GRL Platform Solutions

Firmware Update Guide

Using GRL Platform Solutions USB Power Delivery & Data Loopback Volume Tester (GRL-V-UP)



This material is provided as a reference to perform firmware update using the GRL Platform Solutions GRL-V-UP API Test Software and the GRL Platform Solutions USB Power Delivery & Data Loopback Volume Tester (GRL-V-UP).

For customer support, contact support@grlps.com.

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1 Overview / Pre-requisites

The following equipment are required for firmware update of the GRL-V-UP tester hardware:

- Host computer/PC
- USB Type-A to Type-B cable
- USB Type-A to Mini-B USB cable

There are four controllers in the GRL-V-UP tester hardware for which the firmware needs to be updated for each of the controller. The user can perform updates for all of these firmware using the GRL-V-UP API Test software.

Note: For more information on the GRL-V-UP API Test software, refer to the user documentation from http://grlps.com/download-center/

The following sections provide the procedure on how to perform firmware update for each GRL-V-UP controller.

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2 Firmware Update Procedure

This section allows you to check the firmware version and perform firmware update for the GRL-V-UP tester hardware to ensure that it is up to date.

2.1 Connection to GRL-V-UP Tester Hardware

Follow the steps below to connect and start using the GRL-V-UP API test software:

1. Open the GRL-V-UP API test software and connect the GRL-V-UP tester to the control computer using a USB Type-A to Type-B cable. Upon opening the GRL-V-UP API software, the following screen should appear:

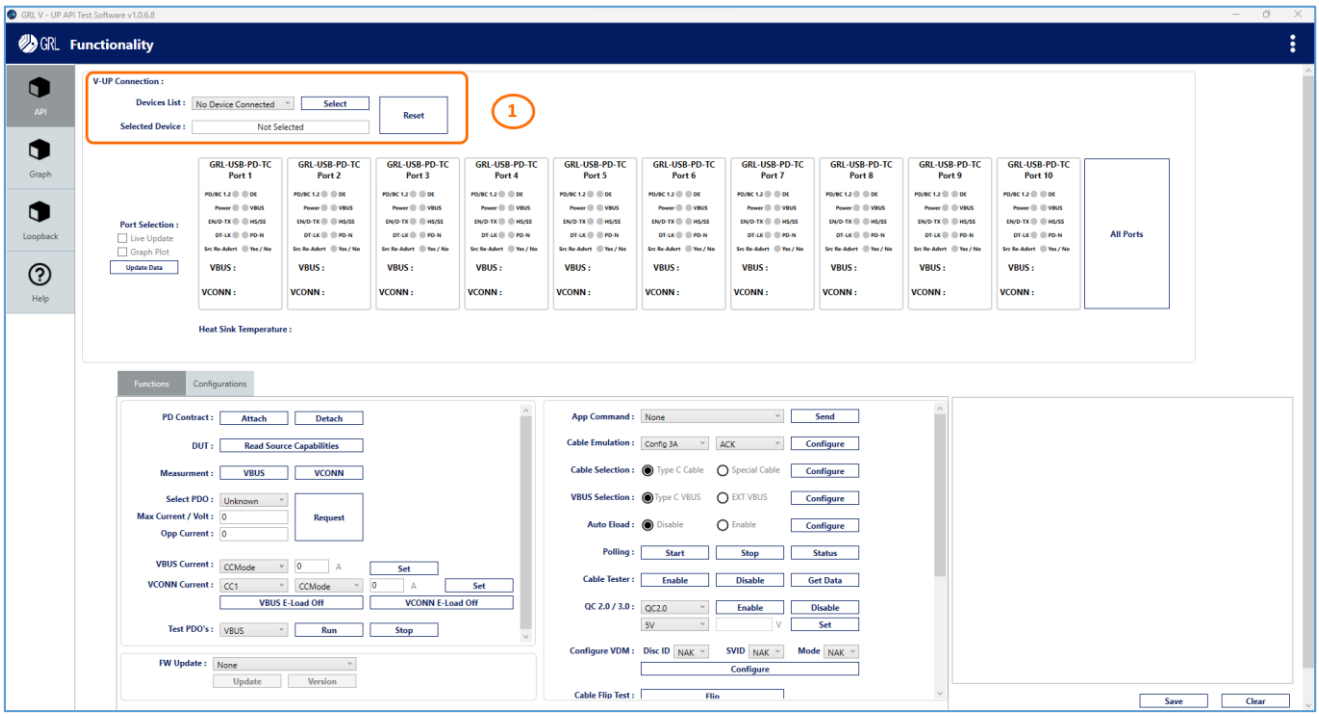

Figure 1. GRL-V-UP API Test Software Landing Screen — GRL-V-UP Connection Field

- 1 in Figure 1 above indicates the field to establish connection with the GRL-V-UP tester hardware.

2. Figure 2 below shows no connection has yet to be established with the tester.

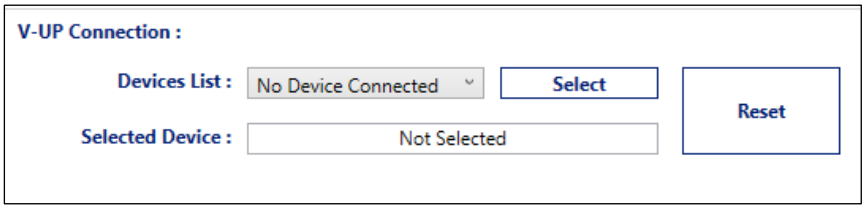

Figure 2. GRL-V-UP API Test Software Showing No Connection Establishment with Tester

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3. Check the connection establishment between the Host PC and Device as shown in Figure 3 below.

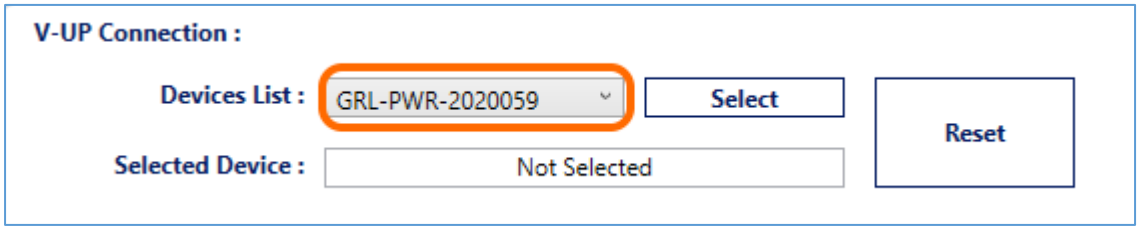

Figure 3. Check Connection Establishment Between Host and Device

4. Select the Device by clicking on the **Select** button as shown in Figure 4 below.

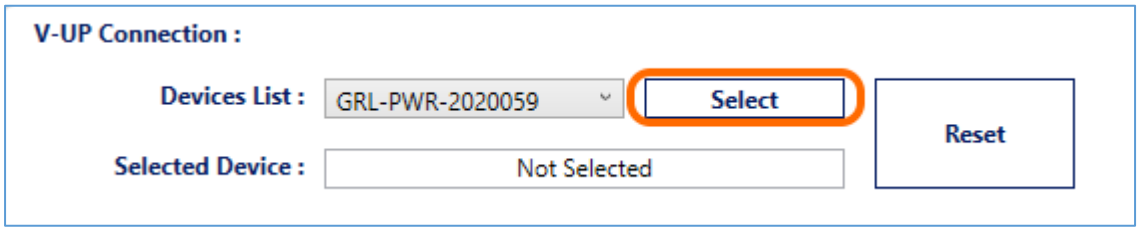

Figure 4. Select Device

5. Check the Device status after clicking on the Select button to verify whether the detected device is selected or not as shown in Figure 5 below.

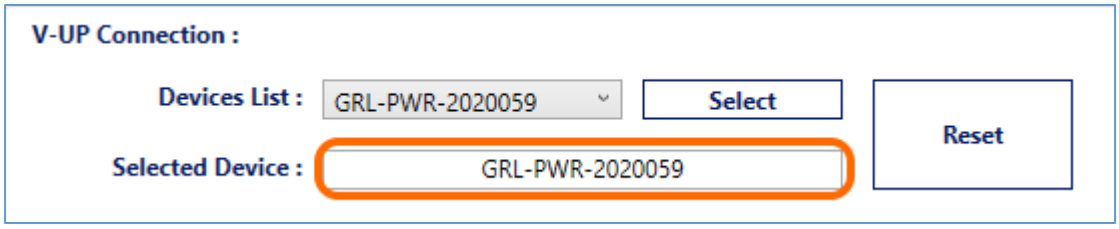

Figure 5. Check Selected Device Status

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2.2 GRL-V-UP Firmware Update Field

After establishing connection with the GRL-V-UP tester hardware, the user can select from the **FW Update** drop-down menu to perform firmware updates for the controller card, GRL-USB-PD-TC tester card, USB Power Delivery controller and E-Load on the GRL-V-UP tester.

