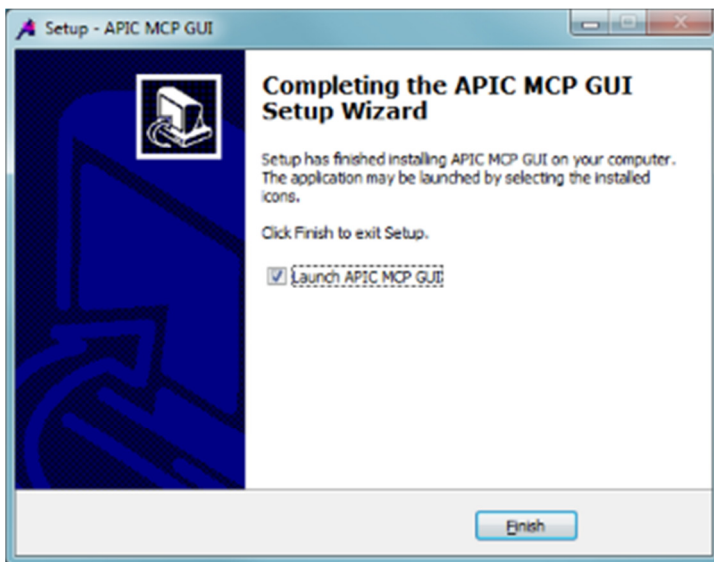


Figure 6 - Final MCP Installation Screen

GUI Overview

The APIC MCP GUI is designed to facilitate command & control communication with multiple target devices. The first time that the MCP GUI is run, the user is presented with a “blank slate”, as illustrated in Figure 7.

