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# **sbRIO-9627**

# **Getting Started**

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2025-03-20

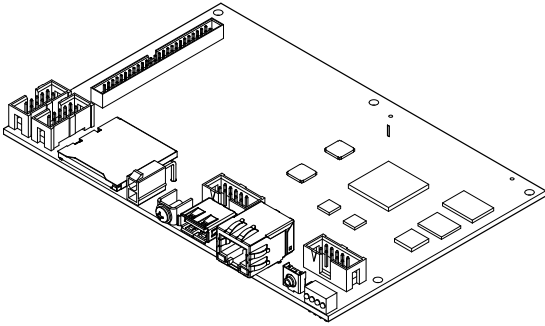


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# Overview

This document describes how to begin using the NI sbRIO-9627.



## Safety Guidelines

Operate the sbRIO-9627 only as described in the user documentation.



**Caution** The sbRIO-9627 must be installed in a suitable enclosure prior to use.



**Caution** NI makes no product safety, electromagnetic compatibility (EMC), or CE marking compliance claims for the sbRIO-9627. The end-product supplier is responsible for conformity to any and all compliance requirements.



**Caution** Exercise caution when designing an enclosure for the sbRIO-9627. Auxiliary cooling may be necessary to keep the sbRIO-9627 within the specified operating temperature range. Refer to the **NI sbRIO-9627 Specifications** on [ni.com/manuals](https://ni.com/manuals) for more information about the maximum operating temperature rating. For information and examples

regarding factors that can affect thermal performance, visit [ni.com/info](https://ni.com/info) and enter the Info Code `sbriocooling`.

## Safety Voltages

Connect only voltages that are below these limits.

|                          |  |
|--------------------------|--|
| V terminal to C terminal | 30 VDC maximum, Measurement Category I |
|--------------------------|--|

## Preparing the Environment

Ensure that the environment in which you are using the sbRIO-9627 meets the following specifications.

|  |                 |
|--|-----------------|
| Local ambient operating temperature near device (IEC 60068-2-1, IEC 60068-2-2) | -40 °C to 85 °C |
| <b>Maximum reported onboard sensor temperature</b>                             |                 |
| CPU/FPGA temperature   | 98 °C           |
| Primary System temperature   | 85 °C           |
| Secondary System temperature   | 85 °C           |



**Note** Ensure that the local ambient, reported CPU/FPGA, and reported Primary System temperatures do not exceed any of the maximum temperatures listed in this document. For more information about how to access the onboard sensors, visit [ni.com/info](https://ni.com/info) and enter the Info Code `sbriosensors`.

|                                     |                                 |
|-------------------------------------|---------------------------------|
| Operating humidity (IEC 60068-2-78) | 10% RH to 90% RH, noncondensing |
| Pollution Degree (IEC 60664)        | 2                               |
| Maximum altitude                    | 5,000 m                         |

Indoor use only.



**Note** Refer to the device specifications on [ni.com/manuals](https://ni.com/manuals) for complete specifications.

## Unpacking the Kit



**Notice** To prevent electrostatic discharge (ESD) from damaging the device, ground yourself using a grounding strap or by holding a grounded object, such as your computer chassis.

1. Touch the antistatic package to a metal part of the computer chassis.
2. Remove the device from the package and inspect the device for loose components or any other sign of damage.



**Notice** Never touch the exposed pins of connectors.



**Note** Do not install a device if it appears damaged in any way.

3. Unpack any other items and documentation from the kit.

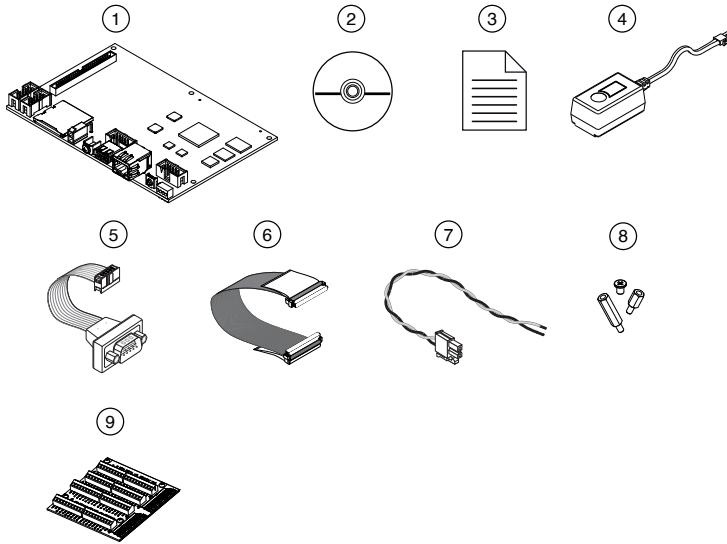


**Note** Store the device in the antistatic package when the device is not in use.

# Verifying the Kit Contents

Verify that the following items are included in the sbRIO-9627 kit.

