

COMPREHENSIVE SERVICES

We offer competitive repair and calibration services, as well as easily accessible documentation and free downloadable resources.

SELL YOUR SURPLUS

We buy new, used, decommissioned, and surplus parts from every NI series. We work out the best solution to suit your individual needs.

 Sell For Cash  Get Credit  Receive a Trade-In Deal

OBSOLETE NI HARDWARE IN STOCK & READY TO SHIP

We stock **New**, **New Surplus**, **Refurbished**, and **Reconditioned** NI Hardware.



Bridging the gap between the manufacturer and your legacy test system.

 1-800-915-6216

 www.apexwaves.com

 sales@apexwaves.com

All trademarks, brands, and brand names are the property of their respective owners.

Request a Quote

 **CLICK HERE**

PXIe-3620

Manufacturer: National Instruments

Board Assembly Part Numbers (Refer to Procedure 1 for identification procedure):

Part Number and Revision	Description
159813B-01L or later	PXIe-3620

Volatile Memory

<i>Target Data</i>	<i>Type</i>	<i>Size</i>	<i>Battery Backup</i>	<i>User¹ Accessible</i>	<i>System Accessible</i>	<i>Sanitization Procedure</i>
FPGA Block Memory	BRAM	64 KB	No	No	Yes	Cycle Power
FPGA Distributed Memory	LUTRAM	51 KB	No	No	Yes	Cycle Power

Non-Volatile Memory (*incl. Media Storage*)

<i>Target Data</i>	<i>Type</i>	<i>Size</i>	<i>Battery Backup</i>	<i>User Accessible</i>	<i>System Accessible</i>	<i>Sanitization Procedure</i>
Calibration Flash	Flash	8 MB	No			
<ul style="list-style-type: none"> Calibration Data² Calibration Metadata 				Yes	Yes	Procedure 2
				Yes	Yes	Procedure 2
LO2 CPLD						
<ul style="list-style-type: none"> Configuration Image User Flash Memory 	CPLD	2210 LEs	No	No	Yes	None
	CPLD	1 KB	No	No	Yes	None
LO1 and IF (RX) CPLD						
<ul style="list-style-type: none"> Configuration Image User Flash Memory 	CPLD	2210 LEs	No	No	Yes	None
	CPLD	1 KB	No	No	Yes	None
LO1 and IF (TX) CPLD						
<ul style="list-style-type: none"> Configuration Image User Flash Memory 	CPLD	2210 LEs	No	No	Yes	None
	CPLD	1 KB	No	No	Yes	None

¹ Refer to *Terms and Definitions* section for clarification of *User* and *System Accessible*

² Calibration constants that are stored on the device include information for the device's full operating range. Any implications resulting from partial self-calibration can be eliminated by running the full self-calibration procedure.

Procedures

Procedure 1 – Board Assembly Part Number identification:

To determine the Board Assembly Part Number and Revision, refer to the label applied to the surface of your product. The Assembly Part Number should be formatted as “P/N: 159813#-01L” where “#” is the letter module revision.

Procedure 2 – Calibration Flash:

The niMmWave Configuration library makes the PXIe-3620’s Calibration Flash user-accessible. To prevent rendering the device inoperable, the original flash contents should be saved and referenced for future use, prior to clearing the device. Both options are shown below:

- A. Save and Restore Original Data:
 1. Backup the original contents prior to initial use
 2. Restore the contents to the backed-up version after use returning the module to factory settings
- B. Overwrite the contents with zeroes, or a data sequence of your choice. Because this option does not restore a valid backup image taken from the module, this option renders the module inoperable. See "*Option B: Erase Data*" for more information.

For both options, LabVIEW 2015, or other versions supporting mmWave Libraries, must be used to execute the following procedures. The necessary library is located at <LabVIEW_DIR>\instr.lib\niMmWave\ni3620\Config\v1\Host. Disconnect the Digital I/O cable such that there are no possible communications with any mmWave heads.

