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**PXIe-4190**



**Manufacturer:** NI

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

Part Number and Revision	Description
142783D-01L or later	PXIe-4190 2 MHZ LCR METER AND SOURCE MEASURE UNIT
142783D-02L or later	PXIE-4190, PRECISION SMU+LCR 500KHZ

**Volatile Memory**

<i>Target Data</i>	<i>Type</i>	<i>Size</i>	<i>Battery Backup</i>	<i>User<sup>1</sup> Accessible</i>	<i>System Accessible</i>	<i>Sanitization Procedure</i>
Device operation	FPGA	Xilinx XC7K160T	No	No	Yes	Cycle Power
Device operation	FPGA	Xilinx XC7A50T	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>
Device configuration	Flash	1 MB	No			
<ul style="list-style-type: none"> <li>• Device information</li> <li>• Calibration metadata</li> <li>• Calibration data<sup>2</sup></li> <li>• Custom cable compensation data</li> <li>• ASIC Configuration</li> </ul>				No Yes No No No	Yes Yes Yes Yes	None Procedure 2 None None None

<sup>1</sup> Refer to *Terms and Definitions* section for clarification of *User* and *System Accessible*

<sup>2</sup> 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: #####a-##L” where “a” is the letter revision of the assembly (e.g. E, F, G...).

### Procedure 2 – Device Configuration Flash (Calibration Metadata):

Requirements: LabVIEW 2018 or later, niDCPower 21.5 or later.

The user-accessible areas of the Device Configuration Flash are exposed in part through a calibration Applications Programming Interface (API) and in part through Measurement & Automation Explorer (MAX). To clear the calibration meta-data, complete all the following steps:

With the calibration API:

1. To clear the calibration password, use niDCPower Change Ext Cal Password.vi in the NI-DCPower Calibration palette in LabVIEW (or equivalent functions in C, C#, or other supported languages) to overwrite the current password of the device you wish to clear.
2. To clear the user-defined information, use niDCPower Set Cal User Defined Info.vi (or equivalent) to overwrite the current user-defined information of the device you wish to clear.

In MAX:

1. To clear the calibration date and calibration due date, select the product in MAX. Change the dates in the External Calibration section and then press Save. You will be asked to confirm the calibration password for the changes to take effect.



## 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.