**Figure 1.** sbRIO-9627 Kit Contents



1. sbRIO Device
2. NI CompactRIO Device Drivers Media
3. Getting Started Guide
4. Power Supply
5. 10-pin IDC to 9-pin DSUB Cable
6. 50-pin IDC Ribbon Cable
7. Power Cable Assembly
8. Standoffs and Screws
9. NI 9694 Digital I/O Breakout RMC Board



**Note** The provided power supply is only intended for the getting started experience. NI recommends the use of a power supply that meets the specifications listed in the ***NI sbRIO-9627 Specifications*** for system deployment.

## Installing Software on the Host Computer

Before using the sbRIO-9627, you must install the following application software and device drivers on the host computer.

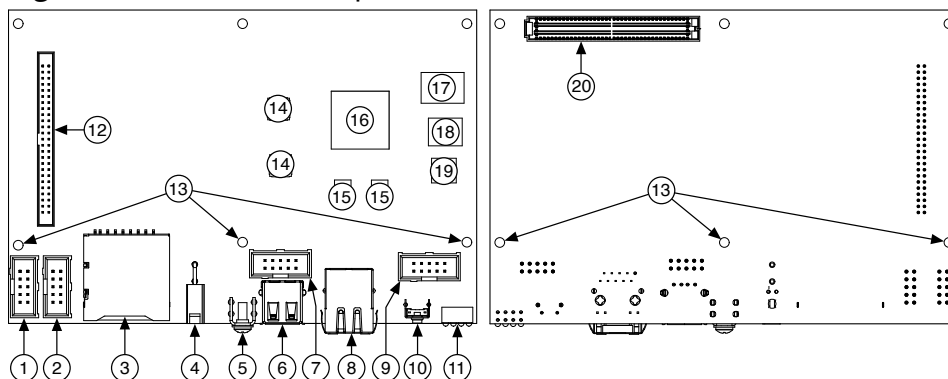
1. LabVIEW 2015 or later
2. LabVIEW Real-Time Module 2015 or later
3. LabVIEW FPGA Module 2015 or later
4. NI CompactRIO Device Drivers August 2015 or later

For minimum software support information, visit [ni.com/info](http://ni.com/info) and enter the Info Code `softwareversion`.

## Connecting the sbRIO-9627

The sbRIO-9627 has the following components.

**Figure 2.** sbRIO-9627 Components



1. W3, RS-485 (COM3)
2. W4, RS-232 (COM2)
3. J6, SDHC
4. J9, Power Connector
5. Chassis Ground Bracket
6. J10, USB Host Port
7. W1, CAN (CAN0)
8. J7, RJ-45 Ethernet Port
9. W2, RS-232 (COM1)
10. Reset Switch
11. LEDs
12. J5, MIO

13. Mounting Holes Connected to Chassis Ground
14. Ethernet RGMII Transceiver
15. ULPI USB Transceiver
16. FPGA Processor
17. DDR Memory
18. NAND Flash
19. CPLD
20. J1, RIO Mezzanine Card Connector

## Connecting the sbRIO-9627 to Power

The NI sbRIO device requires a 9 VDC to 30 VDC external power supply. The NI sbRIO device filters and regulates the supplied power and provides power for RMCs.



**Note** Refer to the ***Power Requirements*** section of the ***NI sbRIO-9627 Specifications*** for the complete power requirement specifications.



**Note** Refer to the ***Power Requirements*** section of the ***NI sbRIO-9627 User Manual*** for formulas and examples for calculating power requirements for different configurations and application types.



**Note** Refer to the ***Power Requirements*** section of the ***NI sbRIO-9627 User Manual*** for proper wiring of the power cable assembly.

Complete the following steps to connect a power supply to the device.



**Caution** Do not mate or unmate the power supply connectors while power is applied.

1. Ensure that your power supply is powered off.
2. Insert the power connector plug into the power connector receptacle of the NI sbRIO device until the connector latches into place.
3. Turn on the power supply.



## Powering On the NI sbRIO Device

The NI sbRIO device runs a power-on self test (POST) when you apply power to the device. During the POST, the Power and Status LEDs turn on. When the Status LED turns off, the POST is complete. If the LEDs do not behave in this way when the system powers on, refer to the [STATUS LED Indicators](#) section of this document to help you troubleshoot the issue.