Option A: Save and Restore Original Data

Save:

Upon receiving a new device from NI, or an otherwise verified good device, store a copy of the flash contents:

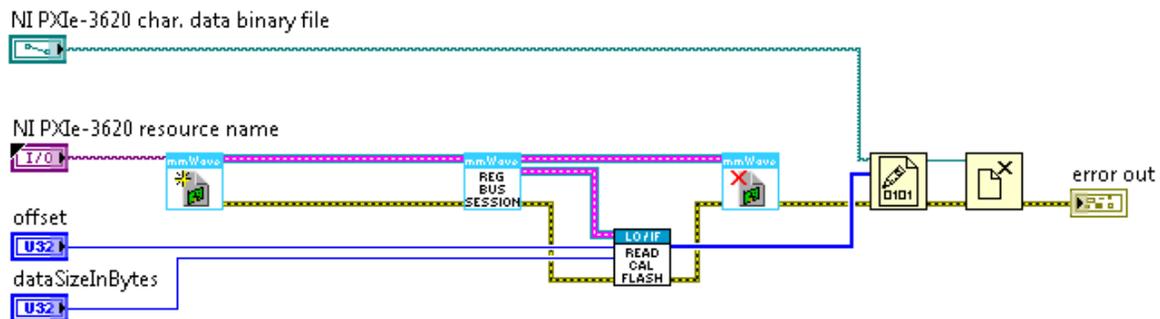


Fig: LabVIEW Block Diagram for Saving flash contents to a Binary file

1. Open a new LabVIEW VI.
2. Add Open Session 2 VI to open a new driver session.
 - a. Provide the resource name for the device from Measurement and Automation Explorer (NI MAX).
3. Add Get Register Bus Session VI after the Open Session 2 VI
 - a. Connect the “session in” to “session out” from Open Session 2 VI.
 - b. Connect the “error in” to “error out” from Open Session 2 VI.
4. Add Opera Read Calibration Flash VI.
 - a. Connect “session in” to "register bus out" output from Get Register Bus Session VI.

- b. Set "offset" to 0 and "dataSizeInBytes" to the Calibration Flash size from the table above (e.g. 8 MB = 0x800000).
- c. Calibration Flash contents are output from the "byte array out" terminal as a byte array and should be saved to disk (Follow step 6).
5. Add Close Session VI to close the driver session.
 - a. Connect "session in" to "session out" from Get Register Bus Session VI.
 - b. Connect "error in" to "error out" from Get Register Bus Session VI.
6. Add Write to Binary File VI.
 - a. Use "file" to provide a path to the file that needs to be written.
 - b. Connect "data" to "byte array out" output from Opera Read Calibration Flash VI.
 - c. Connect "error in" to "error out" from Close Session VI.
 - d. Adding Close File VI and wire in the error wire.
7. Run the LabVIEW VI.

Restore:

Perform the following steps to restore the saved data:

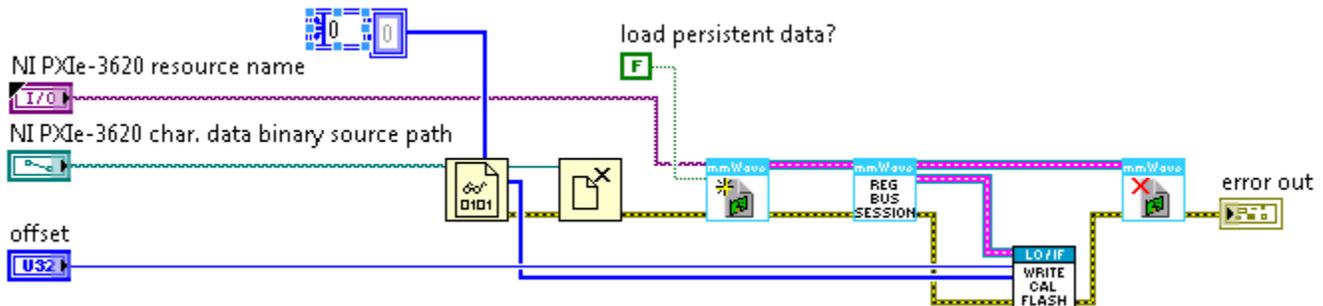


Fig: LabVIEW Block Diagram for Restoring flash contents from a Binary file

1. Open a new LabVIEW VI.
2. Load the calibration data from disk into a byte array.
 - a. Add the Read from Binary File VI and provide a path to the binary
 - b. Connect "data" to "byte array in" of Opera Write Calibration Flash VI in step 4 below.
 - c. Add Close File VI and wire in the error wire.
3. Add Open Session 2 VI to open a new driver session.
 - a. Set "load persistent data?" to False.
 - b. Provide the resource name for the device from Measurement and Automation Explorer (NI MAX).
4. Add Get Register Bus Session VI after the Open Session 2 VI
 - a. Connect the "session in" to "session out" from Open Session 2 VI.
 - b. Connect the "error in" to "error out" from Open Session 2 VI.
5. Add the Opera Write Calibration Flash VI.
 - a. Use the "register bus out" output from the Get Register Bus Session VI as "session in".
 - b. Set "offset" to 0, and set "byte array in" to the data loaded from disk.
6. Add Close Session VI to close the driver session.
 - a. Connect "session in" to "session out" from Get Register Bus Session VI.
 - b. Connect "error in" to "error out" from Get Register Bus Session VI.
7. Run the LabVIEW VI.

