

# PXle-416x Remote Sense Resistor Accessory

## Sense Resistor Accessory for the PXle-4162/PXle-4163

This document explains how to install and use the PXle-416x Remote Sense Resistor Accessory with a PXle-4162/PXle-4163 source measure unit (SMU)—collectively referred to as the PXle-416x—and includes PXle-416x Remote Sense Resistor Accessory specifications.

The PXle-416x Remote Sense Resistor Accessory is used to modify the behavior of the PXle-4162/PXle-4163 SMU when the module is used in remote sense mode.

Read this document and the documents listed in the *Additional Resources* section about installation, configuration, and operation of this product before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.



**Caution** Observe all instructions and cautions in the user documentation. Using the product in a manner not specified can damage the product and compromise the built-in safety protection. Return damaged products to NI for repair.



**Attention** Suivez toutes les instructions et respectez toutes les mises en garde de la documentation d'utilisation. L'utilisation du produit de toute autre façon que celle spécifiée risque de l'endommager et de compromettre la protection de sécurité intégrée. Renvoyez les produits endommagés à NI pour réparation.



**Notice** This device is intended for use only with the PXle-4162/PXle-4163 SMU. For more information about the PXle-4162/PXle-4163, refer to [ni.com/manuals](https://ni.com/manuals).

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## Icons

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 **Notice** Take precautions to avoid data loss, loss of signal integrity, degradation of performance, or damage to the model.

 **Caution** Take precautions to avoid injury. Consult the model documentation for cautionary statements when you see this icon printed on the model. Cautionary statements are localized into French for compliance with Canadian requirements.

# Getting Started with the PXIe-4162/4163 Remote Sense Resistor Accessory

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## Kit Contents and Other Equipment

Your kit includes an assembled PXIe-416x Remote Sense Resistor Accessory. In addition, you will need the following items not included in your PXIe-416x Remote Sense Resistor Accessory kit to install and use the PXIe-416x Remote Sense Resistor Accessory.

- PXIe-4162/PXIe-4163<sup>1</sup>
- Number 1 Phillips-head screwdriver

Visit [ni.com](http://ni.com) for more information about the PXIe-4162/PXIe-4163.

## Installing the PXIe-416x Remote Sense Resistor Accessory

Complete the following steps to install the PXIe-416x Remote Sense Resistor Accessory with a PXIe-416x.

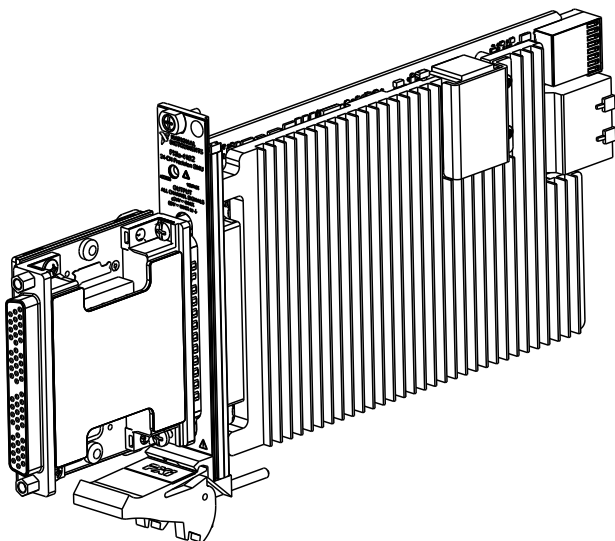
Before you begin, install the PXIe-416x in a chassis and ensure that all signals are disconnected from the PXIe-416x if you have not already done so. Refer to the getting started guide for your module at [ni.com/manuals](http://ni.com/manuals) for installation instructions.

1. Connect the PXIe-416x Remote Sense Resistor Accessory to the PXIe-416x.
  - a) Align the male D-SUB connector on the PXIe-416x Remote Sense Resistor Accessory and the female D-SUB connector on the front of the PXIe-416x and attach.
  - b) Tighten the screws on the front of the PXIe-416x Remote Sense Resistor Accessory until the accessory is secured to the PXIe-416x.

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<sup>1</sup> If you use the PXIe-416x Remote Sense Resistor Accessory with a PXIe-4162/PXIe-4163, refer to your module specifications at [ni.com/manuals](http://ni.com/manuals) for pinout and signal information during installation.

