

## COMPREHENSIVE SERVICES

We offer competitive repair and calibration services, as well as easily accessible documentation and free downloadable resources.

## SELL YOUR SURPLUS

We buy new, used, decommissioned, and surplus parts from every NI series. We work out the best solution to suit your individual needs.

 Sell For Cash  Get Credit  Receive a Trade-In Deal

## OBSOLETE NI HARDWARE IN STOCK & READY TO SHIP

We stock **New**, **New Surplus**, **Refurbished**, and **Reconditioned** NI Hardware.



*Bridging the gap between the manufacturer and your legacy test system.*

 1-800-915-6216

 [www.apexwaves.com](http://www.apexwaves.com)

 [sales@apexwaves.com](mailto:sales@apexwaves.com)

*All trademarks, brands, and brand names are the property of their respective owners.*

**Request a Quote**

 **CLICK HERE**

**PXIe-6378**

# RM-26999

## 4 Channel, Power Measurements Conditioning Rackmount Terminal Block

The RM-26999 is a rack mounted, signal conditioning device that connects to several NI simultaneous multifunction input/output (SMIO) modules and devices for power measurements. The RM-26999 features four voltage input channels, up to 2,000 V peak, and four current transducer ports for current measurements. This document provides information about installing, connecting, and configuring your RM-26999 for use in your data acquisition application.

## Contents

---

Icons.....	2
Safety.....	2
Protective Earth Ground .....	2
Safety Guidelines for Hazardous Voltages.....	3
Minimum Required Competency.....	4
User Responsibilities.....	4
Additional Resources.....	5
Getting to Know the RM-26999.....	5
RM-26999 Front Panel.....	5
RM-26999 Back Panel.....	8
Preparing the System Components.....	10
Unpacking the Kit.....	10
Verifying the Kit Contents.....	10
Compatible NI DAQ Devices and Cabling.....	11
RM-26999 Accessories.....	11
Installing the RM-26999.....	15
Mounting the RM-26999 in a Rack.....	15
Attaching a DIN Rail Clip to the RM-26999.....	17
Setting up the System.....	19
Connecting the RM-26999 to a DAQ Device.....	19
Connecting Voltage and Current Signals.....	20
Connecting Current Transducers with Voltage Output.....	20
Connecting Current Transducers with Current Output.....	22
Connecting Hazardous Voltage Inputs.....	24
Configuring the Software.....	25
Downloading Software.....	25
Configuring the System in NI Measurement & Automation Explorer (MAX).....	25
Testing the DAQ Device Connection.....	25

Taking a Power Measurement.....	26
Troubleshooting.....	26
Worldwide Support and Services.....	26

## Icons

---

-  **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.
-  **Shock Warning**—Take precautions to avoid electrical shock.
-  **Protective Conductor Terminal (PE)**—Indicates a terminal that connects to accessible dead metal parts of the model. Connect the PE terminal(s) to an earth ground system (protective conductor) for safety.
-  **Functional Earth Terminal (FE)**—Indicates a terminal that connects to a measurement or control circuit. Connect FE terminals to an earth ground system for any functional purpose other than safety.

## Safety

---

-  **Caution** Observe all instructions and cautions in the user documentation. Using the model in a manner not specified can damage the model and compromise the built-in safety protection. Return damaged models to NI for repair.
-  **Attention** Suivez toutes les instructions et respectez toutes les mises en garde de la documentation utilisateur. L'utilisation d'un modèle de toute autre façon que celle spécifiée risque de l'endommager et de compromettre la protection de sécurité intégrée. Renvoyez les modèles endommagés à NI pour réparation.

## Protective Earth Ground

-  **Caution** You must connect the RM-26999 to protective earth ground before powering on the system and taking measurements.
  - The facility installation shall provide a means for connection to protective earth; and
  - Qualified personnel shall install a protective earthing conductor from both protective earth terminals on the front panel of the RM-26999 to the protective conductor in the facility.



**Attention** Vous devez connecter le RM-26999 à la terre avant de mettre le système sous tension et de prendre des mesures.

- L'installation du site doit fournir un moyen de connexion à la terre ; et
- Du personnel qualifié doit installer un conducteur de mise à la terre allant de la borne de mise à la terre située sur la face avant du RM-26999 jusqu'au câble de mise à la terre du site.

## Safety Guidelines for Hazardous Voltages

A hazardous voltage is a voltage greater than 42.4 V peak voltage or 60 V DC in DRY LOCATIONS. If hazardous voltages are or will be connected to the device, take the following precautions.

The hazardous voltage input status LEDs on the RM-26999 will turn on (YELLOW) when a voltage is applied to the input channel(s) above 50 V DC or 40 V AC, 60 Hz. If the LED is off, a voltage above 50 V DC or 40 V AC, 60 Hz, has not been applied to the input channel and/or the terminal block is not powered on.



**Caution** Ensure that hazardous voltage wiring is performed only by qualified personnel adhering to local electrical standards.



**Attention** S'assurer que le câblage à tension dangereuse est effectué par du personnel qualifié respectant les normes électriques locales.



**Caution** Do not mix hazardous voltage circuits and human-accessible circuits on the same module.



**Attention** Ne pas combiner des circuits de tension dangereuse et des circuits accessibles aux personnes sur le même module.



**Caution** When module terminals are hazardous voltage LIVE, you must ensure that devices and circuits connected to the module are properly insulated from human contact.



**Attention** Lorsqu'une haute tension dangereuse est appliquée aux bornes de l'appareil, s'assurer que les appareils et les circuits connectés au module sont correctement isolés de tout contact humain.



