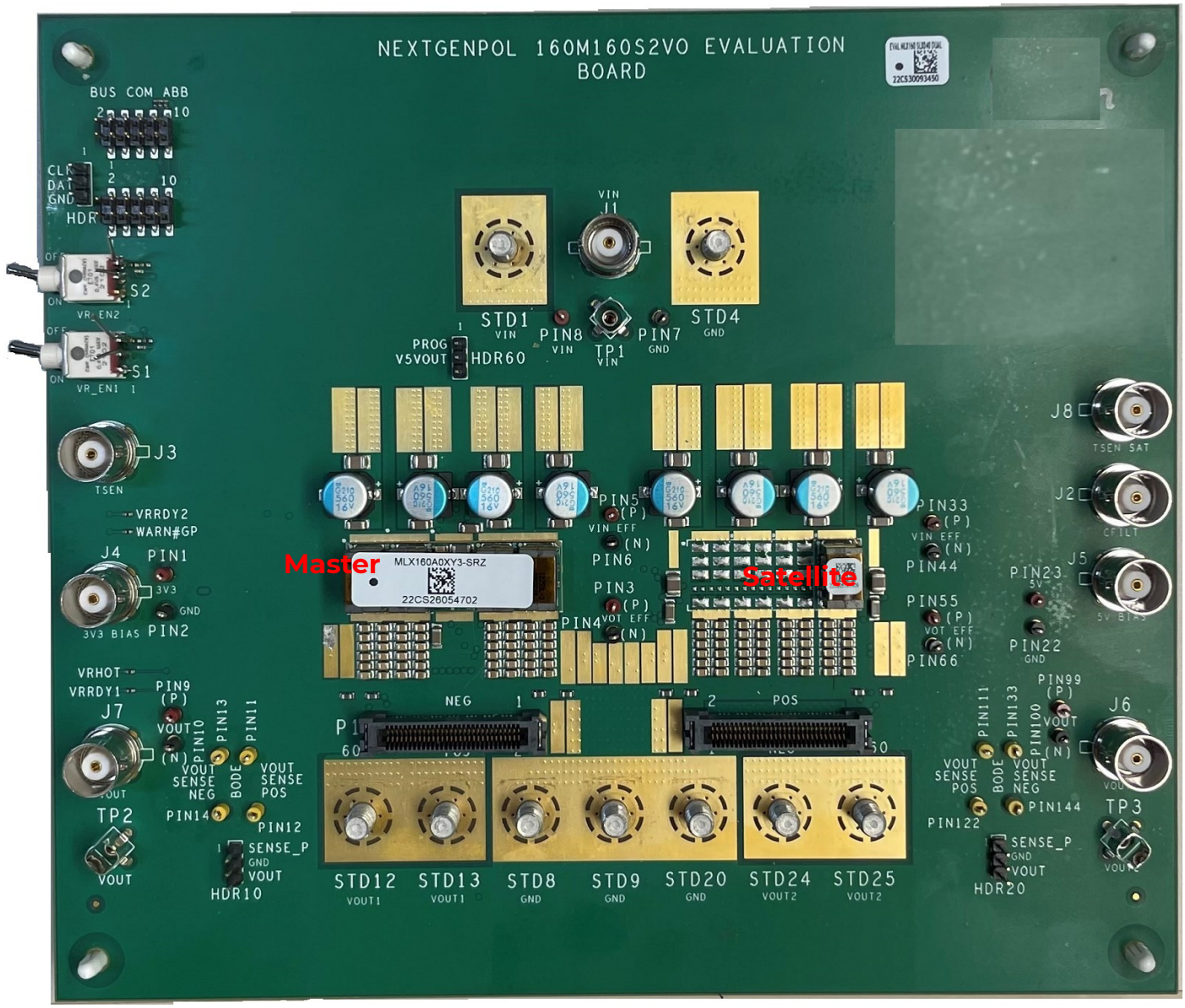
NEXTGENPOL 160M160S2V0 Dual LOOP/OUTPUT



Evaluation Board Guide

NEXTGENPOL 160M160S2V0 DUAL LOOP/OUTPUT

Dual Loop/Output Voltage Evaluation Board populated with MLX040 /MLX080 / MLX120 /MLX160 /MLX160+SLX040 or MLX160+SLX160

Table of Contents

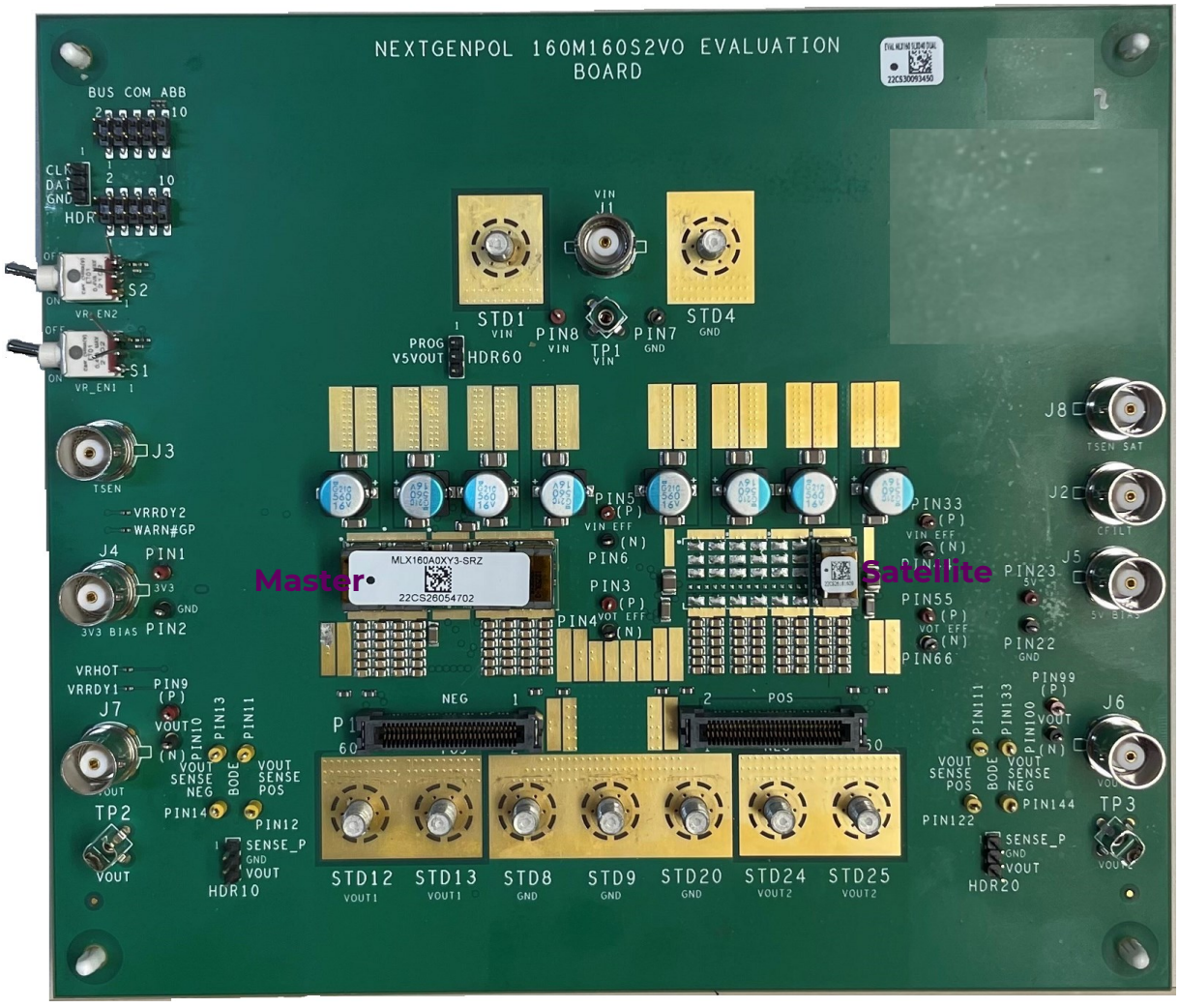
1. Description

The MLX series are the next generation of POL modules that can deliver 40-160A; 40-160A in a two loop configured mode.. It operates over a wide input range from 7V to 14Vdc and provides precisely regulated output voltage from 0.45 to 2..0V

The module's features include digital PMBus™ interface, remote ON/OFF, output voltage sequencing, pre-biased start up, cycle-by-cycle output overcurrent protection, input and output under-voltage and over-voltage protections and over-temperature protections and more. The module has an extensive set of PMBus™ commands for both control and monitoring of the system parameters.

The evaluation board is shown on the picture below. It comes pre-populated with required minimum of input and output capacitors. Numerous empty component place holders allow the board to be reconfigured to match a specific customer's application. Various test points facilitate the easy setup and monitoring of the module operation.

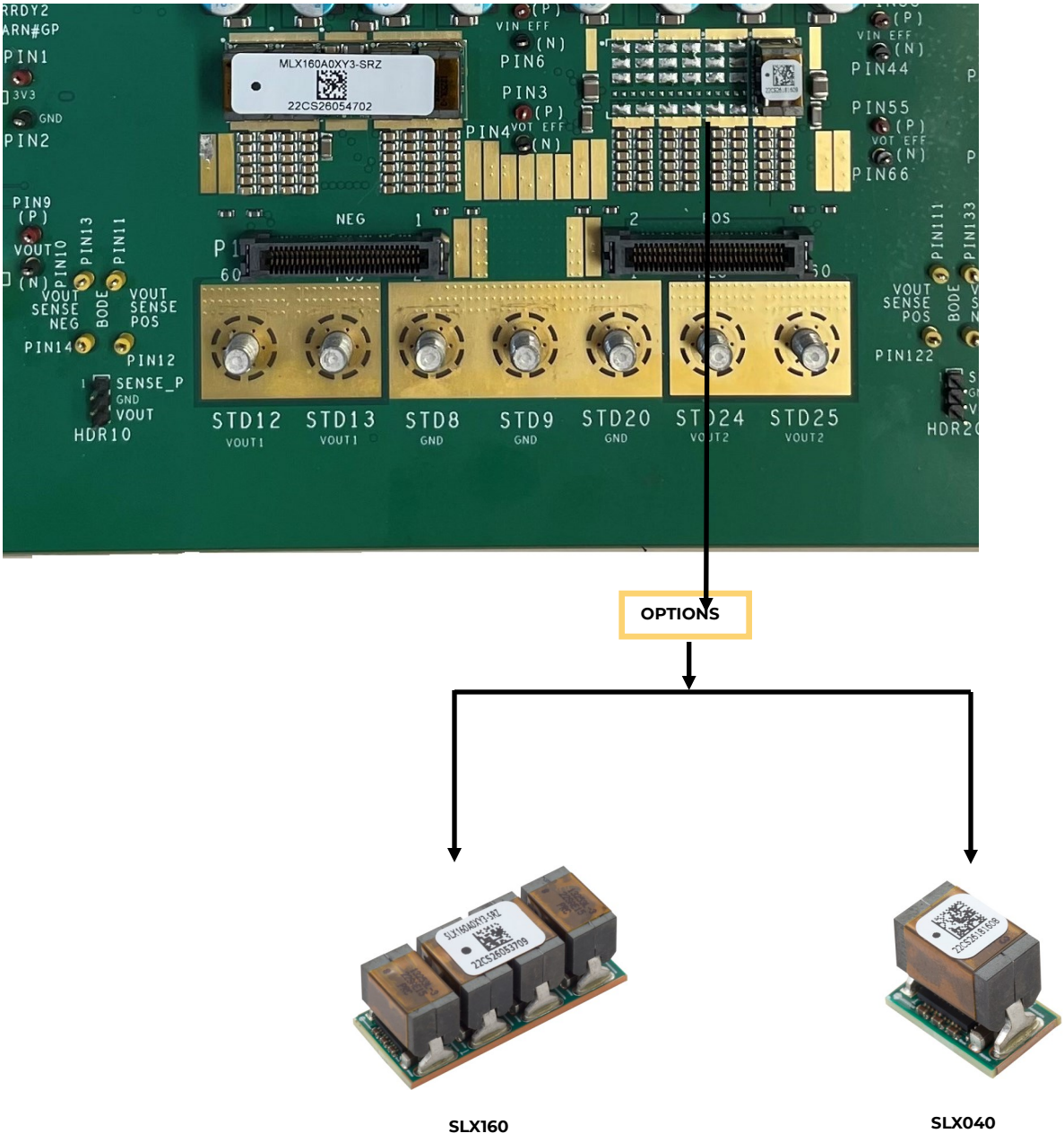
Top View of Evaluation Board with MLX160 +SLX160 moule



