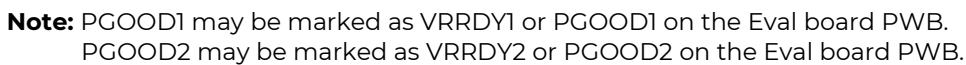


## Single Loop/Output Voltage Evaluation Board populated with MLX160+SLX040 or MLX160+SLX160



# Table of Contents

<b>1. Description .....</b>	<b>3</b>
<b>2. Schematic .....</b>	<b>6</b>
2.1. Eval Board Sections.....	11
2.1.1. Input Connections.....	11
2.1.2. Output Connections.....	12
2.1.3. Load Transient Connection .....	13
2.1.4. PMBus Connection .....	14
2.1.5. Bode Plot Connection.....	15
2.1.6. Connections Summary .....	16
2.2. ProGUI III Connection and Setup.....	18
<b>3. Revision History .....</b>	<b>24</b>

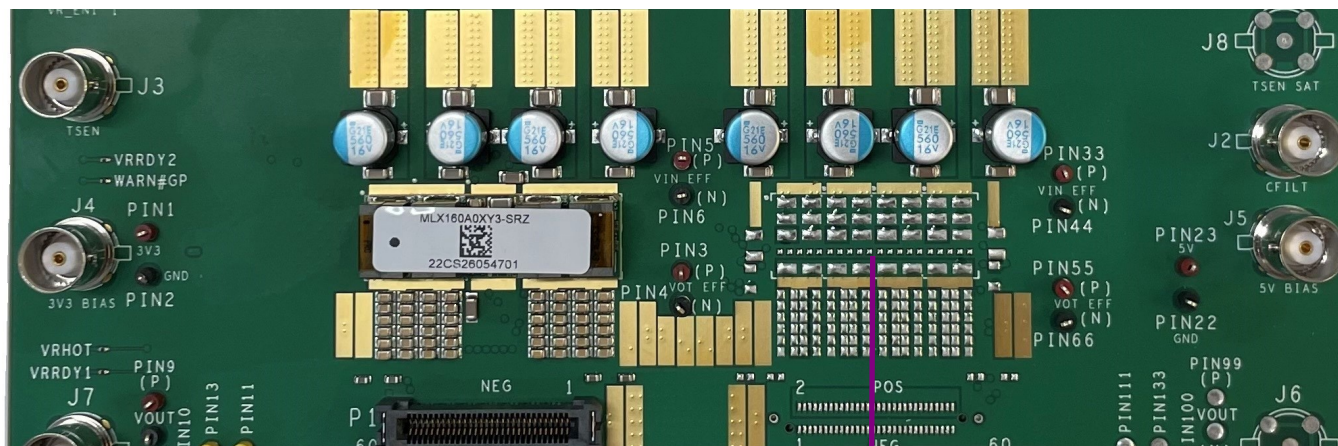




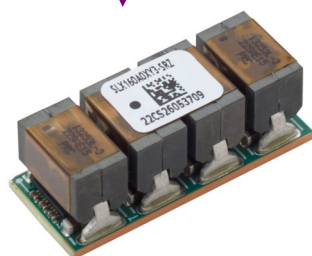
## 1. Description (Continued)

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

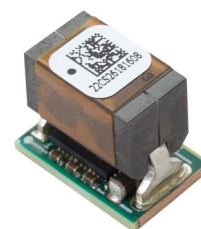
**Evaluation Board with different module variants**