**Caution** All wiring must be insulated for the highest voltage used.



**Attention** Tout le câblage doit être isolé pour la plus haute tension utilisée.



**Warning** Do not connect the RM-26999 to signals or use for measurements within Measurement Categories III, or IV, or for measurements on MAINS circuits or on circuits derived from Overvoltage Category III, or IV which may have transient overvoltages above what the product can withstand. The product must not be connected to circuits that have a maximum voltage above the continuous working

voltage, relative to earth or to other channels, or this could damage and defeat the insulation. The product can only withstand transients up to the transient overvoltage rating without breakdown or damage to the insulation. An analysis of the working voltages, loop impedances, temporary overvoltages, and transient overvoltages in the system must be conducted prior to making measurements.



**Mise en garde** Ne connectez pas le RM-26999 à des signaux dans les catégories de mesure III ou IV et ne l'utilisez pas pour des mesures dans ces catégories, ou des mesures sur secteur ou sur des circuits dérivés de surtensions de catégorie III ou IV pouvant présenter des surtensions transitoires supérieures à ce que le produit peut supporter. Le produit ne doit pas être raccordé à des circuits ayant une tension maximale supérieure à la tension de fonctionnement continu, par rapport à la terre ou à d'autres voies, sous risque d'endommager et de compromettre l'isolation. Le produit risque de tomber en panne et son isolation risque d'être endommagée si les tensions transitoires dépassent la surtension transitoire nominale. Une analyse des tensions de fonctionnement, des impédances de boucle, des surtensions temporaires et des surtensions transitoires dans le système doit être effectuée avant de procéder à des mesures.

## Minimum Required Competency

All persons involved with planning, installing, connecting, or configuring software and hardware for use in systems that employ the RM-26999 must meet the following minimum competency requirements:

- Be informed about dependencies, risks, and consequences associated with safe operation, failure, and unsafe system conditions of any system employing the RM-26999.
- Have appropriate training and knowledge in the operation and implementation of industrial processes, measurement and control, automation, electrical engineering, and safety compliance.
- Have sufficient knowledge of all applicable codes, laws, regulations, and standards.
- Be familiar with and have access to all requirements, conditions, specifications, and guidelines in all applicable NI documentation, including hardware documentation for the RM-26999 and the Data Acquisition equipment connected to the RM-26999.

## User Responsibilities

- Read and adhere to all safety guidelines in the documentation for the RM-26999, accessories, and system components.
- Read the installation and configuration documentation for all hardware and software system components.
- Verify that all necessary system components and accessories are on hand.
- Mount, install, ground, and connect the hardware components of the system.
- Download, install, and configure all software components of the system.
- Verify cabling specifications and insulation meet all local codes for safe installation requirements.

- Conduct a system test to verify connectivity and functionality before connecting hazardous voltages.
- Follow all applicable codes, laws, regulations, and standards for workplace safety requirements when connecting, disconnecting, and configuring systems that measure hazardous voltages.

## Additional Resources

### Product Documentation

Visit [ni.com/manuals](https://ni.com/manuals) for specifications and compliance information for the RM-26999 and the associated cables and accessories.

### Tutorials and Whitepapers

For more information about getting started with the RM-26999 and useful resources, go to [ni.com/info](https://ni.com/info) and enter Info Code `powergs`.

### NI-DAQmx Help

To access *NI-DAQmx Help*, launch NI MAX and go to **Help»Help Topics»NI-DAQmx»NI-DAQmx Help**.

### Examples

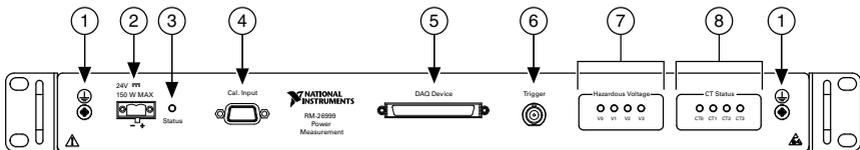
The RM-26999 API includes example programs to help you get started developing an application. Modify example code and save it in an application, or use examples to develop a new application or add example code to an existing application.

To locate examples, navigate to the **NI»RM-26999** folder in the directory view of the NI Example Finder.

## Getting to Know the RM-26999

### RM-26999 Front Panel

Figure 1. RM-26999 Front Panel



- |  |  |
|--|--|
| 1. Protective conductor terminal       | 5. DAQ device port                     |
| 2. 24 V power terminal                 | 6. Trigger port                        |
| 3. RM-26999 status LED                 | 7. Hazardous voltage input status LEDs |
| 4. Current transducer calibration port | 8. Current transducer status LEDs      |

# RM-26999 LED Descriptions

**Table 1.** LED Indicators

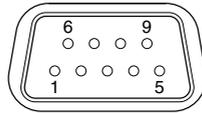
LED	Color	Pattern	Indication
RM-26999 status	Blue	On	+24 V DC power is applied to the terminal block, the terminal block is connected to the DAQ device, and the DAQ device is powered on.
		Blinking	The API is identifying the terminal block during installation.
		Off	One or more of the following conditions are true: <ul style="list-style-type: none"> <li>+24 V DC power is not applied to the terminal block.</li> <li>The terminal block is not connected to the DAQ device.</li> <li>The DAQ device is not powered on.</li> <li>The LED is set to off programmatically through the API.</li> </ul>
Current transducer status	Green	On	The connected current transducer is powered on and the output is valid.
		Off	The terminal block is not powered on, a current transducer is not connected to the port, or the connected current transducer is in a fault state.
Hazardous voltage input status <sup>1</sup>	Yellow	On	A hazardous voltage above 50 V DC or 40 V AC 60 Hz has been applied to the corresponding input channel.
		Off	A hazardous voltage is not applied to the input channel and/or the terminal block is not powered on.