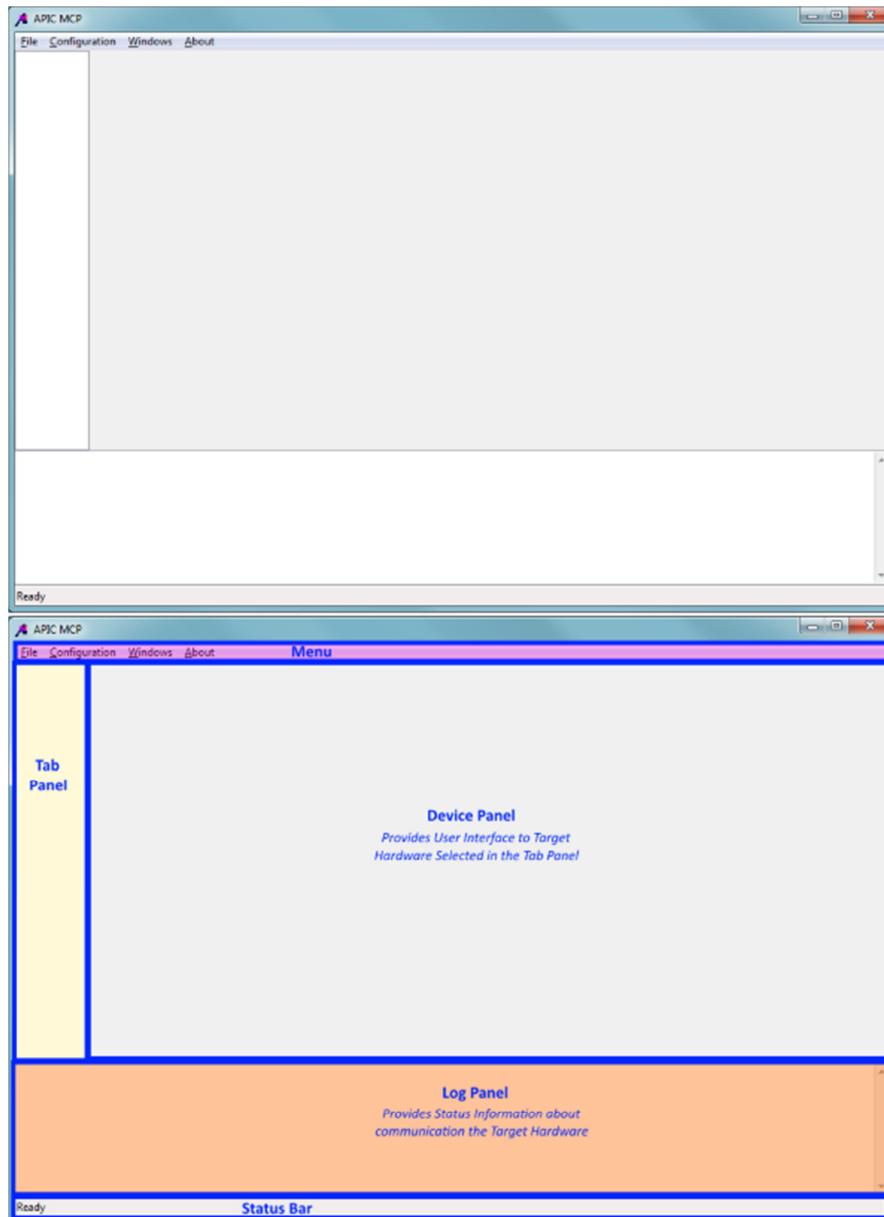


Figure 7 - Initial "Blank Slate" APIC MCP GUI (top), Annotated "Blank Slate" APIC MCP GUI (bottom)

The MCP GUI is broken into multiple sections:

- Tab Panel – Individual controllers to target hardware
- Device Panel – User Interfaces to the target hardware selected by in the Tab Panel
- Log Panel – Provides Status information about communication with the target hardware
- Menu – Used for multiple tasks including adding new Tabs, Updating the installed Communication Ports, and Saving configurations for future relaunches of the GUI.
- Status Bar – Provides simple status information about activities happening within the GUI.

Assuming multiple targets are connected to a computer running the MCP GUI, a single instance can be used to interact with all of them. Figure 8 illustrates a single MCP GUI instance configured to communicate with five independent targets.