**OPTIONS**



**SLX160**



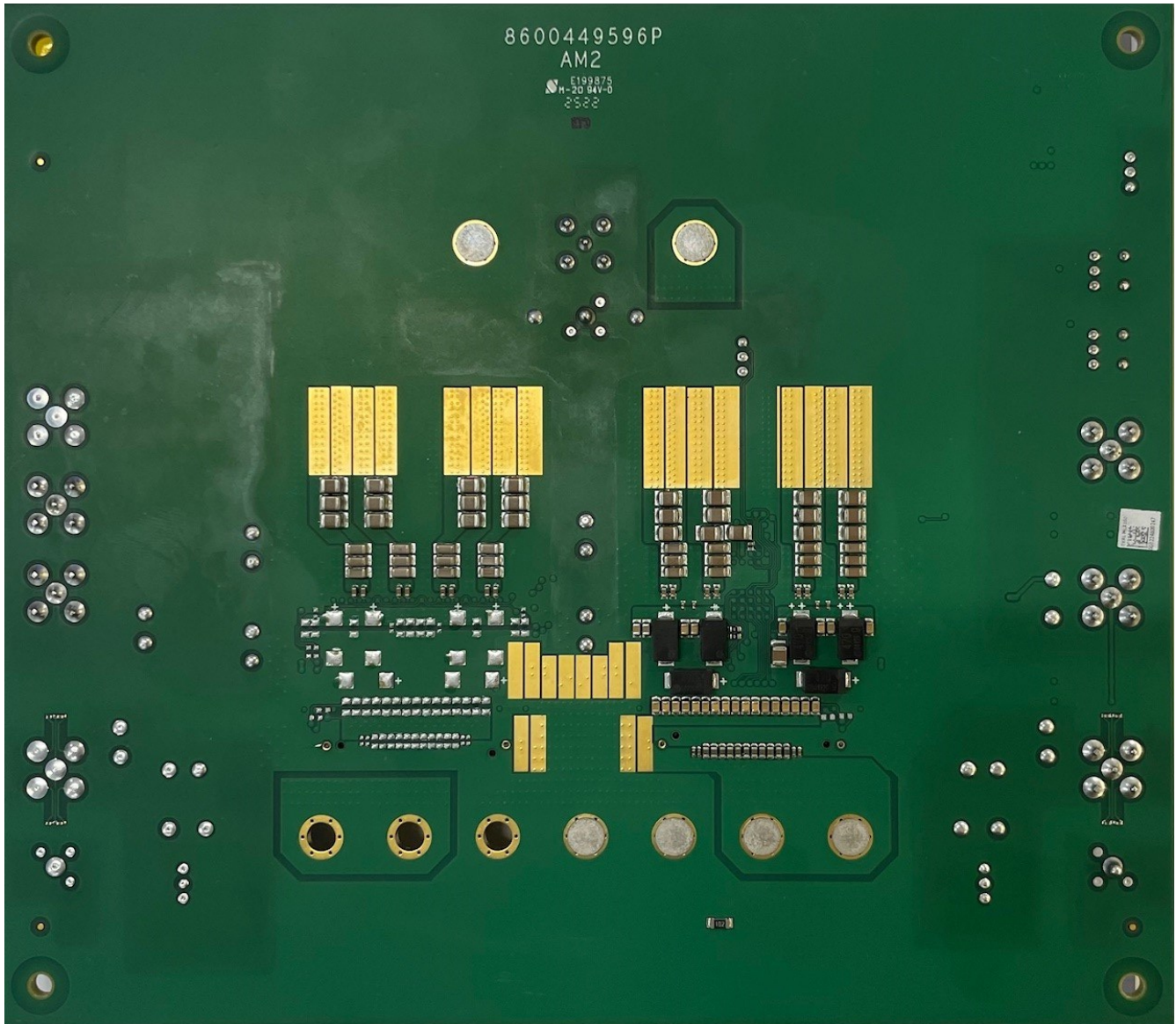
**SLX040**



## 1. Description (Continued)

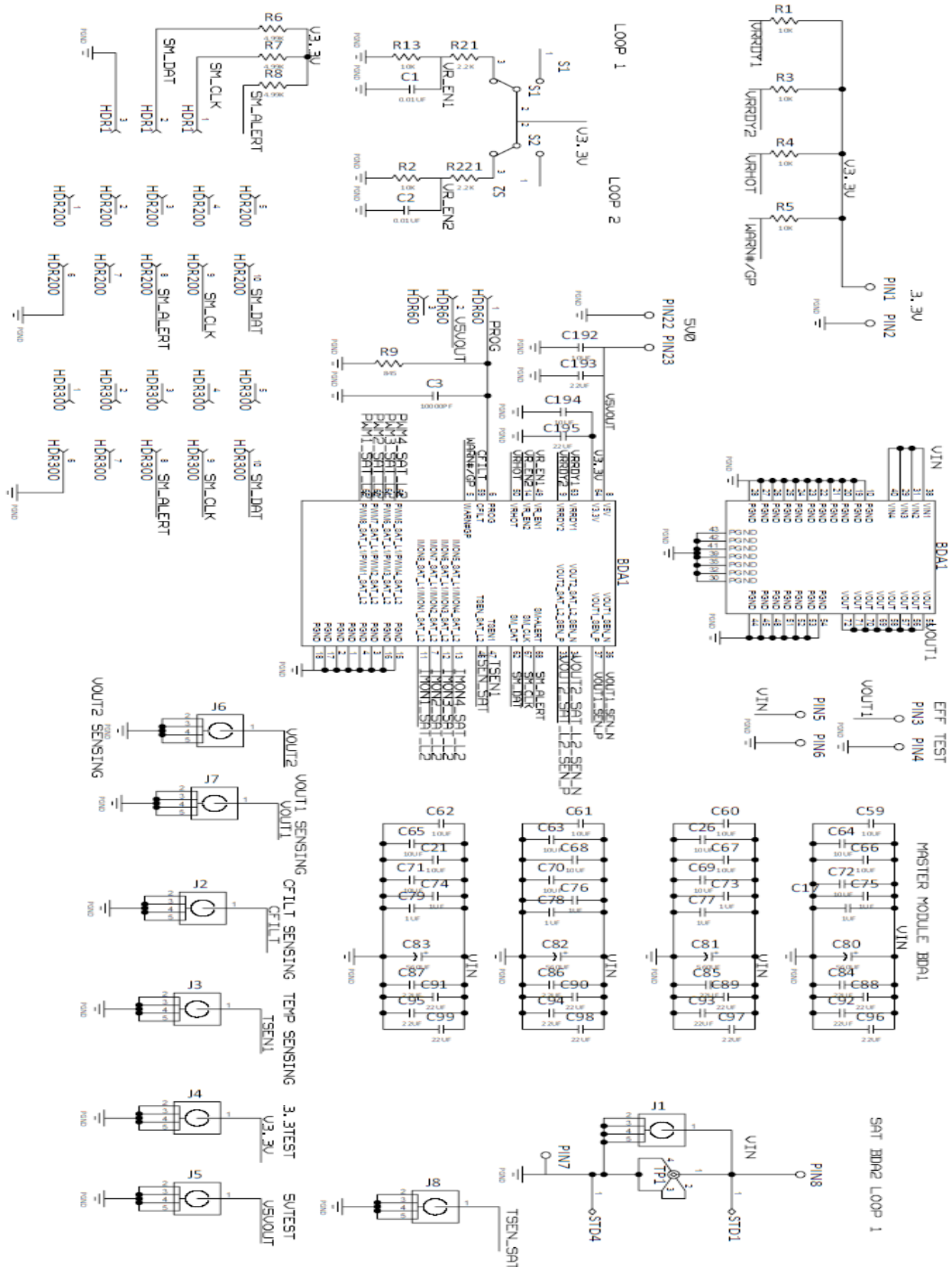
The Installed components are as follows. The schematic on the following page shows maximum capability and includes expansion capability:

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



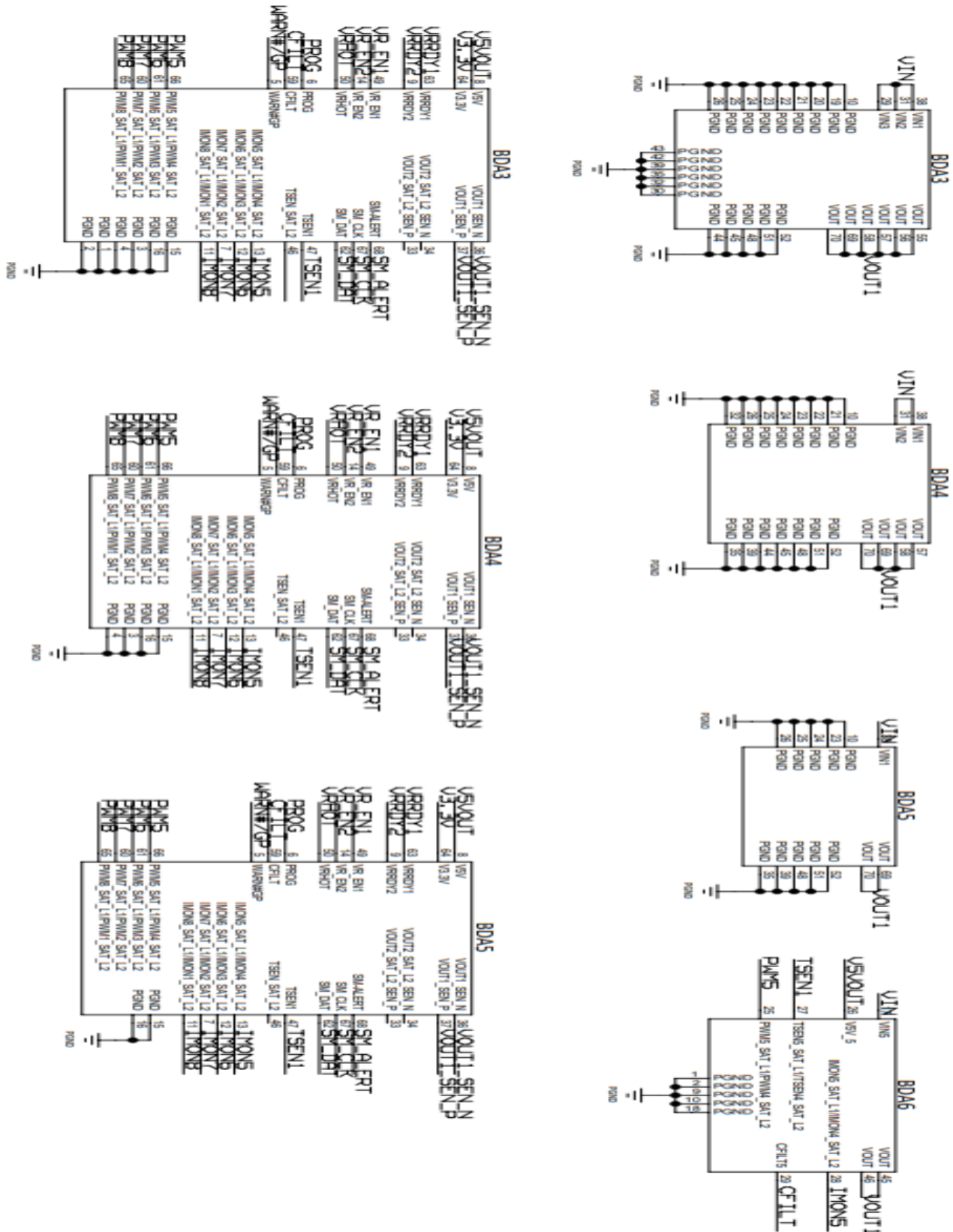
**Bottom View of Evaluation Board**

## 2. Schematic\*



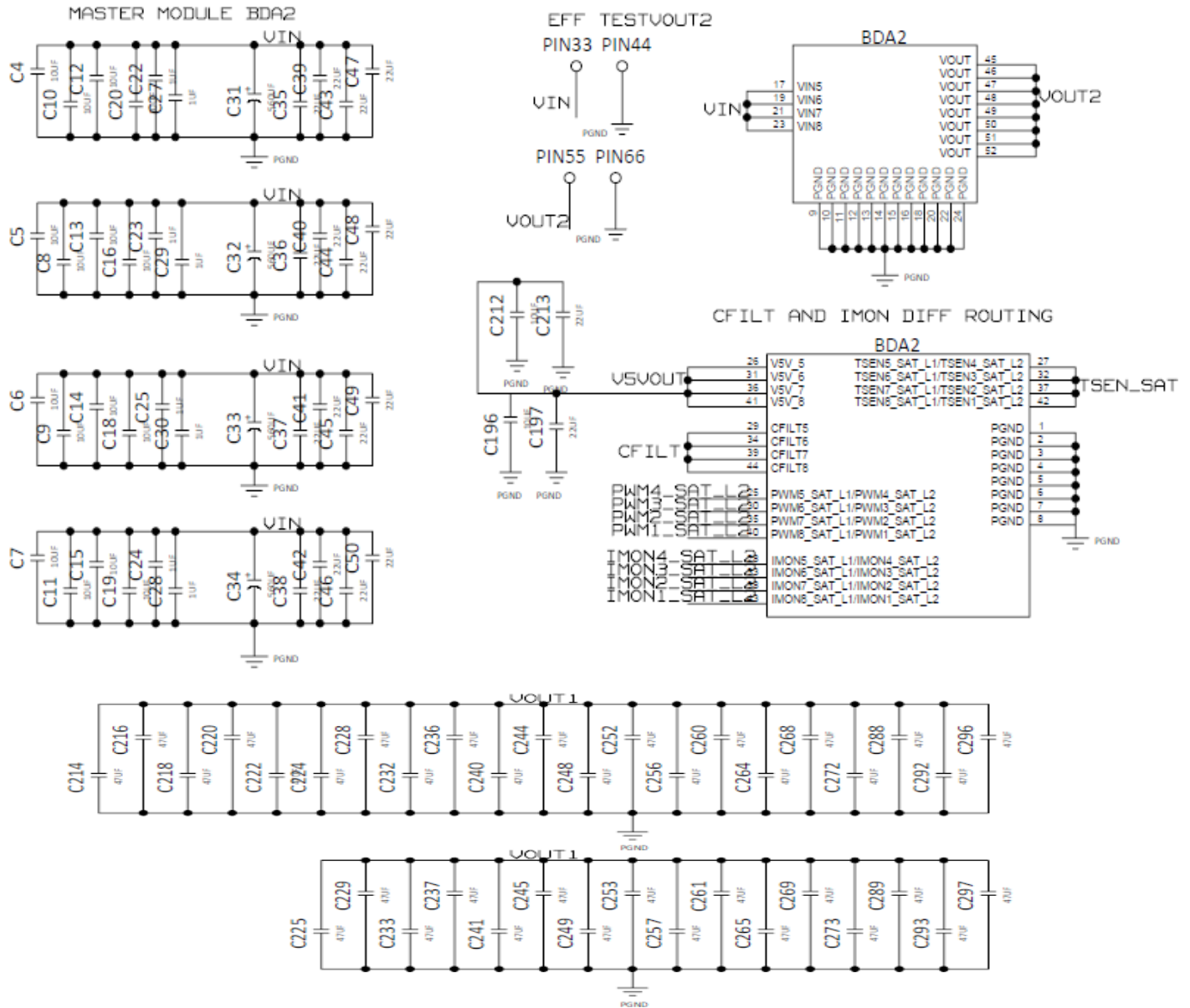
\*Download Schematic at [www.omnionpower.com](http://www.omnionpower.com).