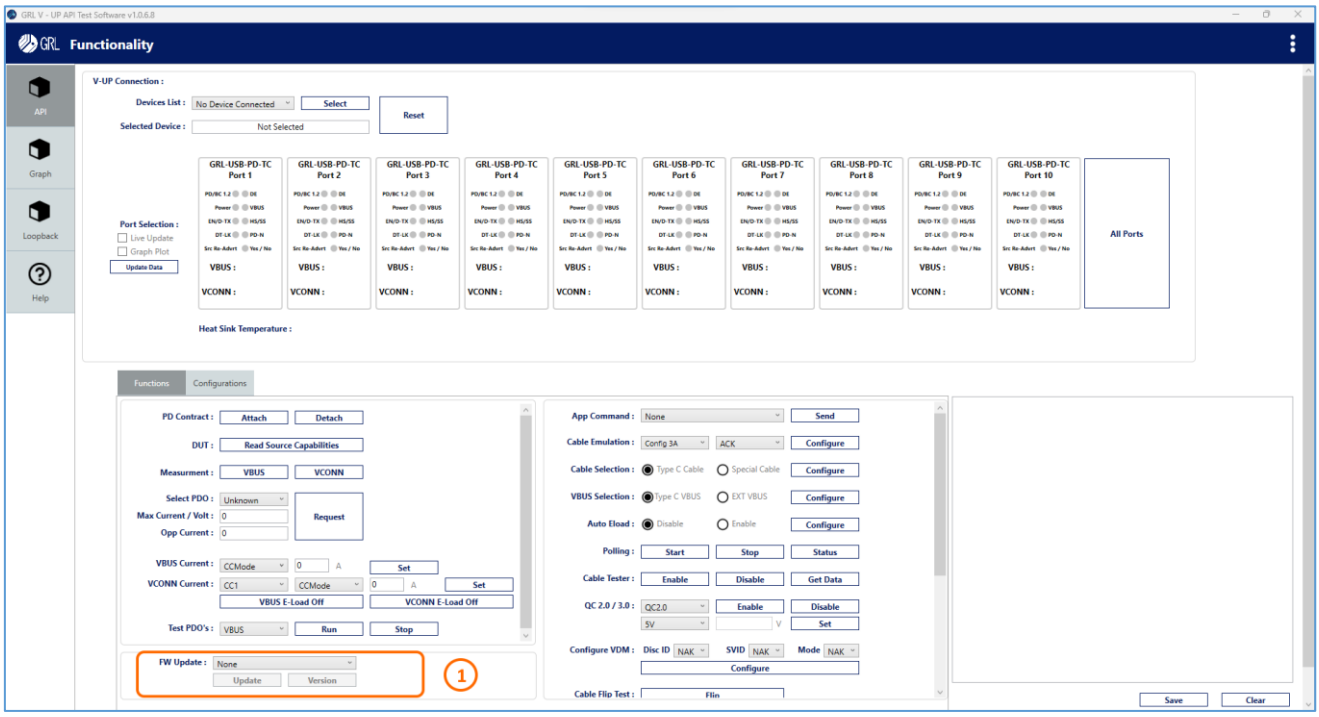
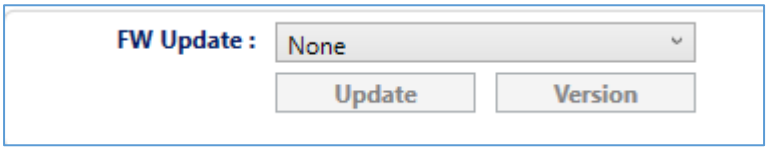


Figure 6. GRL-V-UP API Test Software Firmware Update Field

- (1) in Figure 6 above indicates the field to perform firmware updates in the GRL-V-UP API software.



Click on the **Update** button to start updating the firmware for the selected component.

The user can also click on the **Version** button to verify the current firmware version on the GRL-V- UP tester. Alternatively, the user can access through the Help tab screen as shown in Figure 7 below.

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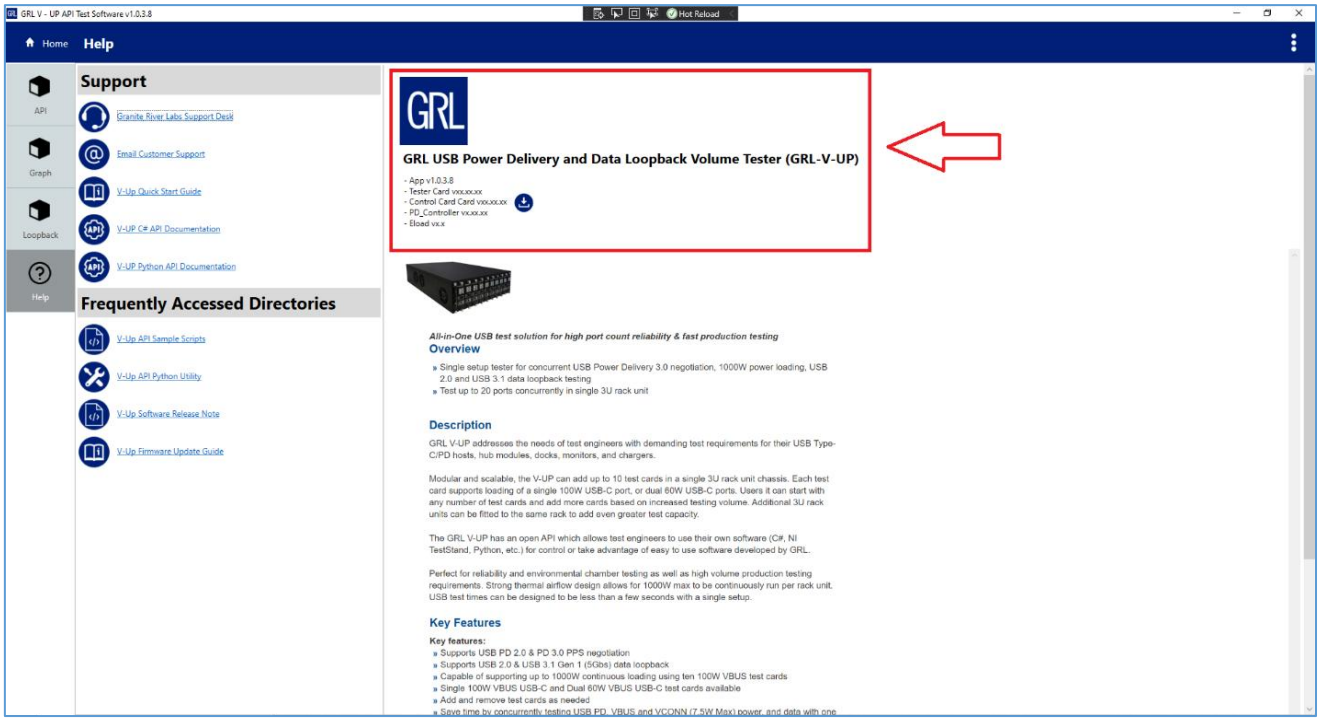

Figure 7. Check Firmware Version on GRL-V-UP API Test Software Help Tab Screen

2.3 Firmware Update for GRL-V-UP Controller Card

2.3.1 Connection Setup

Set up the following hardware connection to update the GRL-V-UP controller card firmware.

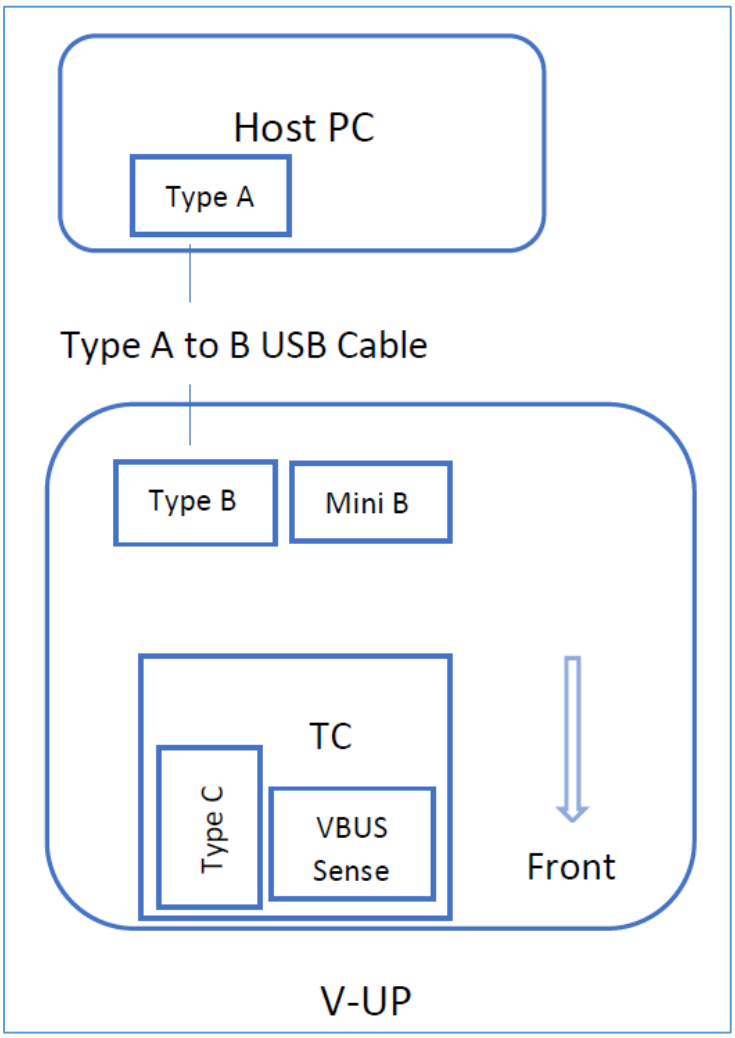

Figure 8. GRL-V-UP Hardware Connection Setup for Controller Card Firmware Update

2.3.2 Controller Card Firmware Update Procedure

1. Update the firmware for the Controller Card by selecting **Controller Card** in the "FW Update" field and clicking on the **Update** button as shown in Figure 9 below.