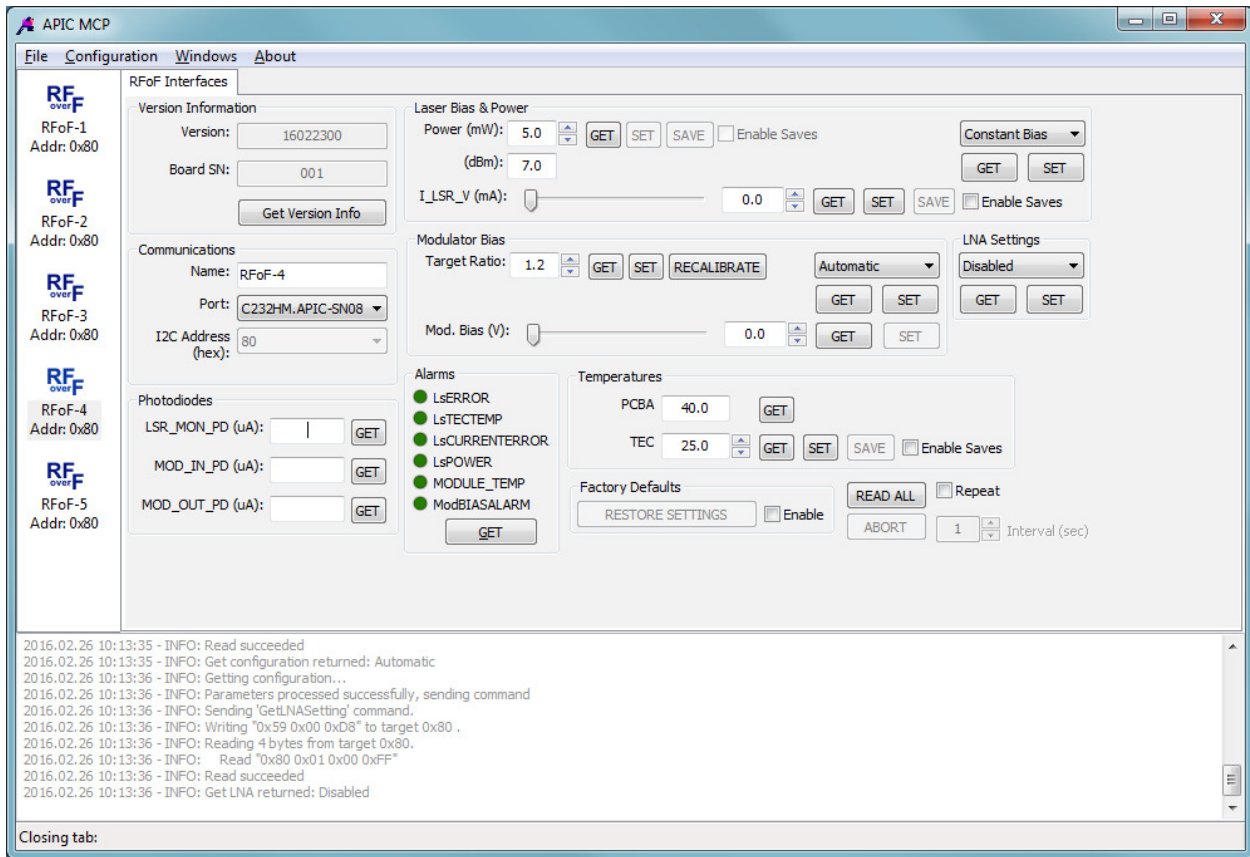


Figure 8 - Single MCP GUI instance Configured for Five Target Hardware

COM Interface Setup

This section provides a brief overview of how to set up the communications interfaces of the MCP GUI.

1. Ensure that your hardware is properly powered and the USB dongle is attached to both the target hardware and the computer.
2. If the MCP GUI is not already running, start it from either the desktop icon or the Start Menu option.
3. Once loaded, create a new view by using the "File Menu" and choosing the "New" option. -- Alternatively, you can right click in the Tab Selector and choose the "Add New Controller" option.

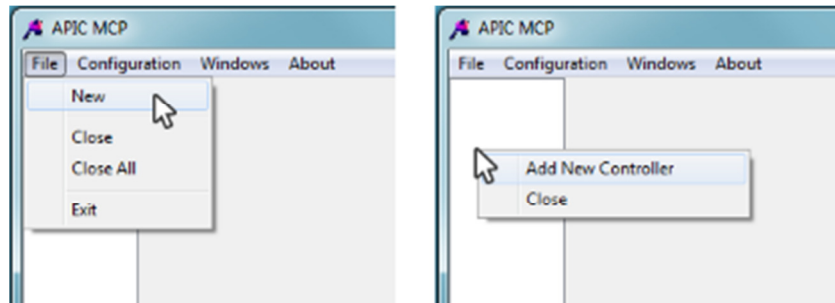


Figure 9 - (LEFT) File Menu, showing the New Option. (RIGHT) Context menu for the Tab Selector

4. The New Controller dialog is then presented. Select the appropriate "RFoF" controller type and press the "Create" button.



Figure 10 – Creating a new Controller Tab

5. You are now presented with a controller view for the target hardware. Note that all of the controls are disabled on first launch. To start communicating with the target and enable these controls, select the appropriate Port as illustrated in Figure 11.

NOTE: If no ports are available, or the desired target is not listed, verify the connections and target power. Then use the GUI's "Configuration"->"Update Ports" option from the File menu. The desired COM port should now be visible in the Communications Port list.

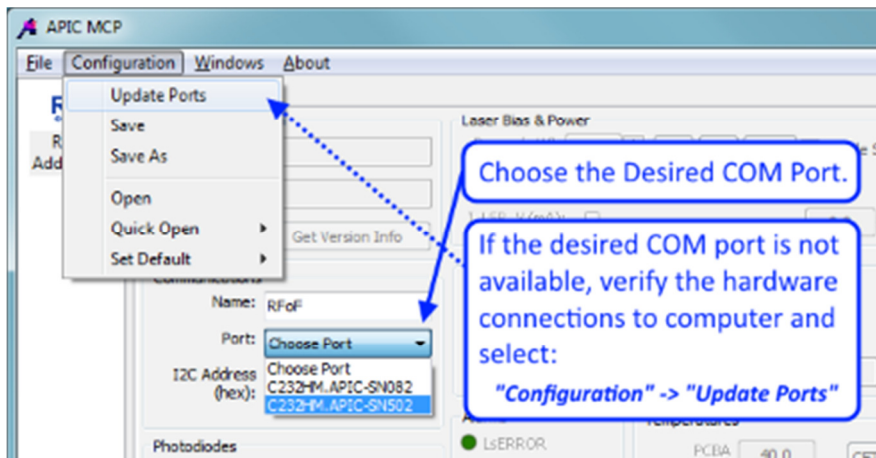


Figure 11 - Selecting Desired COM Interface

6. Once a COM port is selected, the controls should be come enabled and it is then possible to use the interface to interact with the target hardware. The next section explains this in greater detail.
7. Optionally, you can choose to save the MCP GUI configuration for later restarts by Selecting "Configuration" -> "Save" from the Menu bar, as illustrated in Figure 12.