## 2. Schematic\* (Continued)



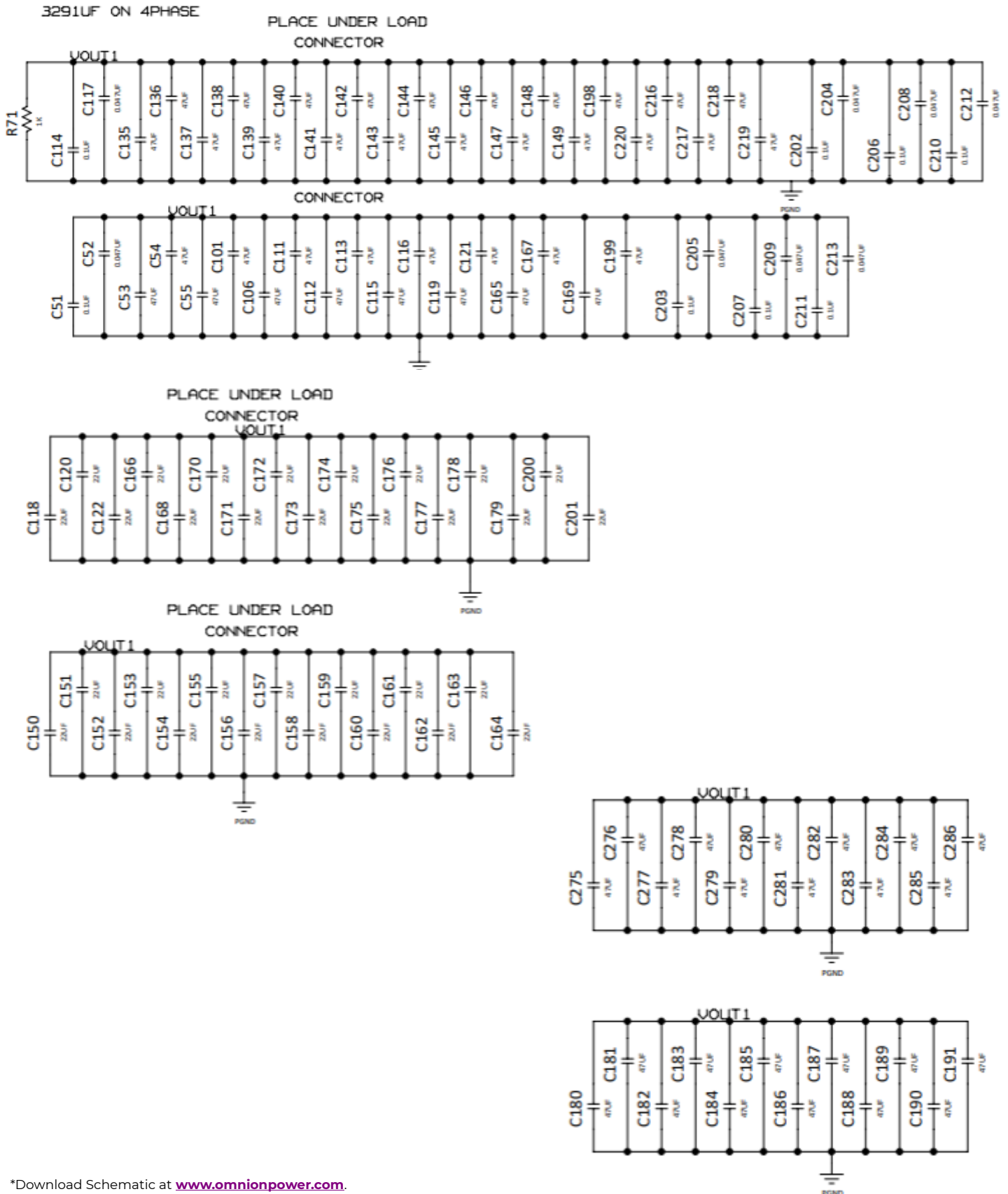
\*Download Schematic at [www.omnionpower.com](http://www.omnionpower.com).

## 2. Schematic\* (Continued)





## 2. Schematic\* (Continued)



\*Download Schematic at [www.omnionpower.com](http://www.omnionpower.com).



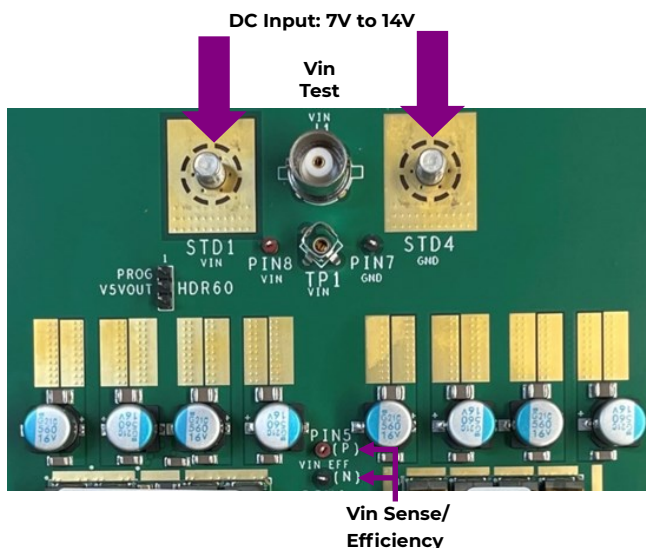
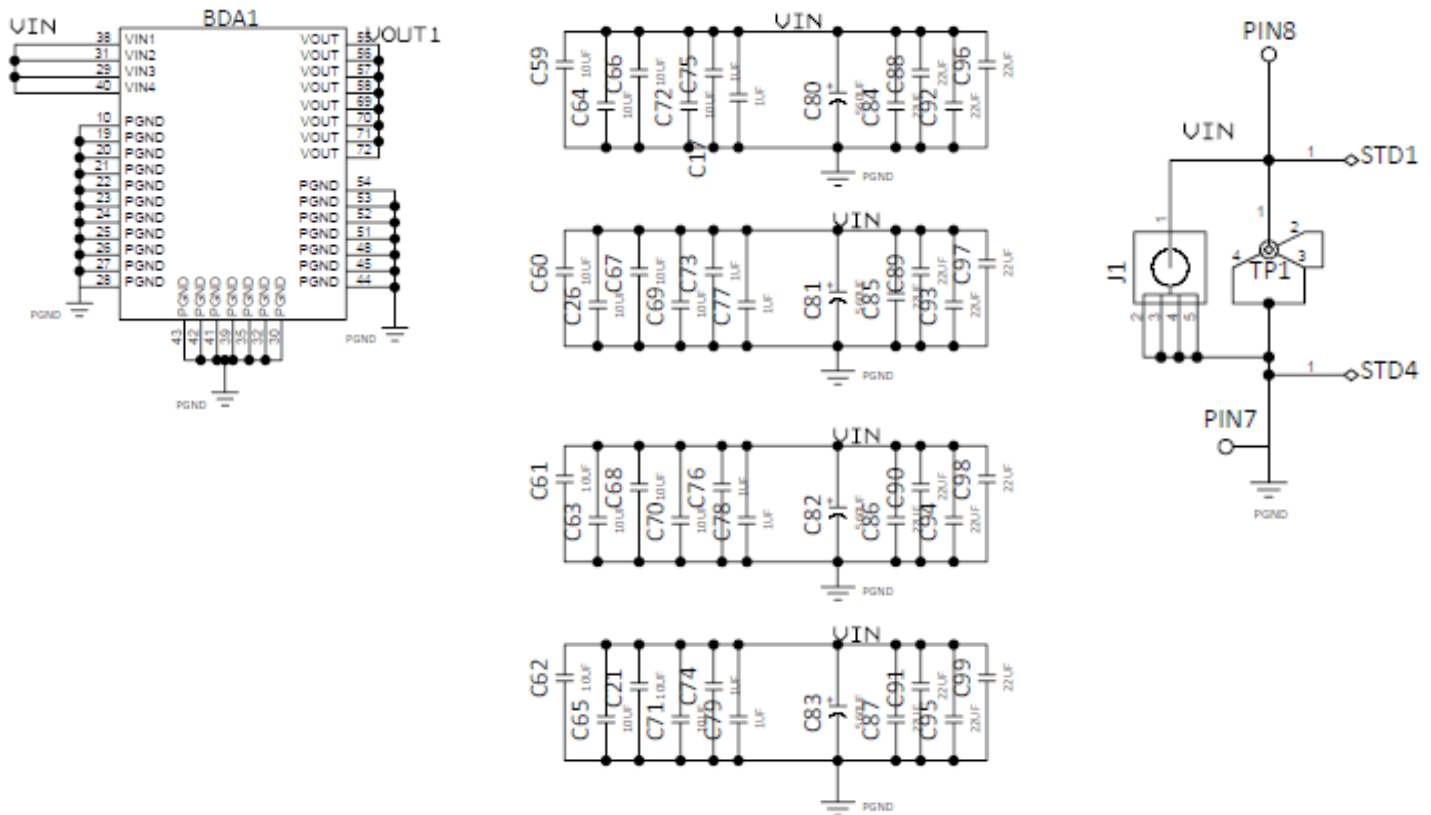
The complete schematic diagram of the MLX Series evaluation board is shown in the previous pages. Components on schematic show max capability and may not be actually used on the board.