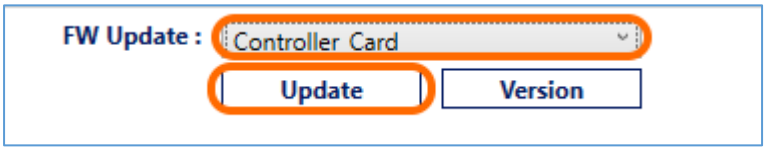

Figure 9. Update Firmware for Controller Card

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Note: Port selection is not required for the Controller Card firmware update.

2. When the following confirmation message pops up as shown in Figure 10 below, click **OK** to start the firmware update process.

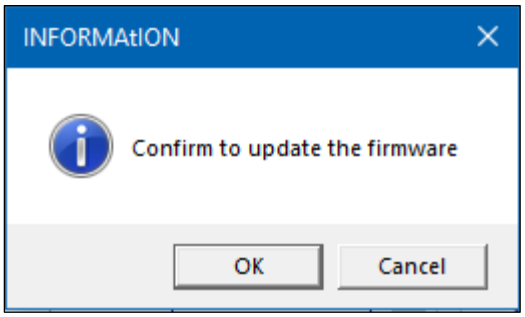
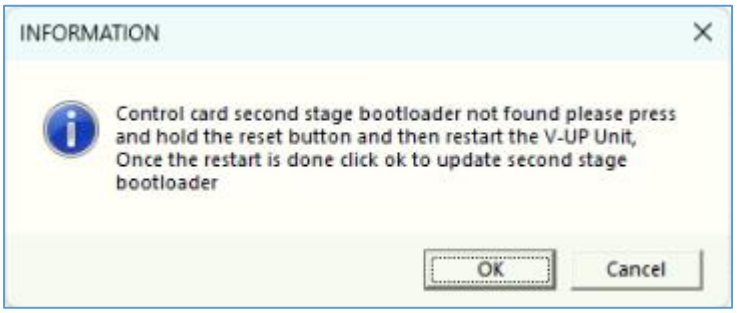


Figure 10. Confirm to Update Firmware Pop-Up

***Note:** Once the **Update** button is clicked, the GRL-V-UP API software will automatically check for the second stage bootloader in the controller card firmware. If the second stage bootloader is present then the GRL-V-UP API software will automatically start updating the controller card firmware, or otherwise there will be a pop-up message as shown below.*



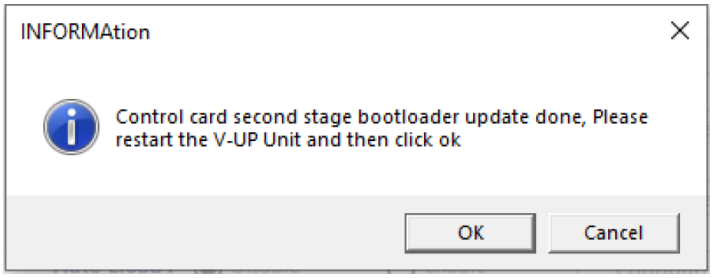
Note: The auto-update of the controller card firmware is included from the GRL-V-UP API software version 1.0.3.5 and above, therefore the below two steps need to be performed one time using the latest version (≥ 1.0.3.5) of the GRL-V-UP API software while updating the controller card firmware. For subsequent firmware updates of the controller card, the updates will be carried out automatically.

*i. Keep the **Reset** button pressed and reset the GRL-V-UP-10SC tester hardware. After the GRL-V-UP API software detects the connection from the tester, click on the **OK** button.*

Note: Do not click on the OK button until the GRL-V-UP has restarted.

Note: The Reset button is located on the back of the GRL-V-UP-10SC tester or on the front of the GRL-V-UP-2SC tester.

*ii. Once the second stage bootloader is updated, the following pop-up message will appear to inform the user to restart the GRL-V-UP-10SC / GRL-V-UP-2SC tester hardware, and this time it is not required to press on the Reset button. Once the GRL-V-UP-10SC / GRL-V-UP-2SC tester hardware is restarted, click on the **OK** button.*



Note: Do not click on the OK button until the GRL-V-UP tester has restarted.

3. Once the OK button is clicked, the firmware update process for the controller card firmware will start and its progress will be displayed as shown in Figure 11 below.

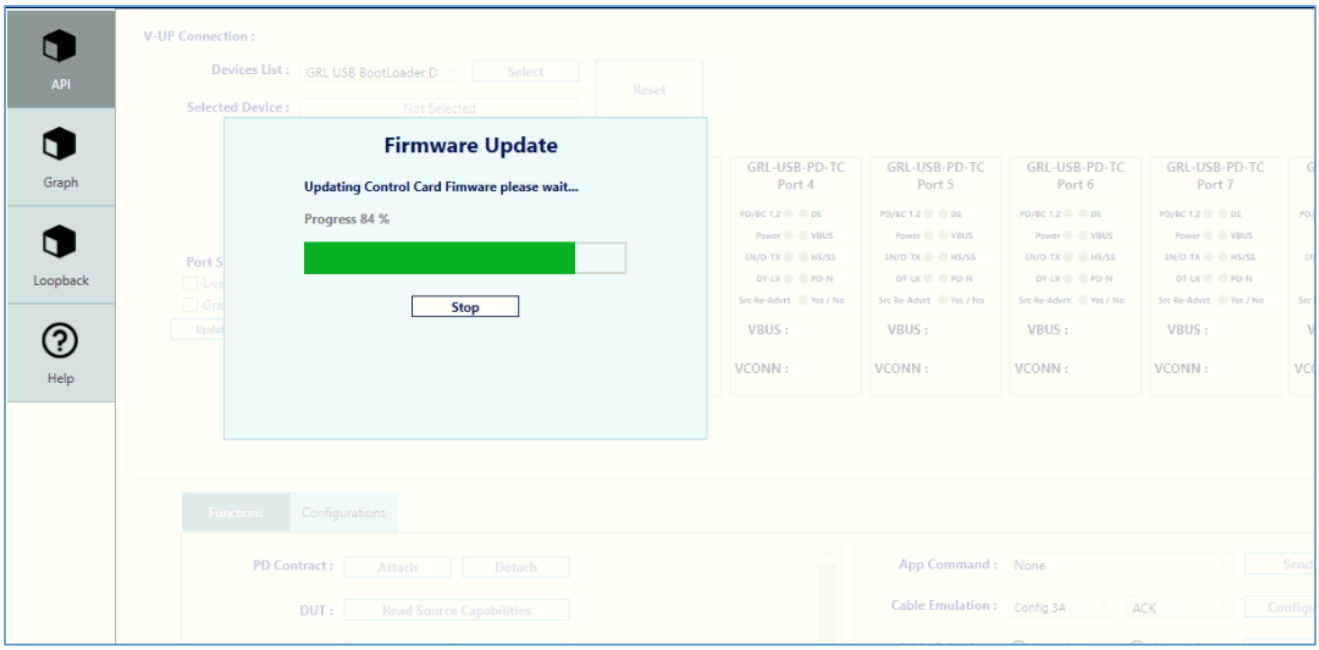


Figure 11. Controller Card Firmware Update in Progress

4. Once the controller card firmware is updated, the GRL-V-UP tester hardware will be restarted by the GRL-V-UP API software automatically. Establish the connection to the tester again using the steps in Section 2.1.
5. Once connection has been established with the GRL-V-UP tester hardware, check the current version of the controller card firmware by clicking on the **Version** button, as shown in Figure 12 below.

