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Manufacturer: National Instruments

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

Part Number and Revision	Description
198643A-01L / 198643B-01L	**PXIe-5450, 128 MB**
198643A-02L / 198643B-02L	**PXIe-5450, 512 MB**

Volatile Memory

Target Data	*Type*	*Size*	*Battery Backup*	*User[1] Accessible*	*System Accessible*	*Sanitization Procedure*
Waveform Data	DDR2 DRAM					
• User Data	(-01L only)	128 MB	No	Yes	Yes	Cycle Power
• Unused memory		384 MB	No	No	Yes	Cycle Power
Waveform Data	DDR2 DRAM (-02L only)	512 MB	No	Yes	Yes	Cycle Power
Buffering Data FPGA	Block RAM	1.2 MB	No	Yes	Yes	Cycle Power
Buffering Data and Configuration FPGA	Block RAM	172 KB	No	Yes	Yes	Cycle Power

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

Target Data	*Type*	*Size*	*Battery Backup*	*User Accessible*	*System Accessible*	*Sanitization Procedure*
Device configuration	FLASH	16 MB	No			
• Device information				No	Yes	None
• FPGA bitstream				No	Yes	None
Spread Spectrum Clock (config)	On-Chip	CY25100	No	No	No	None
Device configuration	EEPROM	32 KB	No			
• Calibration metadata				Yes	Yes	Procedure 2
• Calibration data[2]				Yes	Yes	Procedure 3
FPGA Configuration PLD						
• User Flash Memory	FLASH	1 KB	No	No	No	None
• Configuration Image	FLASH	240 LEs	No	No	No	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.

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

Part Number and Revision	Description
198643C-01L or later	**PXIe-5450, 128 MB**
198643C-02L or later	**PXIe-5450, 512 MB**

Volatile Memory

Target Data	*Type*	*Size*	*Battery Backup*	*User[3] Accessible*	*System Accessible*	*Sanitization Procedure*
Waveform Data	DDR2 DRAM					
• User Data	(-01L only)	128 MB	No	Yes	Yes	Cycle Power
• Unused memory		384 MB	No	No	Yes	Cycle Power
Waveform Data	DDR2 DRAM (-02L only)	512 MB	No	Yes	Yes	Cycle Power
Buffering Data FPGA	Block RAM	844 KB	No	Yes	Yes	Cycle Power
Buffering Data and Configuration FPGA	Block RAM	172 KB	No	Yes	Yes	Cycle Power
PCIe PHY FPGA	Block RAM	153 KB	No	No	Yes	Cycle Power
PCIe PHY FPGA	LUTRAM	5.2 KB	No	No	Yes	Cycle Power

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

Target Data	*Type*	*Size*	*Battery Backup*	*User Accessible*	*System Accessible*	*Sanitization Procedure*
Device configuration	FLASH	32 MB	No			
• Device information				No	Yes	None
• FPGA bitstream				No	Yes	None
Spread Spectrum Clock (config)	On-Chip	CY25100	No	No	No	None
Device configuration	EEPROM	32 KB	No			
• Calibration metadata				Yes	Yes	Procedure 2
• Calibration data[4]				Yes	Yes	Procedure 3
FPGA Configuration PLD						
• User Flash Memory	FLASH	1 KB	No	No	No	None
• Configuration Image	FLASH	240 LEs	No	No	No	None

[3] Refer to *Terms and Definitions* section for clarification of *User* and *System Accessible*
[4] 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 "PART NO: 198643#-0xL" or alternately "P/N: 198643#-0xL" where "#" is the letter module revision and "x" determines the module memory option.

Procedure 2 - Device Configuration FLASH (Calibration Metadata):
The user-accessible areas of the Device Configuration FLASH are exposed through a calibration Applications Programming Interface (API) in LabVIEW. To clear the calibration meta-data area, complete the following steps in an empty VI and run in LabVIEW:

1. Open a calibration session using the niFgen Initialize External Calibration VI.
2. To clear the calibration password:
    a. Specify the current password in the "Old Password" input of the niFgen Change External Calibration Password VI.
    b. Wire a string of 4 "0" characters to the "New Password" input of niFgen Change External Calibration Password VI.
3. To clear the user-defined information:
    a. Wire a string of 4 "0" characters to the input of the niFgen Set Cal User Defined Info VI.
4. Close the calibration session using the niFgen Close External Calibration VI.

Procedure 3 - Device Configuration FLASH (Calibration Data):
The NI PXIe-5450 has a user-accessible calibration Application Programming interface (API) for LabVIEW. This API allows the user to perform the following calibrations manually, which re-write the stored calibration constants:

1. DC ADC and reference
2. Frequency response (flatness)

Documentation for the use of this API is listed in the *NI Signal Generators Help* file.

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.