The complete schematic can be downloaded from [www.omnionpower.com](http://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



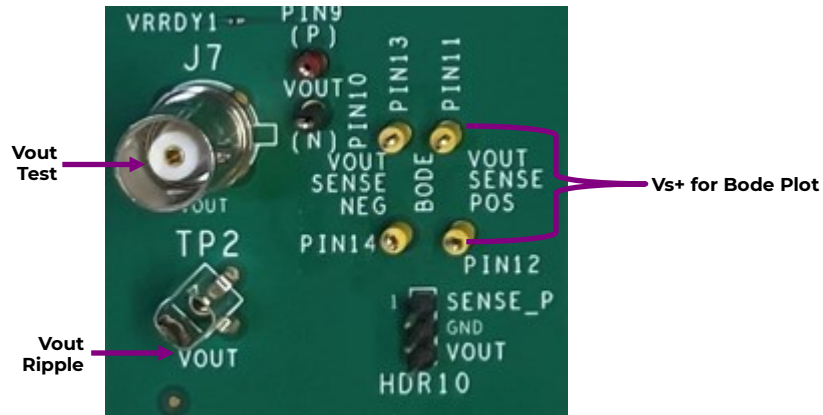
Enable for Loop2 - Not Used for Single Output Mode. Turn to OFF position

Enable for Loop1. Turn this ON

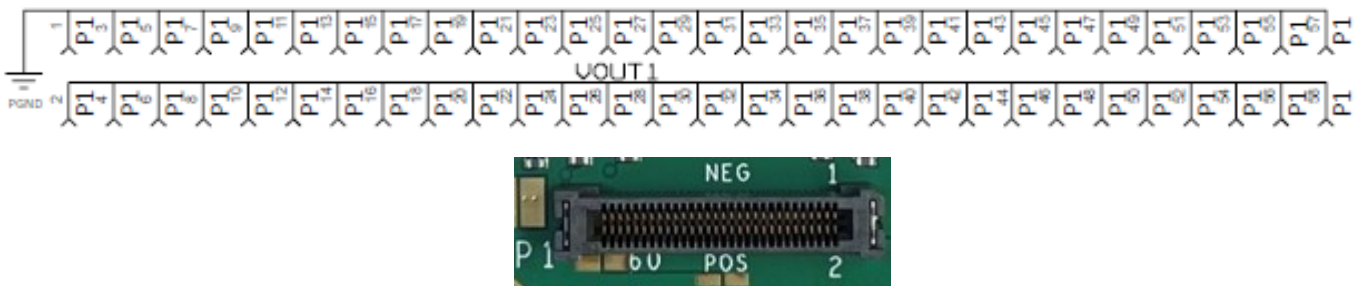
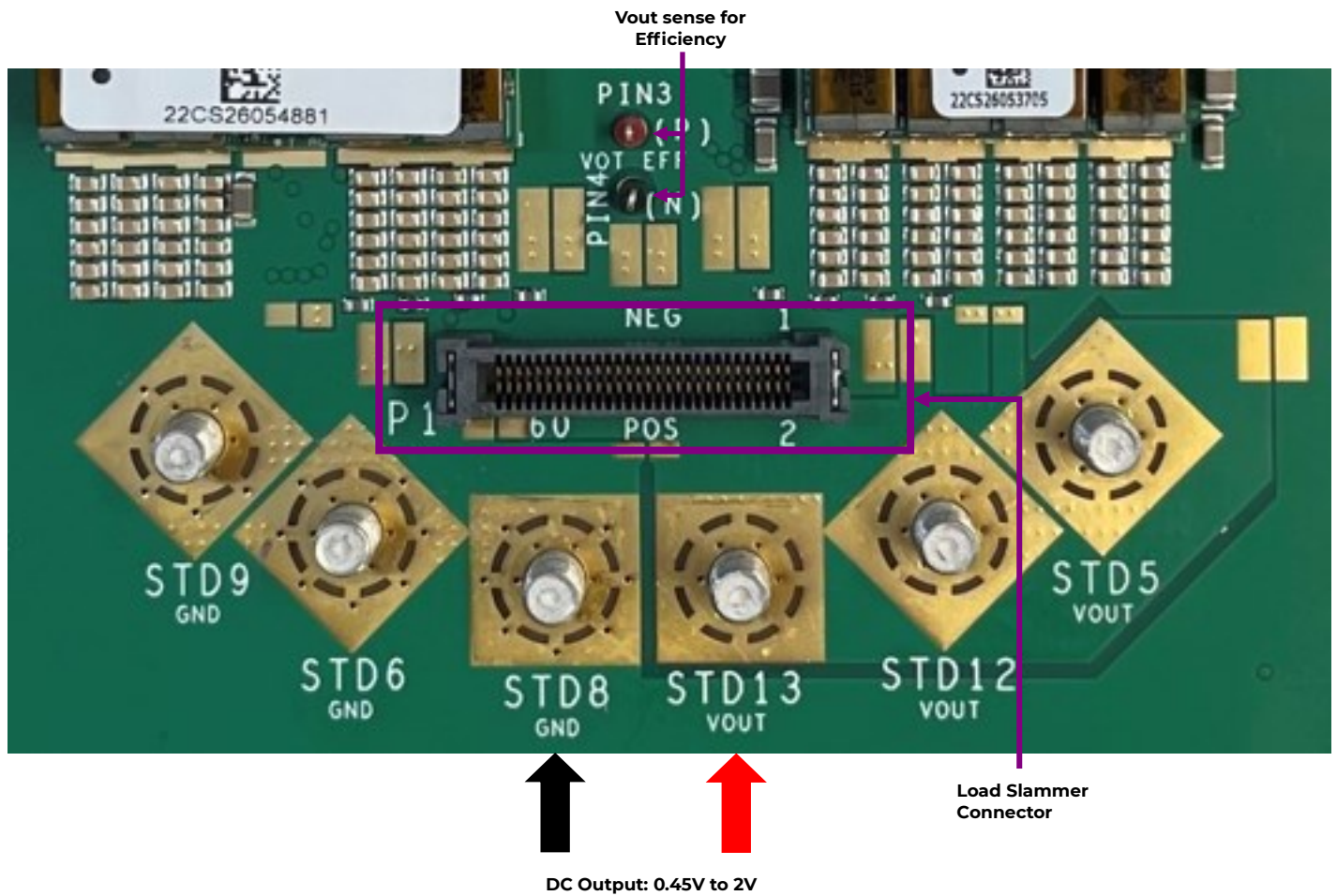






