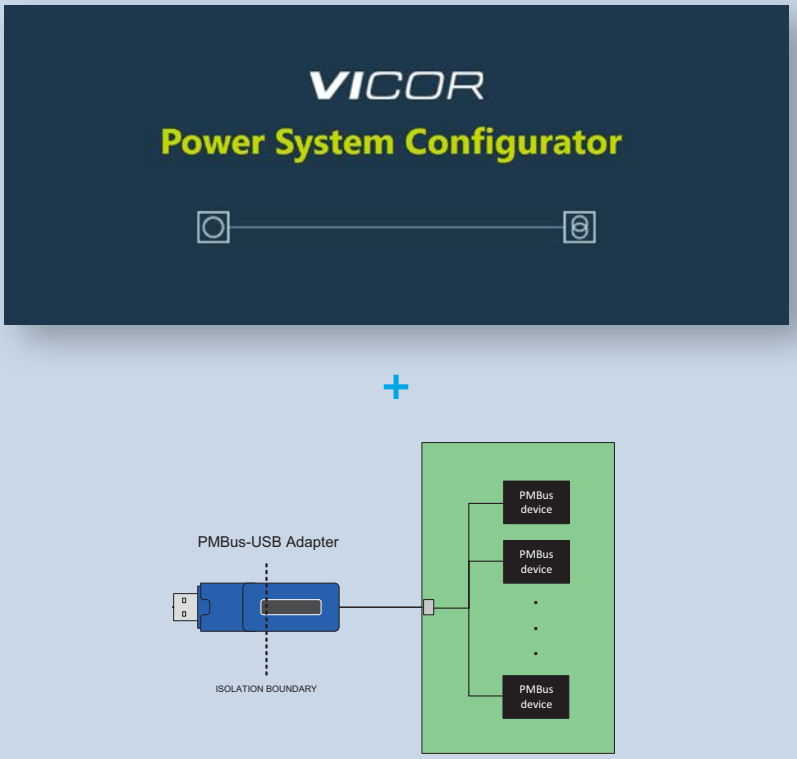
Power System Configurator User Guide

Contents **Page**



For use with the PMBus-USB Adapter

Introduction

The Vicor Power System Configurator (PSC) software interface enables control and monitoring of select Vicor power modules from a Host PC. Connected to the PMBus® interface of power modules by a compatible Vicor PMBus-USB Adapter, the GUI allows users to read and write into the configuration registers and to observe input and output telemetry, monitor faults and obtain other device information.

Download the software and purchase a compatible PMBus-USB Adapter at the Vicor website.

Compatible Dongle	Status	User Guide
I2C-ADAPTER-A04	Released	UG:901 PMBus Interface and Accessories User Guide

Installing the PSC Software

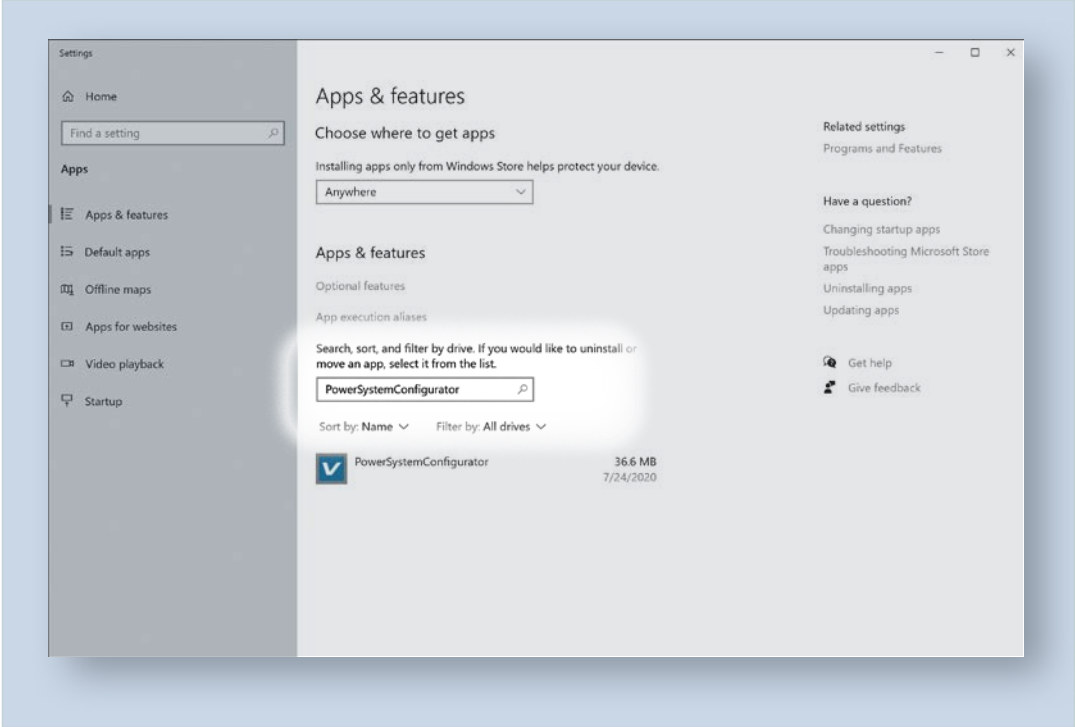
Uninstall Previous Versions

Note: if a previous version of PSC is not already installed, skip this step.

Prior to installation, check for previous versions of Power System Configurator (PSC) that may already be installed. If any previous versions of PSC are installed, remove them before installing the new version.

- Go into the Add or Remove Programs window. If a previous version of PSC is installed, uninstall it.

Figure 1
Add or remove programs window in Windows



If there are no other versions in the window, continue to the next step, *Install PSC: Run the Set Up Wizard*.

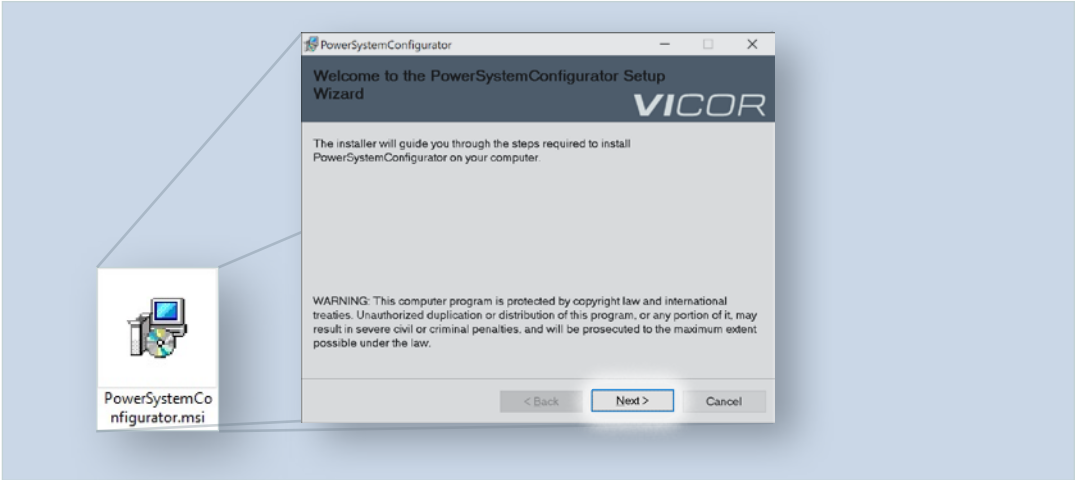
Install PSC: Run Set Up Wizard

Note: if a previous version of PSC is already installed, uninstall it first.

Run the PowerSystemConfigurator.msi file; this will open the set up wizard.

- Click **Next >** to begin the installation.