1. Description (Continued)

The evaluation board can come pre-installed with any of the Satellite Modules

Evaluation Board with different module variants

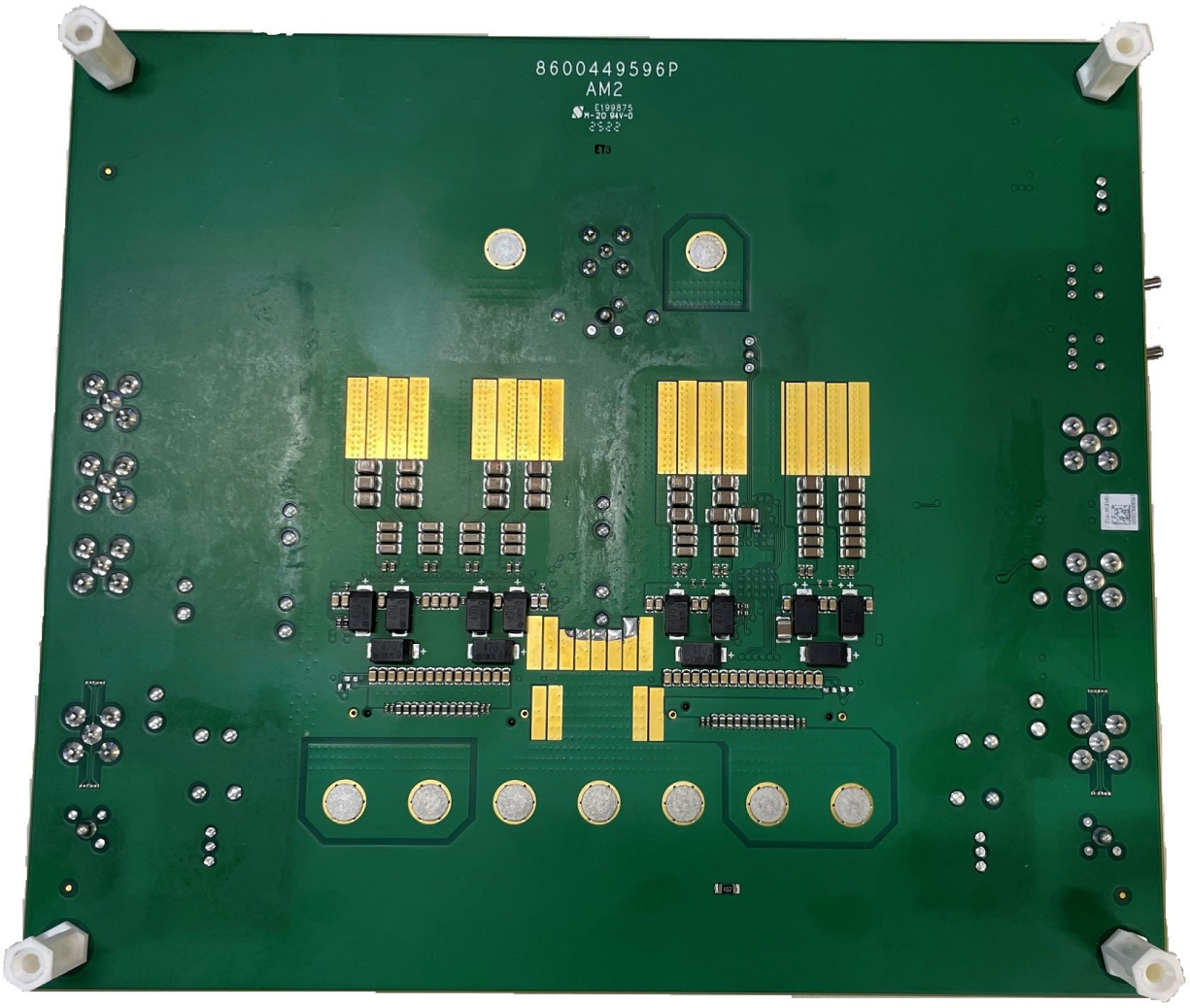


1. Description (Continued)

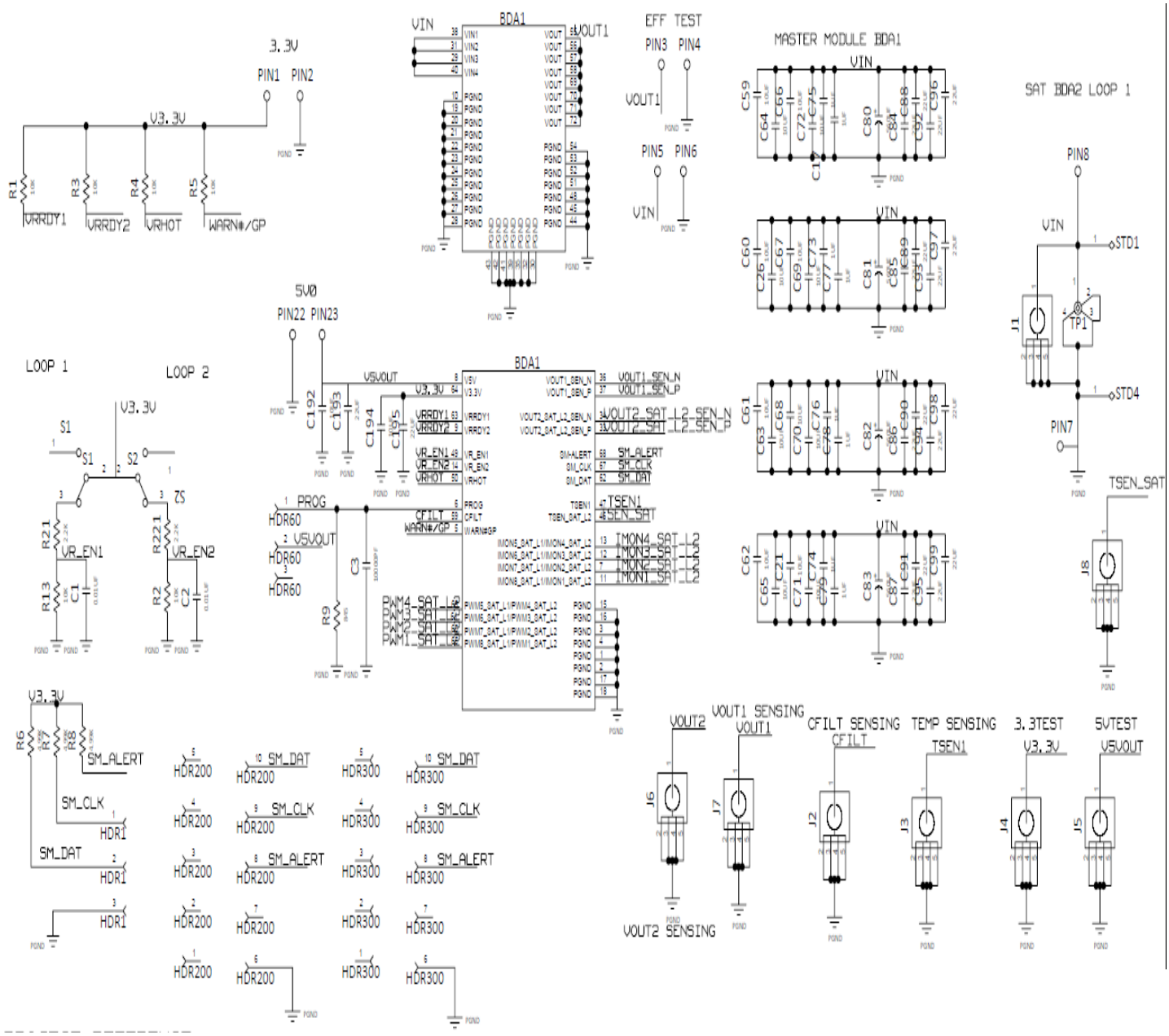
The Installed components are as follows. The schematic on the following page shows maximum capability and includes expansion capability:

