iJB Parallel Eval Board
Operators Guide

This Guide shows you how to Get Started and use your IJB Parallel Evaluation System.

Please contact to TDK-Lambda if you have any questions or need further product details.

Note: The GUI software is provided on a CD-ROM and is also available at http://www.us.tdk-lambda.com/lp/contacts/gui-download-page/. If downloading from the web, registration is required.

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EVAL KIT CONTENTS

Features

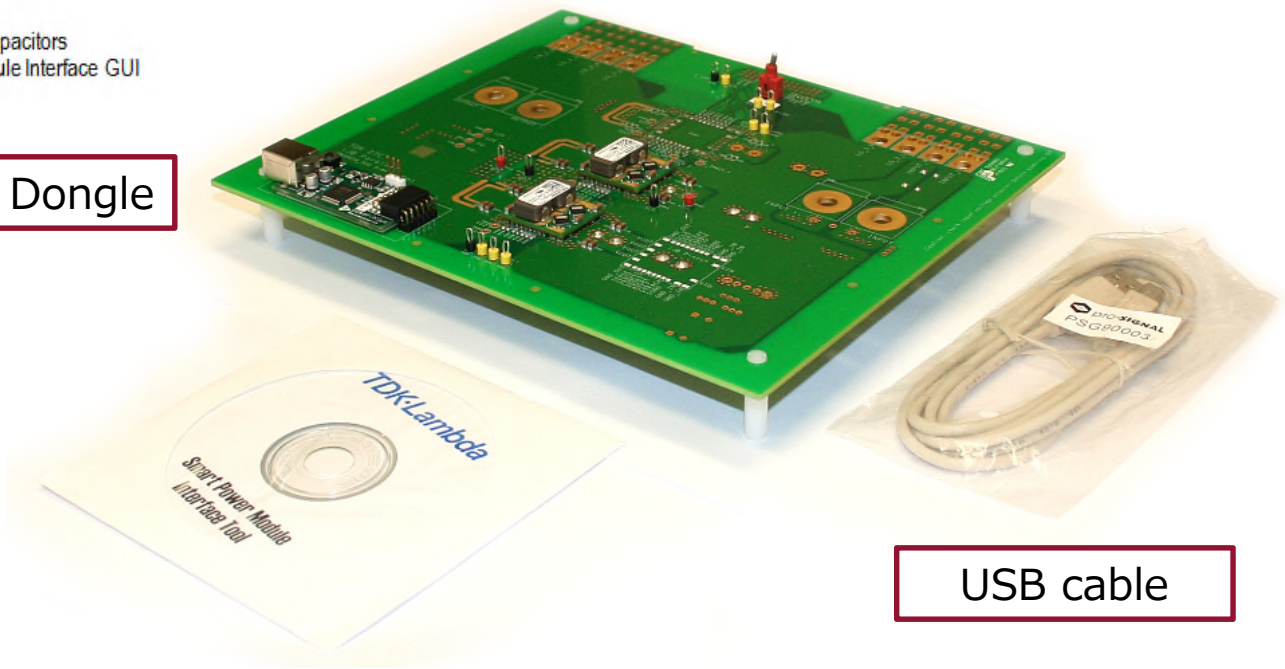
- iJB12060A007V-002-R power module
- USB to PMBus Dongle Board
- Cables to make PC connection
- Required Input & Output filter capacitors
- CD with TDK Smart Power Module Interface GUI

EVAL Board

PMBus Dongle

Software CD-ROM

USB cable



Ordering Information

Code	Input Voltage	Output Voltage	Output Current	Note
iJBEB2	8.0-14.0V	0.6 – 2V	110A	Comes with two iJB modules installed to allow parallel module evaluation

About the iJB

TDK·Lambda — iJB Series

60A Non-isolated SMT Point of Load with PMBus

Features

- Only 1.0 in² Board Space
- PMBus Compliant (Read & Write)
- Surface Mountable
- Digital Adaptive Control
- Parallel Operation with Current Sharing
- Configurable Sequence & Fault Management

Key Market Segments & Applications

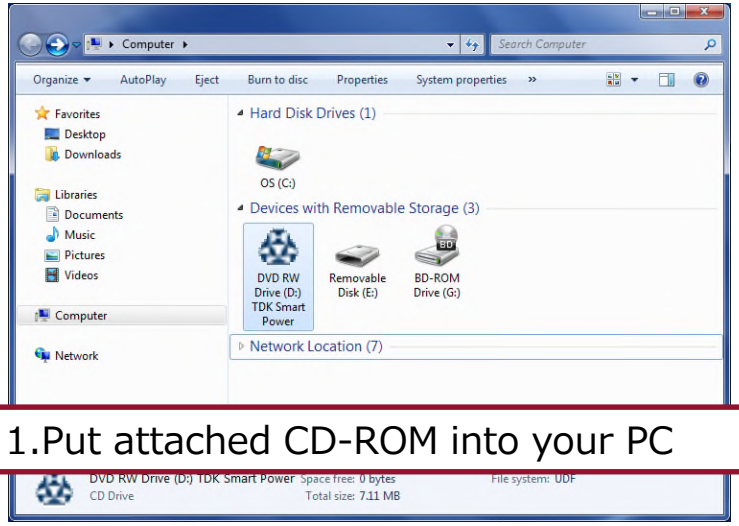
Industrial · Test · COMM · Broadcast

PMBus · Non-isolated · RoHS

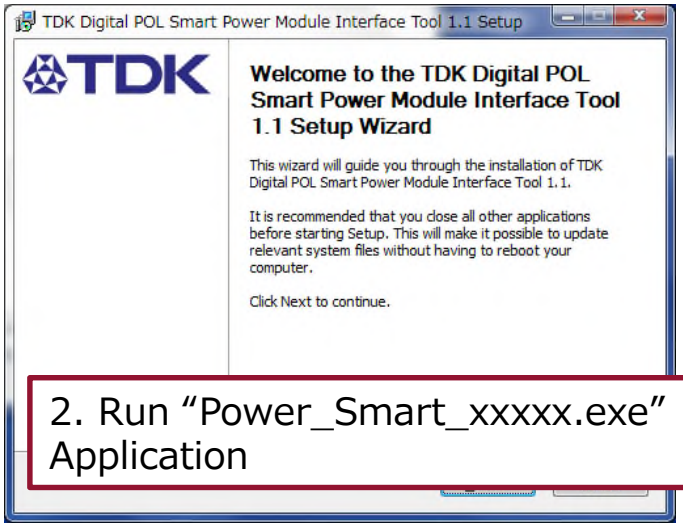
Vi: 8 – 14 VDC
Vo: 0.6 to 3.3 Volts
100 Watts
35 Amps

Install GUI Interface Tool

The Smart Power Interface tool allows the user to configure and operate the iJB device via the PMBus. Install as shown.



1.Put attached CD-ROM into your PC



2. Run “Power_Smart_xxxxx.exe” Application

*Require Windows XP or later

A icon will appear on your desktop after install.