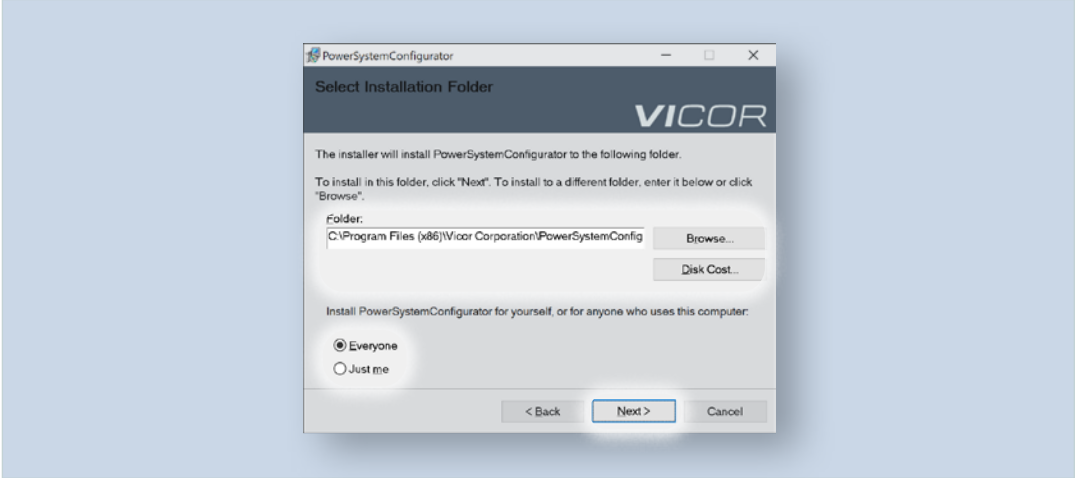
Figure 2
Installer welcome screen



Specify the folder address for installation, then select the user group that will have access to the software on this machine.

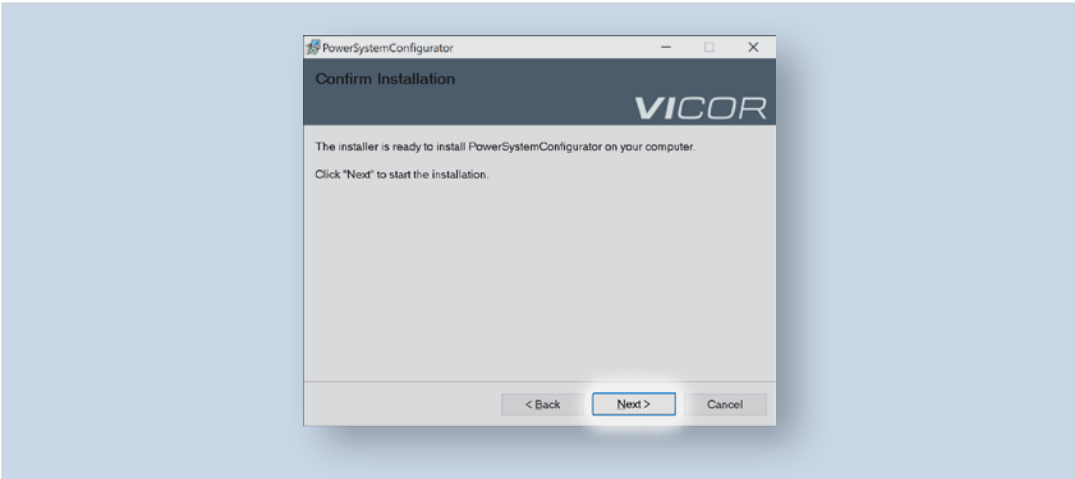
- Click **Next >** to continue.

Figure 3
Select installation location and user(s)



- Click **Next >** to confirm installation.

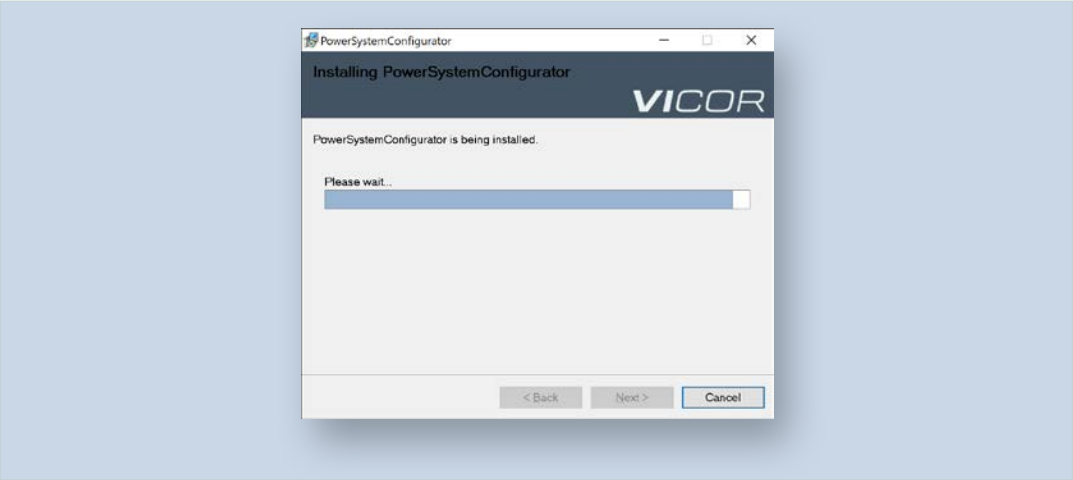
Figure 4
Confirm installation



Run Set Up Wizard (cont.)

Wait while installation commences.

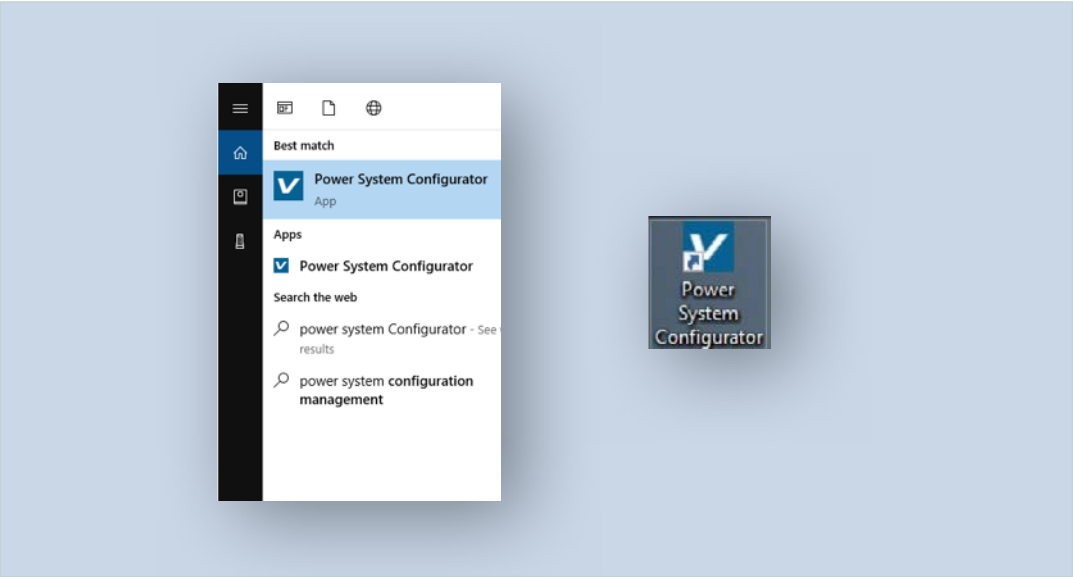
Figure 5
Installer progress



- Click **Close** when installation is complete.