- Ceramic caps for input
- Ceramic and Surface electrolytic on output

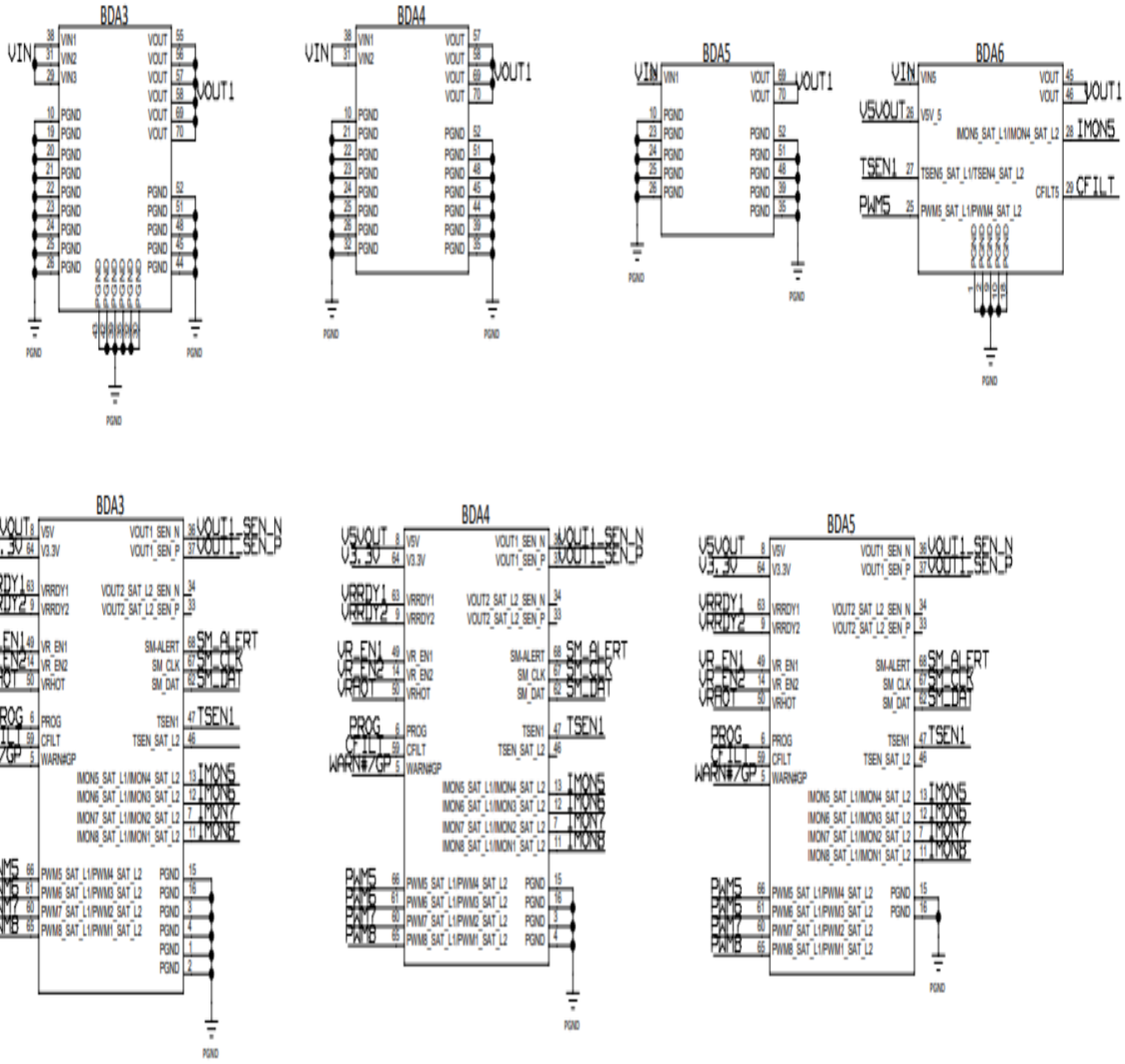
Bottom View of Evaluation Board



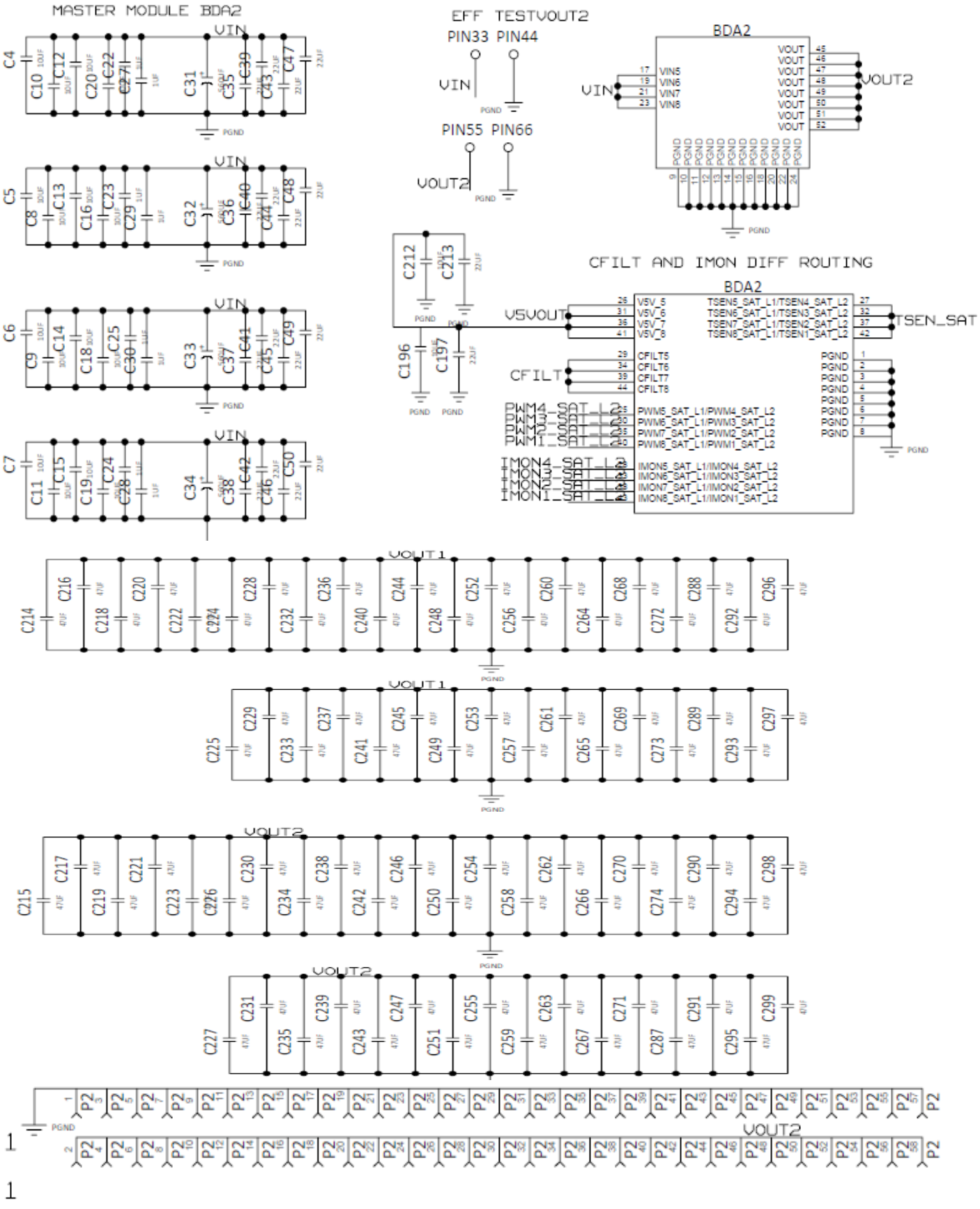
2. Schematic — Download Schematic at www.omnionpower.com



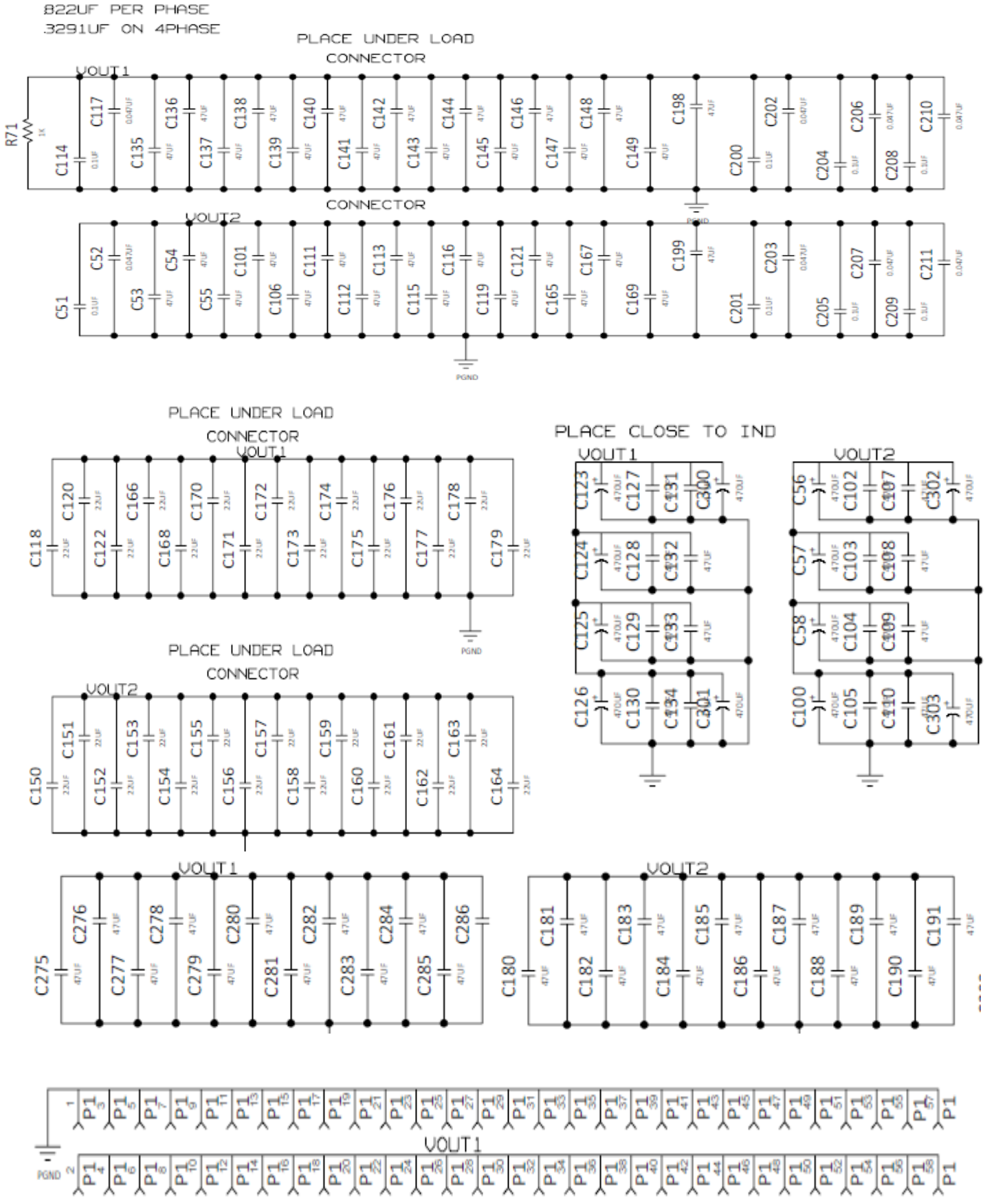
2. Schematic (Continued) Download Schematic @www.omnionpower.com



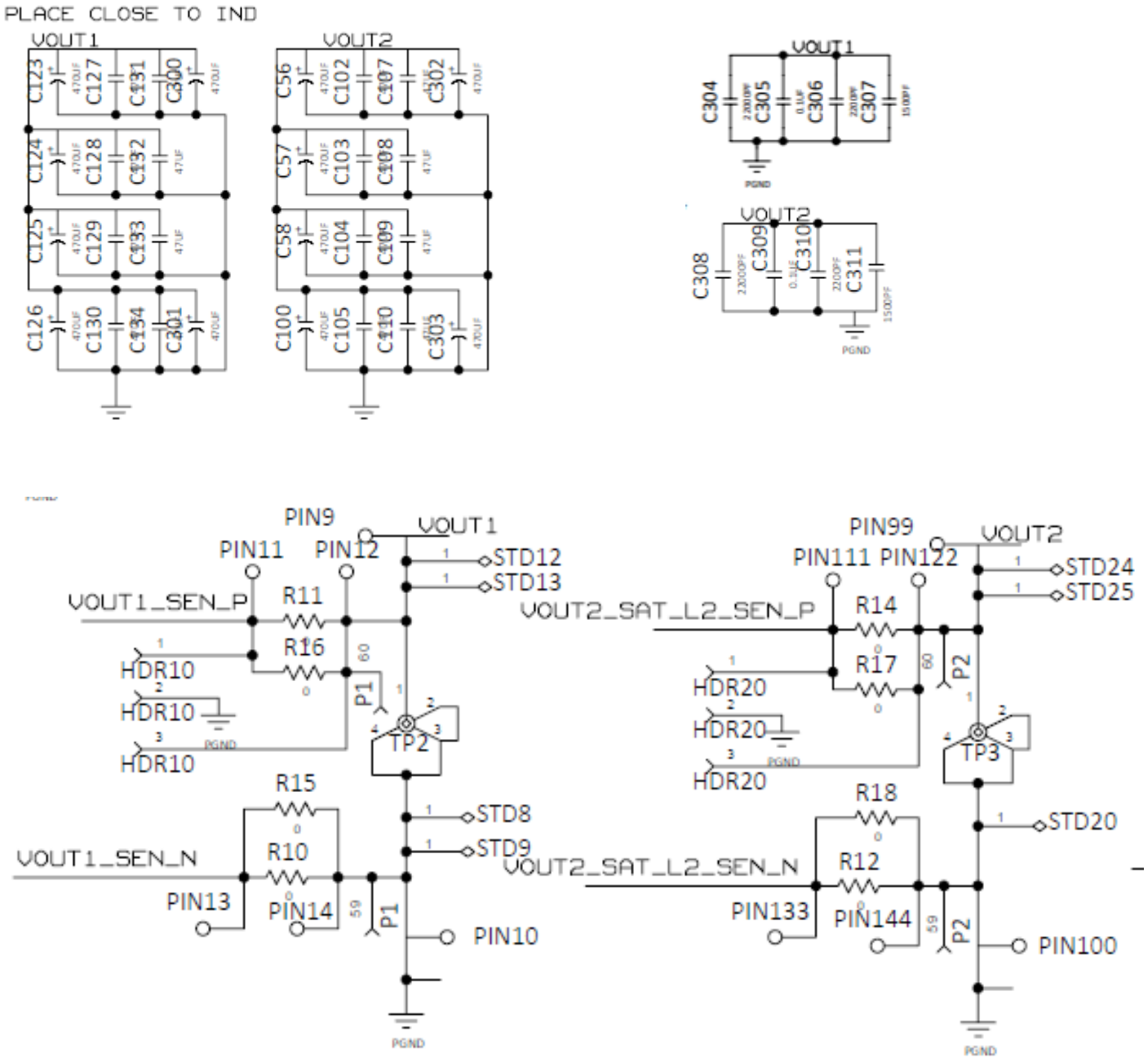
2. Schematic (Continued) Download Schematic @www.omnionpower.com