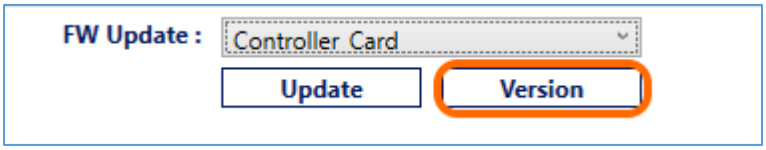


Figure 12. Check Firmware Version of Controller Card

6. The latest firmware version number will be displayed in the API activity log panel on the right of the screen as shown in Figure 13 below.

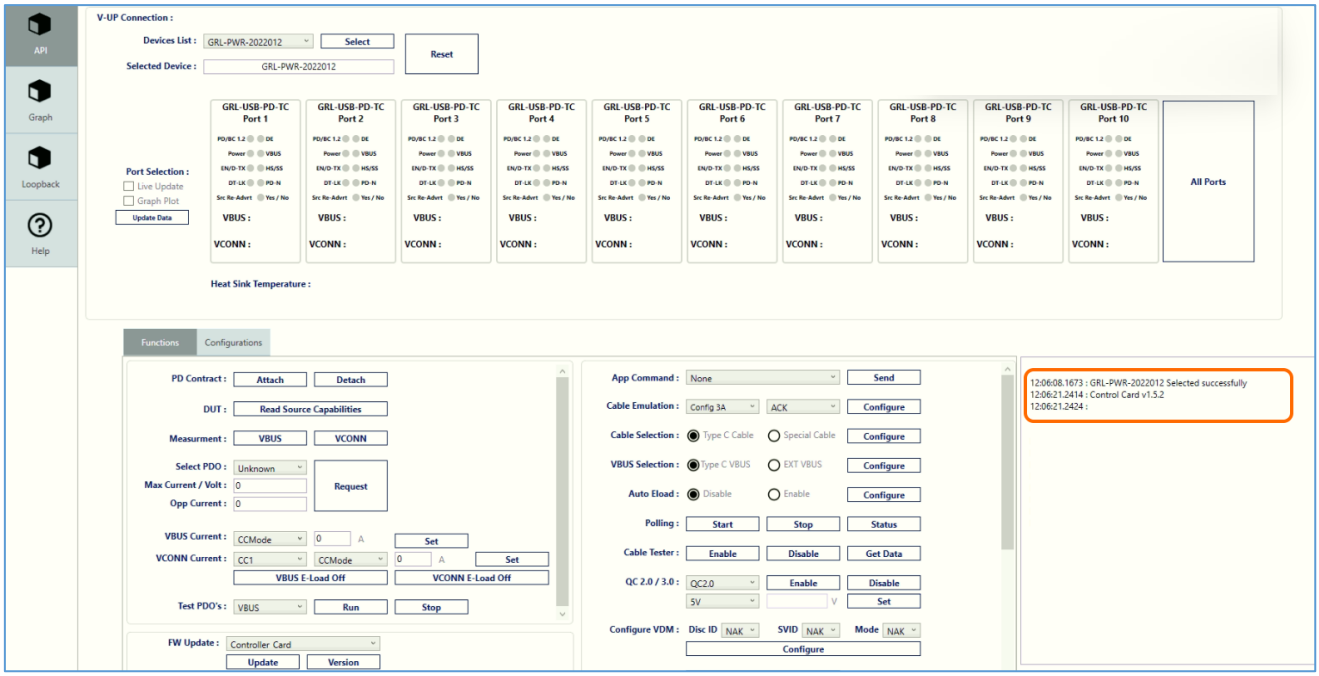


Figure 13. Display of Latest Firmware Version of Controller Card

Note: The controller card firmware should now be updated and can also be verified by checking the current version in the Help tab of the GRL-V-UP API software.

2.4 Firmware Update for GRL-USB-PD-TC Tester Cards

2.4.1 Connection Setup

Set up the following hardware connection to update the GRL-USB-PD-TC tester cards firmware.

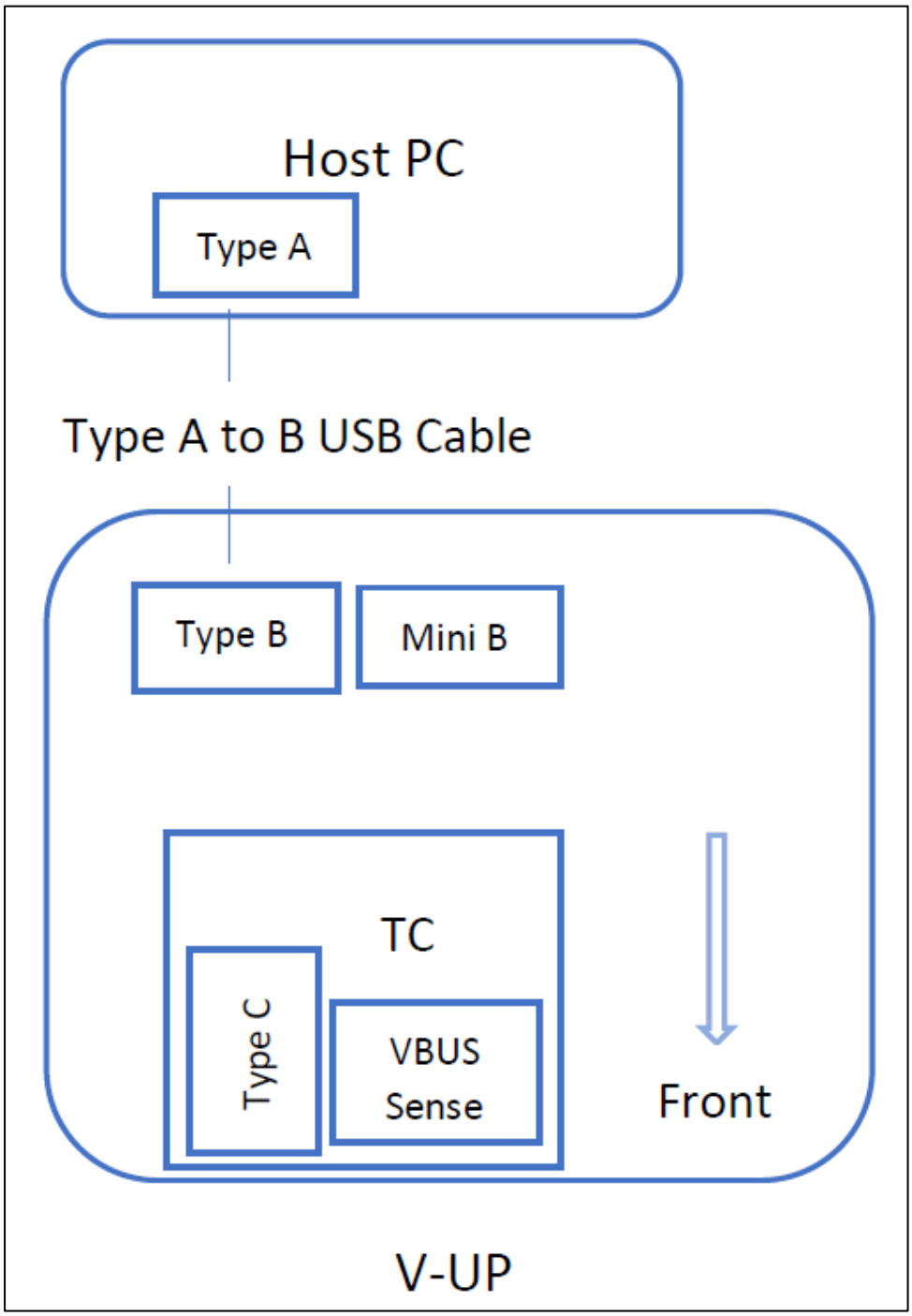


Figure 14. GRL-V-UP Hardware Connection Setup for GRL-USB-PD-TC Tester Cards Firmware Update

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2.4.2 GRL-USB-PD-TC Tester Cards Firmware Update Procedure

1. Select **Tester Card** in the “FW Update” field and click on the **Update** button as shown in Figure 15 below.

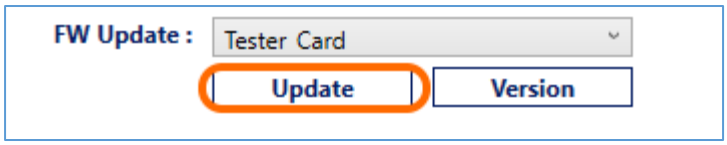

Figure 15. Update Firmware for GRL-USB-PD-TC Tester Cards

Note: Port selection is not required for the GRL-USB-PD-TC tester cards firmware update.

2. When the following confirmation message pops up as shown in Figure 16 below, click **OK** to start the firmware update process.