The program will now be accessible from the desktop or Start menu.

Figure 6
Desktop alias, appearance in Start menu

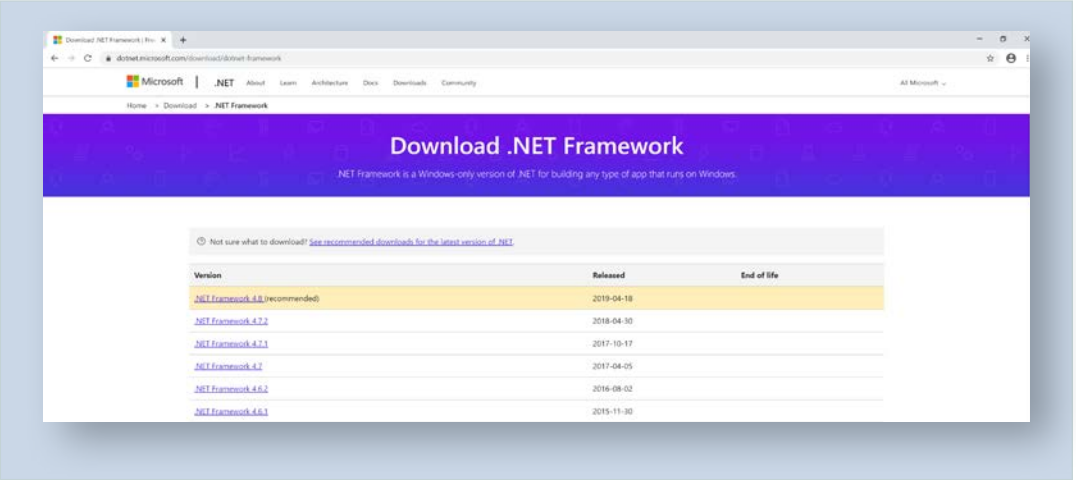


Install Microsoft .NET Framework (if applicable)

PSC requires Microsoft .NET framework v4.5.2 or later. PSC will determine if .NET Framework is installed and if the version is compatible with the PSC software.

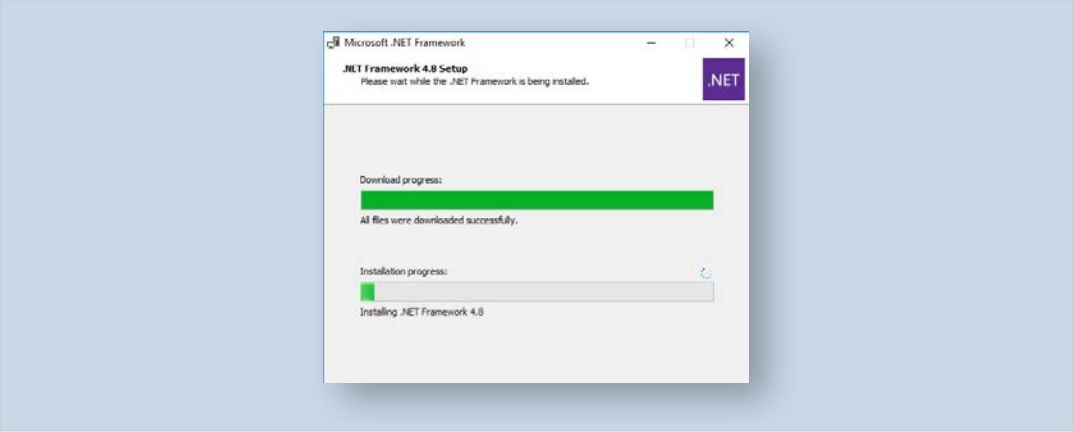
- Open PSC from the desktop alias or Start menu icon.
  If .NET Framework is not installed, PSC will direct the user to the correct website to download and install.
- Download the latest version of .NET Framework from the Microsoft website:
  https://dotnet.microsoft.com/download/dotnet-framework

Figure 7
Download Microsoft .NET Framework



- Run the downloaded .exe to install .NET Framework.

Figure 8
Install .NET Framework



Wait while installation commences.

- Click **Finish** when installation is complete.

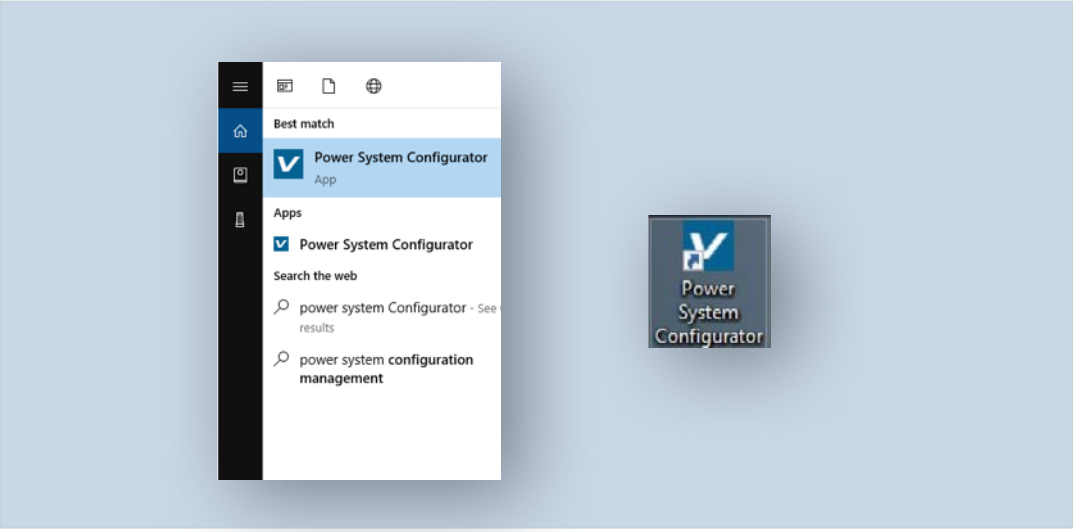
Quick Start

Launch the Vicor Power System Configurator (PSC) Application

Note: PSC requires Microsoft .NET Framework.
If it is not installed, turn to the *Install Microsoft .NET Framework* section of this user guide.

- Open the Vicor PSC application from the desktop alias or search "power system configurator" in the Start menu.

Figure 9
PSC desktop alias, appearance in Start menu



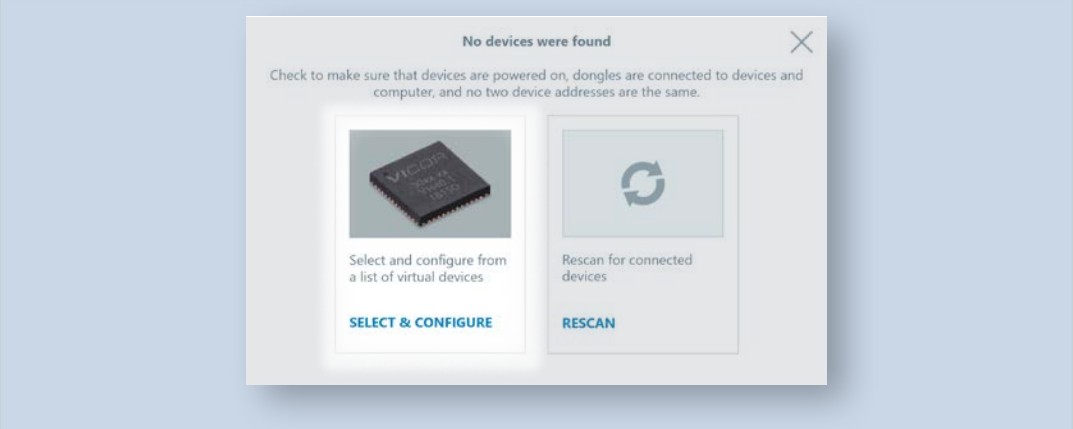
Connect PSC to Vicor Hardware

The PSC application will attempt to connect to Vicor power system hardware upon launch. To connect compatible hardware, use the PMBus-USB Adapter.