2. Schematic (Continued) Download Schematic @www.omnionpower.com



2. Schematic (Continued) Download Schematic @www.omnionpower.com

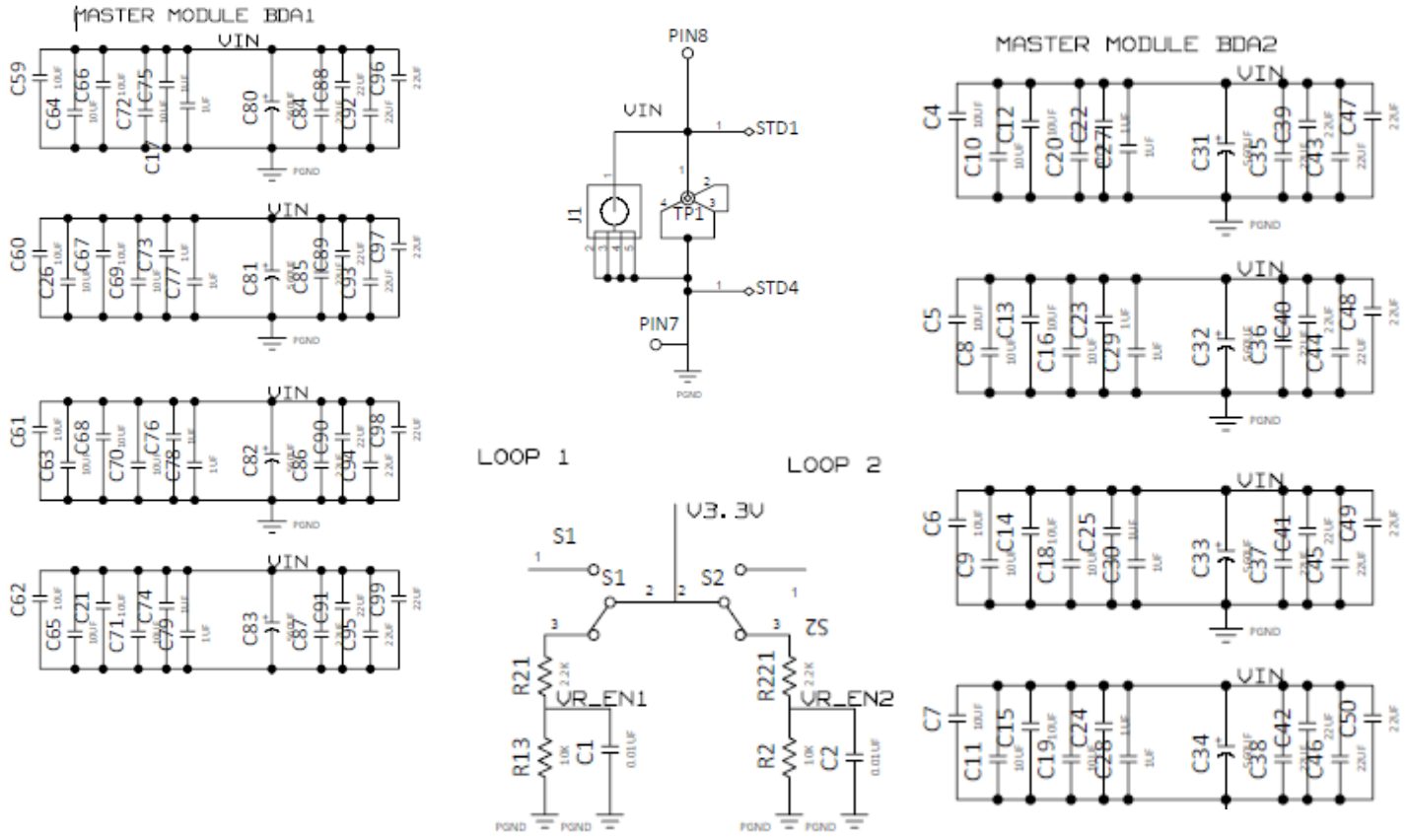


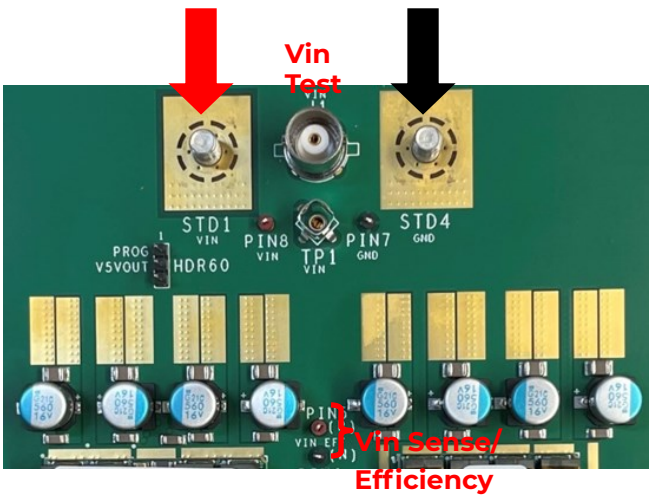
The complete schematic diagram of the MLX Series evaluation board is shown in the previous pages. Components on schematic show max capability and may not be actually used on the board. The complete schematic can be downloaded from www.omnionpower.com

2.1. Eval Board Sections

The following pictures show the input connections and components external to the module

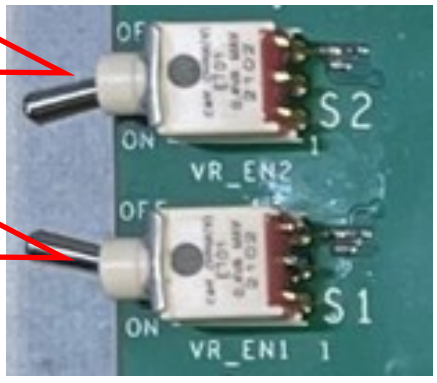
2.1.1. Input Connections





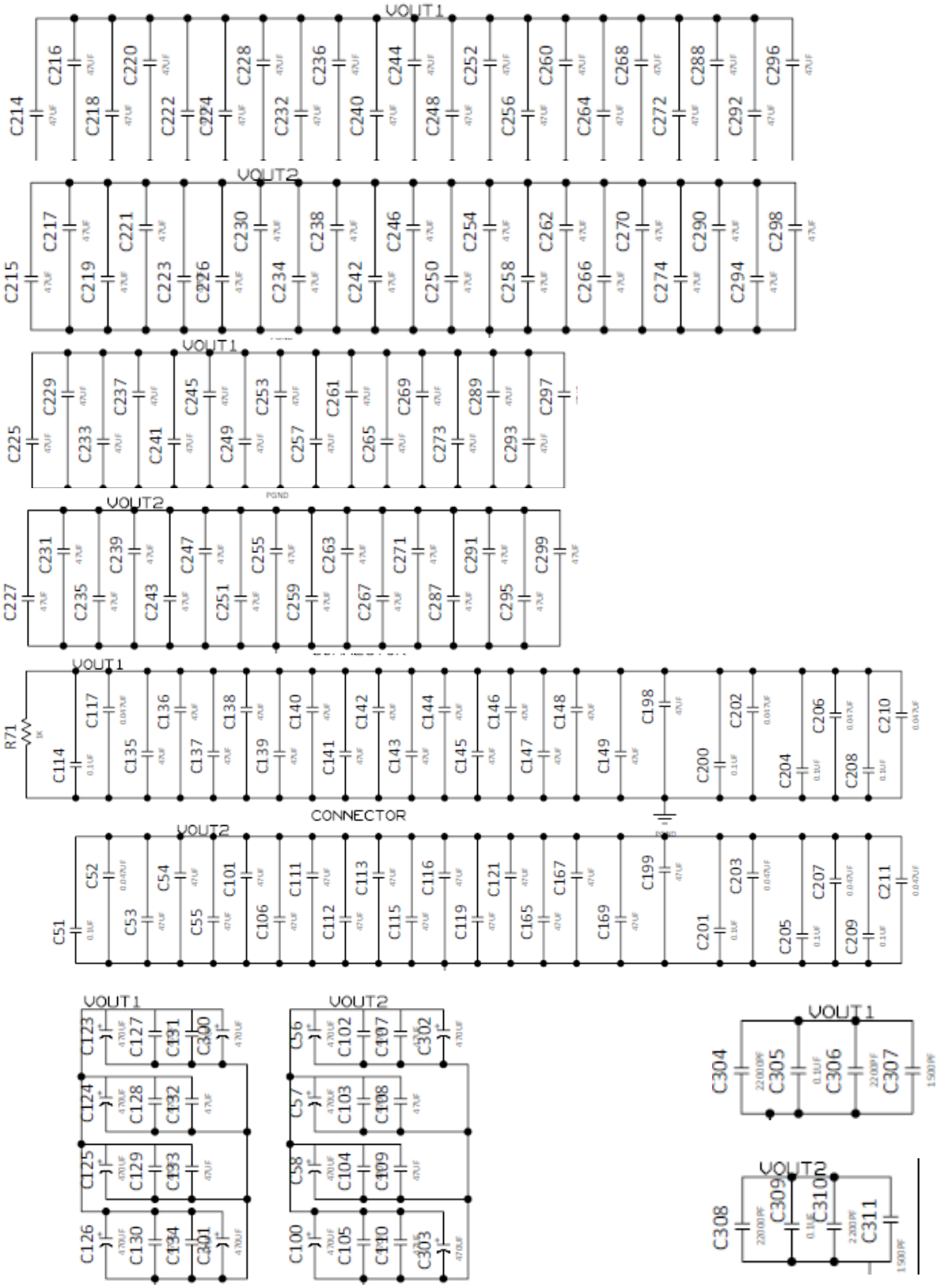
Switch in ON Position. Loop2 is Enabled

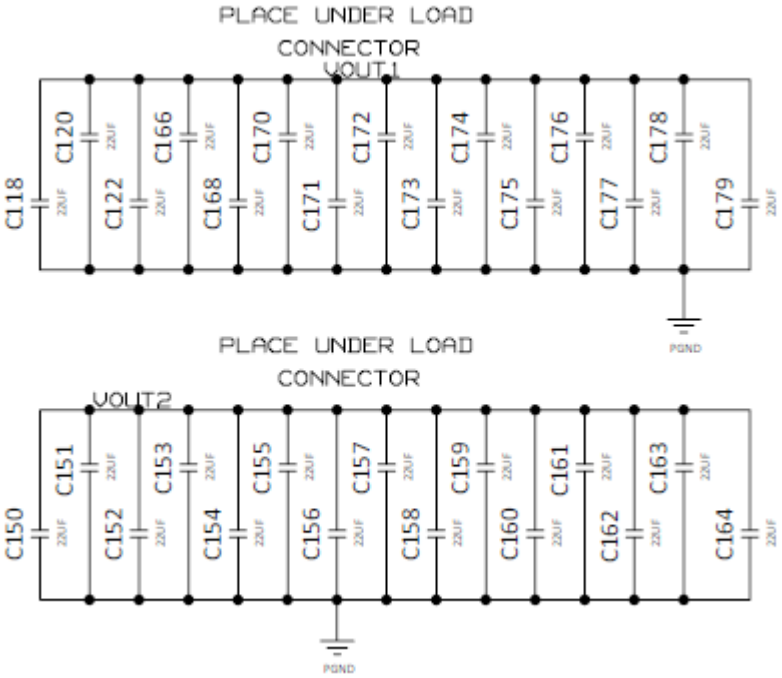
Switch in OFF Position. Loop1 is Disabled