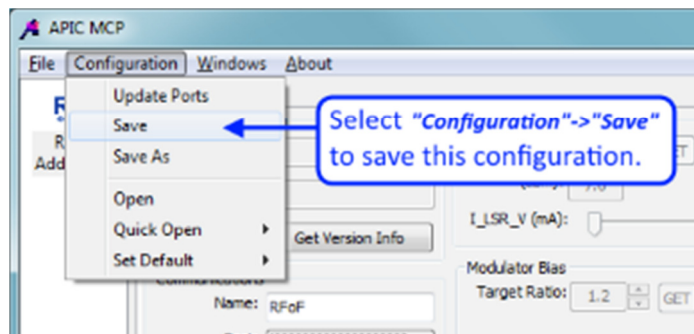


Figure 12 - Saving the GUI Configuration

Typical Usage

Once the MCP GUI is successfully configured to interact with the target hardware, there are a number of features that facilitate an understanding of the system controls. This section identifies some of the common use-cases and GUI features.

Read All Settings

The “Read All” button in the lower right of the screen (see Figure 13) allows for the repeated reading of all system settings including alarms. This feature has the option to repeat the Read at regular intervals.

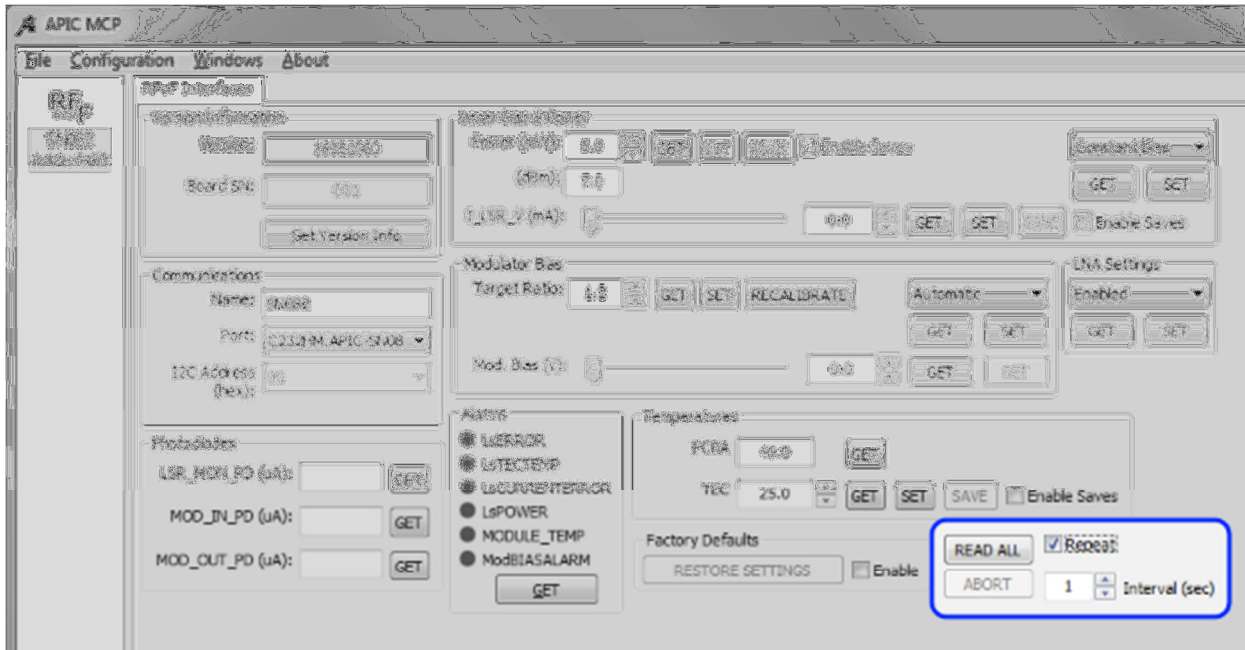


Figure 13 - Read All Settings Interface

Alarms

The Alarms screen provides a summary of the state of the hardware. The lights typically turn GREEN when the laser is enabled (using the physical switch on the hardware) and when everything is running nominally. Table 1 provides detail about each of these alarms.