Figure 10
Start-up sequence: connecting power system hardware

If no devices are connected, PSC allows users to select a virtual device.

Figure 11
Selecting a virtual device when no devices are connected



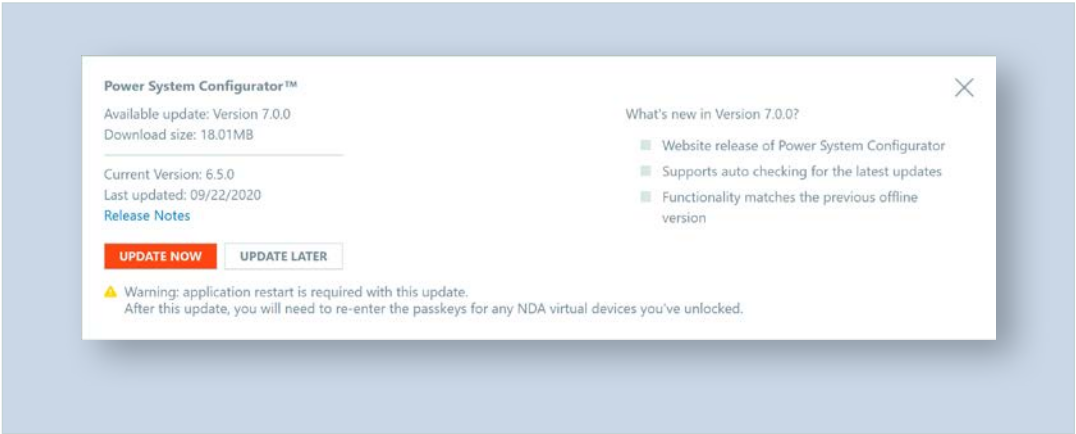
Automatic Updates

Note: While The PSC application does not require an internet connection for normal operation, an active internet connection is required for successful automatic application updates. Manual updates are also possible by running the latest executable from the Vicor website offline on the local machine.

At launch, the PSC application will attempt to check the Vicor server for any necessary updates to the software. If a new update has been detected, a prompt will appear as shown in Figure 12, alerting the user. Updates may also be checked manually by clicking the **UPDATE** button to the right of the **SAVE** button on the top left of the PSC window, as shown in Figure 18.

- Click the **UPDATE NOW** button to proceed with the update.

Figure 12
Automatic update prompt

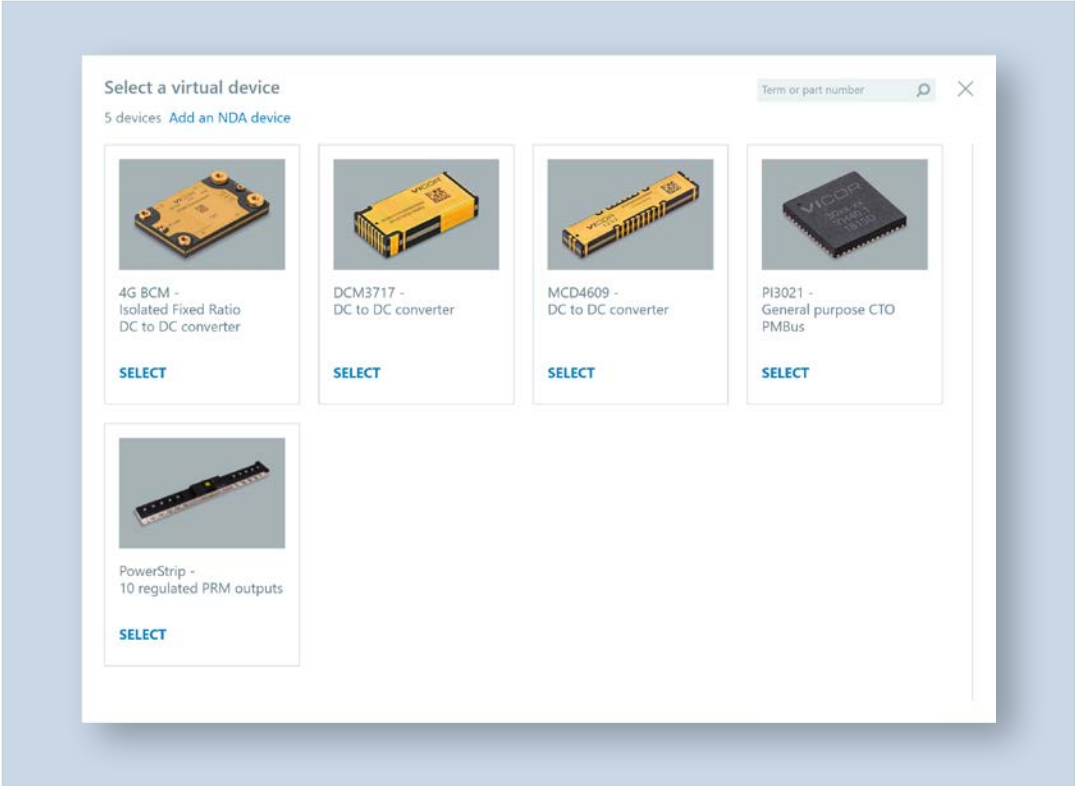


NDA Device Passkey

Certain devices supported in PSC may only be accessed with a provided passkey from Vicor. Enter this passkey at the "Select a virtual device" prompt as shown in Figure 13. The passkey is not needed when connecting to a physical device connected to a Host PC, only when configuring a virtual device. Upon entry of the passkey, the NDA device will stay in the virtual device list through application exit and re-launch.

Note: Passkeys may be cleared and need re-entry during PSC updates of version number X and Y, not Z (i.e., version X.Y.Z). The automatic update prompt will display a warning when NDA passkeys will be cleared with the new update as shown in Figure 12.

Figure 13
Select a virtual device prompt

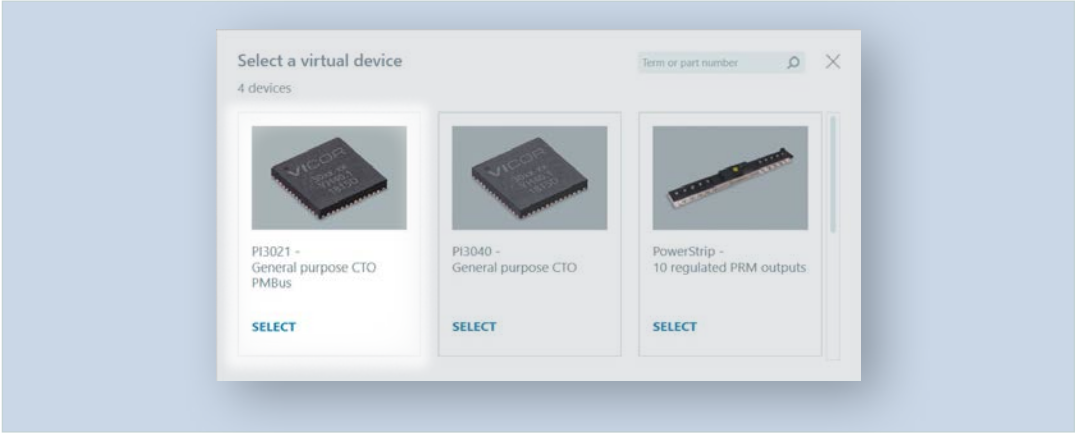


Select and Configure a Virtual Device

A "virtual device" refers to an emulated version of a device that can be used to explore all configuration settings while no hardware is connected to the computer. Virtual devices have no telemetry or fault status monitoring capabilities.