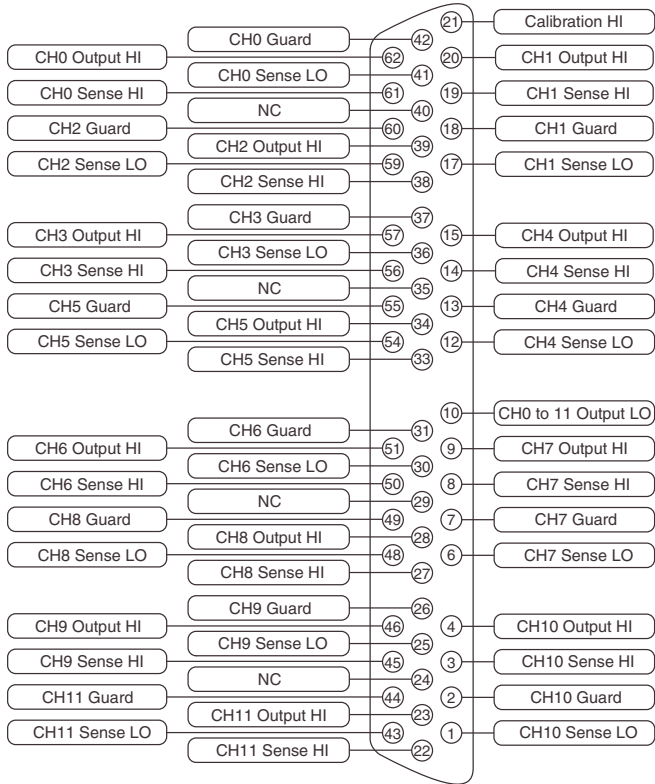
**Figure 1.** Installed PXIe-416x Remote Sense Resistor Accessory



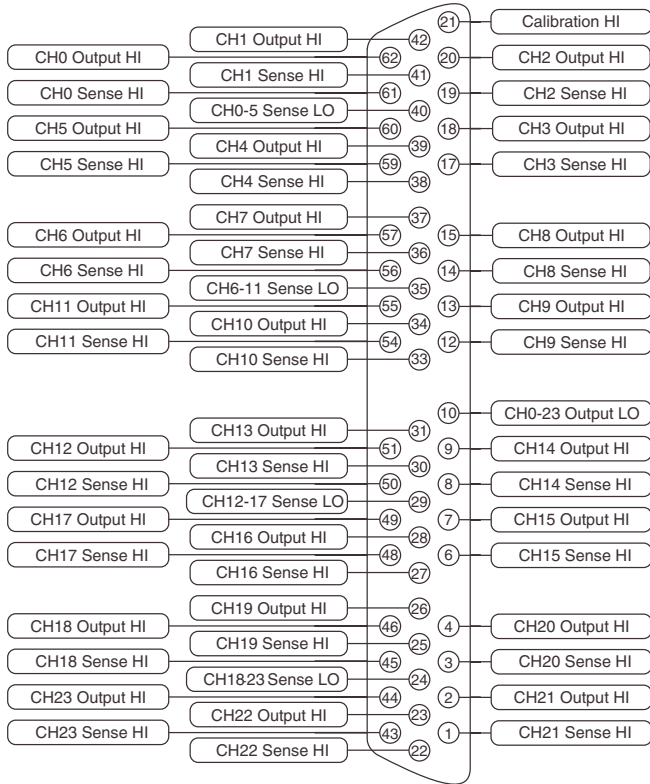
2. Connect a compatible cable or connectivity accessory to the PXIe-416x Remote Sense Resistor Accessory. Refer to your cable or accessory documentation for more information.

Refer to the following pinouts for your respective module to make the appropriate connections for your application.

**Figure 2. PXle-4162 Pinout**



**Figure 3. PXIe-4163 Pinout**



### Uninstalling the PXIe-416x Remote Sense Resistor Accessory

1. Disconnect any attached cable or connectivity accessory from the PXIe-416x Remote Sense Resistor Accessory.
2. Loosen the screws on the front of the PXIe-416x Remote Sense Resistor Accessory and detach the accessory from the front of the PXIe-416x.

## PXIe-416x Remote Sense Resistor Accessory Specifications

These specifications apply to the PXIe-416x Remote Sense Resistor Accessory for use with the PXIe-4162/PXIe-4163.

The PXIe-4162 is a 12-Channel,  $\pm 24$  V, 100 mA SMU, and the PXIe-4163 is a 24-Channel,  $\pm 24$  V, 50 mA SMU. Refer to the module specifications at [ni.com/manuals](http://ni.com/manuals) for more information.

## Definitions

*Warranted* specifications describe the performance of a model under stated operating conditions and are covered by the model warranty.

*Characteristics* describe values that are relevant to the use of the model under stated operating conditions but are not covered by the model warranty.

- *Typical* specifications describe the performance met by a majority of models.
- *Nominal* specifications describe an attribute that is based on design, conformance testing, or supplemental testing.

Specifications are *Nominal* unless otherwise noted.