## Current Transducer Calibration Port

This port allows you to calibrate current transducers with calibration windings that are connected to the RM-26999. The calibration port routes to each of the four current transducer ports.

<sup>1</sup> A DAQ device and +24 V DC power must be connected to the RM-26999.

**Figure 2.** Current Transducer Calibration Port



**Table 2.** Current Transducer Calibration Port Signal Descriptions

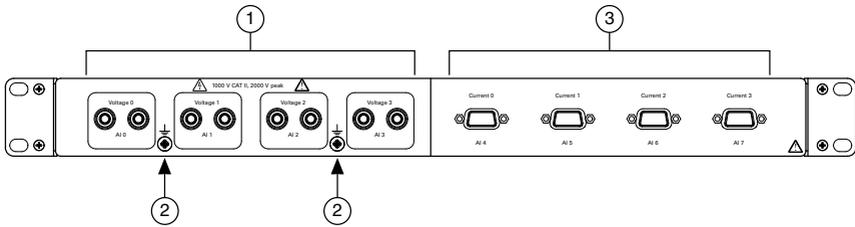
Pin	Description
1	Transducer 3, calibration winding +
2	Transducer 2, calibration winding +
3	Transducer 1, calibration winding +
4	Transducer 0, calibration winding +
5	Ground reference
6	Transducer 3, calibration winding -
7	Transducer 2, calibration winding -
8	Transducer 1, calibration winding -
9	Transducer 0, calibration winding -

## Trigger Port

The BNC trigger port on the RM-26999 front panel connects to the bidirectional pin 11 on your data acquisition device. You can use this port to configure and control acquisition triggering using NI-DAQmx. For more information about triggering with your device refer to your DAQ device specifications on [ni.com/manuals](http://ni.com/manuals) and Chapter 11, *Triggering*, in the *X Series User Manual*.

# RM-26999 Back Panel

**Figure 3.** RM-26999 Back Panel



1. Hazardous voltage ports
2. Functional earth ground terminal
3. Current transducer ports

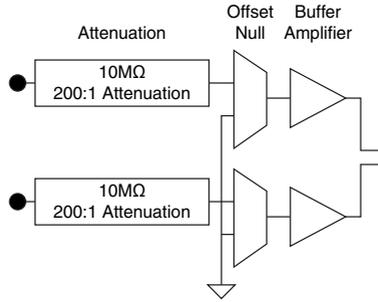
**Table 3.** Signal Descriptions

Port	Signal	DAQmx Channel
Voltage 0	AI0	MIODevice/ai0
Voltage 1	AI1	MIODevice/ai1
Voltage 2	AI2	MIODevice/ai2
Voltage 3	AI3	MIODevice/ai3
Current 0	AI4	MIODevice/ai4
Current 1	AI5	MIODevice/ai5
Current 2	AI6	MIODevice/ai6
Current 3	AI7	MIODevice/ai7

## Hazardous Voltage Port

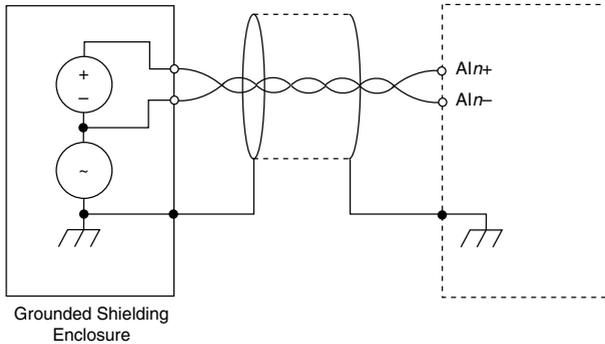
The hazardous voltage ports have 10 M  $\Omega$  attenuators, connected to ground and fixed at 200:1 on each input path. The input path also includes an offset null multiplexer and a buffer amplifier to drive signals to the DAQ device connected to the RM-26999.

**Figure 4. Hazardous Voltage Signal Path**



NI recommends using a twisted, shielded pair cable for noise immunity. The hazardous voltage ports have corresponding functional earth ground screws for terminating the shielded cable drain wire.

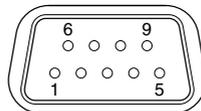
**Figure 5. Twisted, Shielded Pair Connections**



## RM-26999 Current Transducer Port

The RM-26999 does not directly measure current. A current transducer must be used. The current transducer ports on the device are optimized for flux-gate transducers by providing all the necessary power, communication, and signal lines.

**Figure 6. Current Transducer Port Pinout**



**Table 4. Current Transducer Port Signal Descriptions**

Pin	Description
1	AI- channel input, $\pm 10$ V signal
2	Calibration winding -
3	Transducer status ground
4	Transducer supply ground return, $\pm 2.25$ A maximum
5	-15 V transducer supply output, $\pm 5\%$ , no load, 2.25 A maximum
6	AI+ channel input, $\pm 10$ V signal
7	Calibration winding +
8	Transducer status, 5 V, 10 mA maximum
9	+15 V transducer supply output, $\pm 5\%$ , no load, 2.25 A maximum



**Note** The RM-26999 allows you to calibrate your current transducers, if necessary for your system. Consult your transducer documentation to verify that your transducer supports calibration through windings.

