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***cRIO-9033***

**Board Assembly Part Number(s)**

Part Number	Description
156502A-11L or later	cRIO-9030
156502A-01L or later	cRIO-9031
156502A-02L or later	cRIO-9033
156502A-03L or later	cRIO-9034
157732A-11L or later	cRIO-9035
157732A-01L or later	cRIO-9036
157732A-02L or later	cRIO-9038
157732A-03L or later	cRIO-9039

**Manufacturer:** National Instruments

**Volatile Memory**

Type <sup>1</sup>	Size	User Accessible/ System Accessible <sup>2</sup>	Battery Backup?	Purpose	Method of Clearing <sup>3</sup>
<b>(9030)</b>					
DDR3-SDRAM	1 GB	Yes/Yes	No	System Memory	Cycle Power
FPGA RAM	Kintex-7 7K70T	Yes/Yes	No	LabVIEW and User Data	Cycle Power
<b>(9031)</b>					
DDR3-SDRAM	1 GB	Yes/Yes	No	System Memory	Cycle Power
FPGA RAM	Kintex-7 7K70T	Yes/Yes	No	LabVIEW and User Data	Cycle Power
<b>(9033)</b>					
DDR3-SDRAM	2 GB	Yes/Yes	No	System Memory	Cycle Power
FPGA RAM	Kintex-7 7K160T	Yes/Yes	No	LabVIEW and User Data	Cycle Power
<b>(9034)</b>					
DDR3-SDRAM	2 GB	Yes/Yes	No	System Memory	Cycle Power
FPGA RAM	Kintex-7 7K325T	Yes/Yes	No	LabVIEW and User Data	Cycle Power
FPGA DRAM	128 MB	Yes/Yes	No	LabVIEW and User Data	Cycle Power
<b>(9035)</b>					
DDR3-SDRAM	1 GB	Yes/Yes	No	System Memory	Cycle Power
FPGA RAM	Kintex-7 7K70T	Yes/Yes	No	LabVIEW and User Data	Cycle Power
<b>(9036)</b>					
DDR3-SDRAM	1 GB	Yes/Yes	No	System Memory	Cycle Power
FPGA RAM	Kintex-7 7K70T	Yes/Yes	No	LabVIEW and User Data	Cycle Power

<sup>1</sup> Calibration constants that are stored in device EEPROMs include information for the device's full operating range. Calibration constants do not maintain any unique data for specific configurations at which the device is used unless otherwise specified.

<sup>2</sup> Items are designated **No** for the following reason(s):

- a) Hardware changes or a unique software tool from National Instruments are required to modify contents of the memory listed.
- b) Hardware-modifying software tools are not distributed to customers for any personal access or customization, also known as non-normal use.

<sup>3</sup> The designation *None Available to User* indicates that the ability to clear this memory is not available to the user under normal operation. The utilities required to clear the memory are not distributed by National Instruments to customers for normal use.



**(9038)**

DDR3-SDRAM	2 GB	Yes/Yes	No	System Memory	Cycle Power
FPGA RAM	Kintex-7 7K160T	Yes/Yes	No	LabVIEW and User Data	Cycle Power

**(9039)**

DDR3-SDRAM	2 GB	Yes/Yes	No	System Memory	Cycle Power
FPGA RAM	Kintex-7 7K325T	Yes/Yes	No	LabVIEW and User Data	Cycle Power
FPGA DRAM	128 MB	Yes/Yes	No	LabVIEW and User Data	Cycle Power

**(9030/9031/9033/9034/9035/9036/9038/9039)**

CPLD-SDRAM	51 Mb	No/Yes	No	CPLD Memory	Cycle Power
SoC RTC RAM	242Bytes	Yes/Yes	Yes	Battery Backed portion of RTC	CMOS reset button

**Non-Volatile Memory**

Type	Size	User Accessible/ System Accessible	Battery Backup?	Purpose	Method of Clearing
<b>(9030)</b>					
Disk-on-Chip	4 GB				
-Firmware		No/Yes	No	Safemode	None available to user
-OS		No/Yes	No	Operating System	Format drive in MAX
-User Disk		Yes/Yes	No	User Data	Format drive in MAX
Flash	32 Mb				
-Firmware		No/Yes	No	FPGA Firmware	None available to user
-FPGA Bitstream		Yes/Yes	No	User LV FPGA VI Bitstream	NI-RIO Device Setup
<b>(9031)</b>					
Disk-on-Chip	4 GB				
-Firmware		No/Yes	No	Safemode	None available to user
-OS		No/Yes	No	Operating System	Format drive in MAX
-User Disk		Yes/Yes	No	User Data	Format drive in MAX
Flash	32 Mb				
-Firmware		No/Yes	No	FPGA Firmware	None available to user
-FPGA Bitstream		Yes/Yes	No	User LV FPGA VI Bitstream	NI-RIO Device Setup
<b>(9033)</b>					
Disk-on-Chip	8 GB				
-Firmware		No/Yes	No	Safemode	None available to user
-OS		No/Yes	No	Operating System	Format drive in MAX
-User Disk		Yes/Yes	No	User Data	Format drive in MAX
Flash	64 Mb				
-Firmware		No/Yes	No	FPGA Firmware	None available to user
-FPGA Bitstream		Yes/Yes	No	User LV FPGA VI Bitstream	NI-RIO Device Setup