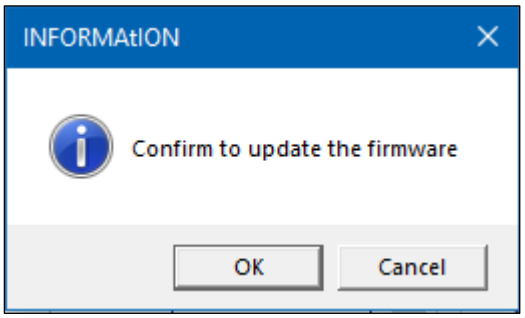

Figure 16. Confirm to Update Firmware Pop-Up

3. An initial loading sequence will take a few seconds to run and the firmware update process will begin. During this loading sequence, the GRL-USB-PD-TC tester cards will be restarted automatically, and all the GRL-USB-PD-TC tester cards installed in the GRL-V-UP tester hardware will get updated after some time.

   Note: Firmware update should not be terminated during the loading sequence.

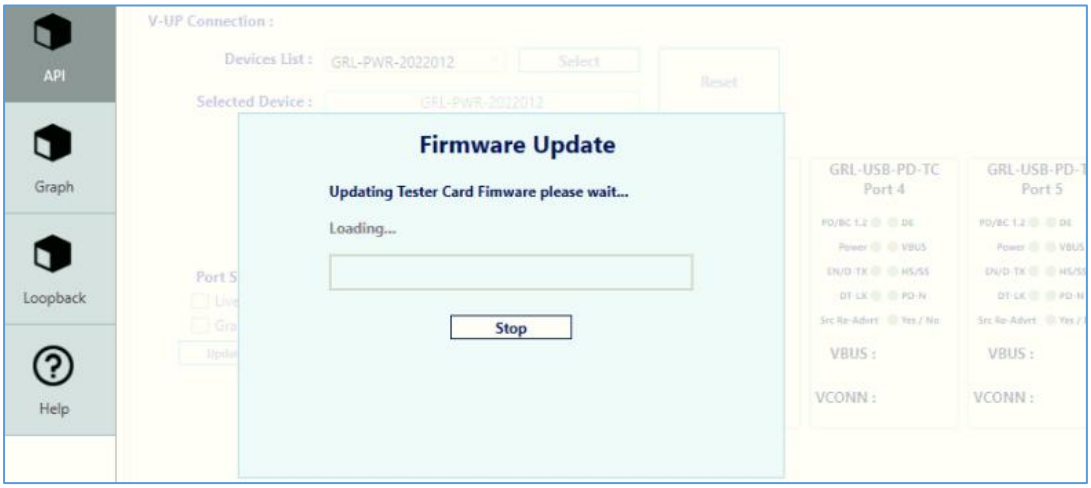

Figure 17. GRL-USB-PD-TC Tester Card Firmware Update Initial Loading Sequence

4. Once the initial loading sequence is completed, the GRL-USB-PD-TC tester card firmware update process will begin. While the firmware is updating, make sure that the DT-LK LED is blinking and the PD-N LED is continuously glowing in the GRL-USB-PD-TC tester cards. Otherwise, the firmware is not updating.

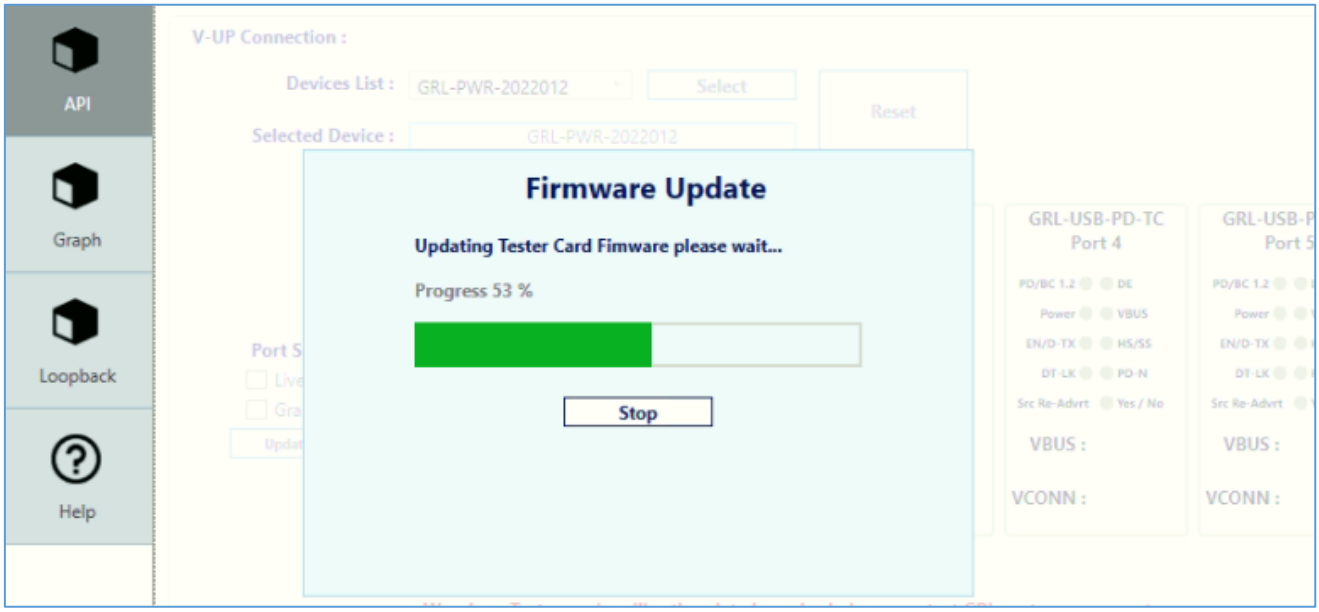

Figure 18. GRL-USB-PD-TC Tester Card Firmware Update in Progress

5. Once the firmware is updated, the GRL-USB-PD-TC tester cards will be automatically restarted. After successful booting, the DT-LK LED will light up and turn off while the PD-N LED will blink twice and turn off, indicating successful booting of the GRL-USB-PD-TC tester cards.
6. The GRL-V-UP tester hardware will also be restarted by the GRL-V-UP API software automatically. Establish the connection to the tester again using the steps in Section 2.1.
7. Once connection has been established with the GRL-V-UP tester hardware, select the ports from the “Port Selection” field and check the current version of the GRL-USB-PD-TC tester card firmware by clicking on the **Version** button, as shown in Figure 19 below.

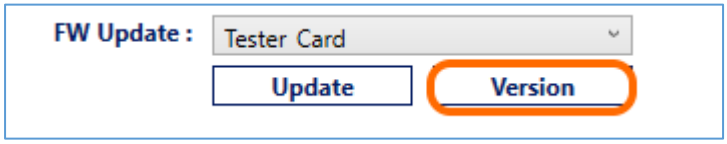

Figure 19. Check Firmware Version of GRL-USB-PD-TC Tester Cards

8. The latest firmware version number will be displayed in the API activity log panel on the right of the screen as shown in Figure 20 below.

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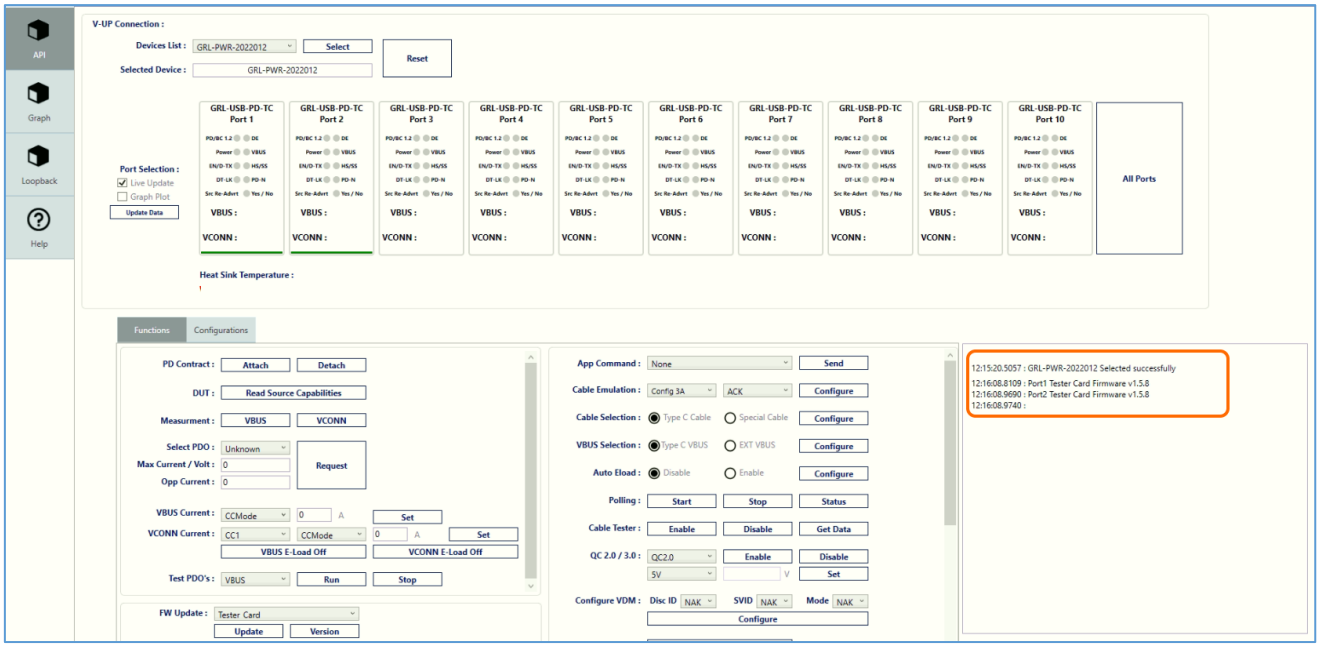

Figure 20. Display of Latest Firmware Version of GRL-USB-PD-TC Tester Cards

2.5 Firmware Update for GRL-V-UP USB Power Delivery Controller

2.5.1 Connection Setup

Set up the following hardware connection to update the GRL-V-UP USB Power Delivery Controller firmware.