## Preparing the System Components

### 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 hardware rack.

1. Touch the antistatic package to a metal part of the hardware rack.
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.



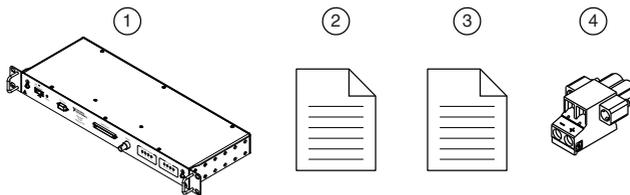
**Note** Do not install a device if it appears damaged in any way.

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

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 RM-26999 kit.



- 
1. RM-26999 rack-mount terminal block
  2. RM-26999 Safety, Environmental, and Regulatory Information document
  3. RM-26999 User Manual
  4. 24 V power supply terminal
- 

## Compatible NI DAQ Devices and Cabling

The RM-26999 voltage inputs are designed for measuring voltage according to the guidelines specified in the *Hazardous Voltage Port* section and the current inputs are designed to measure current using an external current transducer. While the RM-26999 provides the necessary power, communication, and signal conditioning for these measurements; an appropriate DAQ Multifunction I/O module or device is required to complete the system.

NI recommends using one of the following DAQ Multifunction I/O modules in your system: PXIe-6356, PXIe-6358, PXIe-6366, PXIe-6368, PXIe-6376, or PXIe-6378. For more information about compatible DAQ devices, including updated recommendations, go to [ni.com/info](http://ni.com/info) and enter the Info Code `powergs`.

The recommended DAQ Multifunction I/O modules use one SHC68-68-EPM cable for each connected RM-26999. For additional information about DAQ Multifunction I/O module cables, refer to the *DAQ Multifunction I/O Cable and Accessory Compatibility Guide*. Go to [ni.com/info](http://ni.com/info) and enter the Info Code `miocag`.

## RM-26999 Accessories

### Power Accessories

You must power the RM-26999 using a suitably rated 24 V power supply. The total power required depends on the current transducers and the signal current. If a suitable 24V power supply is not already part of your system, refer to the following table for suggested power supplies available from NI.

**Table 5. NI Power Supplies**

Power Supply	Description	Part Number
	NI PS-15 Industrial Power Supply, 24 V DC to 28 V DC, 5 A, 100/230 V AC Input	781093-01
	NI PS-16 Industrial Power Supply, 24 V DC to 28 V DC, 10 A, 115/230 V AC Input	781094-01

NI provides a power connector in the RM-26999 kit. If you require additional power connectors, you can order them through Phoenix Contact.

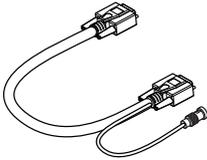
**Table 6. Replacement Power Connector**

Power Connector	Manufacturer	Part Number
	Phoenix Contact	1970058

### SHDB9M-DB9F-BNCM Cable

This cable is designed to interface to the RM-26999 current transducer ports and current transducers that output a voltage for the current measurement.

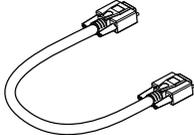
**Table 7. SHDB9M-DB9F-BNCM Cables**

Cable	Cable Length	Part Number
	2 m	786668-02
	3 m	786668-03
	5 m	786668-05

### SHDB9M-DB9F Cable

This cable is designed to interface to the SHDB9M-DB9F-SHUNT and current transducers that output a current for the current measurement. You must choose an appropriate SHDB9M-DB9F-SHUNT value for the chosen transducer.

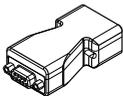
**Table 8. SHDB9M-DB9F Cables**

Cable	Cable Length	Part Number
	2 m	786879-02
	3 m	786879-03
	5 m	786879-05

**SHDB9M-DB9F-SHUNT**

Use this shunt accessory to convert the current output from a transducer to a voltage signal that can be read by the RM-26999. Do not exceed the working voltage of the RM-26999 inputs.

**Table 9. SHDB9M-DB9F Shunt**

Shunt	Resistance Value	Part Number
	0.5 $\Omega$	786897-0R5
	1 $\Omega$	786897-01
	2 $\Omega$	786897-02
	5 $\Omega$	786897-05
	10 $\Omega$	786897-10

**DaniSense Current Transducers**

NI recommends and has validated the RM-26999 rackmount signal conditioning device with DaniSense current transducers. These transducers are ideal for highly accurate and isolated DC and AC current measurements.

**Table 10.** DaniSense Current Transducers

Power Supply	Description	Model	Part Number
	DaniSense Current Transducers, Voltage Output	50 A, DS50UB-10V	786956-01
		200 A, DS200UB-10V	786957-01
		600 A, DS600UB-10V	786958-01
		2000 A, DL2000UB-10V	786959-01
	DaniSense Current Transducers, Current Output	150 A, DS50ID	Not currently available through NI. Contact DaniSense ( <a href="http://www.danisense.com">www.danisense.com</a> ) for more information.
		370 A, DS200ID	
		1000 A, DS600ID	
		3000 A, DL2000ID	

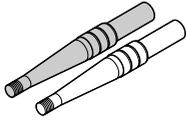


**Note** This is not a comprehensive list of available current transducers offered by DaniSense. Contact DaniSense ([www.danisense.com](http://www.danisense.com)) for additional models that fit your application requirements.

### Accessories for Hazardous Voltages

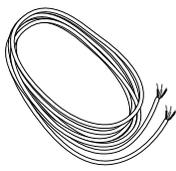
NI recommends using these connectors and cables to connect hazardous voltages to the RM-26999. The recommended accessories are suitably rated to operate at high voltages compatible with the RM-26999.