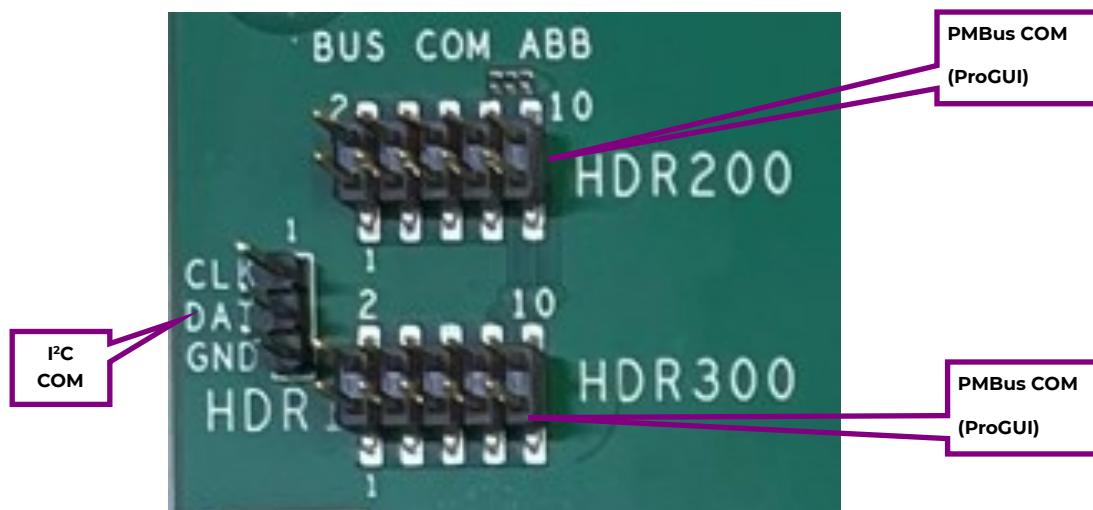
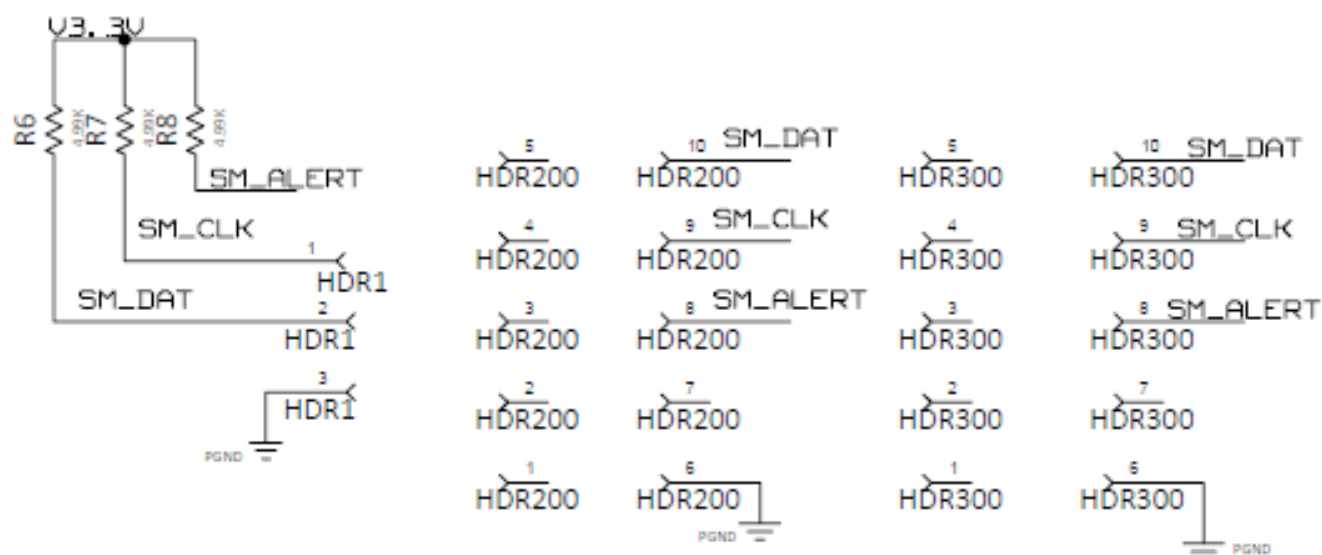


### 2.1.3. Load Transient Connections



## 2.1.4. PMBus Connection

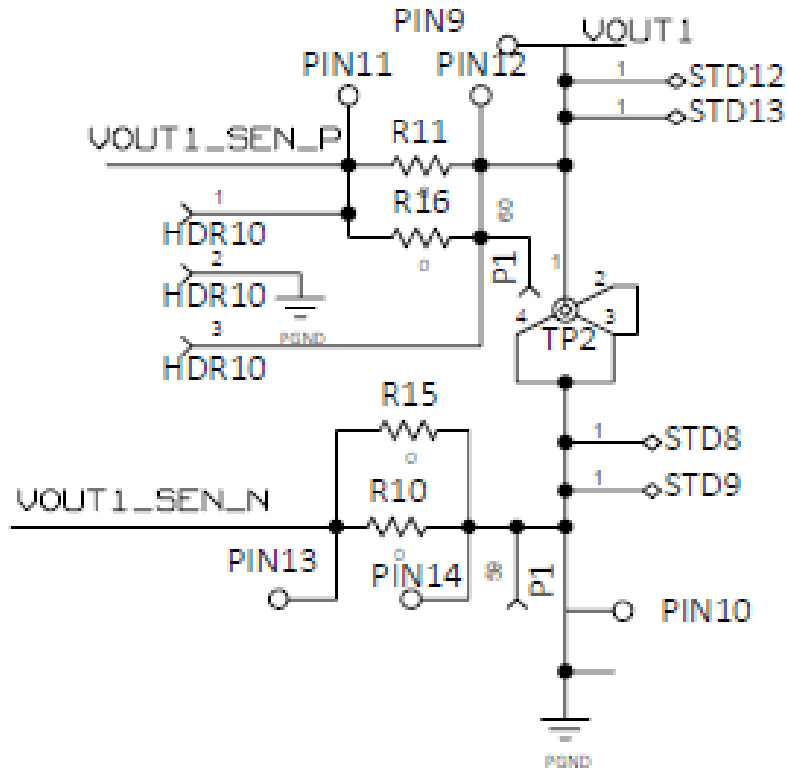
Evaluation Board is provided with a pair of 10 pin connectors and 3 pin header for PMBus connectivity



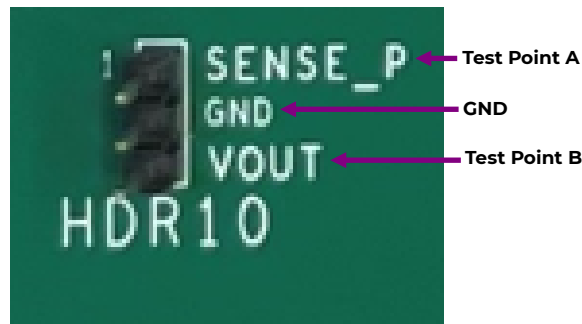


## 2.1.5. Bode Plot Connection

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**



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) are zero ohm resistors.


Sense at the slammer connector (R10, R11) 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 and R11.