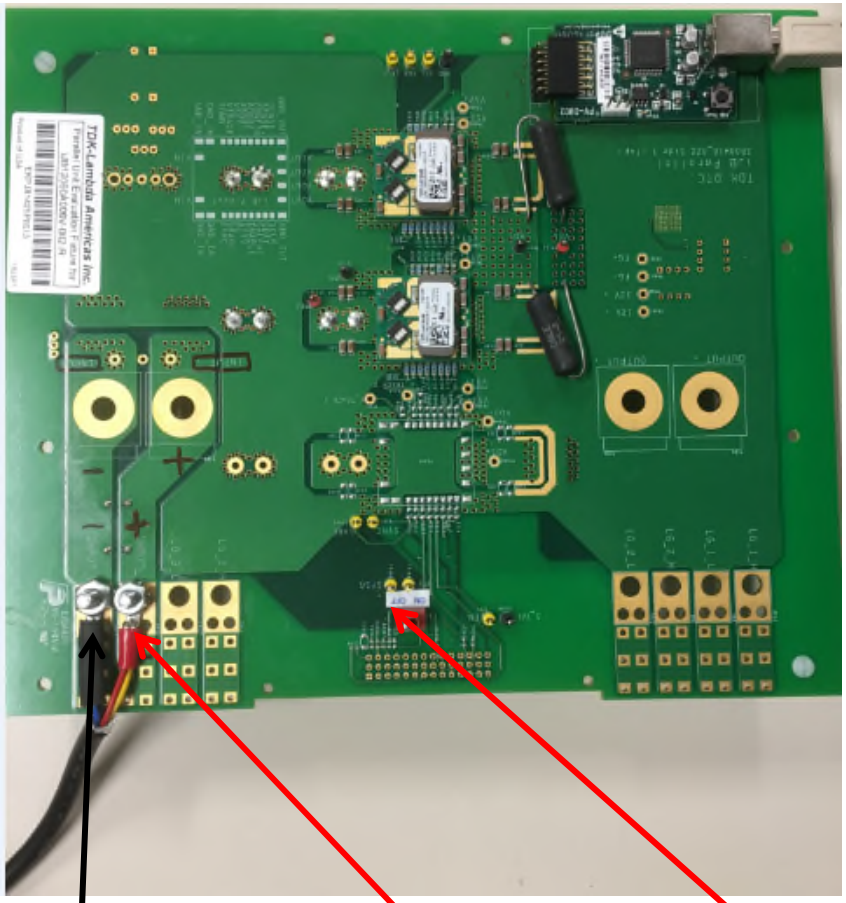
Please check latest version on our website

http://www.us.tdk-lambda.com/lp/contacts/gui-download-page/

iJB Eval Board Installation

- System requirements
  - Windows XP, Windows 7 (32bit or 64bit)
  - Java
  - Free USB port
- GUI installation
  - Do not connect USB cable !
  - Install “SmartPower_1.1_20130926_win32-setup.exe”
  - Follow the instruction by the installer
  - Close GUI
- Evaluation board set-up
  - Apply 12V source to the Vin terminal (see picture 1)
  - Connect USB cable to board and PC
  - Driver will be installed

Connect the Power



Input Voltage Range:

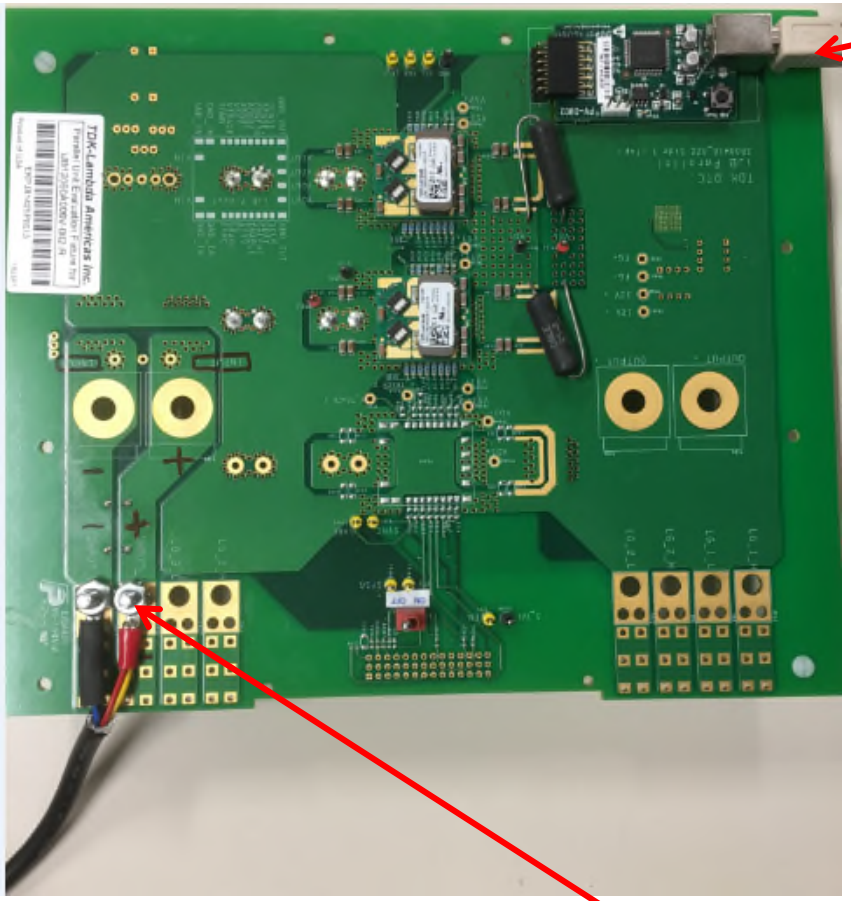
Code	Input Voltage
iJB_Evaluation_Kit-R	8.0-14.0V
iJB_Eval_Kit_Parallel-R	8.0-14.0V

- **+**

Observe Polarity!

Enable Switch to “OFF” position!

Get Connected



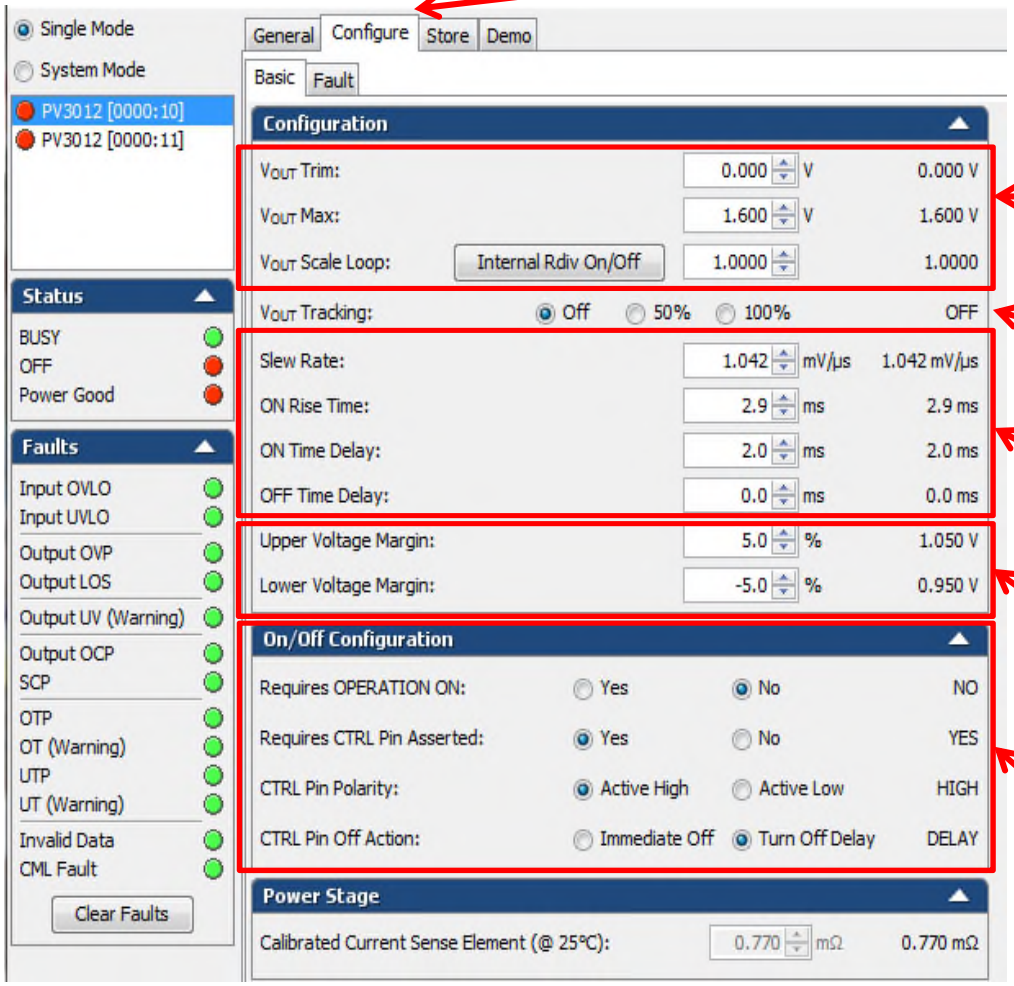
1) Connect USB from computer to Dongle Input