Table 1 - Alarms and Descriptions

Alarm Name	Description
LsERROR	Summary alarm that reports GREEN when no laser alarms (LsTECTEMP, LsCURRENTERROR, or LsPOWER) are alarmed.
LsTECTEMP	Reports GREEN when the TEC temperature is locked to its target temperature.
LsCURRENTERROR	Reports GREEN when the target Laser Bias has been achieved.
LsPOWER	Reports GREEN when the target Laser Output Power has been achieved.
MODULE_TEMP	Reports GREEN when the hardware is within operational temperature range.
ModBIASALARM	Reports GREEN when the modulator is locked to its runtime-calibrated value. – NOTE: This alarm typically reports an error during the calibration of Modulator Bias (approximately 30 seconds after laser turn on). Subsequent reads will typically result in a cleared alarm.

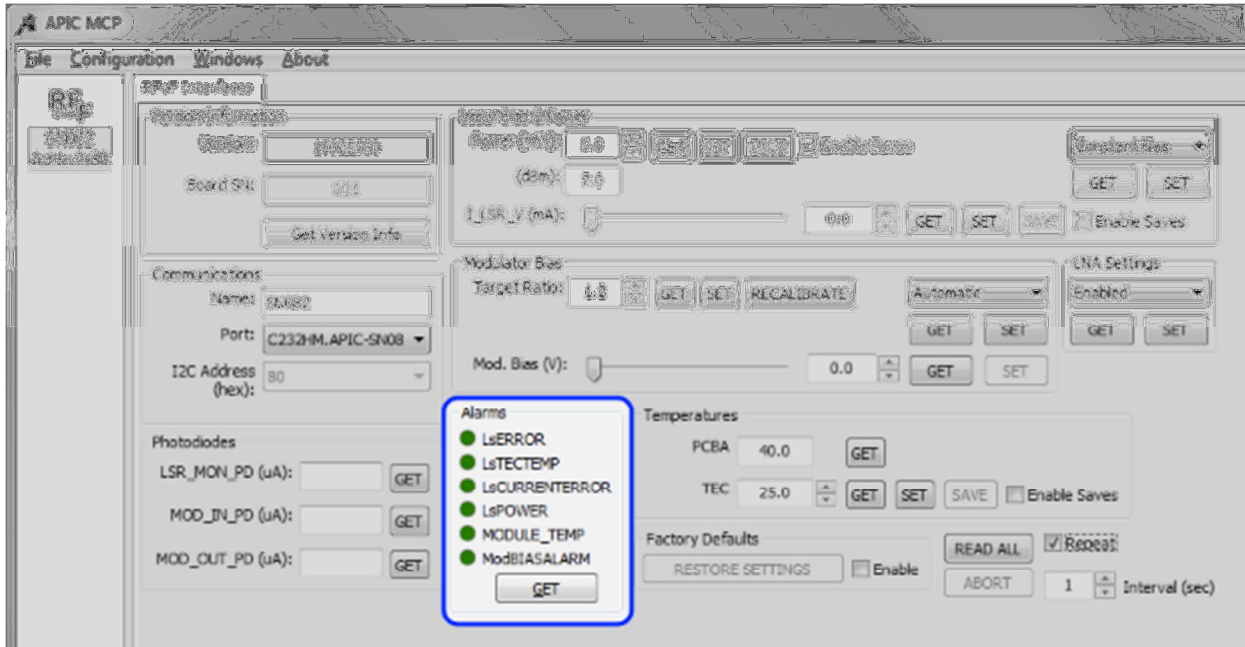


Figure 14 - Alarms Panel

Laser Bias & Power

The target hardware has an option to either control the laser via *Constant Laser Output Power* or *Constant Laser Bias*. Manipulating this configuration via the GUI interface is Non-Volatile and will remain intact upon power cycling the hardware.