- Choose a virtual device from the available options; PI3021 shown below.

Figure 14
Selecting a virtual device from the available options



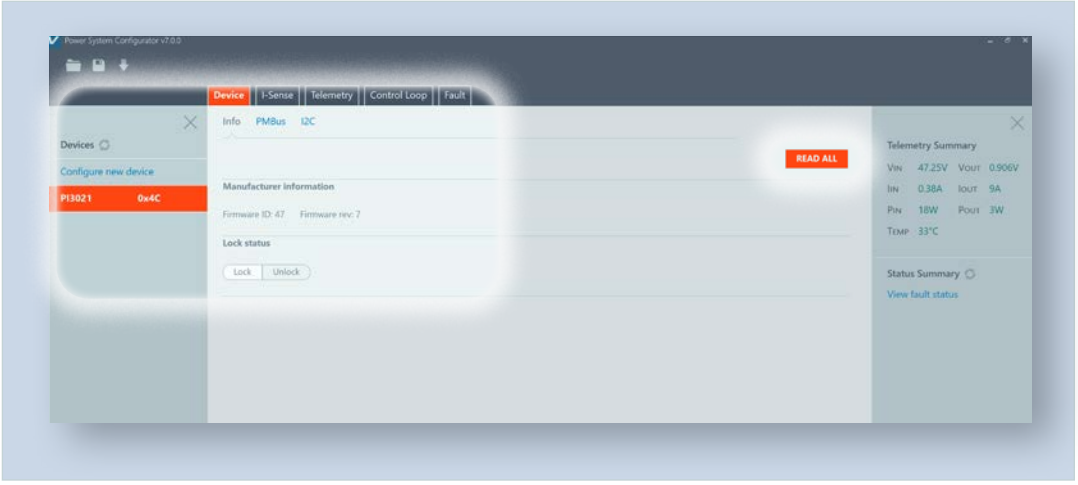
After selecting the device, configuration tabs will be accessible in the settings pane (center) of the PSC screen.

Tabs in this example:

- Device
- I-Sense
- Telemetry
- Control Loop
- Fault

All of these tabs are accessible in virtual mode and the fields can be altered without needing a physical device connected to the computer.

Figure 15
Info section of Device tab



Configure a Connected Device

Note: To connect compatible hardware, use the PMBus-USB Adapter.

If the PSC application successfully connects to Vicor power system hardware during start up, it will show the device name and address on the device sidebar (left side).

Figure 16
PMBus® section of Device tab for a real PI3021 with address 0x4C

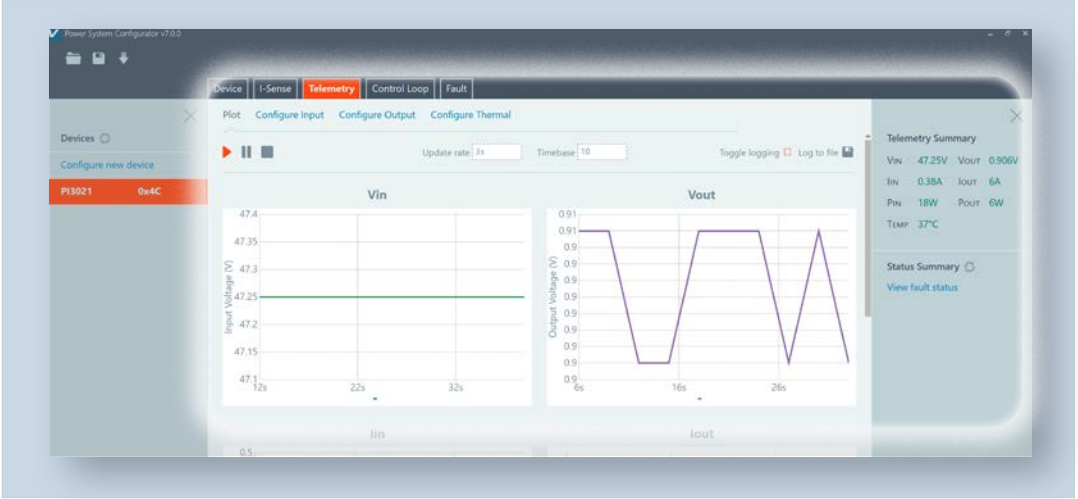
The settings pane of the PSC window (center) shows the fixed and variable configuration parameters of the device, and the telemetry summary sidebar (right side) shows the system telemetry information along with the system warnings and faults.

Device Configuration Tabs

When PSC detects Vicor power system hardware, it automatically reads all the configuration parameters from the hardware attached through the PMBus-USB Adapter and updates them in the appropriate fields within different configuration tabs. Each compatible Vicor device connected to PSC will display tabs for viewing and customizing its settings.

The tabs and sub-tabs shown here are specific to the PI3021 device.
Other devices may show different tabs and options.

Figure 17
Plot section of Telemetry tab for PI3021 shows charts of voltage and current for input and output



Saving Customized Settings

PSC will show pre-set hardware configuration parameters in appropriate fields within the settings pane; it is also possible to save custom settings into power system memory and into a file on the local drive of a computer.

Writing to Hardware Memory

Write to volatile memory: Values, buttons, and switches will perform calculations altering the configuration of the power system. These changes are temporarily saved into the volatile memory. Do this by either:

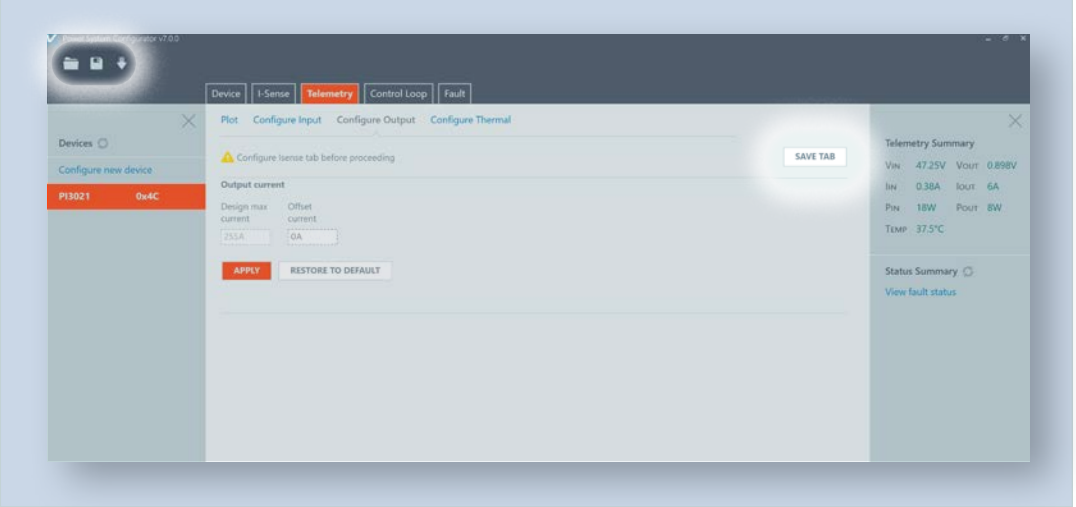
- Pressing **Enter** on the keyboard.
- Clicking **Apply** where shown in a sub-tab.

Write to non-volatile memory: Changes made to the power system's volatile memory may be permanently saved into the non-volatile memory by:

- Clicking the **SAVE TAB** button. This button only saves the parameters related to the tab being viewed.
  Other tabs are not affected; if applicable, each will have its own **SAVE TAB** button.
- Clicking the **SAVE** button on the top left of the PSC window and choosing the **DEVICE** option. This will save all configuration parameters across all tabs.