2) Energize Eval Board

Run the GUI

Launch the GUI

Single mode Screen:



Configure Tab Shows Default Basic Configuration Settings

Controls Output voltage Trim values, allowable maximum output voltages and scaling selection (internal or external).

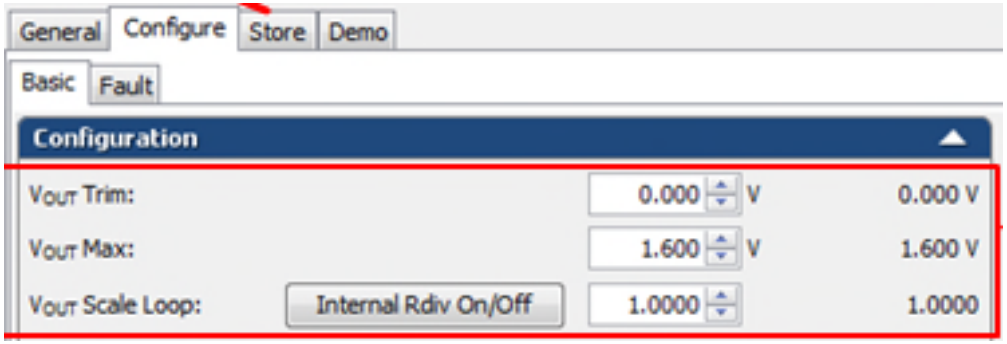
Controls Ratiometric output voltages for non parallel operation.

Controls Output voltage timing on power up and power down.

Sets incremental voltage margin control in percent.

Establishes on/off hardware control features.

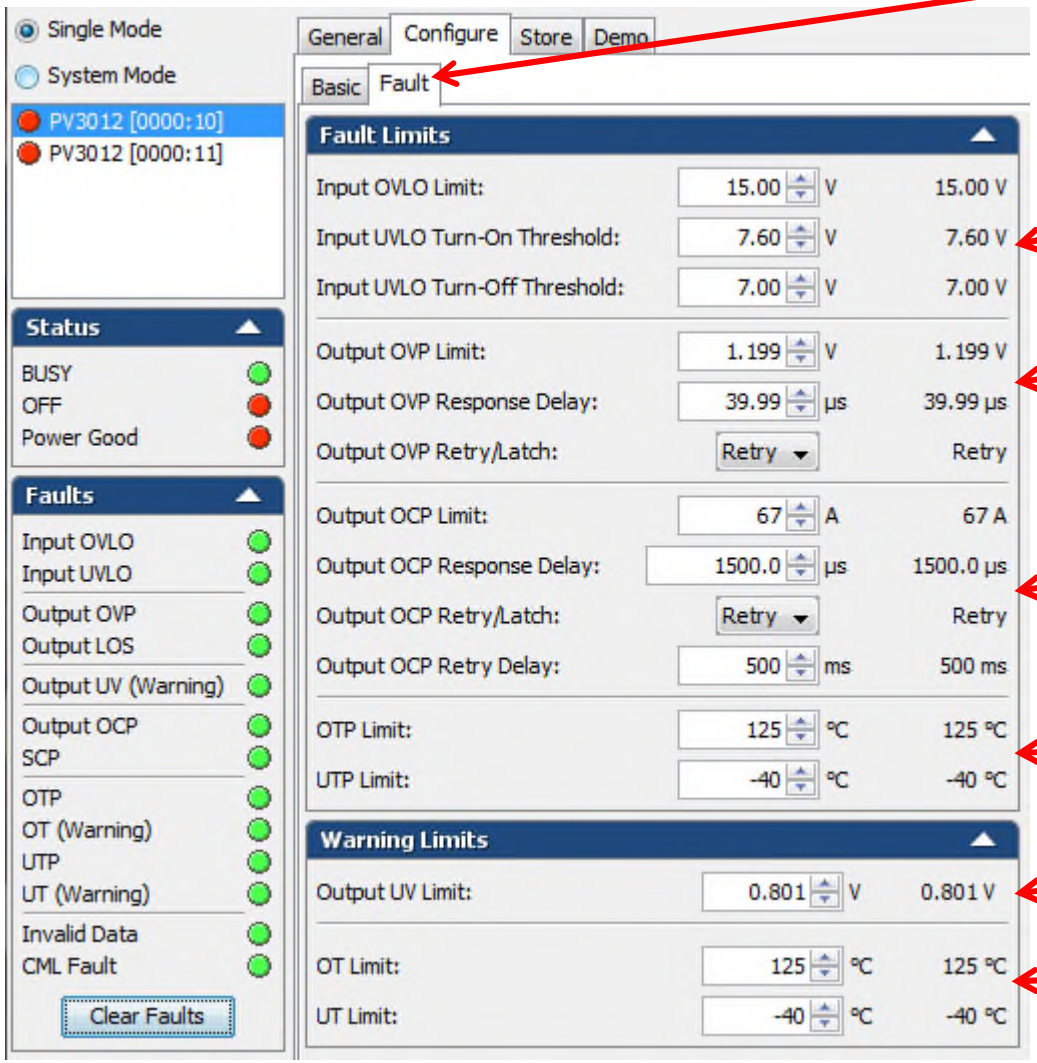
About the Internal Voltage Divider



- The Power Modules feature an internal voltage divider which can be disabled to enhance voltage setpoint accuracy when no attenuation is required. (output voltage 1.500 volts or lower). During startup the module will turn the divider on or off depending on the VOUT_OV_FAULT_LIMIT that was determined based on Rset value. With voltage attenuation off, VOUT_MAX = 1.6 V. With voltage attenuation on, VOUT_MAX = 3.5 V.
- If you want to change to higher voltage then you must turn voltage divider on (select 0.2857). This will happen automatically if resistor on Vset pin is changed so generally a user does not need to worry about this item, but in case of EV-kit they may need to turn on or off.

Run the GUI (cont.)

Single mode Screen:



Shows Default Fault Limit Settings

Sets Input Voltage fault limits and thresholds.