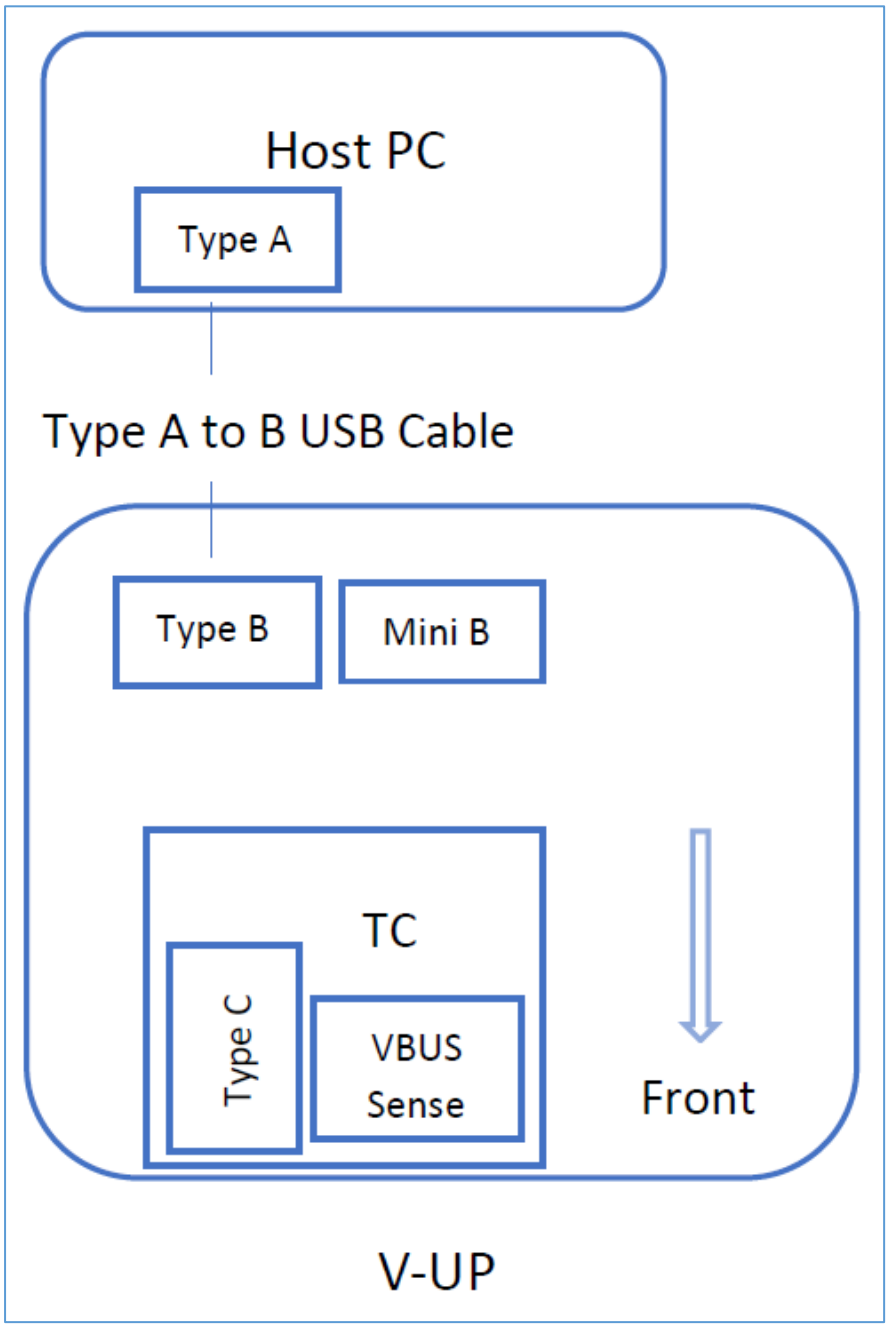

Figure 21. GRL-V-UP Hardware Connection Setup for GRL-V-UP USB Power Delivery Controller Firmware Update

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2.5.2 USB Power Delivery Controller Firmware Update Procedure

1. Select **PD Controller** in the “FW Update” field and click on the **Update** button as shown in Figure 22 below.

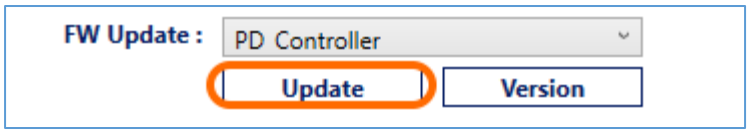

Figure 22. Update Firmware for PD Controller

Note: Port selection is not required for the USB Power Delivery Controller firmware update.

2. When the following confirmation message pops up as shown in Figure 23 below, click **OK** to start the firmware update process.

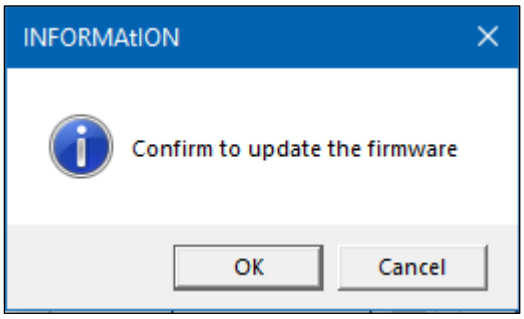

Figure 23. Confirm to Update Firmware Pop-Up

3. An initial loading sequence will take a few seconds to run and the firmware update process will begin. During this loading sequence, all the GRL-USB-PD-TC tester cards installed in the GRL-V-UP tester hardware will get the USB Power Delivery controller firmware update after some time.

   Note: Firmware update should not be terminated during the loading sequence.

4. Once the initial loading sequence is completed, the USB Power Delivery controller firmware update process will begin. While the firmware is updating, make sure that only the DT-LK LED is blinking in the GRL-USB-PD-TC tester cards. Otherwise, the firmware is not updating.

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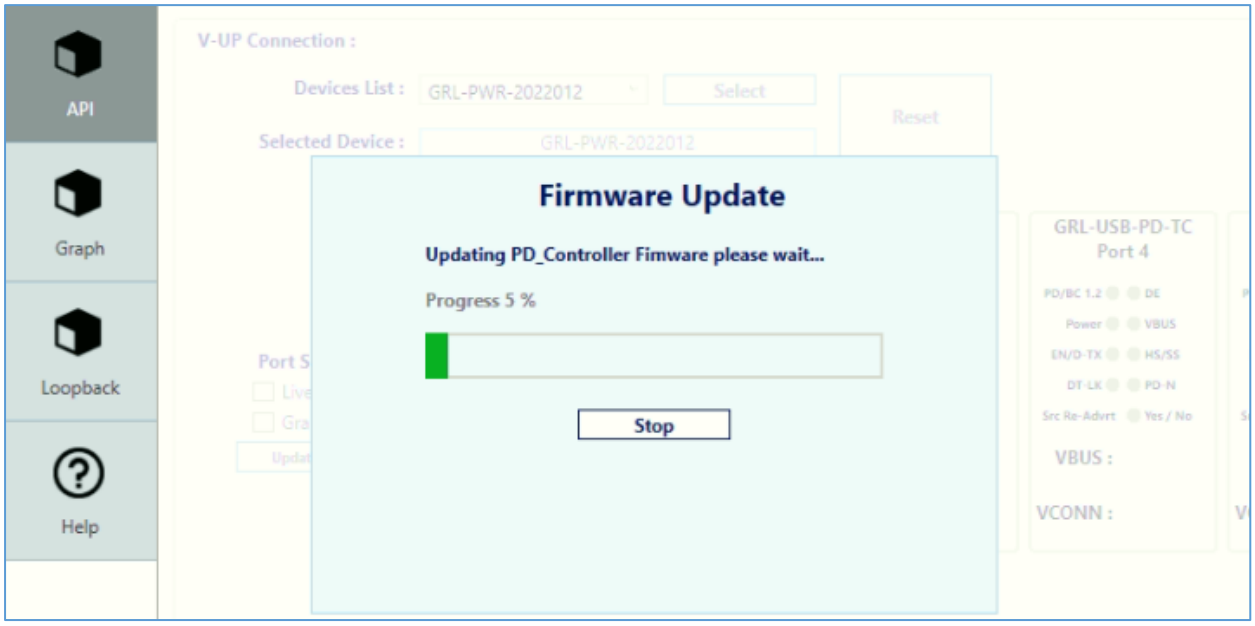

Figure 24. USB Power Delivery Controller Firmware Update in Progress

5. Once the USB Power Delivery controller firmware update is completed, there will be pop-up message box notifying that “PD_Controller Firmware update done” as shown in . Click on the **OK** button to continue.