Important note: Not all values shown in the settings pane will be saved to the power system, e.g., component values and the fault status. Refer to saving to local computer file section to store these values.

Figure 18
Saving and opening customized settings on a local computer or saving to non-volatile power system memory



Saving to the PC File System

Saving to a file: Configuration parameters in all tabs can also be saved to a file on the local drive of computer by:

- Clicking the **SAVE** button on the top left of the PSC window and choosing the **FILE** option.

Restoring saved settings from PC file system: A saved configuration file can also be opened and restored by:

- Clicking on the **OPEN** button next to the **SAVE** button on the top left of the main screen, as shown in Figure 18.

Important Note: When a saved configuration file is restored, the PSC application will immediately load the configuration parameters into the system's volatile memory.

Example Configuration: Vicor PI3021 CTO

Note: The tabs and sub-tabs shown in this quick start guide are specific to the PI3021 device.
Other devices may have the same, similar or completely different tabs not discussed in this guide.

When the PSC application successfully connects to the PI3021 CTO device through the PMBus-USB Adapter during start up, the device name (PI3021) and address (0x4C) will appear on the device sidebar (left side) of the application window.

Figure 19
PMBus® section of Device tab for a real PI3021

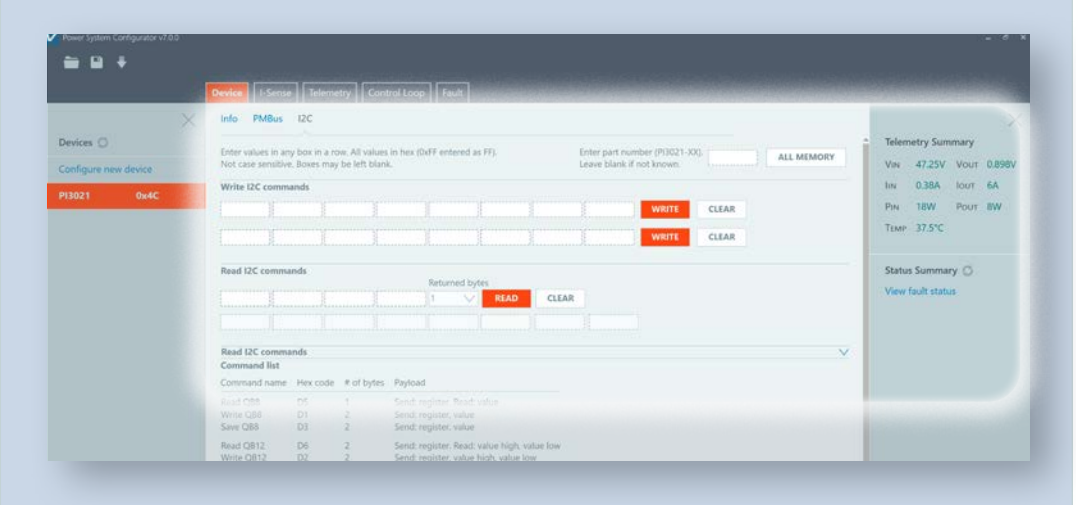
The settings pane of the PSC window (center) shows the fixed and variable configuration parameters of the device, and the telemetry summary sidebar (right side) shows the system telemetry information along with the system warnings and faults.

Device Configuration Tabs: Device

General information and basic parameters (Figures 15, 19, 20). A **READ ALL** button can be found in the Info section. This will refresh the selected device as if PSC were just re-launched.

- Info: general manufacturer and firmware information (Figure 15 above)
- PMBus: determining output voltage level, transition rate, overpower and overtemperature warnings (Figure 19 above)
- I2C: sending individual commands on the I^2C bus to the hardware (Figure 20 below)

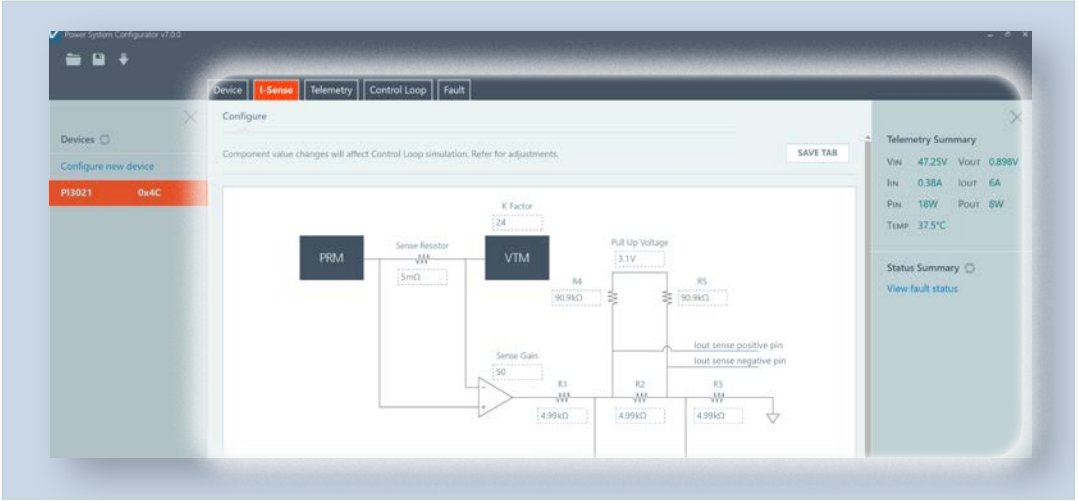
Figure 20
I2C section of Device tab



Device Configuration Tabs: I-Sense

Use to adjust all the output-current-sensing parameters (Figure 21).

Figure 21
I-Sense tab



Device Configuration Tabs: Telemetry

Use to take measurements and configurations for input voltage, output voltage and thermal settings (Figures 22 – 24).

- Plot: charts of voltage, current, power and temperature (Figure 22)
- Configure: configure measurements of voltage and current (Figure 23)
- Thermal: use to modify thermal configuration (Figure 24)