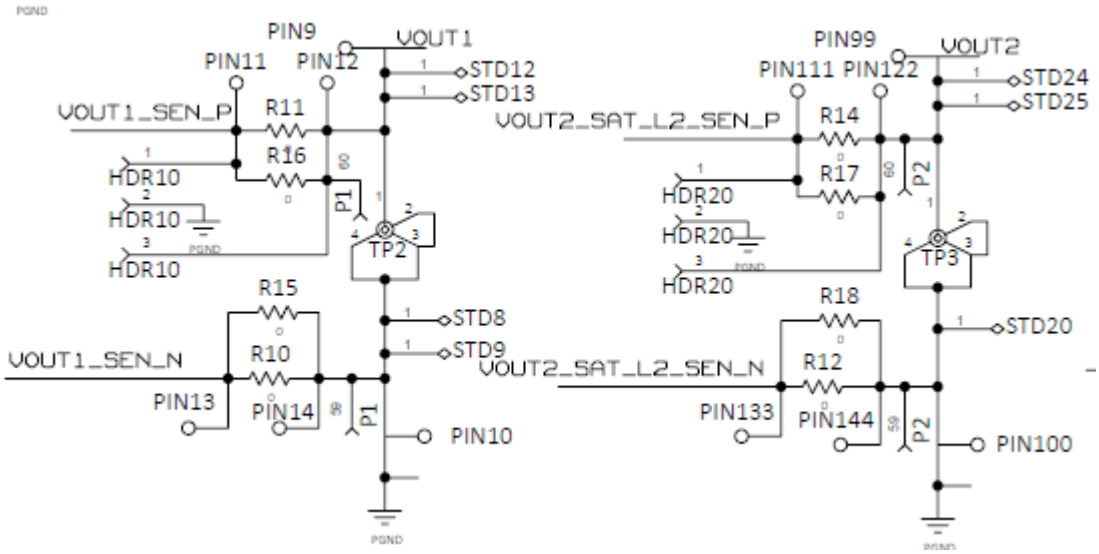


2.1.2. Output Connections

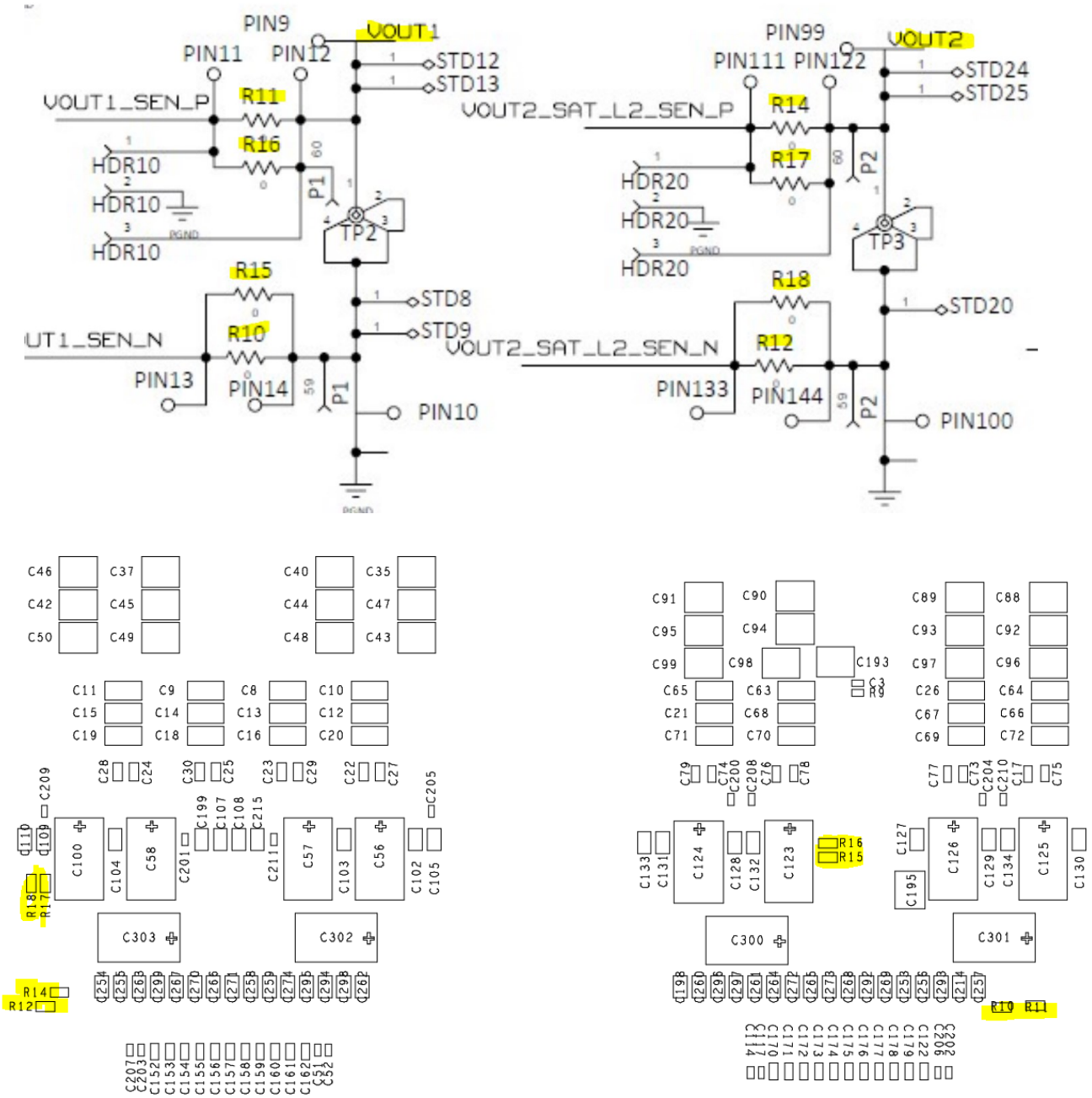
Schematic shows max capability. Board will not be populated with all components







2.1.2. Output Connections (Continued)

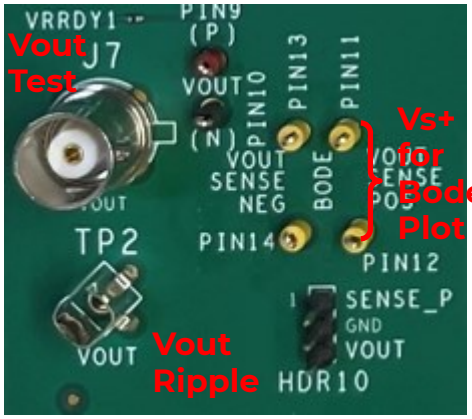


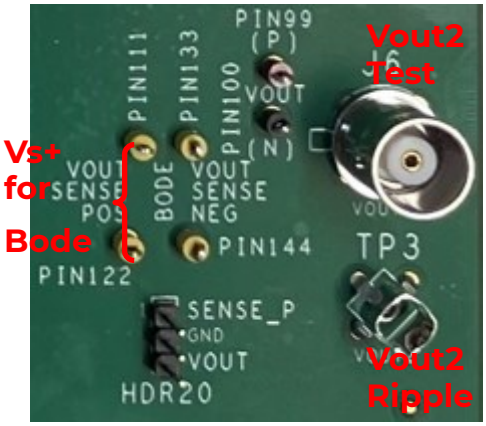
There are two set of traces for Vout sensing. Zero ohm resistors are provided to select the sensing location.

Sense at the output of the POL module (R15,R16,R17,R18) are zero ohm resistors

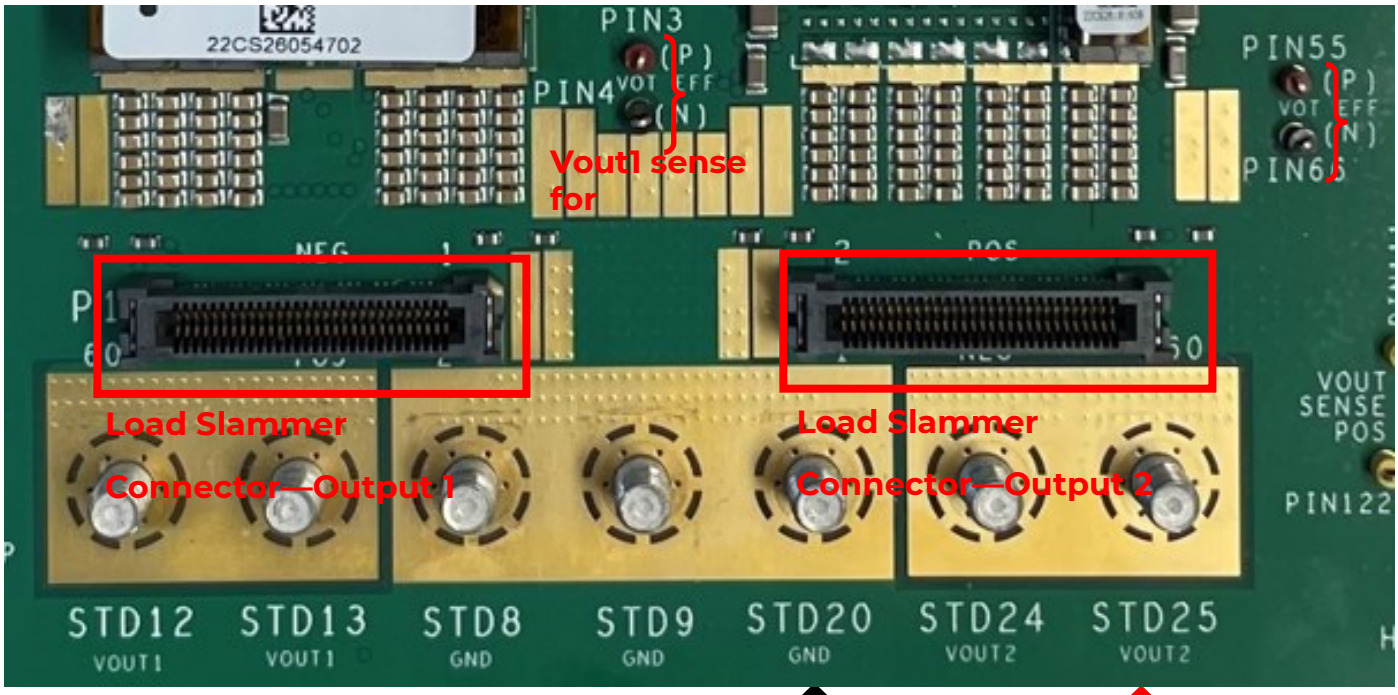
Sense at the slammer connector (R10,R11,R12,R14) either zero ohm or 50 ohm,

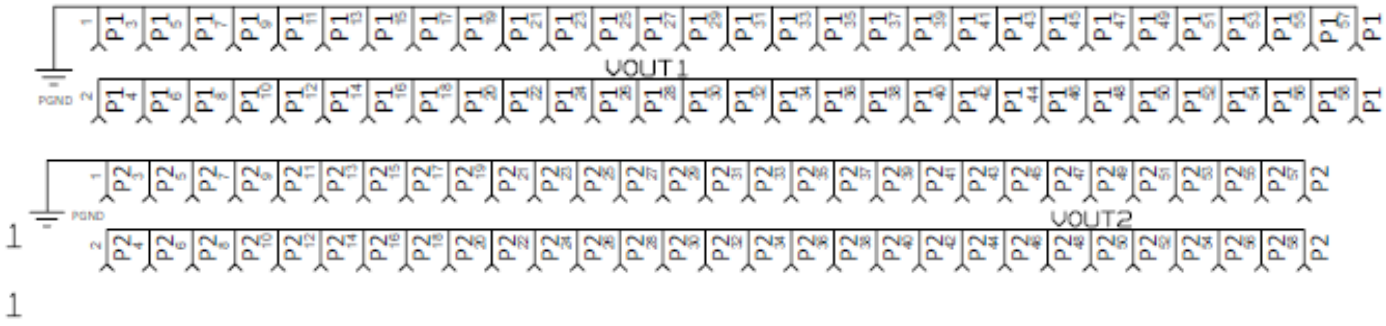
The single output and the dual output evaluation boards come with the Zero ohm resistors to regulate at the POL. To regulate at the slammer connector remove zero ohm resistors near module and populate at the slammer connector R10,R11,R12,R14.