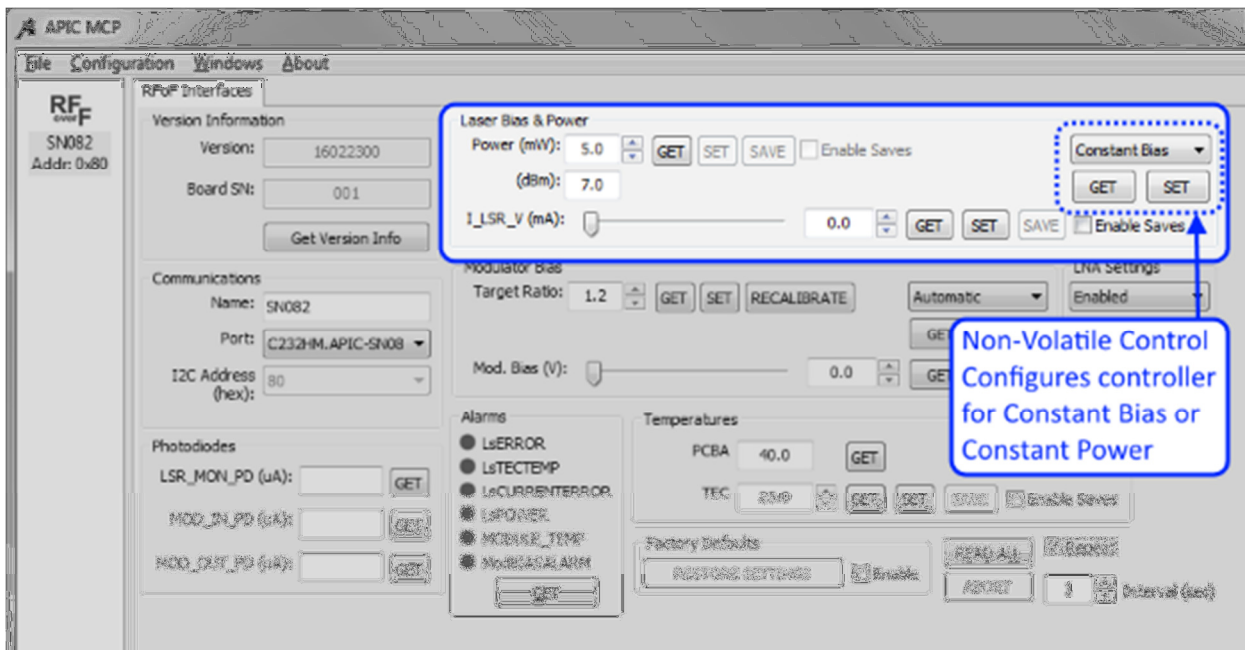


Figure 15 - Laser Bias Controller Configuration

Modulator Bias Control

By default, the target hardware works to perform a runtime calibration of modulator bias every time the laser is enabled.

The displayed Target Ratio is defined as:

$$\text{Target Ratio} = \frac{\text{Photodiode. MOD_OUT_PD}}{\text{Photodiode. MOD_IN_PD}}$$

Once the calibration is complete, the target hardware works to maintain the optimal modulator bias target ratio.

The GUI provides a means to manually manipulate the target ratio *but this is not advised*. It is only provided for completeness.

If desired or needed, a new runtime calibration of the Modulator Bias can be performed by using the “RECALIBRATE” button. This calibration takes approximately 30 seconds to complete.