## Derating

### Remote Sense

|                               |  |
|-------------------------------|--|
| Maximum sense lead resistance | 100 $\Omega$   |
| Maximum force lead drop       | 1 V  |
| Voltage accuracy              | Add 200 $\mu\text{V}$ to the accuracy specification for your respective module when using the PXIe-416x Remote Sense Resistor Accessory. |

### Load Regulation

|         |  |
|---------|--|
| Voltage | Add 300 $\mu\text{V}/\text{mA}$ to the accuracy specification for your respective module at the output connector pins of the connected PXIe-416x Remote Sense Resistor Accessory when using local sense configuration. |
|---------|--|

### Physical

|            |   |
|------------|---|
| Dimensions | 8 mm $\times$ 72 mm $\times$ 16 mm<br>(2.9 in. $\times$ 2.8 in. $\times$ 0.6 in.) |
| Weight     | 89 g (3.15 oz)  |

## Environmental Guidelines



**Notice** This model is intended for use in indoor applications only.

# Environmental Characteristics

## Temperature and Humidity

| Temperature  |   |
|--|---|
| Operating  |   |
| Chassis with slot cooling capacity $\geq 58 \text{ W}^2$ | 0 °C to 55 °C                                     |
| All other compatible chassis                             | 0 °C to 40 °C                                     |
| Storage  | -40 °C to 71 °C                                   |
| Humidity   |   |
| Operating  | 10% to 90%, noncondensing                         |
| Storage  | 5% to 95%, noncondensing                          |
| Pollution Degree   | 2   |
| Maximum altitude   | 2,000 m (800 mbar) (at 25 °C ambient temperature) |

## Compliance and Standards

### Environmental Management

NI is committed to designing and manufacturing products in an environmentally responsible manner. NI recognizes that eliminating certain hazardous substances from our products is beneficial to the environment and to NI customers.

For additional environmental information, refer to the *Commitment to the Environment* web page at [ni.com/environment](http://ni.com/environment). This page contains the environmental regulations and directives with which NI complies, as well as other environmental information not included in this document.

### Waste Electrical and Electronic Equipment (WEEE)



**EU Customers** At the end of the product life cycle, all NI products must be disposed of according to local laws and regulations. For more information about how to recycle NI products in your region, visit [ni.com/environment/weee](http://ni.com/environment/weee).

### 电子信息产品污染控制管理办法（中国 RoHS）



**中国客户** National Instruments 符合中国电子信息产品中限制使用某些有害物质指令 (RoHS)。关于 National Instruments 中国 RoHS 合规性信息，请登录 [ni.com/environment/rohs\\_china](http://ni.com/environment/rohs_china)。(For information about China RoHS compliance, go to [ni.com/environment/rohs\\_china](http://ni.com/environment/rohs_china).)

<sup>2</sup> Not all chassis with slot cooling capacity  $\geq 58 \text{ W}$  can achieve this ambient temperature range. Refer to PXIe chassis specifications to determine the ambient temperature ranges your chassis can achieve.

# CE Compliance

This product meets the essential requirements of applicable European Directives, as follows:

- 2011/65/EU; Restriction of Hazardous Substances (RoHS)

## Export Compliance

This product is subject to control under the U.S. Export Administration Regulations (15 CFR Part 730 et. seq.) administered by the U.S. Department of Commerce's Bureau of Industry and Security (BIS) ([www.bis.doc.gov](http://www.bis.doc.gov)) and other applicable U.S. export control laws and sanctions regulations. This product may also be subject to additional license requirements of other countries' regulations.

Additionally, this product may also require export licensing before being returned to NI. The issuance of a Return Material Authorization (RMA) by NI does not constitute export authorization. The user must comply with all applicable export laws prior to exporting or re-exporting this product. See [ni.com/legal/export-compliance](http://ni.com/legal/export-compliance) for more information and to request relevant import classification codes (e.g. HTS), export classification codes (e.g. ECCN), and other import/export data.

## Product Certifications and Declarations

Refer to the product Declaration of Conformity (DoC) for additional regulatory compliance information. To obtain product certifications and the DoC for NI products, visit [ni.com/product-certifications](http://ni.com/product-certifications), search by model number, and click the appropriate link.

## Additional Resources

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Visit [ni.com/manuals](http://ni.com/manuals) for information about the PXIe-4162/PXIe-4163 and the following resources:

- The getting started guide for your module:
  - *PXIe-4162 Getting Started Guide*
  - *PXIe-4163 Getting Started Guide*
- The specifications for your module:
  - *PXIe-4162 Specifications*
  - *PXIe-4163 Specifications*
- *NI DC Power Supplies and SMUs Help*
- *PXIe-4162/4163 Calibration Procedure*
- The safety, environmental, and regulatory information for your module:
  - *PXIe-4162 Safety, Environmental, and Regulatory Information*
  - *PXIe-4163 Safety, Environmental, and Regulatory Information*



# Worldwide Support and Services

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The NI website is your complete resource for technical support. At [ni.com/support](https://ni.com/support), you have access to everything from troubleshooting and application development self-help resources to email and phone assistance from NI Application Engineers.

Visit [ni.com/services](https://ni.com/services) for information about the services NI offers.

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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