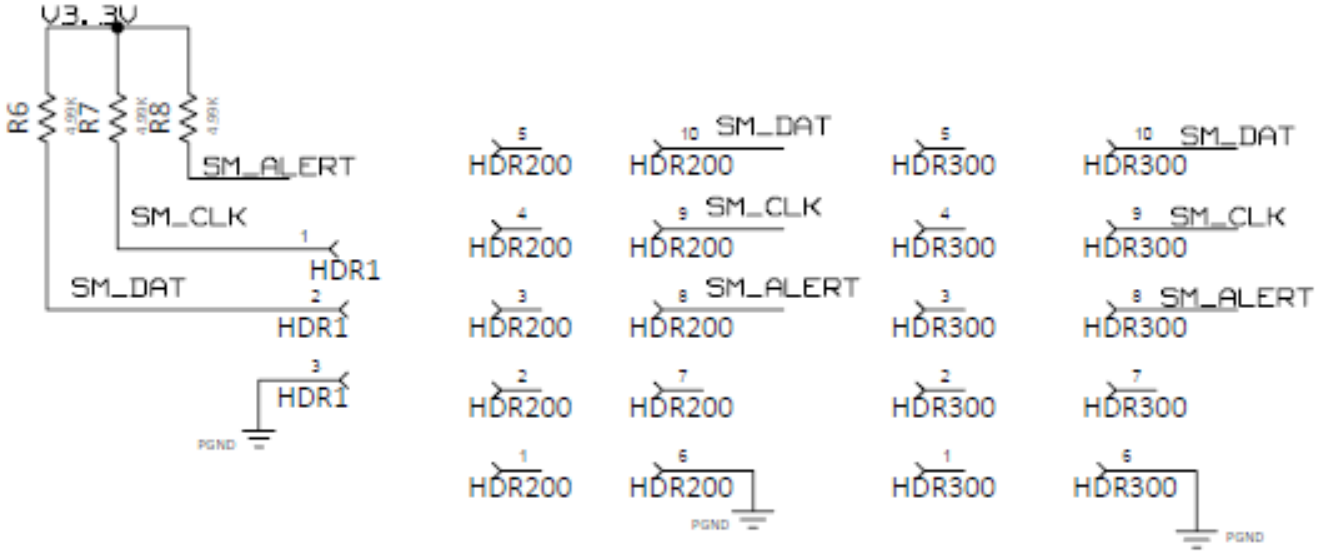
2.1.3. Load Transient Connections

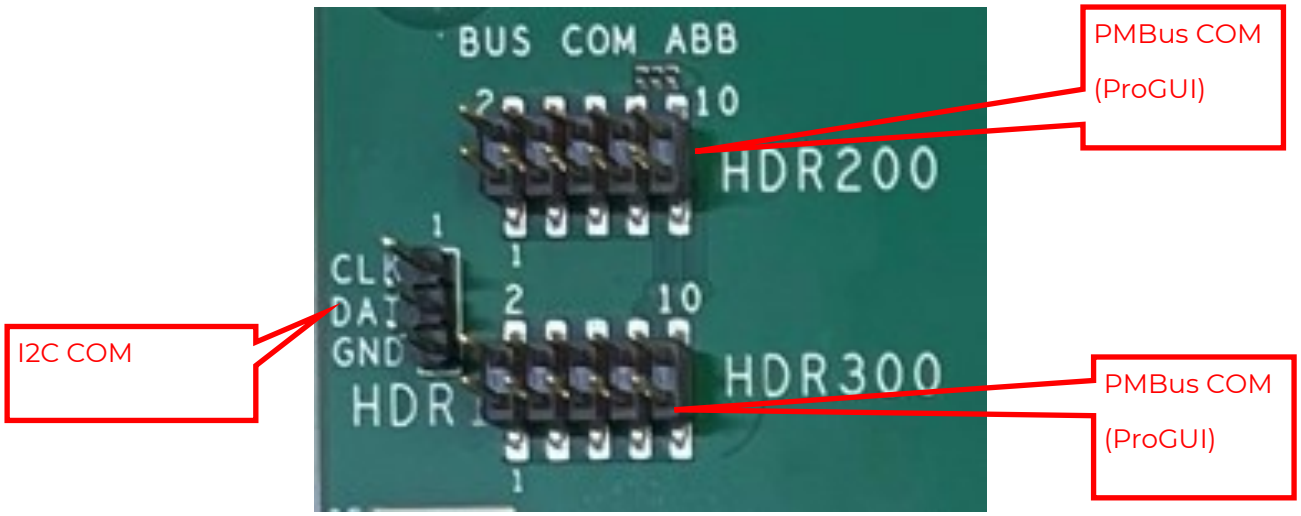




2.1.4. PMBus Connection

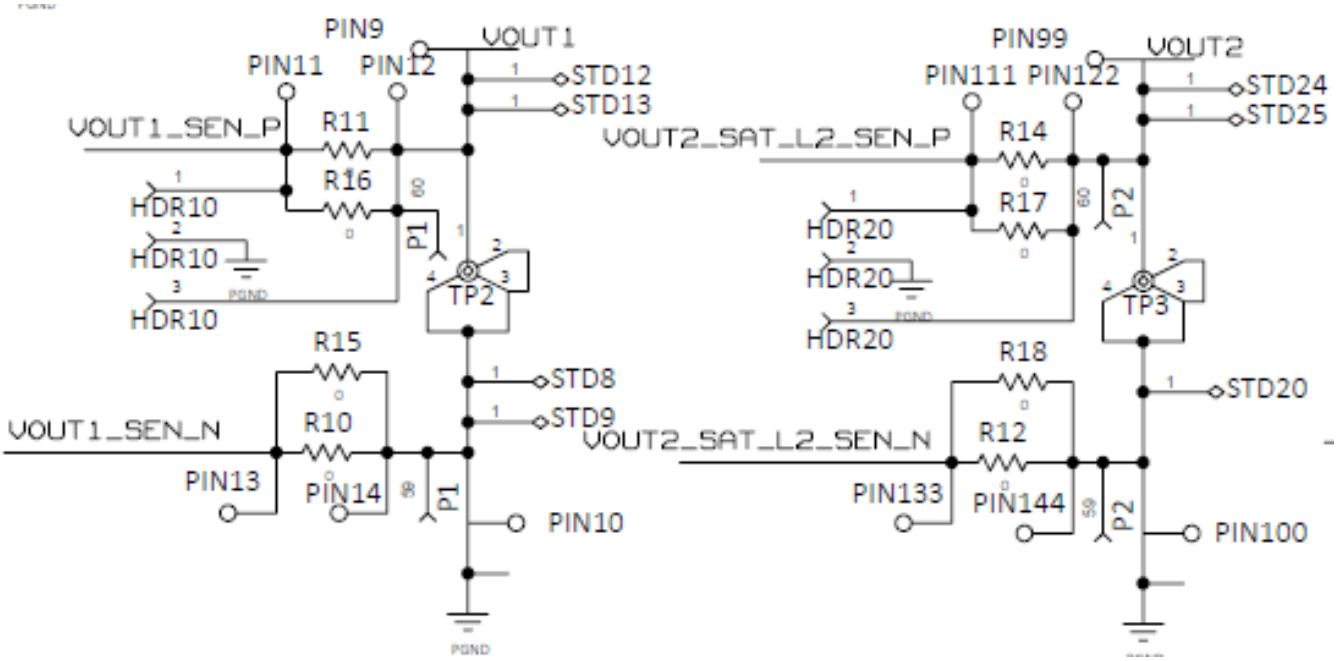
Evaluation Board is provided with a pair of 10 pin connectors and 3 pin header for PMBus connectivity



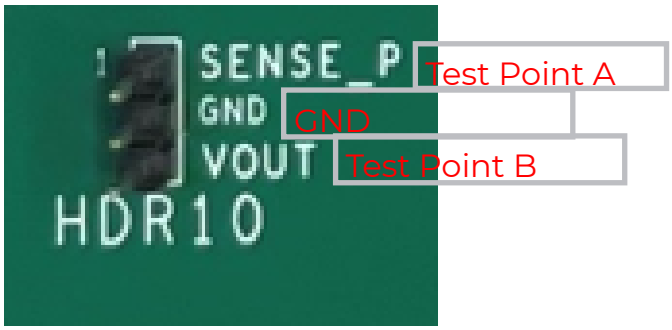


2.1.5. Bode Plot Connection

Evaluation Board is provided with test points for Bode Plot connections. Populate a 10-50 ohm resistor between test points A&B, and inject a small signal across Point A and Point B by using a transformer. Measure voltage of Ch1(A and GND) and Ch2(B and GND); Gain=Ch1/Ch2