Sets Output Overvoltage Protection Fault Limits

Sets Output Overcurrent protection Limits

Sets Operating Temperature upper and lower limits

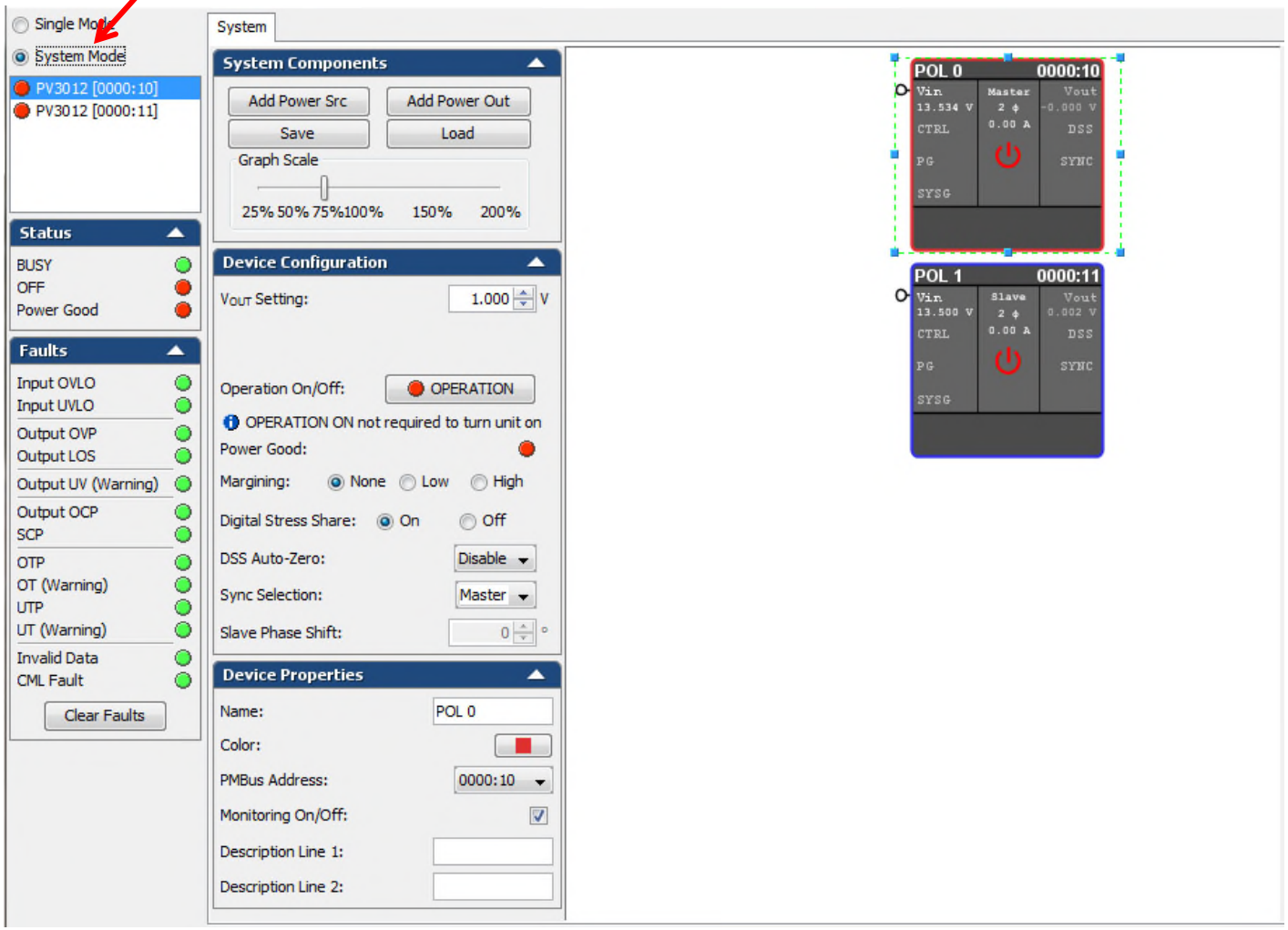
Sets Output Undervoltage Limits

Sets Operating Temperature Warning upper and lower limits

Run the GUI (cont.)

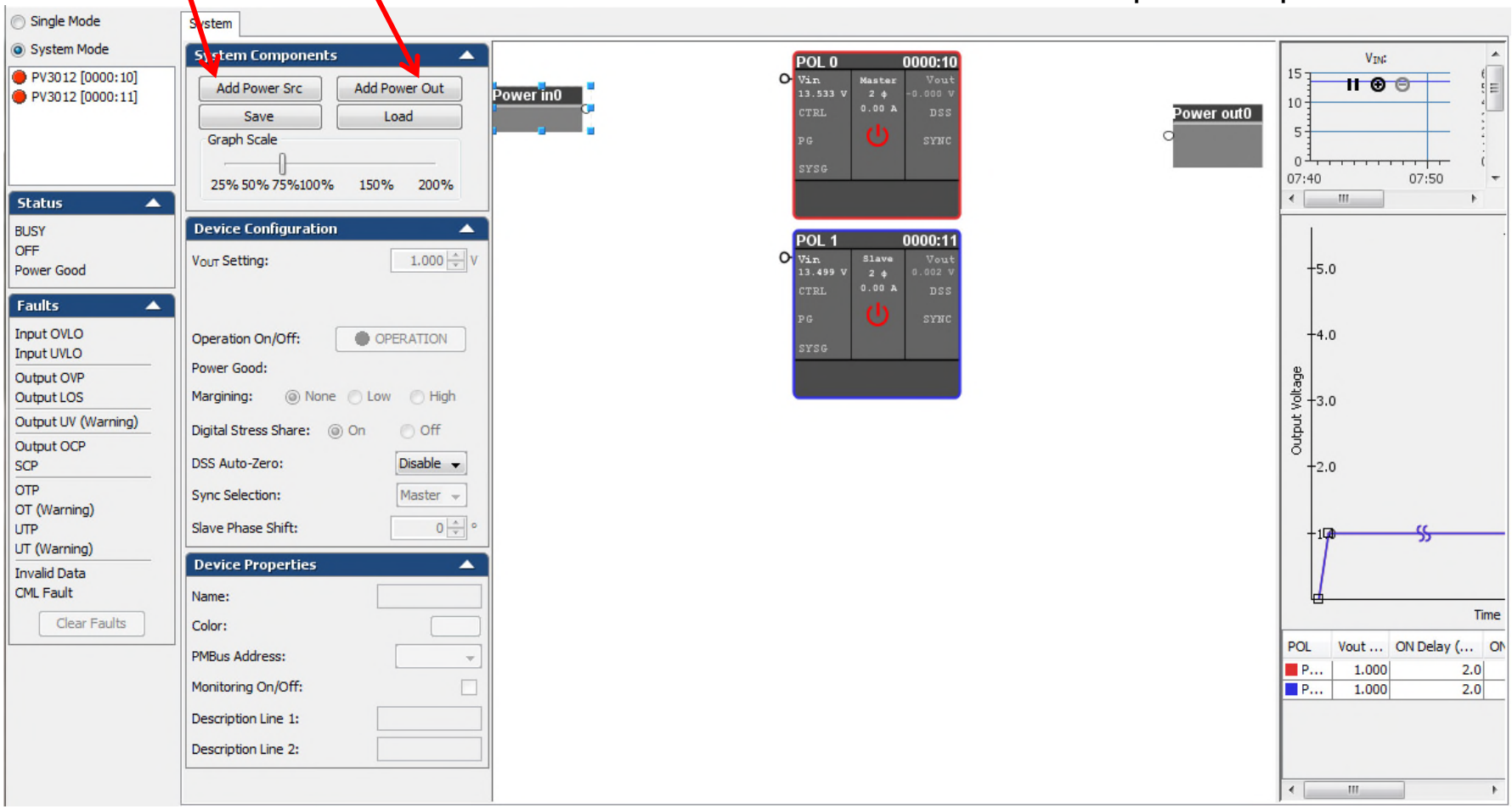
- Connect the Converters
  Use the GUI Schematic Capture feature to connect the two onboard converters for parallel operation