Figure 25. USB Power Delivery Controller Firmware Update Completed Pop-Up Message

6. The GRL-V-UP tester hardware will also be restarted by the GRL-V-UP API software automatically. Establish the connection to the tester again using the steps in Section 2.1.
7. Once connection has been established with the GRL-V-UP tester hardware, select the ports from the “Port Selection” field and check the current version of the USB Power Delivery controller firmware by clicking on the **Version** button, as shown in Figure 26 below.

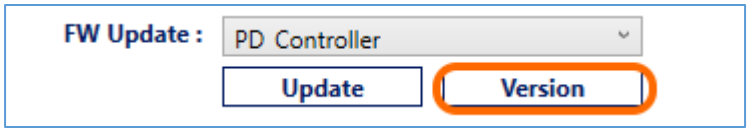

Figure 26. Check Firmware Version of PD Controller

8. The latest firmware version number will be displayed in the API activity log panel on the right of the screen as shown in Figure 27 below.

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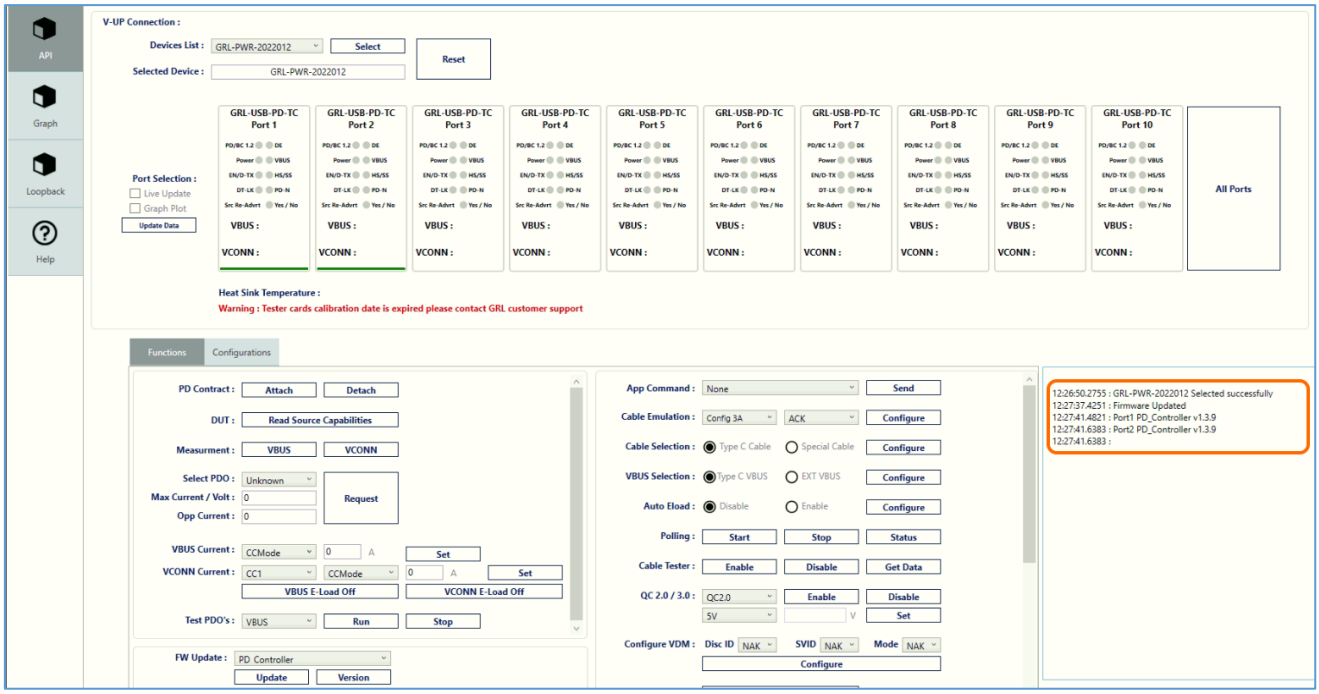

Figure 27. Display of Latest Firmware Version of USB Power Delivery Controller

2.6 Firmware Update for GRL-V-UP E-Load

2.6.1 Connection Setup

Set up the following hardware connection to update the GRL-V-UP E-Load firmware.

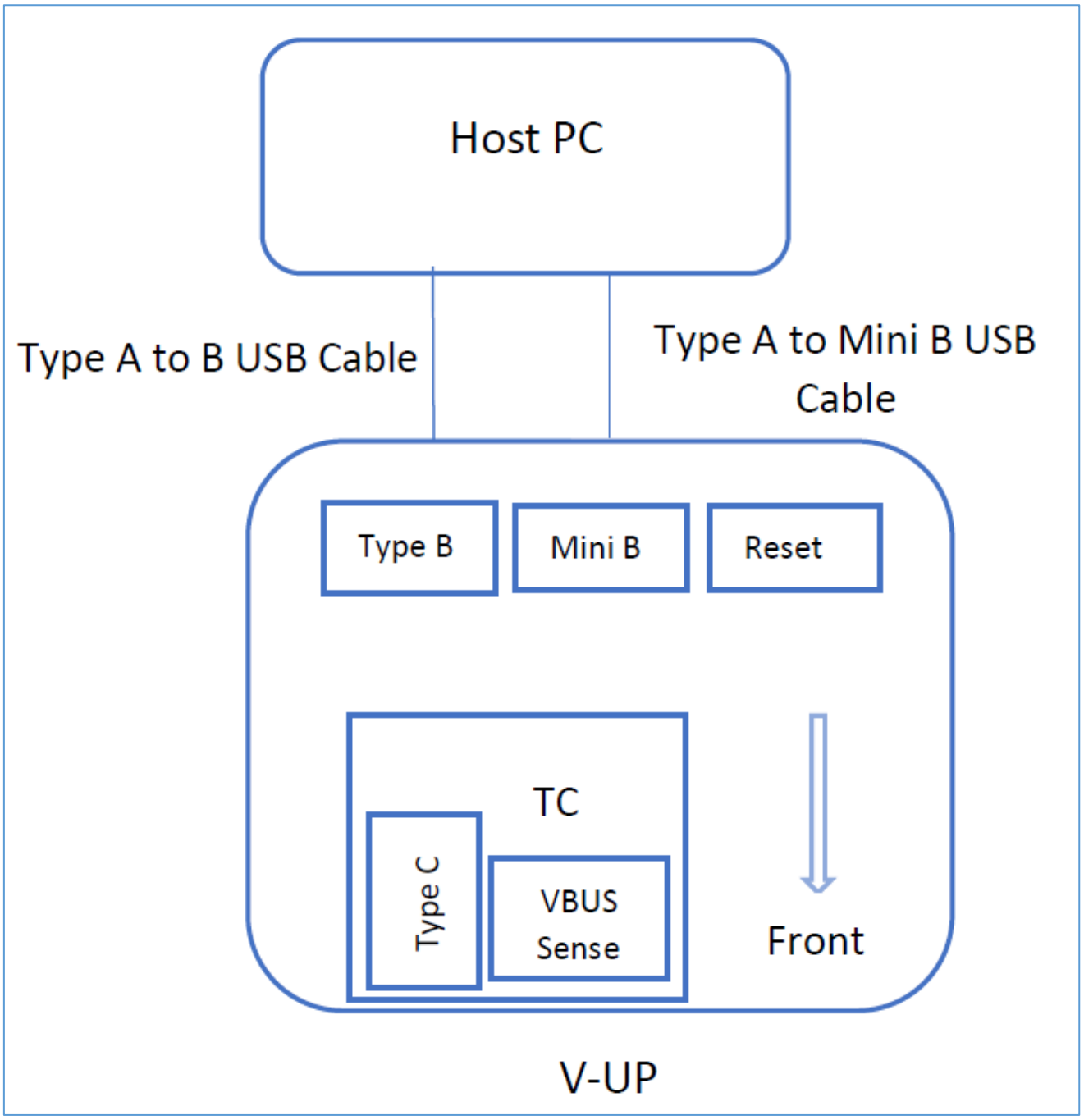

Figure 28. GRL-V-UP Hardware Connection Setup for GRL-V-UP E-Load Firmware Update

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2.6.2 E-Load Firmware Update Procedure

1. To update the E-Load firmware, a mini-USB cable is required.
2. Connect the mini-USB cable from the host PC to the GRL-V-UP tester's FX3 module.
3. Select the ports based on the GRL-USB-PD-TC tester cards present in the GRL-V-UP tester hardware.