## 2.1.6. Miscellaneous Connections (Continued)

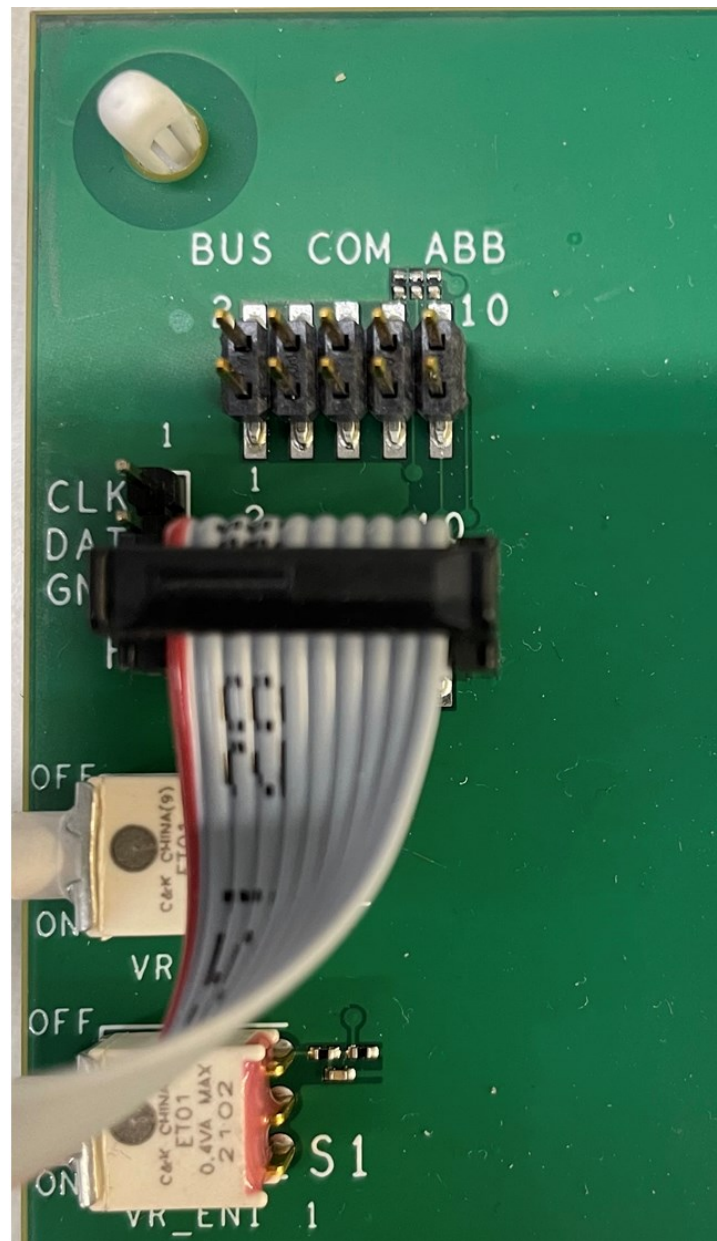
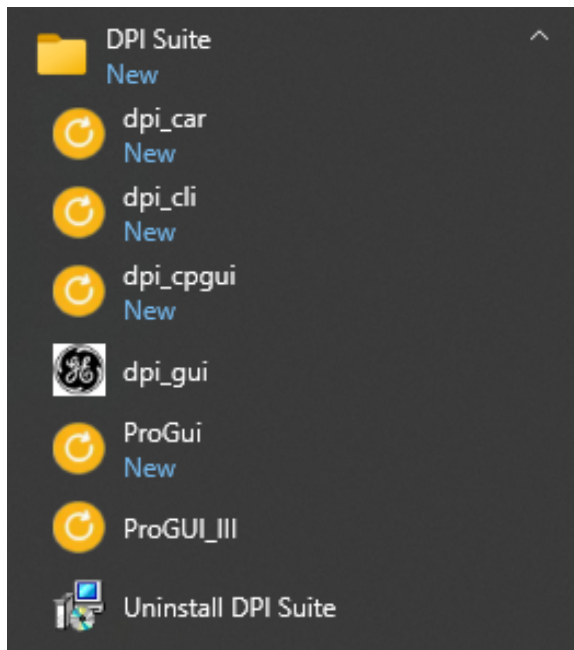
### Output Rails

<p>VOUT1</p>	
--------------	--

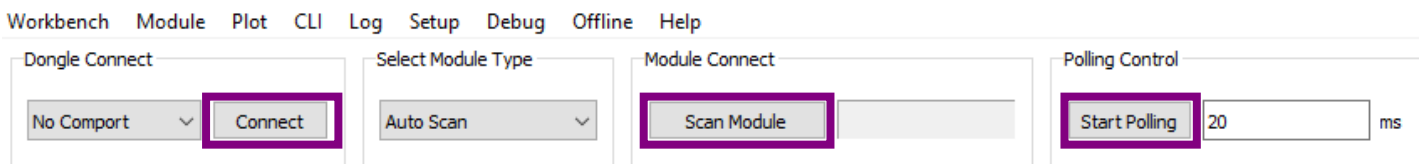


## 2.2 ProGUI III Connection and Setup

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.

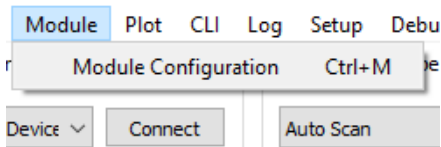


Click on Connect and then Scan Module to find the MLX module and then click on Start Polling.

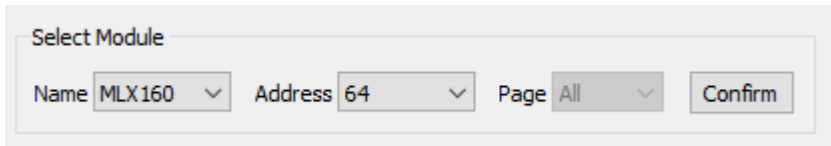


## 2.2 ProGUI III Connection and Setup (Continued)

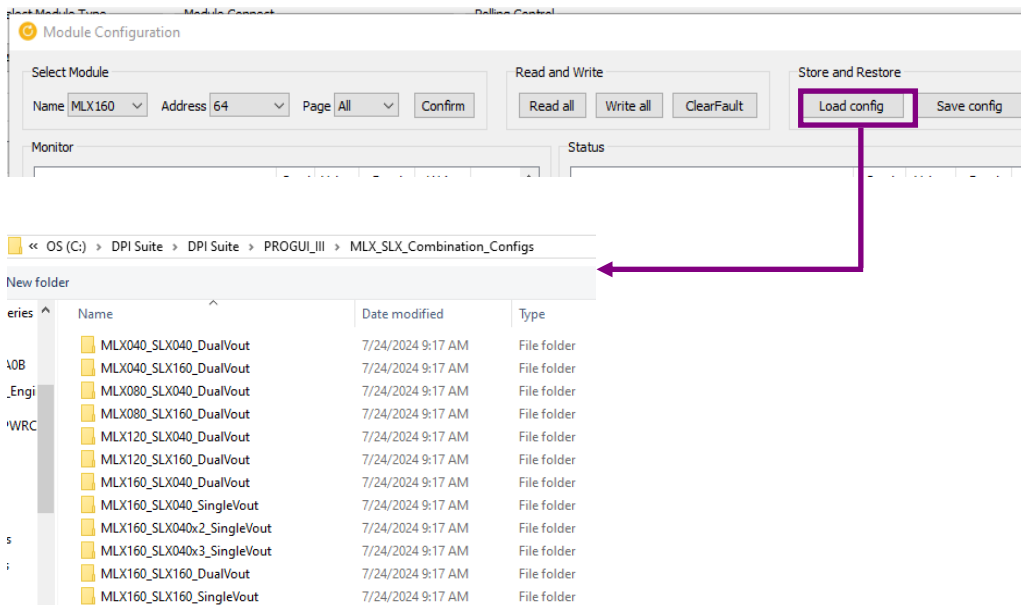
- Click on “Module” in the top left corner and then click on Module Configuration.



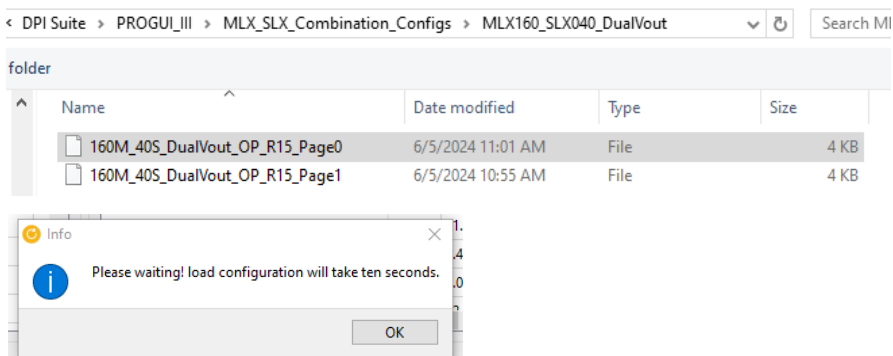
- A new window will open up. Click on the Confirm button to allow access to the module.



- 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.

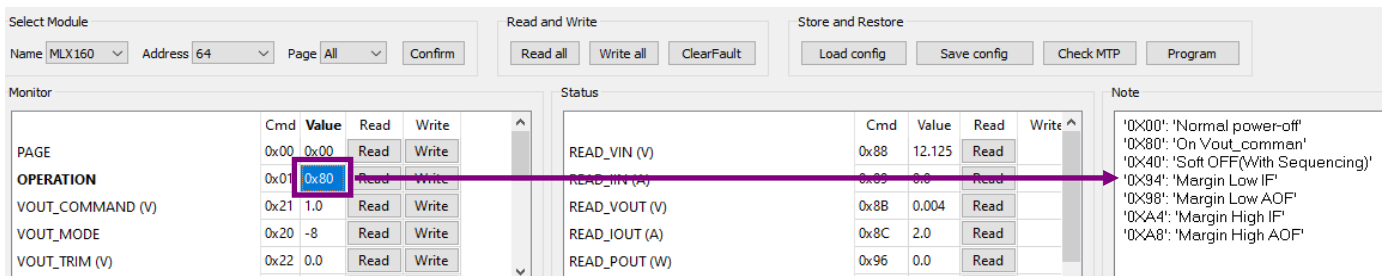


- Select the file from the folder representing the configuration on the board. Be aware that some configurations may have 2 files. Load page 0 followed by Page 1. There are separate files for Single Output and Dual Output. Example below is of Dual Output. For this board use Single Output.