**Table 11.** Recommended Banana Connectors

Banana Connectors	Manufacturer	Description	Part Number
	Mueller	Shrouded Banana Plug, Black	BU-32603-0
		Shrouded Banana Plug, Red	BU-32603-2
	Stäubli	Shrouded Banana Plug, Black	66.9196-21
		Shrouded Banana Plug, Red	66.9196-22

Use the cable appropriate for the installation requirements of your application.

**Table 12.** Recommended Cables

Cables	Manufacturer	Description	Part Number
	TE Connectivity	High-Frequency Twinaxial Cable, 1 kV RMS	2021D0309-0
	Trompeter	High-Frequency Twinaxial Cable, 1 kV RMS, 2 kV DC	TWC-124-2

## Installing the RM-26999

---

### Mounting the RM-26999 in a Rack

#### What to Use

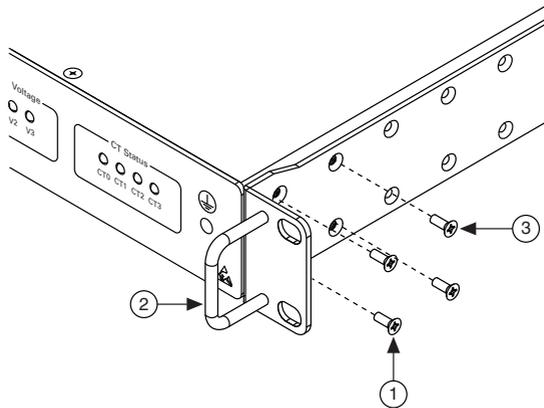
- RM-26999
- 19 in. rack
- 4x rack-mounting screws, user-provided
- 2x ring lugs
- 2x wires, 1.3 mm<sup>2</sup> (16 AWG) or larger
- Screwdriver, Phillips #2

#### What to Do

Complete the following steps to install the RM-26999 in a rack mount.



**Figure 8. RM-26999 Mounting Flange Adjustment**



1. Remove the four screws that secure the mounting flange to the side of the RM-26999.
2. Adjust the mounting flange to the desired position and align the screw holes.
3. Secure the mounting flange to the end of the RM-26999 with the four screws.



**Note** Screws must not exceed 8 mm of insertion into the RM-26999. Tighten the screws to a maximum torque of  $.56 \text{ N} \cdot \text{m}$  ( $5.0 \text{ lb} \cdot \text{in.}$ ).

4. Repeat steps 1-3 for the remaining mounting flange.

## Attaching a DIN Rail Clip to the RM-26999

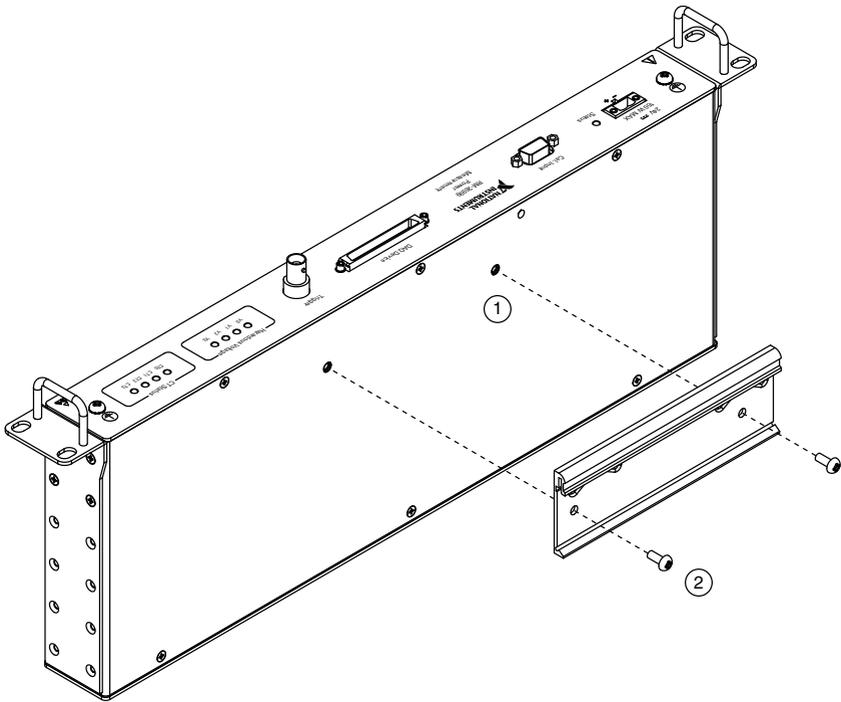
### What to Use

- RM-26999
- Screwdriver, Phillips #2
- NI DIN rail mounting kit, 157254-01
  - DIN rail clip
  - M4 x 10 screws (x2)

### What to Do

Complete the following steps to attach a DIN rail clip to the RM-26999.

**Figure 9. Attaching a DIN Clip**



1. Align the DIN rail clip with the mounting holes on the RM-26999.
2. Fasten the DIN rail clip to the RM-26999.

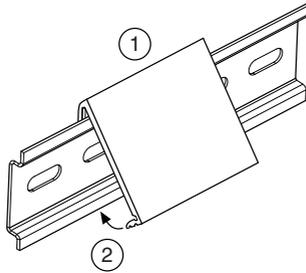


**Note** You must use the screws provided with the NI DIN rail kit because they are the correct depth and thread for the DIN rail clip. Tighten the screws to a maximum torque of 1.3 N · m ( 11.5 lb · in.).