Figure 22
Plot section of Telemetry tab

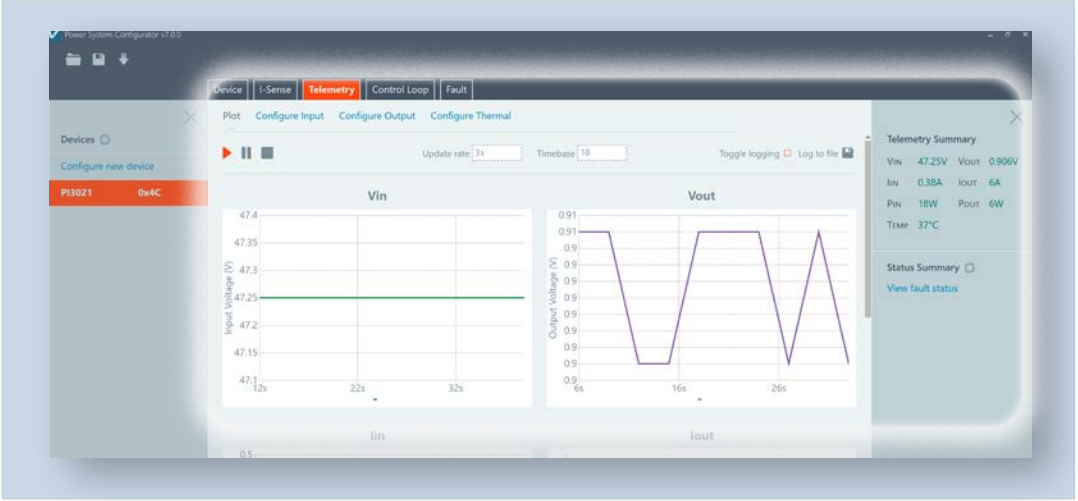


Figure 23
Configure Input, Configure Output sections of Telemetry tab

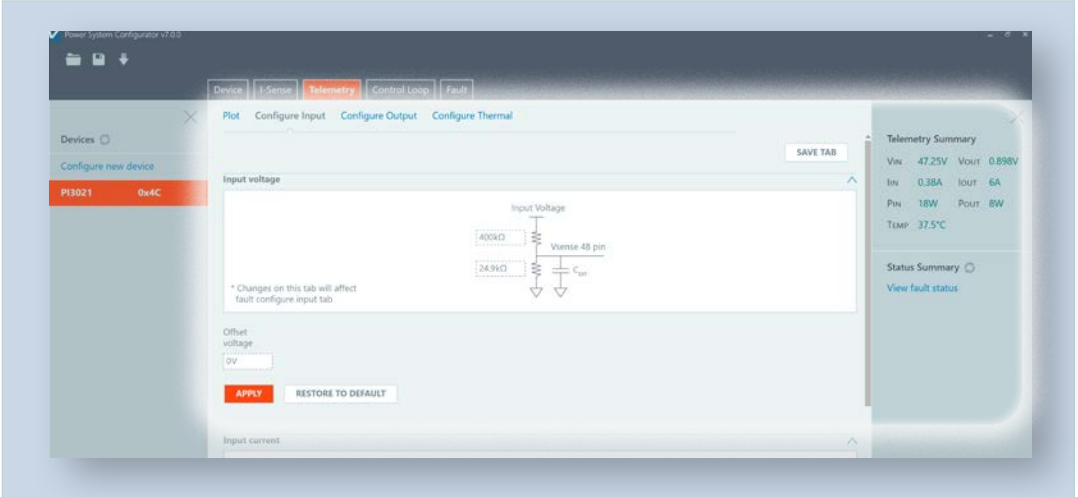
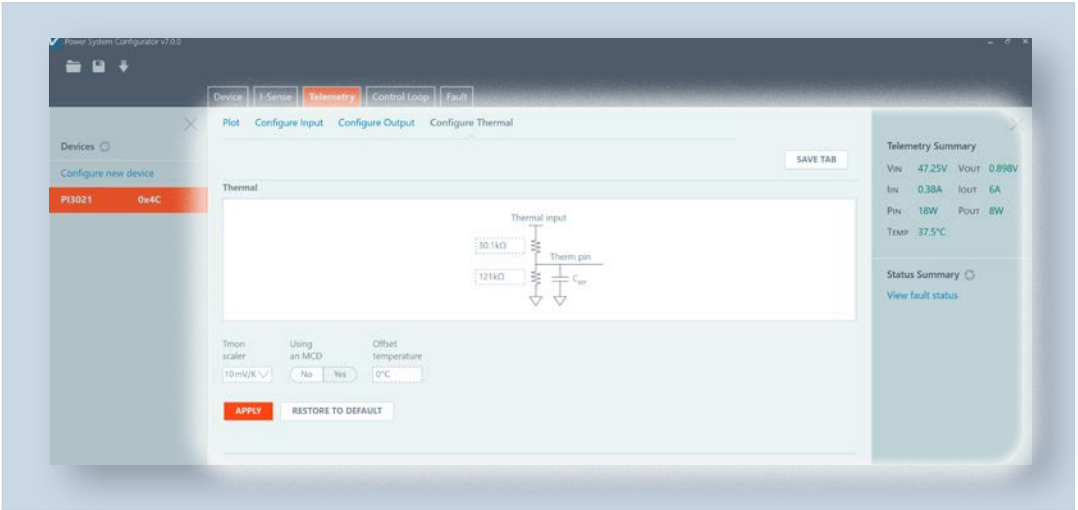


Figure 24
Configure Thermal section of Telemetry tab



Device Configuration Tabs: Control Loop

Use to adjust the control loop and compensation network parameters (Figures 25 and 26).

- System Configuration: example powertrain set-up selection with inputs for board PDN (Figure 25)
- Loop Compensation: SPICE output of system configuration adjusted by loop parameters (Figure 26)

Figure 25
System Configuration section of Control Loop tab

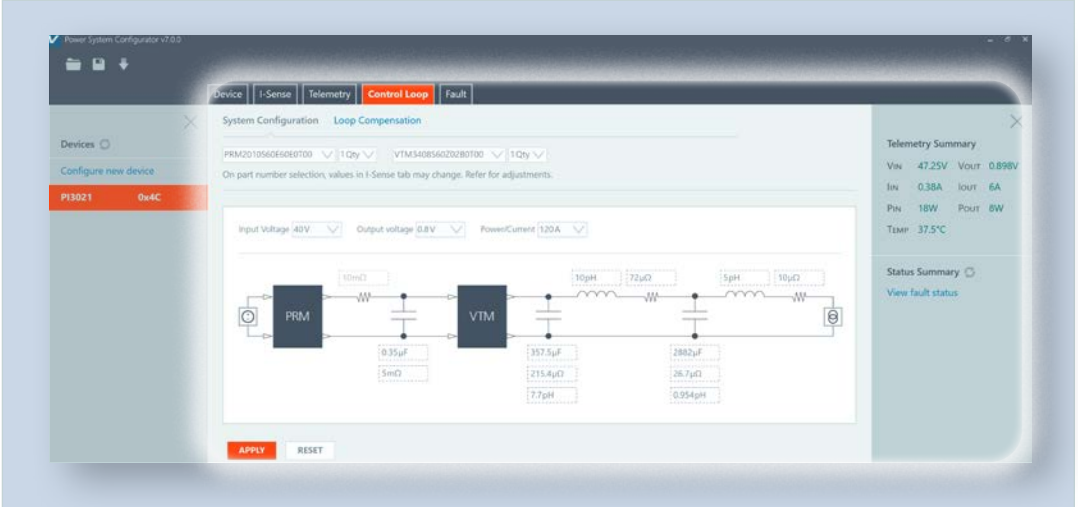


Figure 26
Loop Compensation section of Control Loop tab

Device Configuration Tabs: Fault

Fault monitoring and related input/output voltage and current configurations, can all be set and adjusted in the Fault tab (Figures 27 – 29).