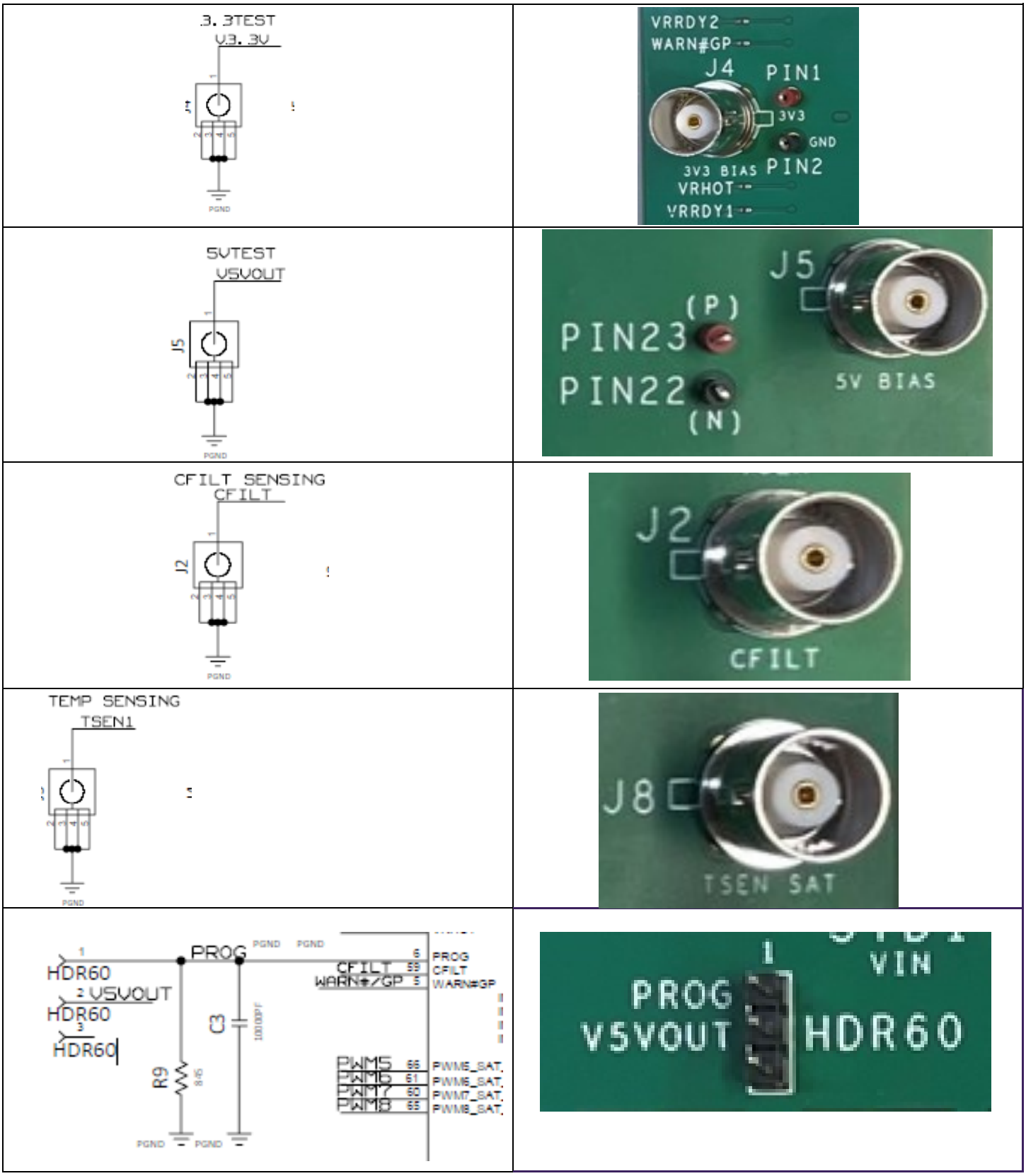


Bode Measurement



2.1.6. Connections Summary

Bias Rails

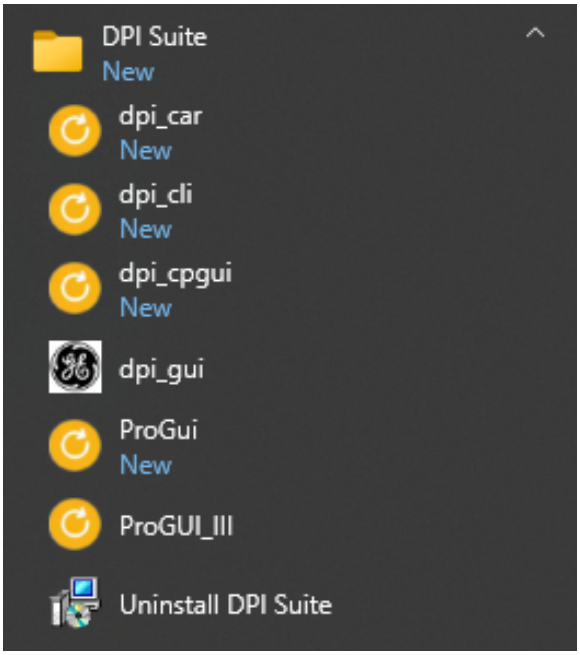


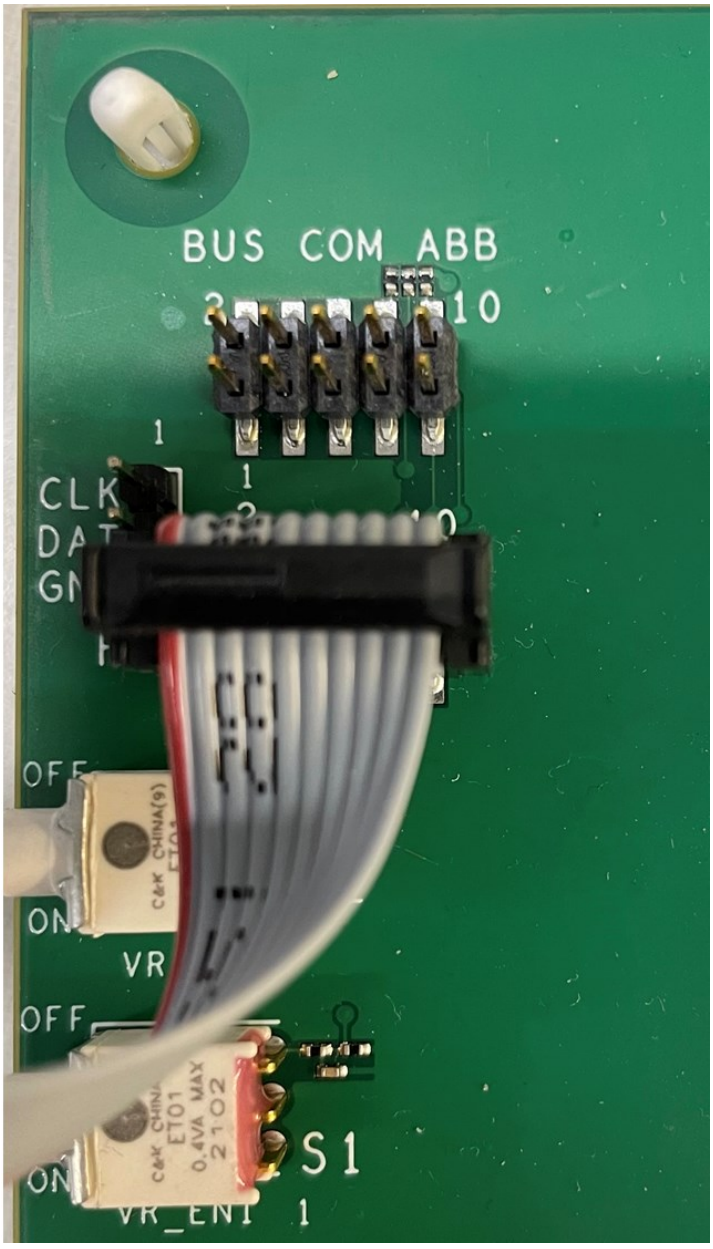
Output Rails

VOUT 1	
VOUT 2	

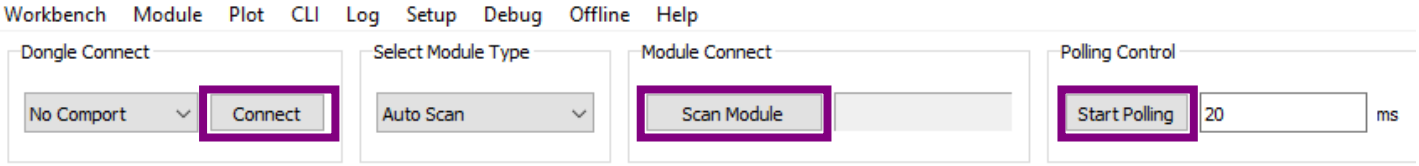
2.2 ProGUI III Connection and Setup

Click on ProGUI_III option after clicking on your Windows Start Icon. Make sure the dongle is connected to the board and the computer. Ensure ribbon cable is connected with the pin alignment shown below.



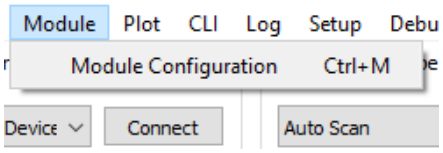


Click on Connect and then Scan Module to find the MLX module and then click on Start Polling

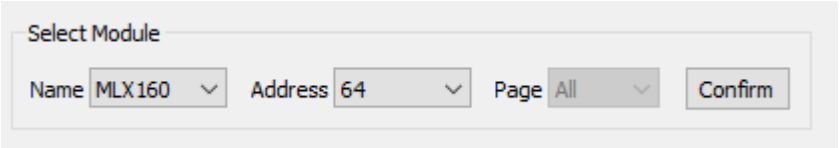


2.2 ProGUI III Connection and Setup (Continued)

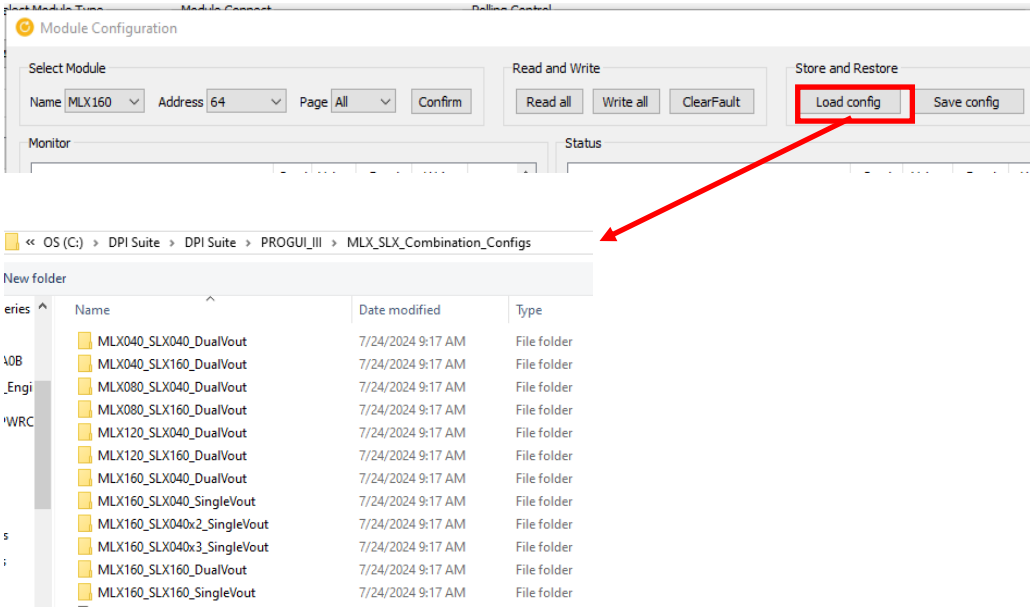
- Click on “Module” in the top left corner and then click on Module Configuration



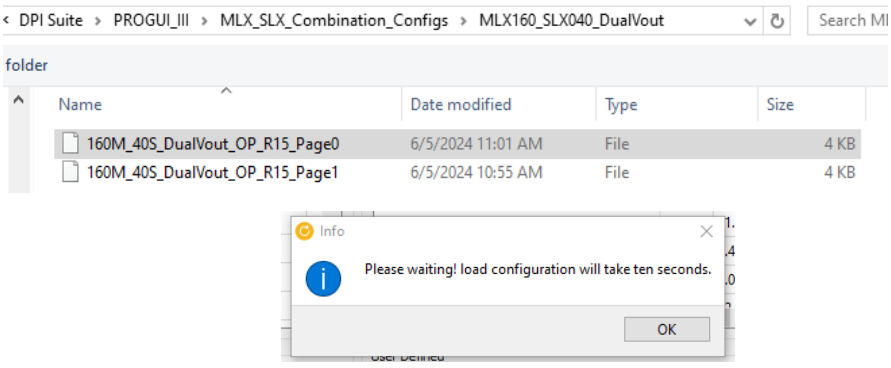
- A new window will open up. Click on the Confirm button to allow access to the module.



- Clicking on the Load Configuration in the Store and Restore section on the Right Upper corner which enables the user to select pre-loaded config files for the type of MLX+SLX board being used.

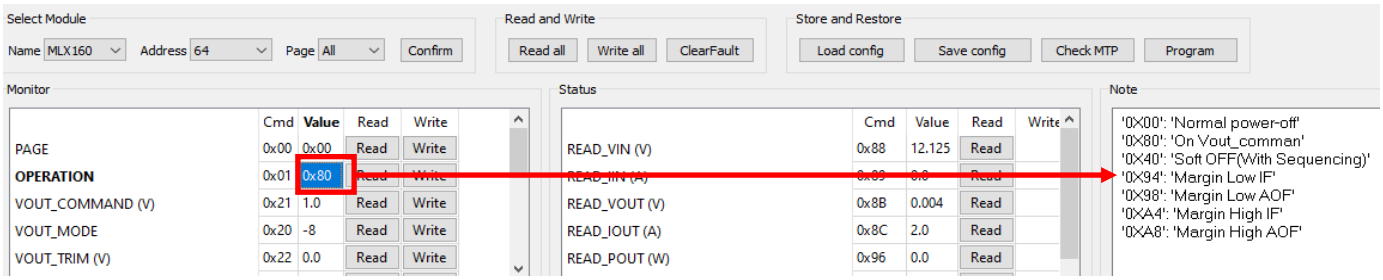


- Select the file from the folder representing the configuration on the board. Be aware that some configurations may have 2 files. Load page 0 followed by Page 1