## Mounting a DIN Rail Clip on a DIN Rail

Complete the following steps to mount the RM-26999 on a standard 35-mm DIN rail.

**Figure 10. Mounting a DIN Clip**



1. Latch the spring side (top) of the DIN rail clip onto the top edge of the DIN rail.
2. Press down firmly to compress the spring until the clip locks in place on the DIN rail.

## Setting up the System

### Connecting the RM-26999 to a DAQ Device

#### What to Use

- RM-26999
- DAQ Multifunction I/O module appropriate for your system configuration
  - NI recommends: PXIe-6356, PXIe-6358, PXIe-6366, PXIe-6368, PXIe-6376, or PXIe-6378
- Device-appropriate cable, one per RM-26999
  - For the recommend DAQ Multifunction I/O modules: SHC68-68-EPM
- 24 V power supply
- Power connector, included in kit

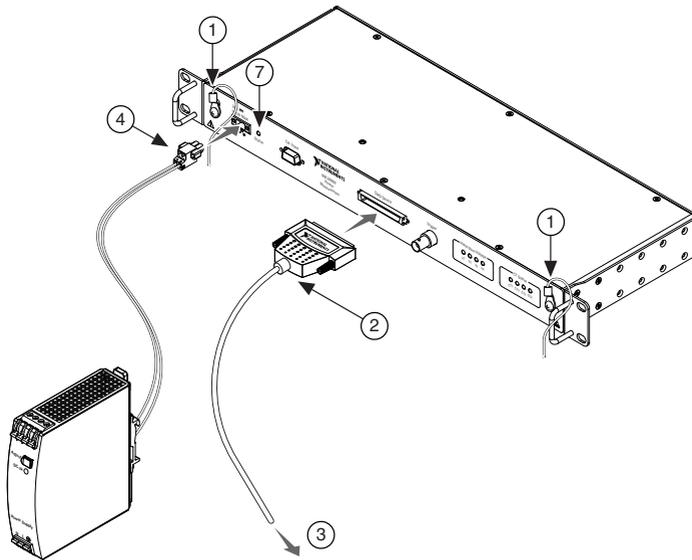
#### What to Do

Complete the following steps to connect the RM-26999 to a DAQ device.



**Note** Before you connect your RM-26999, you should install, connect, and configure any DAQ chassis, controller, module, or device appropriate for your desired system configuration. Refer to the hardware documentation for those hardware components for the correct installation and connection procedures.

**Figure 11.** Connecting the RM-26999 to a DAQ Device



1. Verify that the protective conductor terminals are connected to protective earth ground.
2. Connect the device-appropriate cable to the RM-26999 and secure it using the retention screws.
3. Connect the device-appropriate cable to the DAQ device.
4. Connect a 24 V power supply to the power terminal on the RM-26999.
5. Power on the DAQ device.
6. Power on the 24 V power supply.
7. Verify that the RM-26999 status LED is on.

## Connecting Voltage and Current Signals

### Connecting Current Transducers with Voltage Output

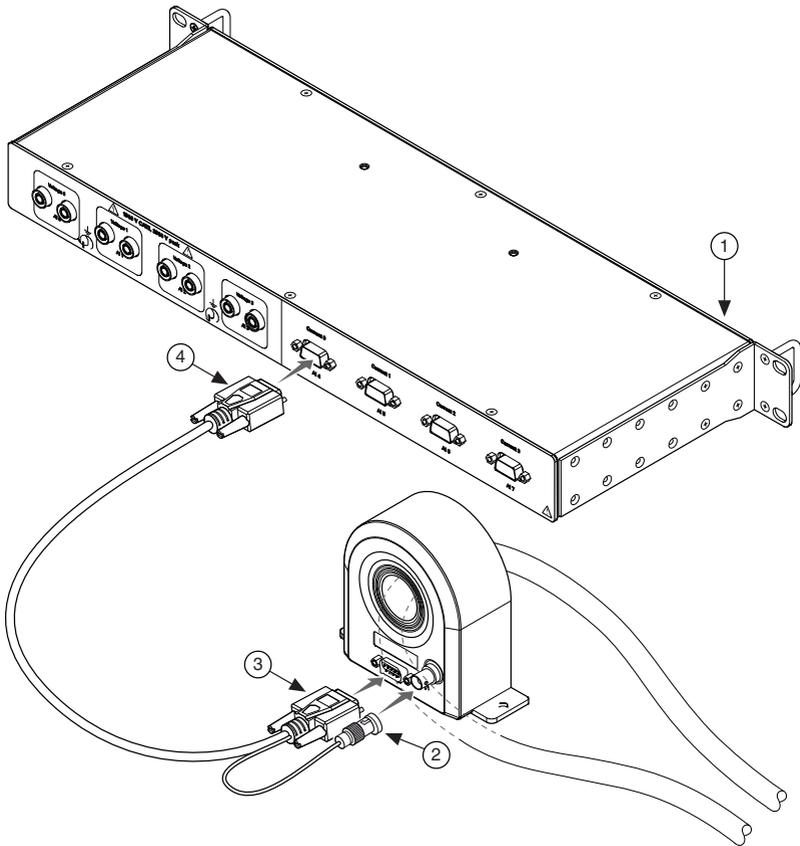
#### What to Use

- Current transducer
- SHDB9M-DB9F-BNCM cable

#### What to Do

Complete the following steps to connect current transducers to the RM-26999.