## 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 is mentioned later in this document.



Select Module: Name MLX160 Address 64 Page All Confirm

Read and Write: Read all Write all ClearFault

Store and Restore: Load config Save config Check MTP Program

**Monitor**

	Cmd	Value	Read	Write
PAGE	0x00	0x00	Read	Write
<b>OPERATION</b>	0x01	0x80	Read	Write
VOUT_COMMAND (V)	0x21	1.0	Read	Write
VOUT_MODE	0x20	-8	Read	Write
VOUT_TRIM (V)	0x22	0.0	Read	Write

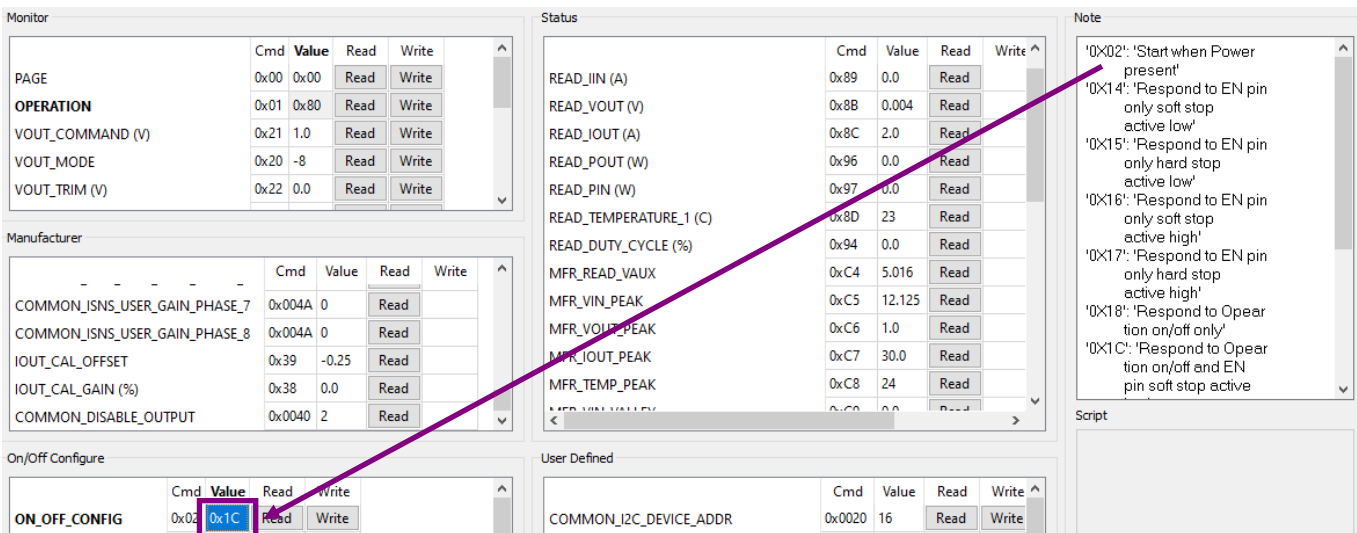
**Status**

	Cmd	Value	Read	Write
READ_VIN (V)	0x88	12.125	Read	
READ_IIN (A)	0x89	0.0	Read	
READ_VOUT (V)	0x8B	0.004	Read	
READ_IOUT (A)	0x8C	2.0	Read	
READ_POUT (W)	0x96	0.0	Read	

**Note**

- '0x00': 'Normal power-off'
- '0x80': 'On Vout\_comman'
- '0x40': 'Soft OFF(With Sequencing)'
- '0x94': 'Margin Low IF'
- '0x98': 'Margin Low AOF'
- '0xA4': 'Margin High IF'
- '0xA8': 'Margin High AOF'

- 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



**Monitor**

	Cmd	Value	Read	Write
PAGE	0x00	0x00	Read	Write
<b>OPERATION</b>	0x01	0x80	Read	Write
VOUT_COMMAND (V)	0x21	1.0	Read	Write
VOUT_MODE	0x20	-8	Read	Write
VOUT_TRIM (V)	0x22	0.0	Read	Write

**Manufacturer**

	Cmd	Value	Read	Write
COMMON_ISNS_USER_GAIN_PHASE_7	0x004A	0	Read	
COMMON_ISNS_USER_GAIN_PHASE_8	0x004A	0	Read	
IOUT_CAL_OFFSET	0x39	-0.25	Read	
IOUT_CAL_GAIN (%)	0x38	0.0	Read	
COMMON_DISABLE_OUTPUT	0x0040	2	Read	

**On/Off Configure**

	Cmd	Value	Read	Write
<b>ON_OFF_CONFIG</b>	0x02	0x1C	Read	Write

**Status**

	Cmd	Value	Read	Write
READ_IIN (A)	0x89	0.0	Read	
READ_VOUT (V)	0x8B	0.004	Read	
READ_IOUT (A)	0x8C	2.0	Read	
READ_POUT (W)	0x96	0.0	Read	
READ_PIN (W)	0x97	0.0	Read	
READ_TEMPERATURE_1 (C)	0x8D	23	Read	
READ_DUTY_CYCLE (%)	0x94	0.0	Read	
MFR_READ_VAUX	0xC4	5.016	Read	
MFR_VIN_PEAK	0xC5	12.125	Read	
MFR_VOUT_PEAK	0xC6	1.0	Read	
MFR_IOUT_PEAK	0xC7	30.0	Read	
MFR_TEMP_PEAK	0xC8	24	Read	

**Note**

- '0x02': 'Start when Power present'
- '0x14': 'Respond to EN pin only soft stop active low'
- '0x15': 'Respond to EN pin only hard stop active low'
- '0x16': 'Respond to EN pin only soft stop active high'
- '0x17': 'Respond to EN pin only hard stop active high'
- '0x18': 'Respond to Operation on/off only'
- '0x1C': 'Respond to Operation on/off and EN pin soft stop active'

**User Defined**

	Cmd	Value	Read	Write
COMMON_I2C_DEVICE_ADDR	0x0020	16	Read	Write



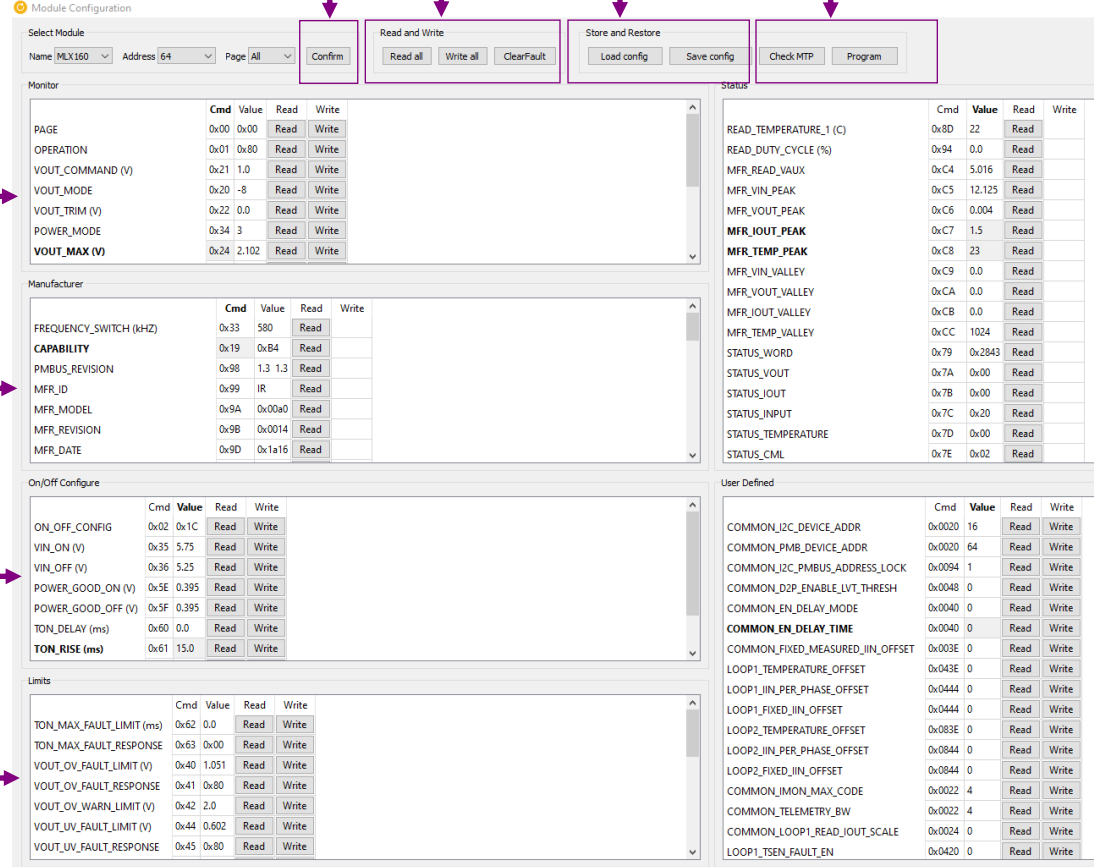
## 2.2 ProGUI III Connection and Setup (Continued)