## Connecting the sbRIO-9627 to the Host Computer

Complete the following steps to connect the sbRIO-9627 to the host computer using the RJ-45 Ethernet port.

1. Power on the host computer.
2. Connect the sbRIO-9627 to the host computer using a standard Category 5 (CAT-5) or better shielded, twisted-pair Ethernet cable.



**Caution** To prevent data loss and to maintain the integrity of your Ethernet installation, do not use a cable longer than 100 m.

The first time you power up the device, it attempts to initiate a DHCP network connection. If the device is unable to initiate a DHCP connection, it connects to the network with a link-local IP address with the form 169.254.x.x. After the device has powered up, you must install software on the device and configure the network settings in MAX.



**Note** Installing software may change the network behavior of the device. For information about network behavior by installed software version, visit [ni.com/info](https://ni.com/info) and enter the Info Code `ipconfigcrio`.

## Configuring the System in Measurement & Automation Explorer (MAX)

Complete the following steps to find the system in MAX.

1. Launch MAX on the host computer.
2. Expand **Remote Systems** in the configuration tree and locate your system.
3. Select your target.



**Tip** MAX lists the system under the model number followed by the serial number, such as NI-sbRIO-9627-#####.

## Setting a System Password

Complete the following steps to set a system password.



**Note** The default username for the sbRIO-9627 is `admin`. There is no default password for the sbRIO-9627, so you must leave the password field blank when logging in until you set a system password.

1. Right-click your system and select **Web Configuration**.  
The NI Web-Based Configuration and Monitoring utility opens in your default browser and is where you set the password. If you have not installed Microsoft Silverlight, NI Web-based Configuration & Monitoring prompts you to do so.
2. Enter a unique name for your system in the **Hostname** field.
3. Click the **Security Configuration** icon.
4. Click **Login**.
5. In the **Login** dialog box, enter the username `admin` and leave the password field blank.
6. Click **OK**.
7. Click **Change Password**.
8. Enter and re-enter a new password.
9. Click **OK**.
10. Click **Save**.
11. Click **OK** to confirm you are changing the password.




**Notice** NI cannot recover lost system passwords. If you forget the password, you must contact NI and reformat the controller.

## Installing Software on the sbRIO-9627


Complete the following steps to install software on the sbRIO-9627.

1. In MAX, expand your system under Remote Systems.
2. Right-click **Software**.
3. Select **Add/Remove Software** to launch the LabVIEW Real-Time Software Wizard.

 **Tip** You must log in if you set a system password.

4. Select the recommended software set for your LabVIEW and NI CompactRIO Device Drivers versions.
5. Click **Next**.
6. Select **NI Scan Engine** from the software add-ons.

Select any additional software to install. If you plan on using the sbRIO-9627 with the LabVIEW FPGA Module, you can click **Next**.

 **Tip** You can use this wizard at anytime to install additional software.

7. Click **Next**.
8. Verify that the summary of software to install is correct.
9. Click **Next** to start the installation.
10. Click **Finish** when the installation is complete.

## Troubleshooting the sbRIO-9627

### The sbRIO-9627 is Not Communicating with the Network

- Ensure that the Ethernet connections between the sbRIO-9627 and the host computer and the Ethernet connections between the host computer and the router are secure.
- Ensure that you have the correct version of NI CompactRIO Device Drivers installed on the host computer. Visit [ni.com/info](http://ni.com/info) and enter the Info Code `softwareversion` for the minimum supported versions of LabVIEW and NI

## CompactRIO Device Drivers.



**Tip** If you have recently upgraded LabVIEW, you must reinstall NI CompactRIO Device Drivers.

- Temporarily disable any network firewalls or other security software.

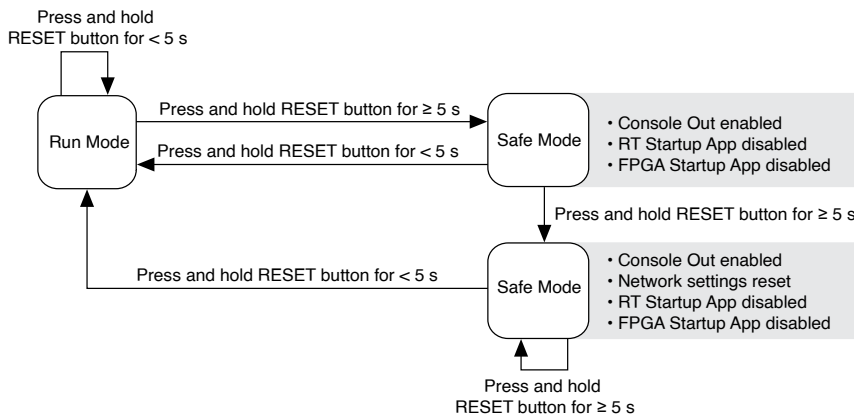
Configure the IP and other network settings by completing the following steps.