**Figure 12.** Connecting Current Transducers for Voltage Output



1. Power off the RM-26999 and the system you are connecting to the RM-26999 for measurement.



**Caution** You must de-energize the system before you connect it to the RM-26999 for measurement. Follow all workplace safety requirements for powering down hazardous voltage systems based on the applicable codes and standards in your location.



**Attention** Vous devez mettre le système hors tension avant de le connecter au RM-26999 pour prendre des mesures. Respectez toutes les exigences de sécurité sur le lieu de travail concernant la mise hors tension des systèmes à tension dangereuse en fonction des normes et des codes locaux en vigueur.

2. Connect the BNC connector on the SHDB9M-DB9F-BNCM cable to the BNC port on the transducer.
3. Connect the female DSUB connector on the SHDB9M-DB9F-BNCM cable to the DSUB port on the transducer. Secure the connector by tightening the retention screws.

4. Connect the male DSUB connector on the SHDB9M-DB9F-BNCM cable to the transducer port on the RM-26999. Secure the connector by tightening the retention screws.
5. Power on the RM-26999 and the system you are connecting to the RM-26999.
6. Verify that the corresponding CT Status LED is on.

## Connecting Current Transducers with Current Output

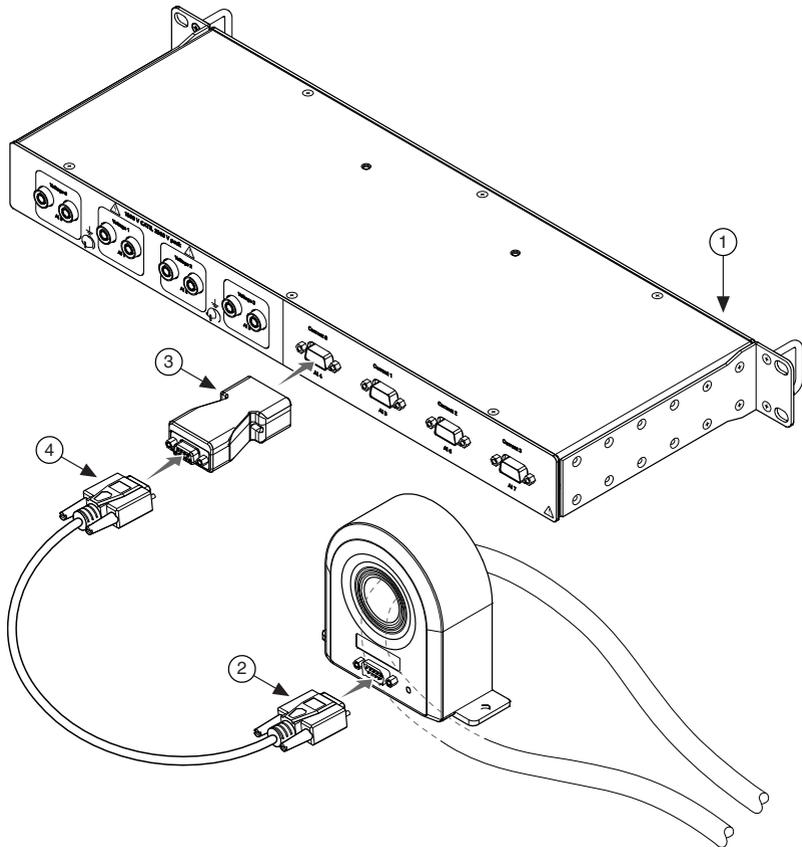
### What to Use

- Current transducer
- SHDB9M-DB9F-SHUNT
- SHDB9M-DB9F cable

### What to Do

Complete the following steps to connect current transducers to the RM-26999.

**Figure 13.** Connecting Current Transducers for Current Output



1. Power off the RM-26999 and the system you are connecting to the RM-26999 for measurement.



**Caution** You must de-energize the system before you connect it to the RM-26999 for measurement. Follow all workplace safety requirements for powering down hazardous voltage systems based on the applicable codes and standards in your location.



**Attention** Vous devez mettre le système hors tension avant de le connecter au RM-26999 pour prendre des mesures. Respectez toutes les exigences de sécurité sur le lieu de travail concernant la mise hors tension des systèmes à tension dangereuse en fonction des normes et des codes locaux en vigueur.

2. Connect the female DSUB connector on the SHDB9M-DB9F cable to the DSUB port on the transducer. Secure the connector by tightening the retention screws.

3. Connect the male DSUB connector on the SHDB9M-DB9F-SHUNT to the current transducer port on the RM-26999. Secure the connector by tightening the retention screws.
4. Connect the male DSUB connector on the SHDB9M-DB9F cable to the female connector on the SHDB9M-DB9F-SHUNT. Secure the connector by tightening the retention screws.
5. Power on the RM-26999 and the system you are connecting to the RM-26999.
6. Verify that the corresponding CT Status LED is on.

## Connecting Hazardous Voltage Inputs

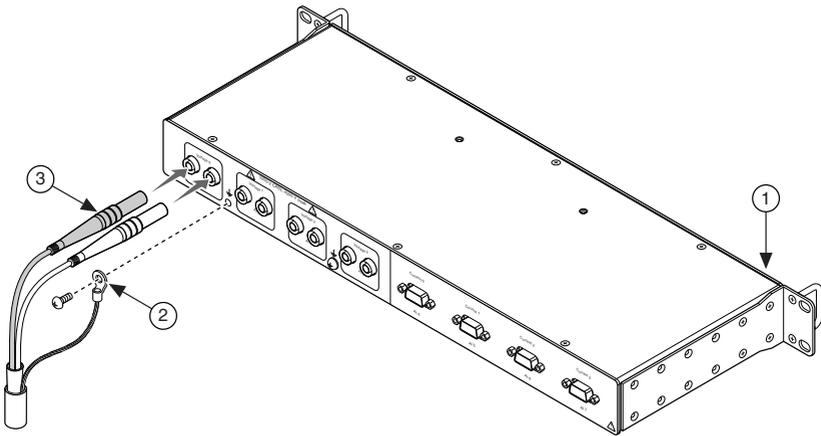
### What to Use

- Twisted, shielded cable pair with banana connectors
- Screwdriver, Phillips #2

### What to Do

Complete the following steps to connect hazardous voltage inputs to the RM-26999.