System Mode

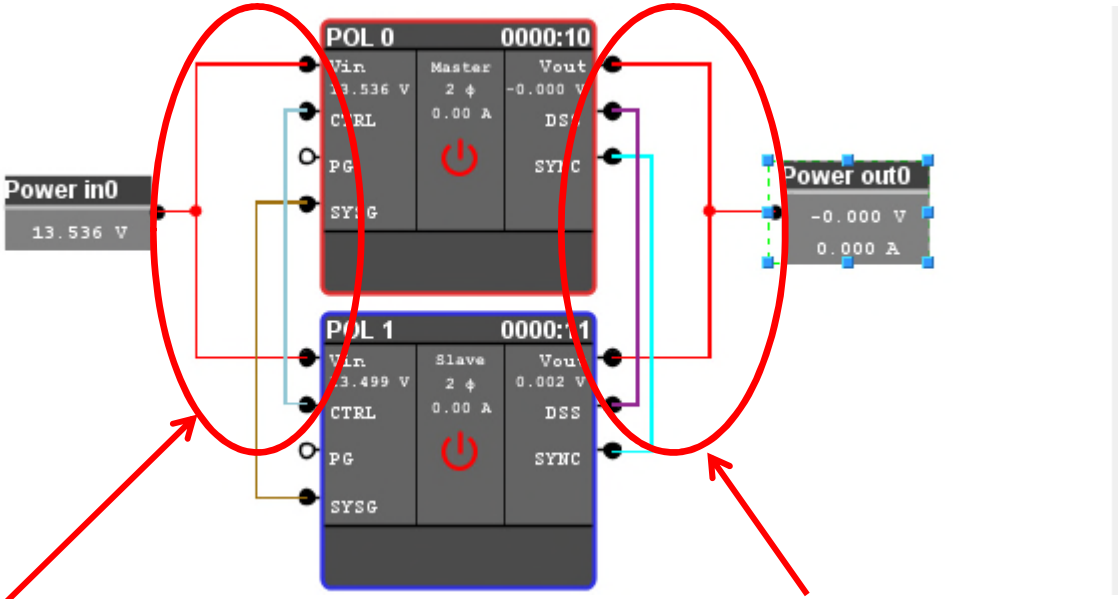


Run the GUI (cont.)

- Click Add Power Source
- Click Add Power Out
- Connect the Converters
  - Use the GUI Schematic Capture feature to connect the two onboard converters for parallel operation



Run the GUI (cont.)

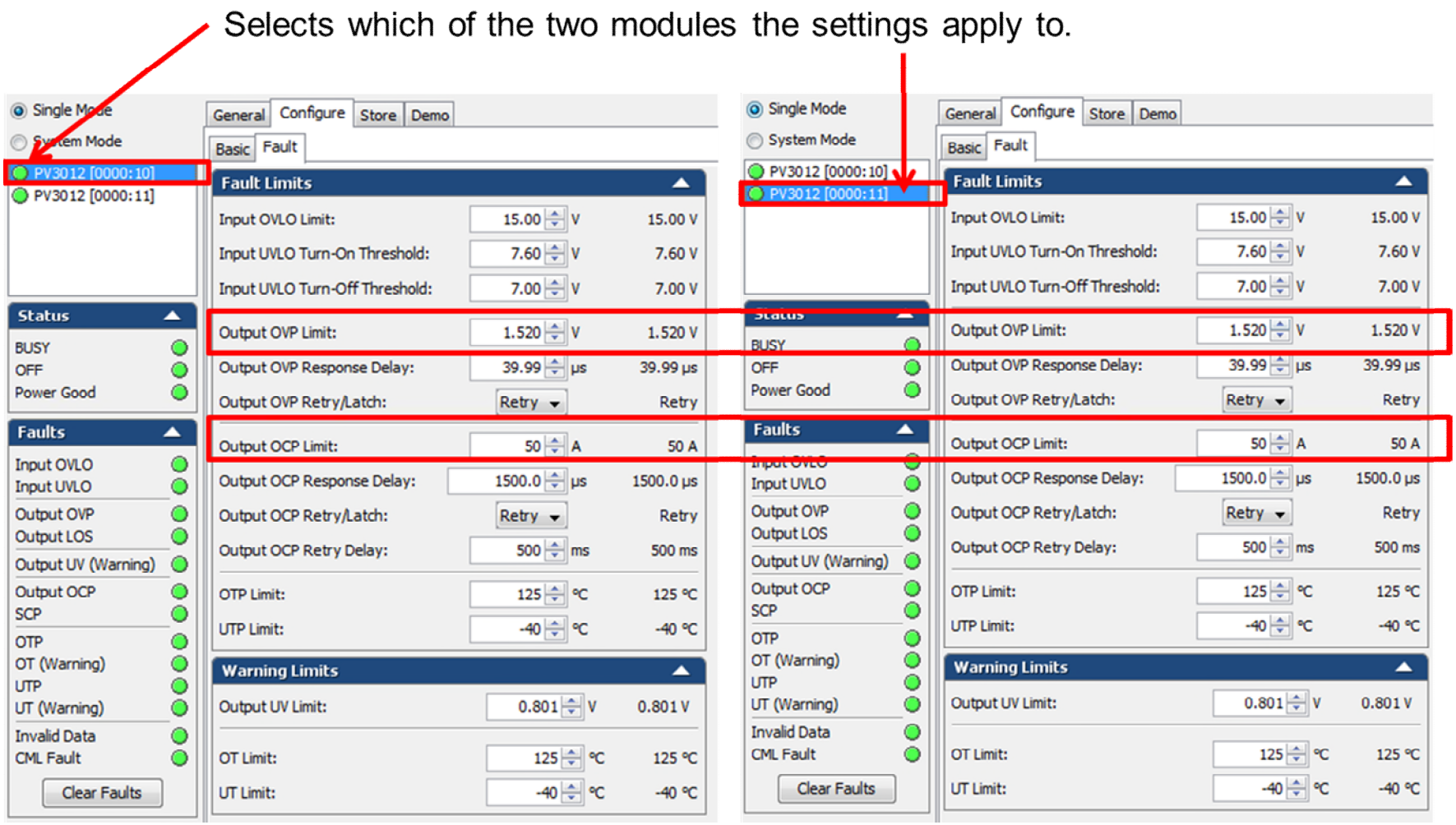


Use the hand tool to connect POL 0 and POL 1 Vin connections to the Power in0 Block as shown.

Use the hand tool to connect POL0 and POL1 Vout connections to the Power out0 Block as shown.

Remaining Connections are made automatically!