Starts communication

Read / Write command for all registers

Use these to save values of all registers to a local file on the or load a local file with desired register values

MTP shows current no. of writes available and Program writes all register values into NVM



Core R/W registers affecting many other registers

Read only registers with MFR data

Adjustment of ON/OFF thresholds and ramp-up

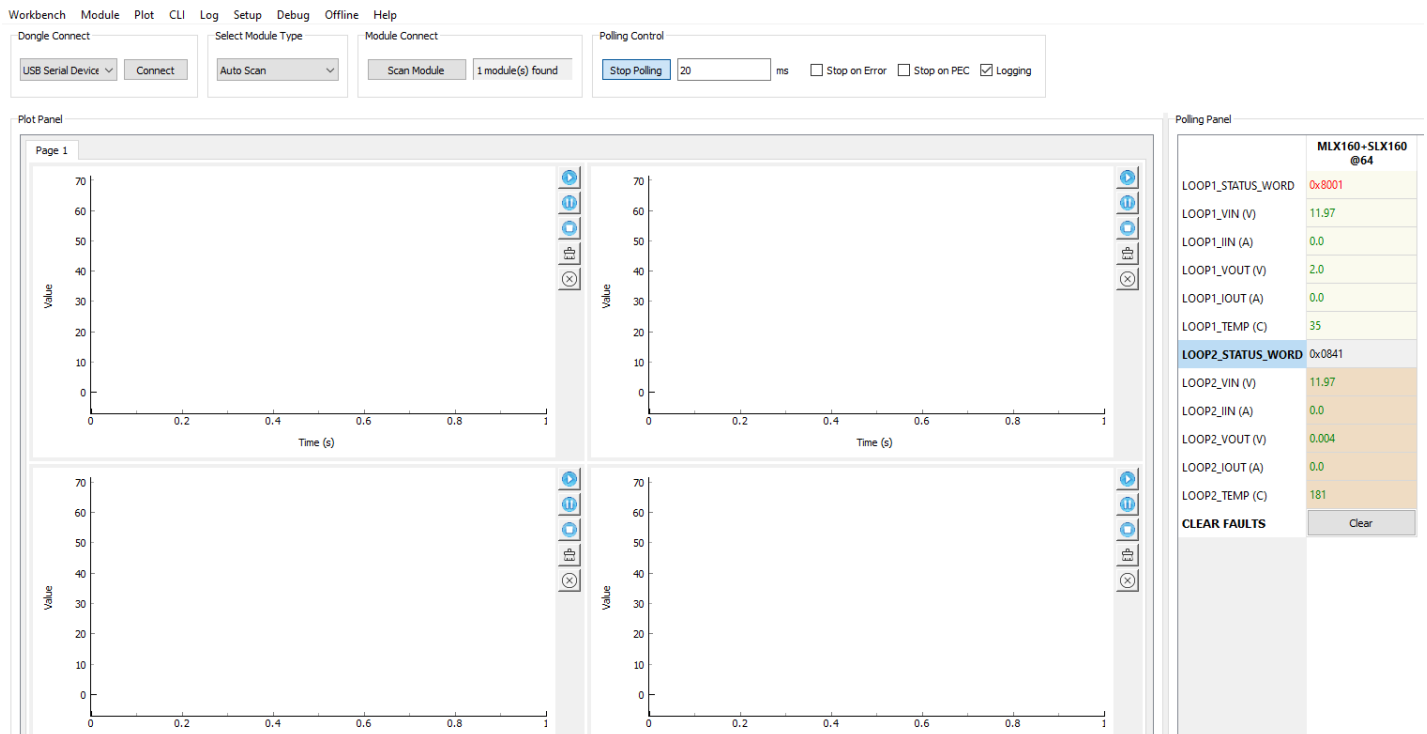
Fault, and Warning Thresholds and Response behavior

Read only registers with Performance data and Status Registers

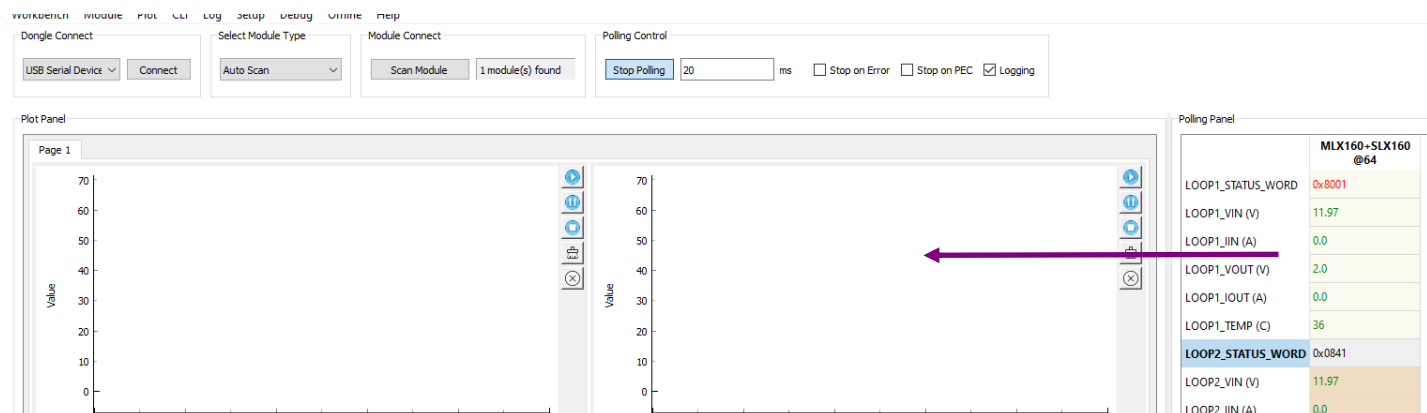
Advanced Performance registers including Control Loop and Module Calibration and response

## 2.2 ProGUI III Connection and Setup (Continued)

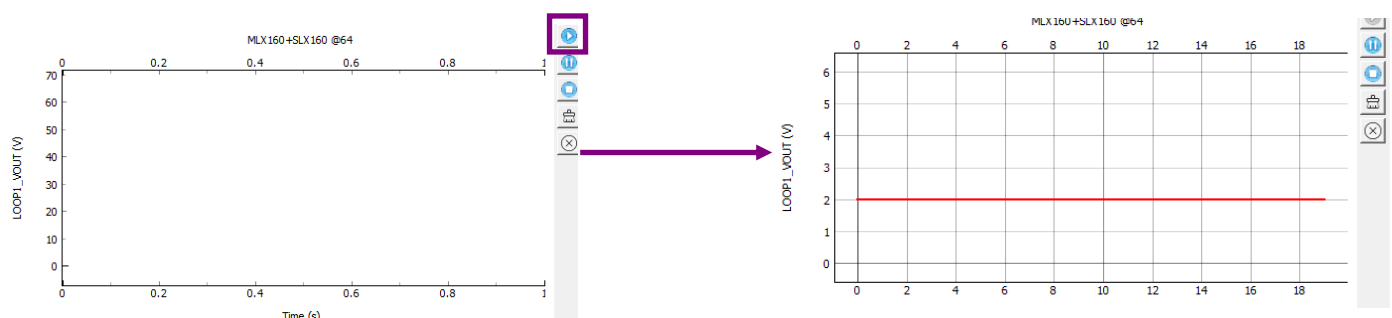
Main Display Screen once Module is On (with output).



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



Remember to click Start.



## 2.2 ProGUI III Connection and Setup (Continued)

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

On/Off Configure				
	Cmd	Value	Read	Write
ON_OFF_CONFIG	0x02	0x02	Read	Write

Polling Panel	
	MLX160 @64
LOOP1_STATUS_WORD	0x0000
LOOP1_VIN (V)	12.09
LOOP1_IIN (A)	0.03
LOOP1_VOUT (V)	1.0
LOOP1_IOUT (A)	0.5
LOOP1_TEMP (C)	25

## Revision History

Revision	Date	Description of the change
1.1	02/06/2024	Initial Release
1.2	08/01/2024	Guidelines for use with ProGUI III added
1.3	08/14/2024	Clarification on voltage Sense Connections
1.4	05/09/2025	Added note regarding PGOOD on cover poge



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