**Figure 14.** Connecting Hazardous Voltage Inputs



1. Power off the RM-26999 and the system you are connecting to the RM-26999 for measurement.



**Caution** You must de-energize the system before you connect it to the RM-26999 for measurement. Follow all workplace safety requirements for powering down hazardous voltage systems based on the applicable codes and standards in your location.



**Attention** Vous devez mettre le système hors tension avant de le connecter au RM-26999 pour prendre des mesures. Respectez toutes les exigences de

sécurité sur le lieu de travail concernant la mise hors tension des systèmes à tension dangereuse en fonction des normes et des codes locaux en vigueur.

2. Connect one of the functional earth terminals to the drain wire on the twisted, shielded cable pair.
3. Connect the twisted, shielded cable pair to the pair of hazardous voltage ports.
4. Power on the RM-26999 and the system you are connecting to the RM-26999.
5. Verify the corresponding hazardous voltage input status LED is on, if applicable.



**Note** The hazardous voltage input status LED lights if a hazardous voltage above 50 V DC or 40 V AC 60 Hz has been applied to the corresponding input channel.

## Configuring the Software

---

### Downloading Software

1. Download LabVIEW 2015 or later.



**Note** The RM-26999 is not currently supported in LabVIEW NXG.

2. Download NI-DAQmx 15.0 or later.
3. Download the RM-26999 API.
  - a) Open VI Package Manager.
  - b) Search for and double-click **RM-26999** to open the install wizard.
  - c) Follow the prompts to install the API.

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

Use NI MAX, installed automatically with NI-DAQmx, to configure the device connected to your RM-26999 system. Refer to the *DAQ Getting Started Guide* on [ni.com/manuals](http://ni.com/manuals) for information about configuring your system in MAX.



**Note** You can not view or configure the RM-26999 in MAX.

### Testing the DAQ Device Connection

Complete the following steps to test your system using an Example VI.

1. In LabVIEW, navigate to **Help»Find Examples...** to open the NI Example Finder.
2. Select the radio button to browse according to directory structure.
3. Navigate to the **NI»RM-26999** folder and double-click **RM-26999 Device Enumeration.vi**.
4. Use this VI to verify the RM-26999 is connected to your DAQ device.

# Taking a Power Measurement

Complete the following steps to take a first power measurement using an Example VI.

1. In LabVIEW, navigate to **Help»Find Examples...** to open the NI Example Finder.
2. Select the radio button to browse according to directory structure.
3. Navigate to the **NI»RM-26999** folder and double-click **RM-26999 Continuous Power Acquisition.vi**.
4. Follow the instructions on the VI to select the proper channels and configuration.
5. Click the **Run** button.

## Troubleshooting

For software installation problems, go to [ni.com/support/daqmx](http://ni.com/support/daqmx).

For hardware troubleshooting, go to [ni.com/support](http://ni.com/support) and enter your model name.

To return your National Instruments hardware for repair or model calibration, go to [ni.com/info](http://ni.com/info) and enter `rdseenn`, which starts the Return Merchandise Authorization (RMA) process.

## Worldwide Support and Services

---

The NI website is your complete resource for technical support. At [ni.com/support](http://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](http://ni.com/services) for information about the services NI offers.

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

NI corporate headquarters is located at 11500 North Mopac Expressway, Austin, Texas, 78759-3504. NI also has offices located around the world. For support in the United States, create your service request at [ni.com/support](http://ni.com/support) or dial 1 866 ASK MYNI (275 6964). For support outside the United States, visit the *Worldwide Offices* section of [ni.com/niglobal](http://ni.com/niglobal) to access the branch office websites, which provide up-to-date contact information.

Information is subject to change without notice. Refer to the *NI Trademarks and Logo Guidelines* at [ni.com/trademarks](http://ni.com/trademarks) for information on NI trademarks. Other product and company names mentioned herein are trademarks or trade names of their respective companies. For patents covering NI products/technology, refer to the appropriate location: **Help»Patents** in your software, the `patents.txt` file on your media, or the *National Instruments Patent Notice* at [ni.com/patents](http://ni.com/patents). You can find information about end-user license agreements (EULAs) and third-party legal notices in the `readme` file for your NI product. Refer to the *Export Compliance Information* at [ni.com/legal/export-compliance](http://ni.com/legal/export-compliance) for the NI global trade compliance policy and how to obtain relevant HTS codes, ECCNs, and other import/export data. NI MAKES NO EXPRESS OR IMPLIED WARRANTIES AS TO THE ACCURACY OF THE INFORMATION CONTAINED HEREIN AND SHALL NOT BE LIABLE FOR ANY ERRORS. U.S. Government Customers: The data contained in this manual was developed at private expense and is subject to the applicable limited rights and restricted data rights as set forth in FAR 52.227-14, DFAR 252.227-7014, and DFAR 252.227-7015.