1. Use a standard Category 5 (CAT-5) or better shielded, twisted-pair Ethernet cable to connect the sbRIO-9627 Ethernet port to a host computer. The sbRIO-9627 attempts to initiate a DHCP network connection at powerup.
2. In MAX, expand your system under Remote Systems and select **Troubleshoot Remote System Discovery**.

## System Reset

The following figure shows the reset behavior of the sbRIO-9627.

**Figure 3. Reset Button Behavior**



## STATUS LED Indicators

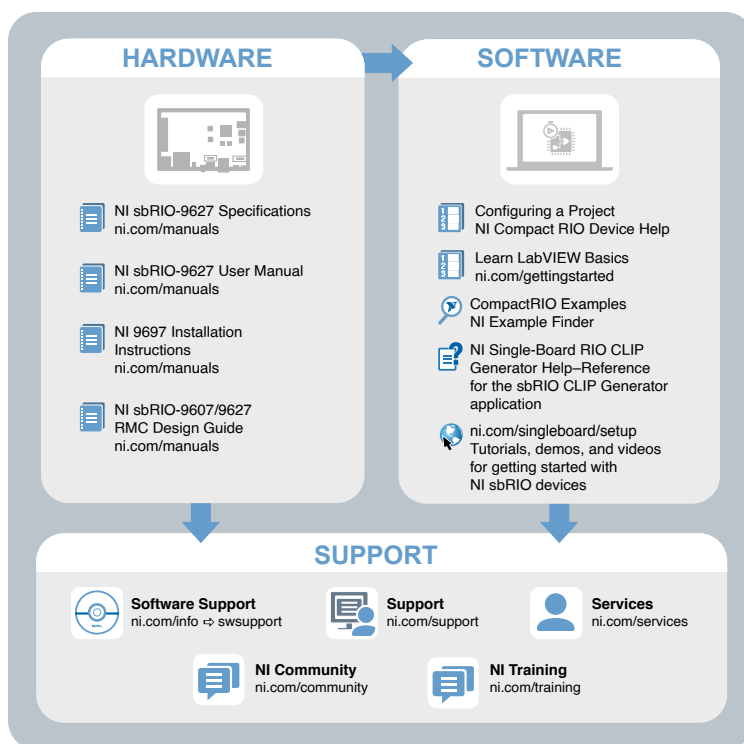
The following table lists the STATUS LED indicators.

Table 1. STATUS LED Indicators

| LED Pattern                   | Indication   |
|-------------------------------|--|
| Blinks twice and pauses       | <p>The sbRIO-9627 is in safe mode. Software is not installed, which is the factory default state, or software has been improperly installed on the sbRIO-9627.</p> <p>An error can occur when an attempt to upgrade the software is interrupted. Reinstall software on the sbRIO-9627. Refer to the <b><i>Measurement &amp; Automation Explorer (MAX) Help</i></b> for information about installing software on the sbRIO-9627.</p>                            |
| Blinks three times and pauses | <p>The sbRIO-9627 is in user-directed safe mode, or the sbRIO-9627 is in install mode to indicate that software is currently being installed.</p> <p>This pattern may also indicate that the user has forced the sbRIO-9627 to boot into safe mode by pressing the reset button for longer than five seconds or by enabling safe mode in MAX. Refer to the <b><i>Measurement &amp; Automation Explorer (MAX) Help</i></b> for information about safe mode.</p> |
| Blinks four times and pauses  | <p>The sbRIO-9627 is in safe mode. The software has crashed twice without rebooting or cycling power between crashes.</p>  |
| Continuously blinks           | <p>The sbRIO-9627 has not booted into NI Linux Real-Time. The sbRIO-9627 either booted into an unsupported operating system, was interrupted during the boot process, or detected an unrecoverable software error.</p>   |

| LED Pattern    | Indication  |
|----------------|---|
| On momentarily | The sbRIO-9627 is booting. No action required.  |
| Off            | The sbRIO-9627 is in run mode. Software is installed and the operating system is running. |

## Where to Go Next



## Worldwide Support and Services

Visit [ni.com/support](http://ni.com/support) to find support resources including documentation, downloads, and troubleshooting and application development self-help such as tutorials and examples.

Visit [ni.com/services](http://ni.com/services) to learn about NI service offerings such as calibration options,

repair, and replacement.

Visit [ni.com/register](https://ni.com/register) to register your NI product. Product registration facilitates technical support and ensures that you receive important information updates from NI.

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