**(9034)**

<i>Disk-on-Chip</i>	<i>16 GB</i>				
-Firmware		No/Yes	No	Safemode	None available to user
-OS		No/Yes	No	Operating System	Format drive in MAX
-User Disk		Yes/Yes	No	User Data	Format drive in MAX

<i>Flash</i>	<i>128 Mb</i>				
-Firmware		No/Yes	No	FPGA Firmware	None available to user
-FPGA Bitstream		Yes/Yes	No	User LV FPGA VI Bitstream	NI-RIO Device Setup

**(9035)**

<i>Disk-on-Chip</i>	<i>4 GB</i>				
-Firmware		No/Yes	No	Safemode	None available to user
-OS		No/Yes	No	Operating System	Format drive in MAX
-User Disk		Yes/Yes	No	User Data	Format drive in MAX

<i>Flash</i>	<i>32 Mb</i>				
-Firmware		No/Yes	No	FPGA Firmware	None available to user
-FPGA Bitstream		Yes/Yes	No	User LV FPGA VI Bitstream	NI-RIO Device Setup

**(9036)**

<i>Disk-on-Chip</i>	<i>4 GB</i>				
-Firmware		No/Yes	No	Safemode	None available to user
-OS		No/Yes	No	Operating System	Format drive in MAX
-User Disk		Yes/Yes	No	User Data	Format drive in MAX

<i>Flash</i>	<i>32 Mb</i>				
-Firmware		No/Yes	No	FPGA Firmware	None available to user
-FPGA Bitstream		Yes/Yes	No	User LV FPGA VI Bitstream	NI-RIO Device Setup

**(9038)**

<i>Disk-on-Chip</i>	<i>8 GB</i>				
-Firmware		No/Yes	No	Safemode	None available to user
-OS		No/Yes	No	Operating System	Format drive in MAX
-User Disk		Yes/Yes	No	User Data	Format drive in MAX

<i>Flash</i>	<i>64 Mb</i>				
-Firmware		No/Yes	No	FPGA Firmware	None available to user
-FPGA Bitstream		Yes/Yes	No	User LV FPGA VI Bitstream	NI-RIO Device Setup

**(9039)**

<i>Disk-on-Chip</i>	<i>16 GB</i>				
-Firmware		No/Yes	No	Safemode	None available to user
-OS		No/Yes	No	Operating System	Format drive in MAX
-User Disk		Yes/Yes	No	User Data	Format drive in MAX

<i>Flash</i>	<i>128 Mb</i>				
-Firmware		No/Yes	No	FPGA Firmware	None available to user
-FPGA Bitstream		Yes/Yes	No	User LV FPGA VI Bitstream	NI-RIO Device Setup

**(9030/9031/9033/9034/9035/9036/9038/9039)**

<i>CPLD</i>	<i>0.47 Mb</i>	<i>No/Yes</i>	<i>No</i>	<i>General Logic</i>	<i>None available to user</i>
<i>Ethernet NVM</i>	<i>8 Mb</i>	<i>No/Yes</i>	<i>No</i>	<i>Firmware</i>	<i>None available to user</i>
<i>SPD EEPROM</i>	<i>256 bytes</i>	<i>No/Yes</i>	<i>No</i>	<i>Describes DDR3L memory</i>	<i>None available to user</i>
<i>System BIOS</i>	<i>8 MB</i>	<i>No/Yes</i>	<i>No</i>	<i>BIOS firmware</i>	<i>BIOS update process</i>

## Media Storage

<u>Type</u>	<u>Size</u>	<u>User Accessible/ System Accessible</u>	<u>Battery Backup?</u>	<u>Purpose</u>	<u>Method of Clearing</u>
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NONE

### Clearing Notes:

**CMOS reset button:** To clear the CMOS follow the steps below:

1. Disconnect power from the cRIO controller.
2. Locate the CMOS reset button in the center of the cRIO backplane.
3. Press the CMOS reset button and hold it for 1 second.

**Format drive in MAX:** To format the drive in MAX, follow the steps below:

1. Open NI Measurement & Automation Explorer (MAX).
2. On the left pane, expand *Remote Systems* and select your cRIO.
3. Right-click on the cRIO and select *Format Disk*.
4. Ensure *Reset all of the network adapters to their default settings* is selected.
5. Click the *Format* button.

**NI-RIO Device Setup:** To erase the bitfile from the flash follow the steps below:

1. Add the cRIO Target to your LabVIEW project by right-clicking on the project and selecting New » Targets and Devices and selecting your cRIO.
2. Right-click on the FPGA project item and select RIO Device Setup.
3. In the *Advanced* section, select *Erase Bitfile on Flash*.

**BIOS update process:** In order to update the BIOS, please contact NI by emailing support@ni.com or calling 866-275-6964.

### Terms and Definitions

**User Accessible** Allows the user to directly write or modify the contents of the memory during normal instrument operation.

**System Accessible** Does not allow the user to access or modify the memory during normal instrument operation. However, system accessible memory may be accessed or modified by background processes. This can be something that is not deliberate by the user and can be a background driver implementation, such as storing application information in RAM to increase speed of use.

**Cycle Power** The process of completely removing power from the device and its components. 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.

**Non-Volatile** Retains its contents when power is removed. This type of memory typically contains calibration or chip configuration information, such as power up states.