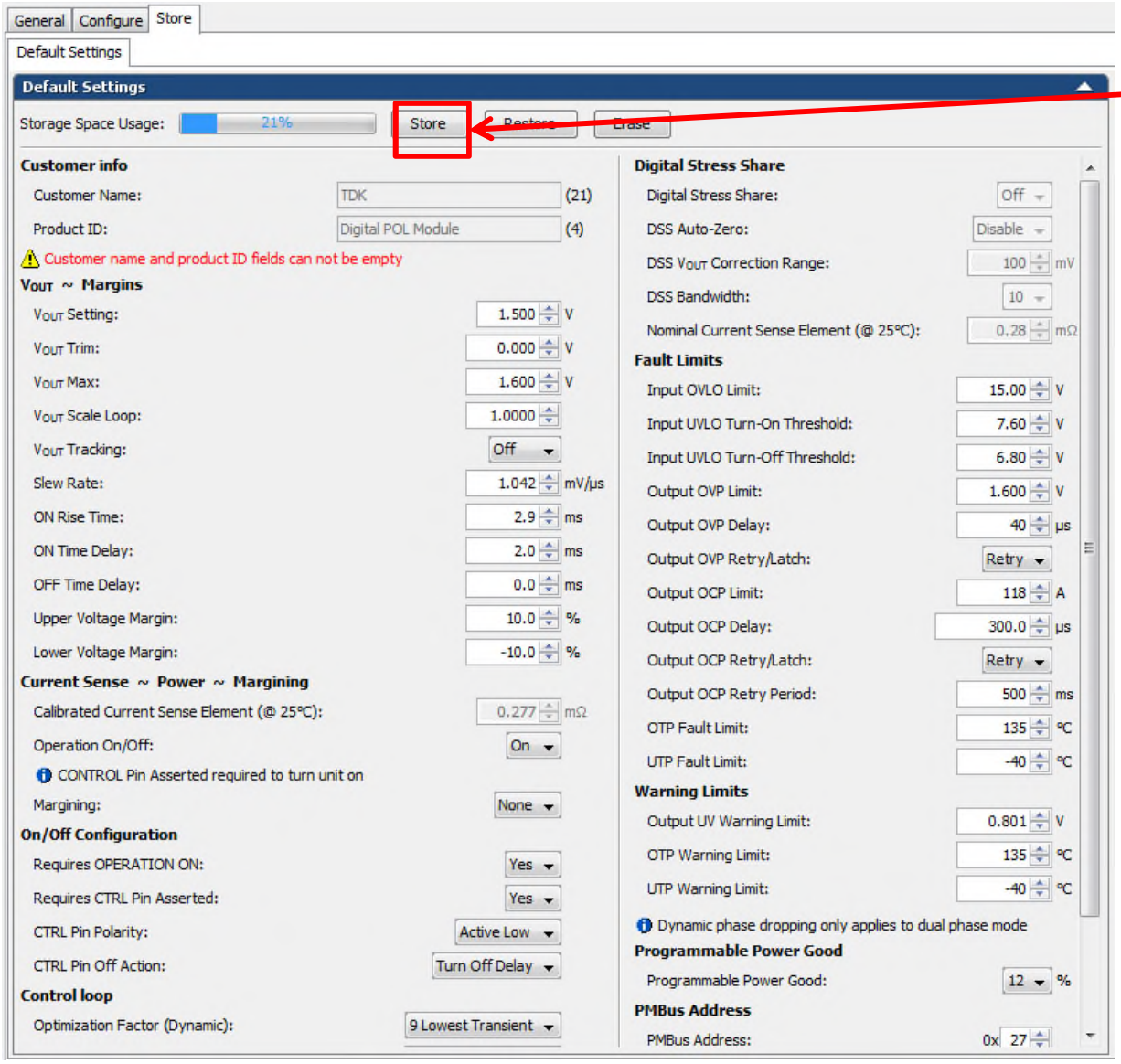
Establish Fault Limits



Since both modules are connected in parallel, all values for each of the converters must be the same for uniform operation.

- Set Output OVP to 1.52 Volts for both converters
- Set Output OCP to 50 Amps for both converters

The Store Tab

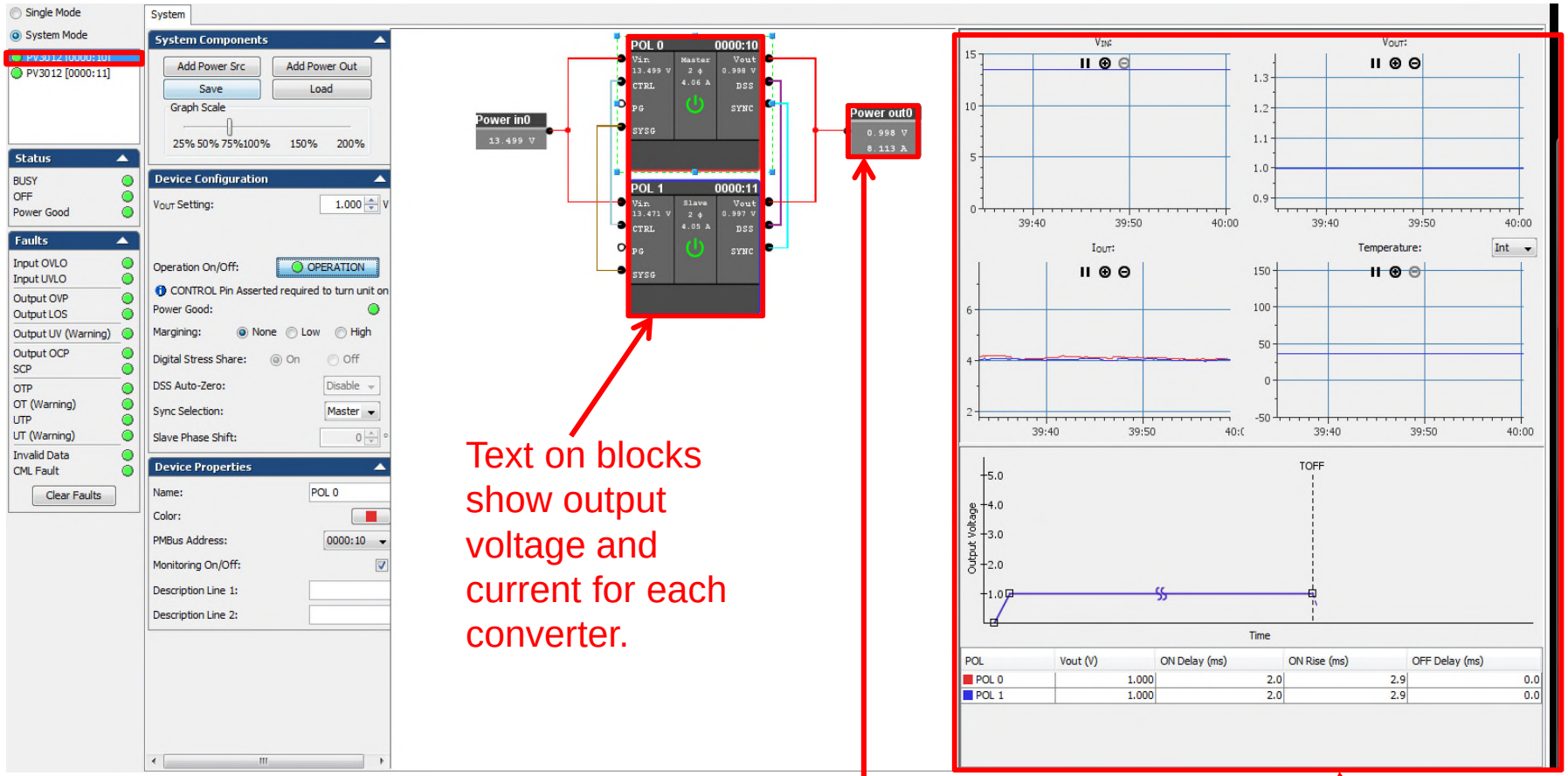


The NVM capacity on the ijX devices is limited; using the Store function is not advised.

Values can be changed in working memory without using the “store” command.

Exercise the Modules

Turn ENABLE switch on eval board “ON”.