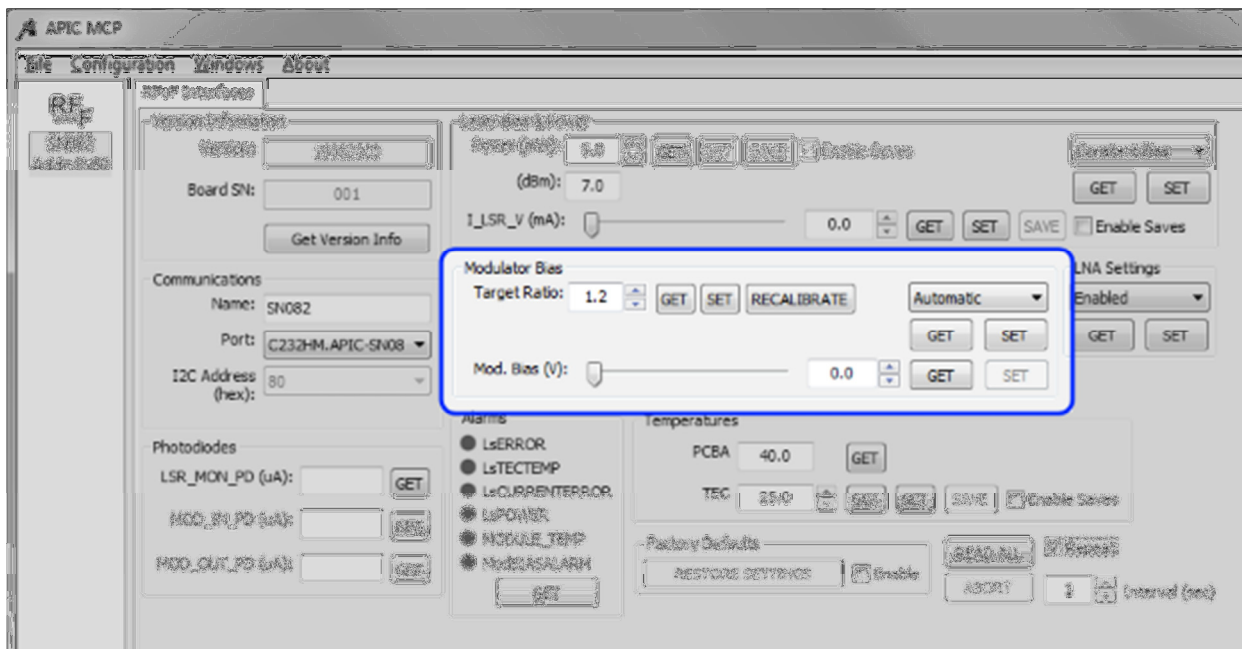


Figure 16 - Modulator Bias Controls

Temperatures

The Temperature interface supports the reporting of the control board’s temperature (PCBA) and the laser TEC temperature. The GUI does support the manipulation of the TEC temperature in both a volatile and non-volatile sense. This feature is supported *but is not advised* as the laser’s optimal performance is identified and set at the factory.