Option B: Erase Data



Caution: The erase procedure renders the module inoperable. The device will still be able to have communications established with it and can be reprogrammed with the contents from “Option A: Save and Restore Original Data”; however, the driver will report a fatal error if any configuration is attempted without restoring the data. If you want to use a module again after erasing the Calibration Flash without having stored a copy of the original flash contents, contact National Instruments for information about costs and procedures to return the module to the factory for repair.

Take these steps to erase the data in the Calibration Flash:

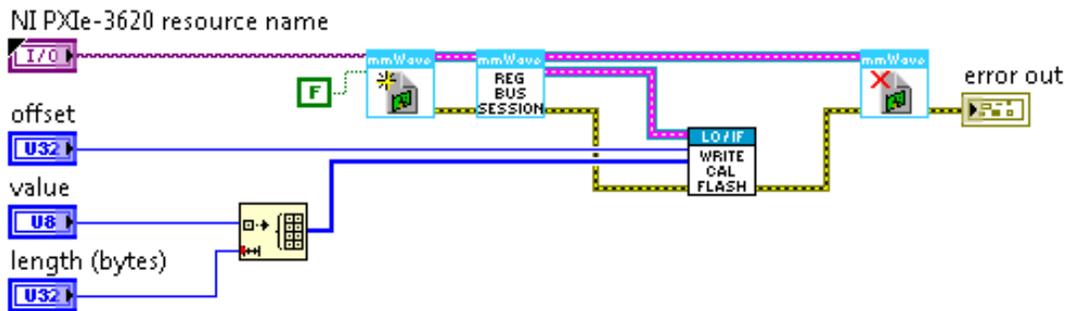


Fig: LabVIEW Block Diagram erasing the data in the Calibration Flash.

1. Open a new LabVIEW VI.
2. Add Open Session 2 VI to open a new driver session.
 - a. Set "load persistent data?" to False.
 - b. Provide the resource name for the device from Measurement and Automation Explorer (NI MAX).
3. Add Get Register Bus Session VI after the Open Session 2 VI
 - a. Connect the “session in” to “session out” from Open Session 2 VI.
 - a. Connect the “error in” to “error out” from Open Session 2 VI.
4. Add the Opera Write Calibration Flash VI.
 - a. Use the "register bus out" output from the Get Register Bus Session VI as "session in".
 - b. Set "offset" to 0, and set "byte array in" to the data loaded from disk.
 - c. Set "byte array in" to an array of 8-bit zero values (0x00) where the array size is equal to the Calibration Flash size from the Non-Volatile Memory table in this document (e.g. 8 MB = 0x800000). Note that the elements in the array can have any value.
5. Add Close Session VI to close the driver session.
 - a. Connect “session in” to “session out” from Get Register Bus Session VI.
 - b. Connect “error in” to “error out” from Get Register Bus Session VI.
6. Run the LabVIEW VI.

Terms and Definitions

Cycle Power:

The process of completely removing power from the device and its components and allowing for adequate discharge. This process includes a complete shutdown of the PC and/or chassis containing the device; a reboot is not sufficient for the completion of this process.

Volatile Memory:

Requires power to maintain the stored information. When power is removed from this memory, its contents are lost. This type of memory typically contains application specific data such as capture waveforms.

Non-Volatile Memory:

Power is not required to maintain the stored information. Device retains its contents when power is removed. This type of memory typically contains information necessary to boot, configure, or calibrate the product or may include device power up states.

User Accessible:

The component is read and/or write addressable such that a user can store arbitrary information to the component from the host using a publicly distributed NI tool, such as a Driver API, the System Configuration API, or MAX.

System Accessible:

The component is read and/or write addressable from the host without the need to physically alter the product.

Clearing:

Per *NIST Special Publication 800-88 Revision 1*, “clearing” is a logical technique to sanitize data in all User Accessible storage locations for protection against simple non-invasive data recovery techniques using the same interface available to the user; typically applied through the standard read and write commands to the storage device.

Sanitization:

Per *NIST Special Publication 800-88 Revision 1*, “sanitization” is a process to render access to “Target Data” on the media infeasible for a given level of effort. In this document, clearing is the degree of sanitization described.