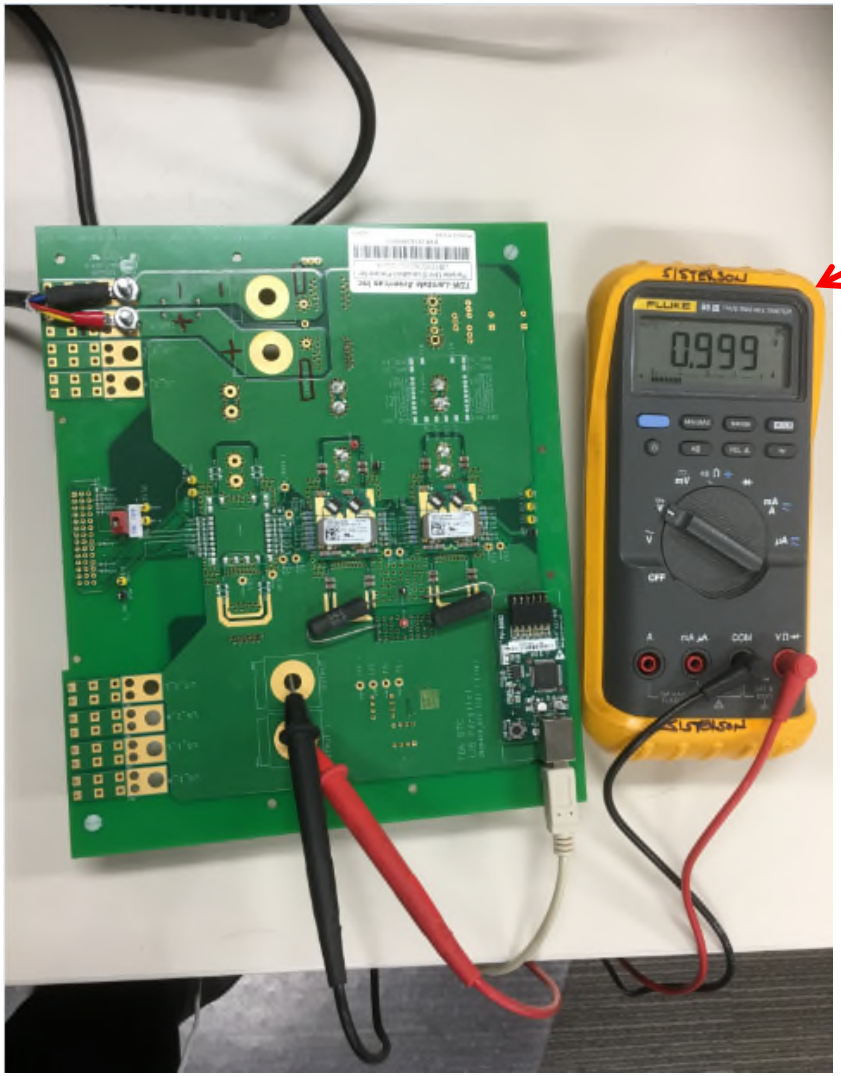


Text on blocks show output voltage and current for each converter.

Shows output voltage at 0.999 V

Graphs show output voltages and currents in real time for each device.

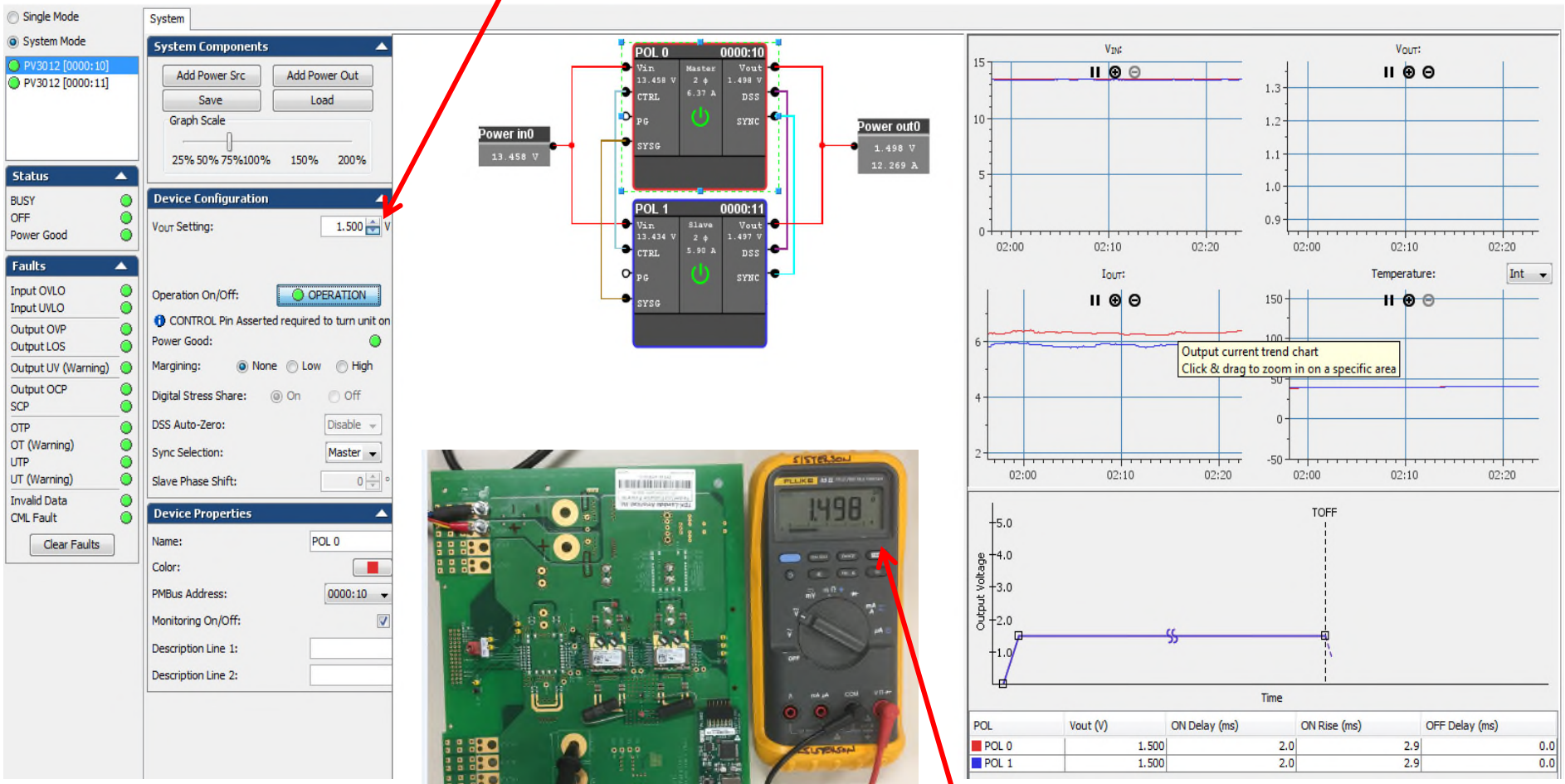
Exercise the Modules



Output Value measured at 0.999 Volts

Exercise the Module (cont.)