Note: Port selection is required for the E-Load firmware update.

4. Select **Eload** in the "FW Update" field and click on the **Update** button as shown in Figure 29 below.

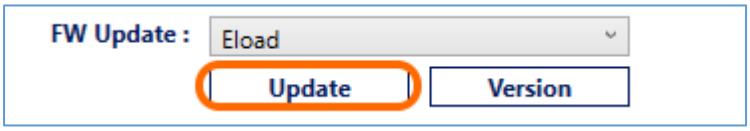

Figure 29. Update Firmware for E-Load

5. When the following confirmation message pops up as shown in Figure 30 below, click **OK** to start the firmware update process.

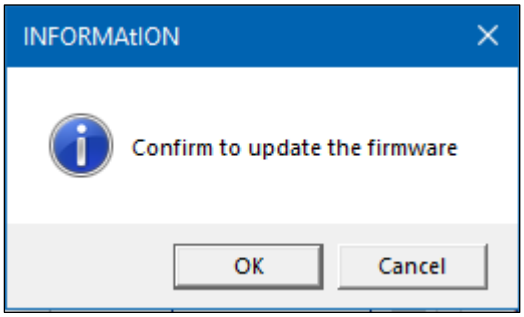

Figure 30. Confirm to Update Firmware Pop-Up

6. The firmware update status will be updated in the API activity log panel on the right of the screen as shown in Figure 31 below. Once the E-Load firmware update is completed for the selected ports, there will be pop-up message box notifying that "Update Done, Please restart the controller". Click on the **OK** button to continue.

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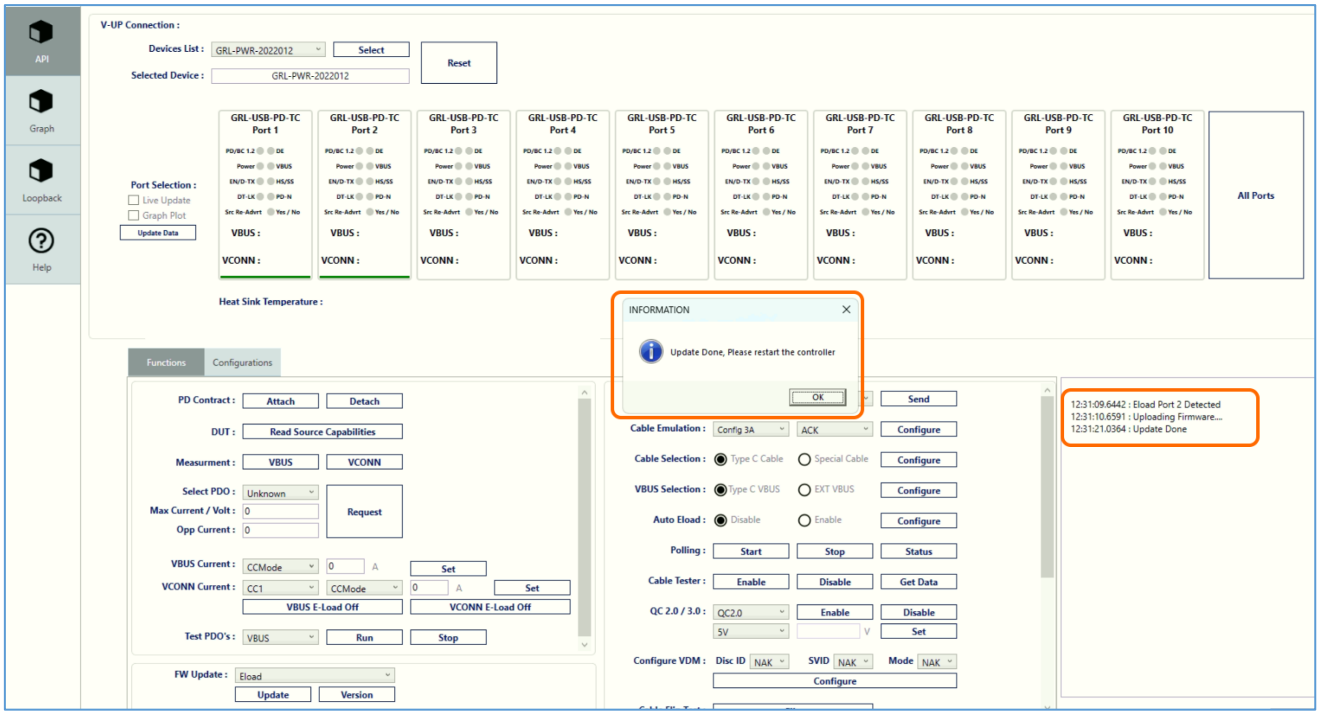

Figure 31. E-Load Firmware Update Completed

7. Once the firmware is updated, restart the GRL-V-UP tester hardware.
8. After the GRL-V-UP tester hardware has restarted, establish the connection to the tester again using the steps in Section 2.1.
9. Once connection has been established with the GRL-V-UP tester hardware, select the ports from the “Port Selection” field and check the current version of the E-Load firmware by clicking on the **Version** button, as shown in Figure 32 below.



Figure 32. Check Firmware Version of E-Load

10. The latest firmware version number will be displayed in the API activity log panel on the right of the screen as shown in Figure 33 below.

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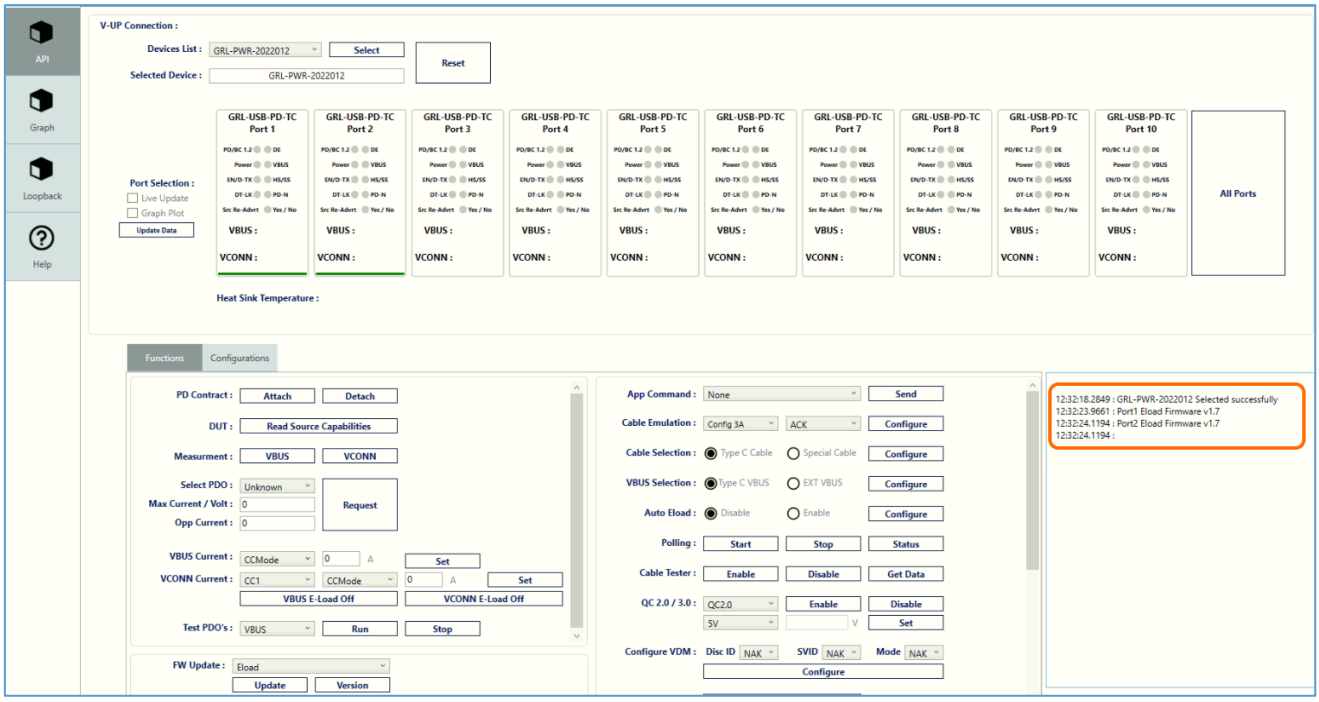

Figure 33. Display of Latest Firmware Version of E-Load

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