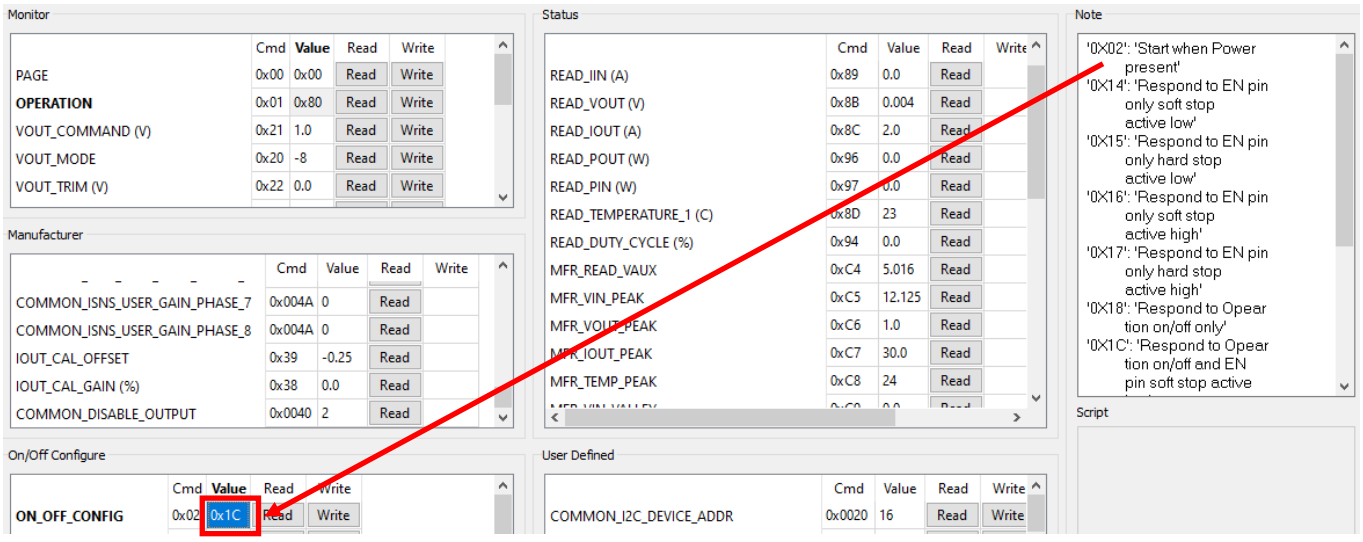


2.2 ProGUI III Connection and Setup (Continued)

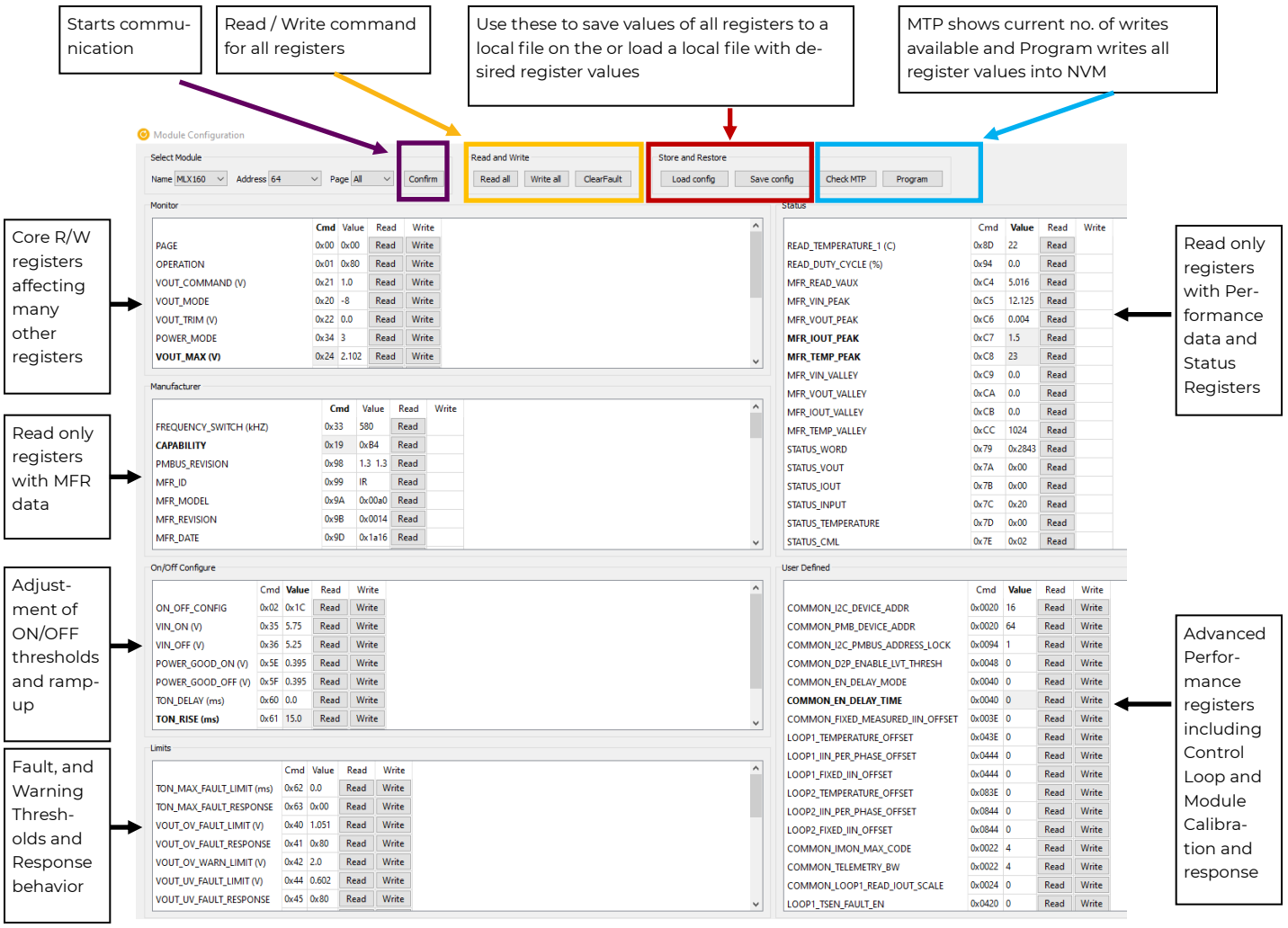
- Clicking on the Hex Command or the Value field for the configurable registers populates the Notes filed on the Right Upper corner which provides the user with information on the available options for that command/register. For example clicking on the current value of 0x80 shows the available valid values for OPERATION command. Remember to click on the Write button after entering the value in the Value register. Click on save config only once all changes have been made since there are limited number of writes available. Another way to conserve number of writes in mentioned later in this document.
- Use PAGE Command to switch between Loop1(Voltage1) and Loop2(Voltage2)



- Similarly clicking on ON_OFF_CONFIG Value 0x1C data field below brings up all the options available to the user in the Note Section. For example, enter 0x02 if you want module to powerup as soon as input is applied



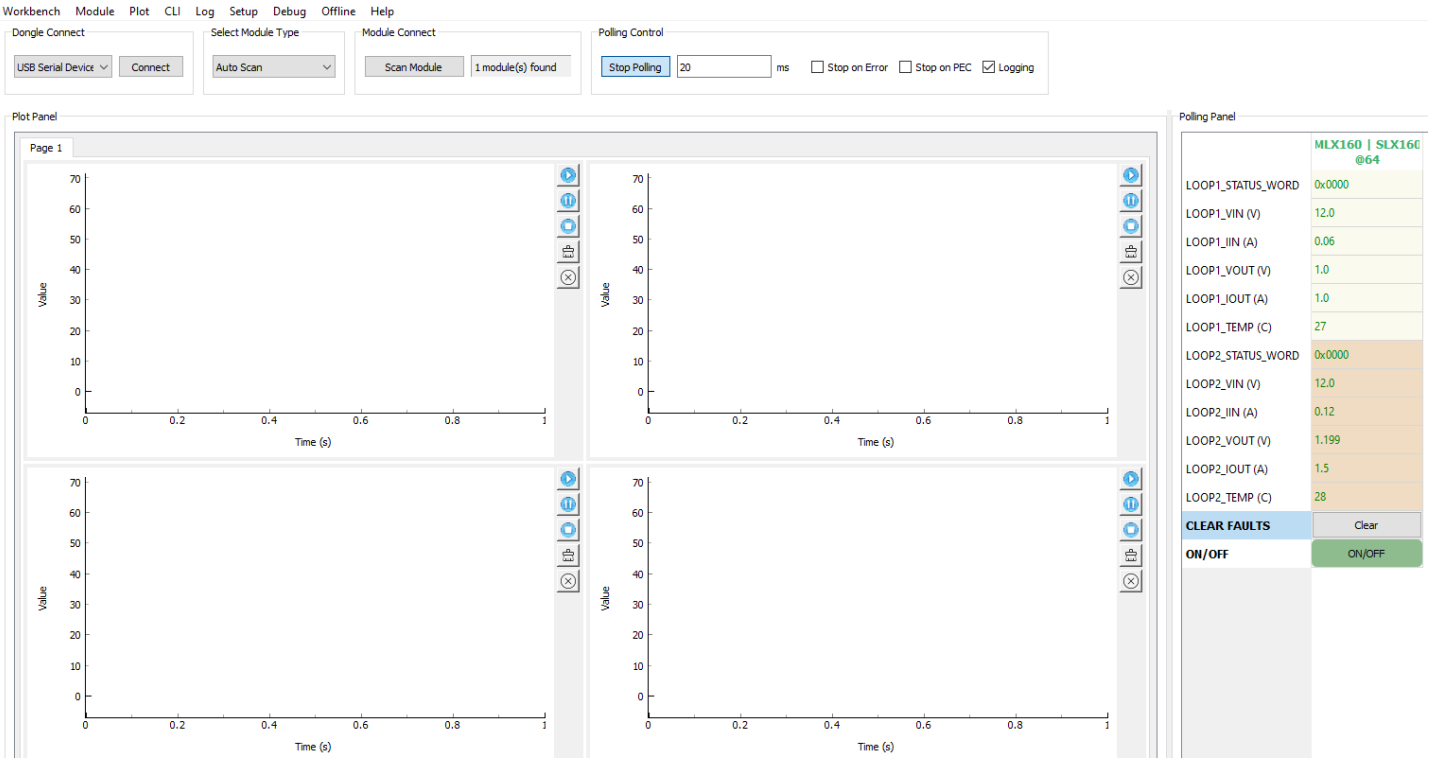
2.2 ProGUI III Connection and Setup (Continued)

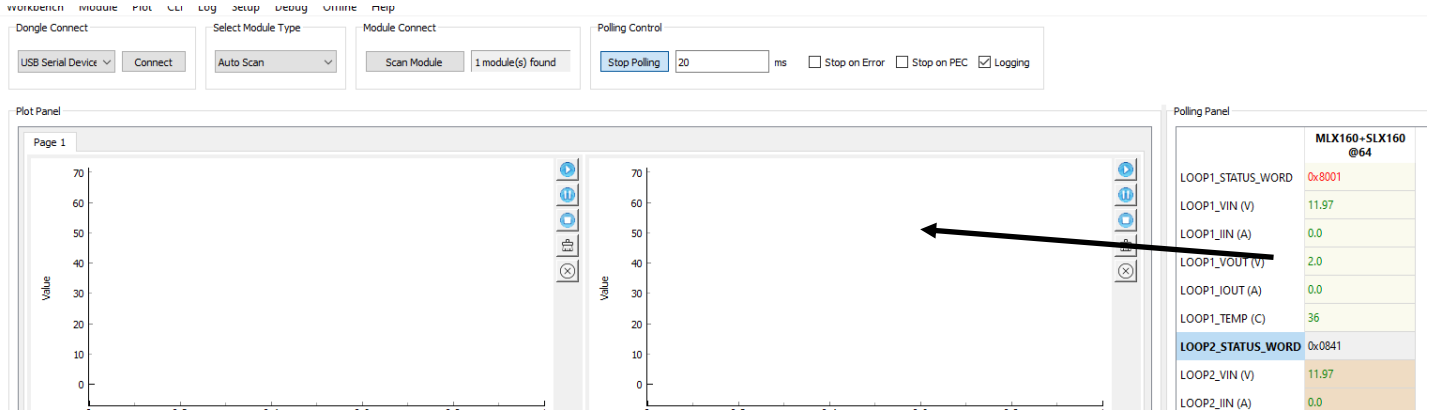


2.2 ProGUI III Connection and Setup (Continued)

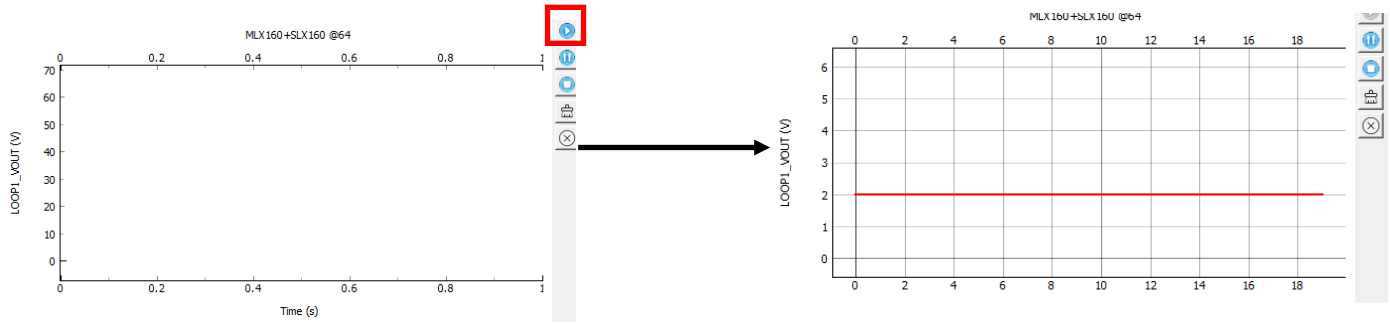
Main Display Screen once Module is On (with output)

Drag desired parameters to screen for polling and drop into graph area



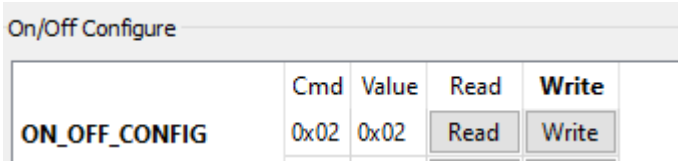


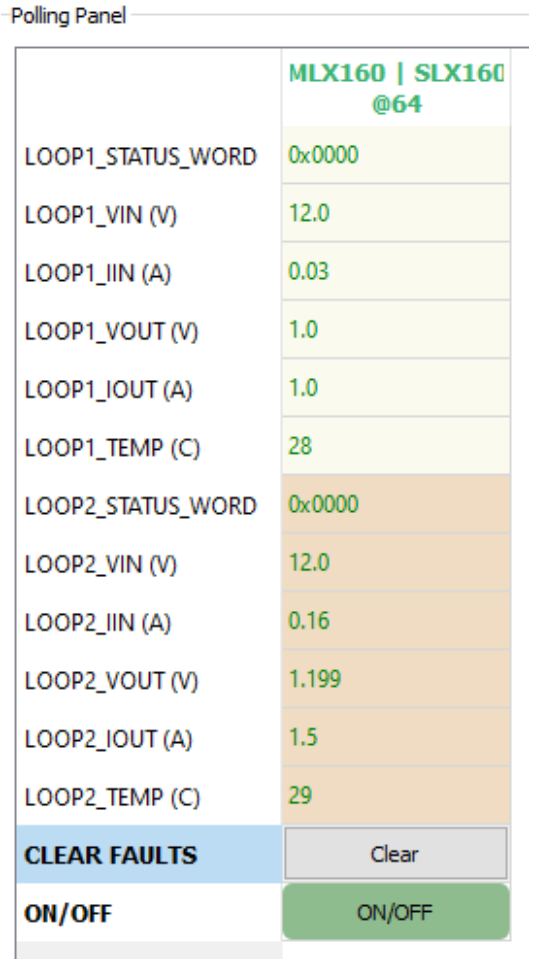
Remember to click Start



2.1.2. ProGUI III Connection and Setup (Continued)

Once module is Turned On the main screen displays the key input-output measurements





Revision History

Revision	Date	Description of the change
1.1	2/6/2024	Initial Release
1.2	08/07/2024	Guidelines for use with ProGUI III added

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