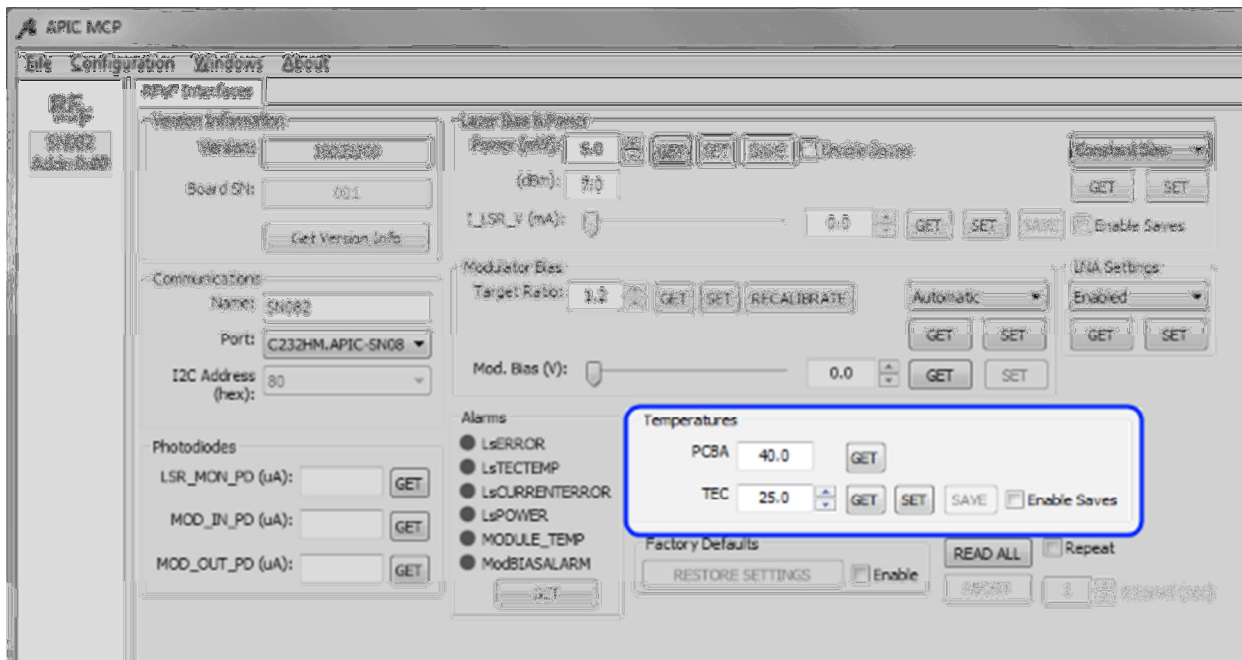


Figure 17 - Temperatures Interface

Saving Settings & Restoring Factory Defaults

Many of the settings in this interface offer options to save their values to Non-Volatile storage, so they can remain intact even after power-cycling the hardware. These include:

- Laser Bias Controller (Constant Power vs Constant Bias)
- Target Laser Output Power
- Target Laser Bias Current
- TEC Temperature

Optionally, a restore to factory default settings can be accomplished via the “Restore Settings” button illustrated in Figure 18.

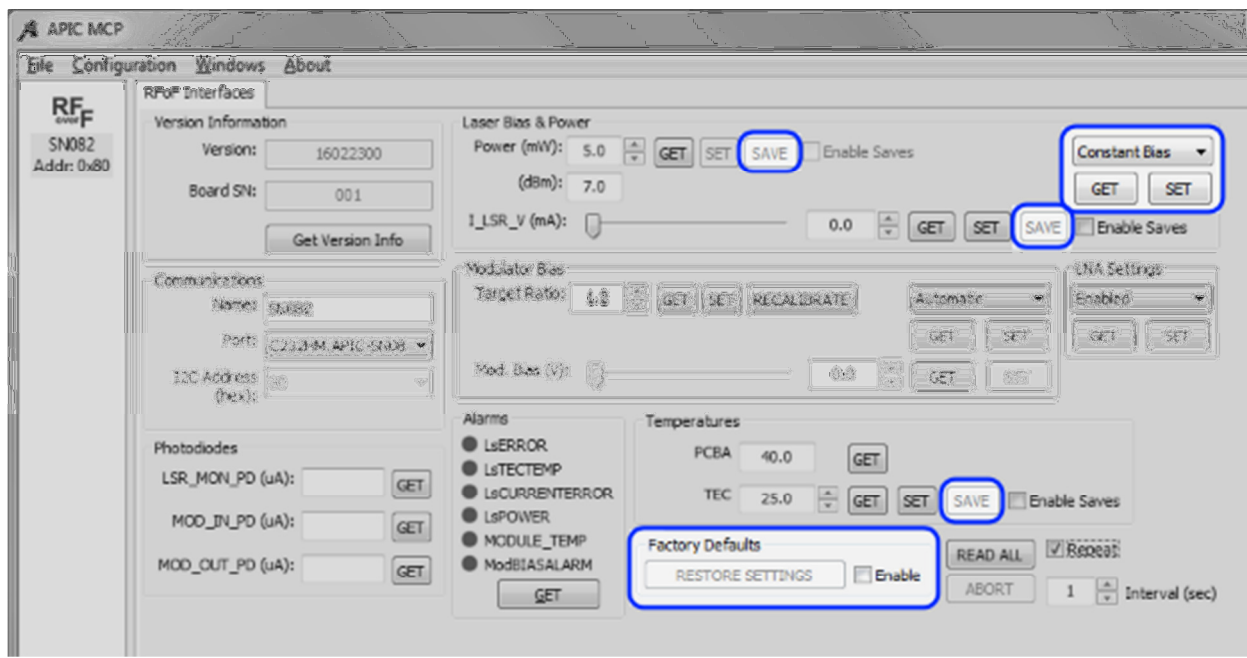


Figure 18 – Non Volatile Settings and Restore to Factory Defaults