Change the output voltage to 1.5 Volts:



See the change on the output at the board.

i²C Convenient Test Points

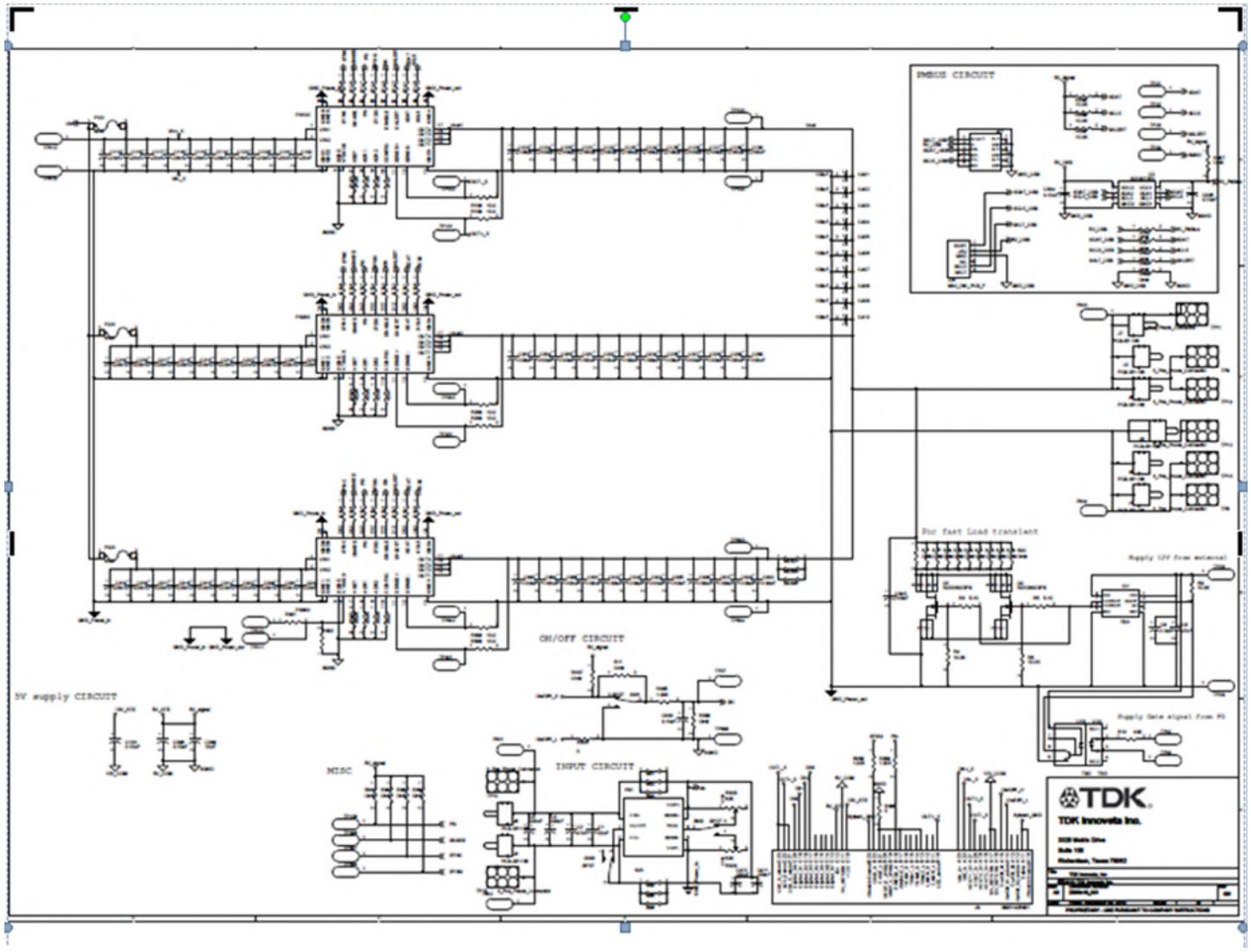
i²C Test Points :

TP 24: i²C Bus Signal Ground
TP 23: i²C Bus Signal Alert
TP 21: i²C Bus Signal Data
TP 22: i²C Bus Signal Clock

Appendix

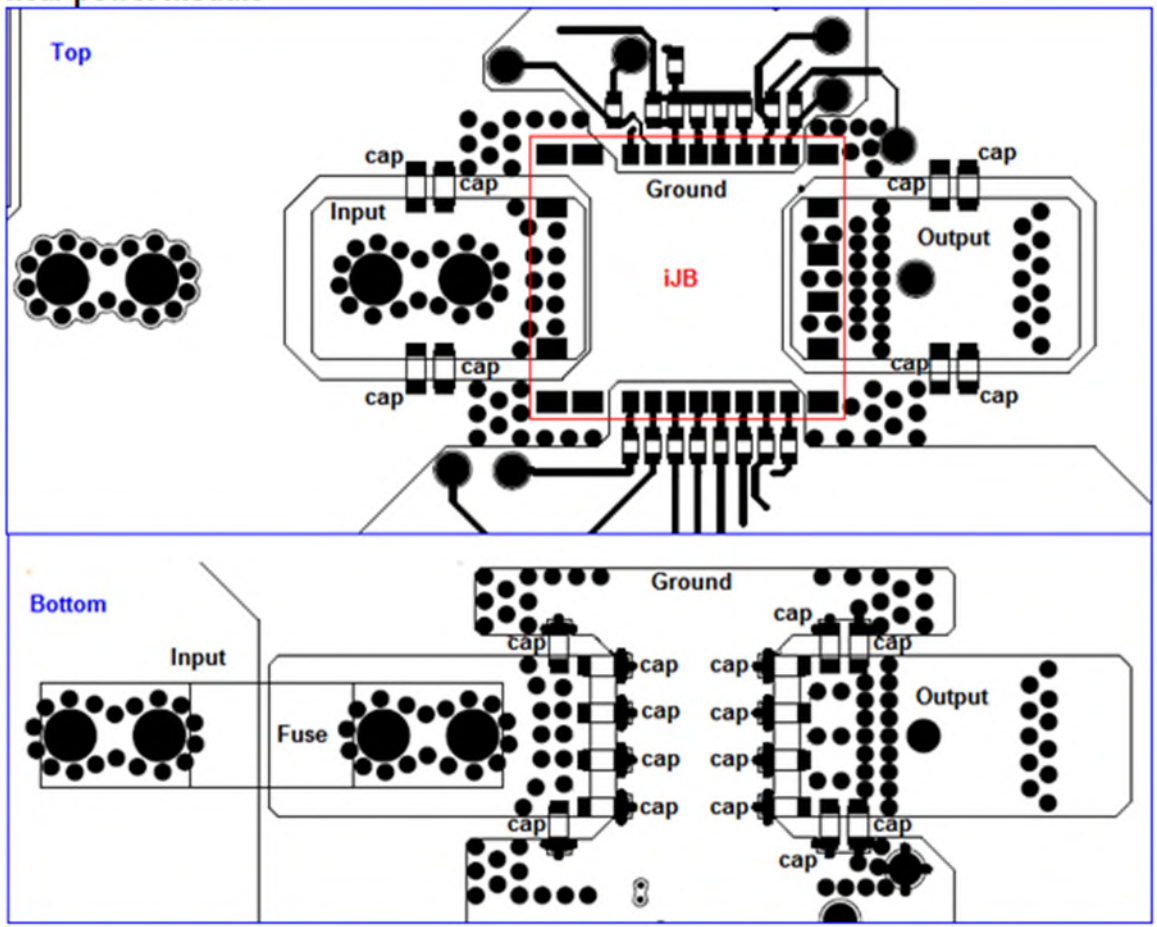
- iJB Parallel Eval Board Simplified Schematic
- Simplified Layout

Simplified Schematic



Simplified Layout

SIMPLIFIED LAYOUT – showing vias & placement of suggested ceramic filter capacitors near power module



REF DESIGNATOR	VALUE, SIZE, RATING	PART NUMBER	SUPPLIER
COUTPUT – 12 pieces	100uF, 1206, 6.3V	C3216X5R0J107MT	TDK
Note 10 additional output capacitors of same type (C401-C410) are populated further away from power module			
CINPUT – 10 pieces	22uF, 1206, 16V	C3216X5R1C226MT	TDK

Mouser Electronics

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TDK-Lambda:

iJBEB2