Figure 27
Status section of Fault tab

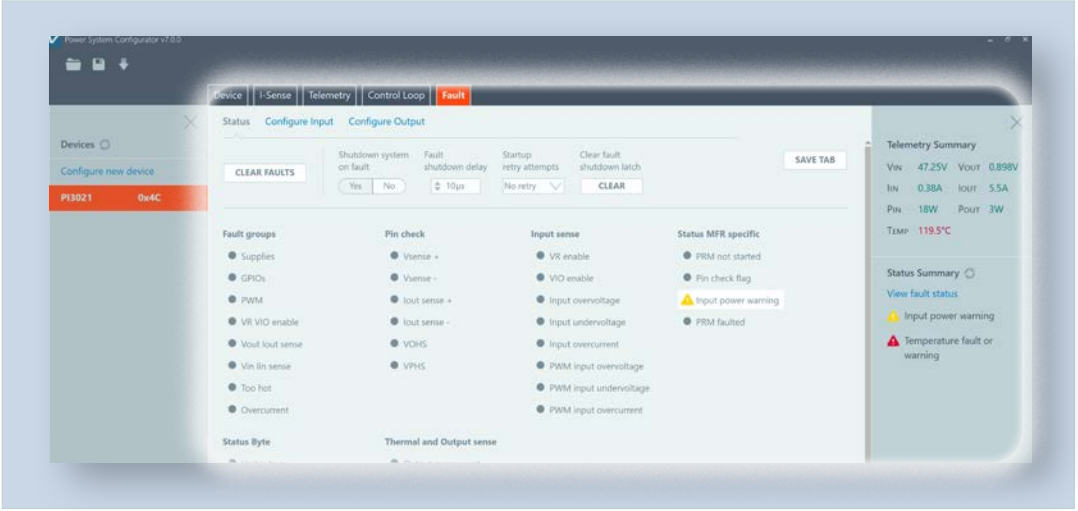


Figure 28
Configure Input section of Fault tab

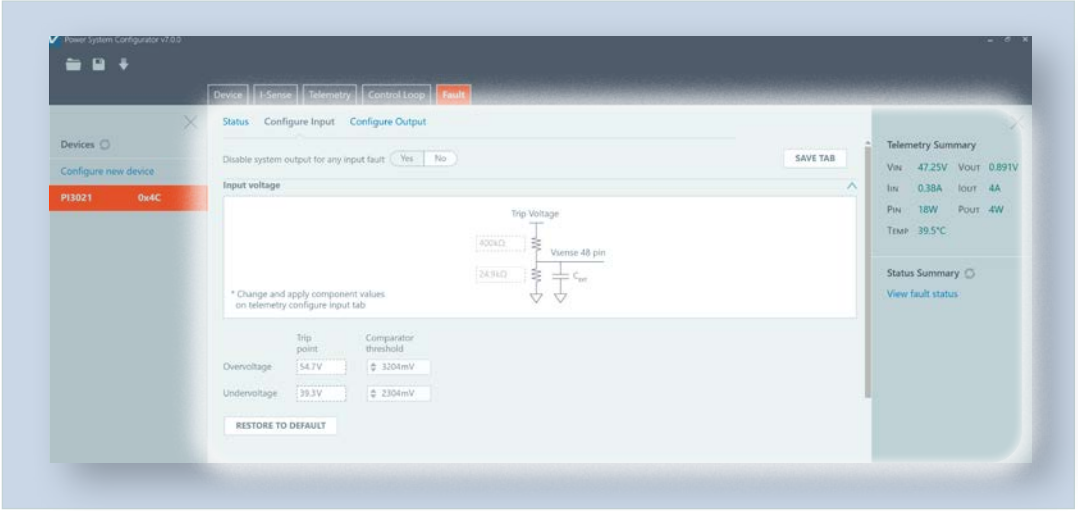
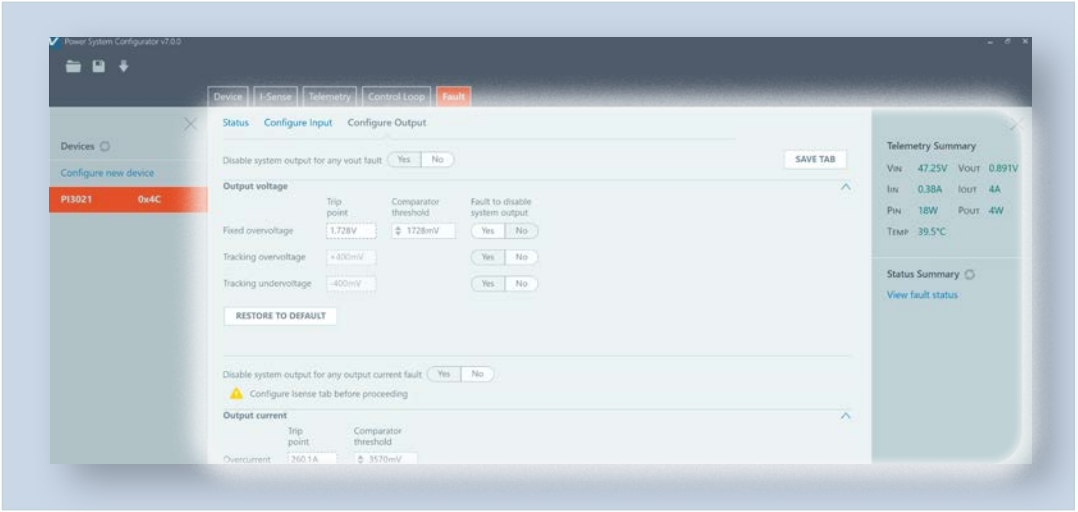


Figure 29
Configure Output section of Fault tab



Revision History

Revision	Date	Description	Page Number(s)
1.0	03/13/20	Initial release	n/a
1.1	10/30/20	Added part number I2C-ADAPTER-A03 Updated figure images Updated automatic updates, added NDA device passkey section	1 all 7
1.2	08/01/24	I2C-ADAPTER-A04 replaces I2C-ADAPTER-A03, I2C-ADAPTER-A03	1

Limitation of Warranties

Information in this document is believed to be accurate and reliable. HOWEVER, THIS INFORMATION IS PROVIDED "AS IS" AND WITHOUT ANY WARRANTIES, EXPRESSED OR IMPLIED, AS TO THE ACCURACY OR COMPLETENESS OF SUCH INFORMATION. VICOR SHALL HAVE NO LIABILITY FOR THE CONSEQUENCES OF USE OF SUCH INFORMATION. IN NO EVENT SHALL VICOR BE LIABLE FOR ANY INDIRECT, INCIDENTAL, PUNITIVE, SPECIAL OR CONSEQUENTIAL DAMAGES (INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR SAVINGS, BUSINESS INTERRUPTION, COSTS RELATED TO THE REMOVAL OR REPLACEMENT OF ANY PRODUCTS OR REWORK CHARGES).

Vicor reserves the right to make changes to information published in this document, at any time and without notice. You should verify that this document and information is current. This document supersedes and replaces all prior versions of this publication.

All guidance and content herein are for illustrative purposes only. Vicor makes no representation or warranty that the products and/or services described herein will be suitable for the specified use without further testing or modification. You are responsible for the design and operation of your applications and products using Vicor products, and Vicor accepts no liability for any assistance with applications or customer product design. It is your sole responsibility to determine whether the Vicor product is suitable and fit for your applications and products, and to implement adequate design, testing and operating safeguards for your planned application(s) and use(s).

VICOR PRODUCTS ARE NOT DESIGNED, AUTHORIZED OR WARRANTED FOR USE IN LIFE SUPPORT, LIFE-CRITICAL OR SAFETY-CRITICAL SYSTEMS OR EQUIPMENT. VICOR PRODUCTS ARE NOT CERTIFIED TO MEET ISO 13485 FOR USE IN MEDICAL EQUIPMENT NOR ISO/TS16949 FOR USE IN AUTOMOTIVE APPLICATIONS OR OTHER SIMILAR MEDICAL AND AUTOMOTIVE STANDARDS. VICOR DISCLAIMS ANY AND ALL LIABILITY FOR INCLUSION AND/OR USE OF VICOR PRODUCTS IN SUCH EQUIPMENT OR APPLICATIONS AND THEREFORE SUCH INCLUSION AND/OR USE IS AT YOUR OWN RISK.

Terms of Sale

The purchase and sale of Vicor products is subject to the Vicor Corporation Terms and Conditions of Sale which are available at: (https://www.vicorpower.com/termsconditionswarranty)

Export Control

This document as well as the item(s) described herein may be subject to export control regulations. Export may require a prior authorization from U.S. export authorities.

Contact Us: https://www.vicorpower.com/contact-us

Vicor Corporation
25 Frontage Road
Andover, MA, USA 01810
Tel: 800-735-6200
Fax: 978-475-6715
www.vicorpower.com

email
Customer Service: custserv@vicorpower.com
Technical Support: apps@vicorpower.com