NI-9870 Getting Started

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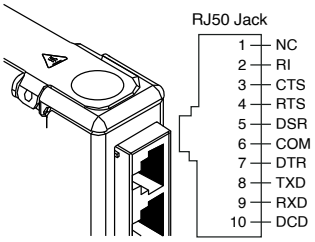
NI-9870 Hardware Overview

The NI-9870 has four full-featured, independent RS232 DTE ports that are isolated from the other modules in the system. Each port is fully compatible with the ANSI/EIA/TIA-232 standard.

NI-9870 Pinout

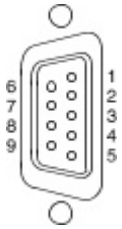
The NI-9870 has four RJ-50 receptacles that provide connections for four RS232 devices.

Table 1. RS232 Port Pinout

	RJ-50 Pin	Signal Name*
	1	No Connect
	2	RI
	3	CTS
	4	RTS
	5	DSR
	6	GND
	7	DTR
	8	TXD
	9	RXD
	10	DCD
*These signals are shared by all four RJ-50 connectors on the NI-9870.		

The cables included with your kit convert the RJ-50 pinout to the standard NI pinout on a DB-9 male connector, as shown in Table 2.

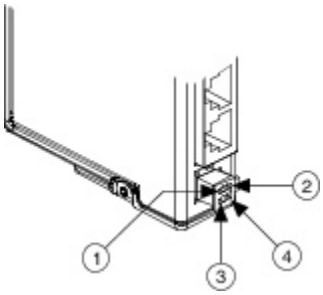
Table 2. Pin Assignments for RS232 DB-9 Male Connector

Connector	RJ-50 Pin	Signal Name
	1	DCD
	2	RXD
	3	TXD
	4	DTR
	5	GND
	6	DSR
	7	RTS
	8	CTS
	9	RI

You must connect an external power supply to the NI-9870. This power supply provides the power for the RS232 transceivers on the module. You can use the included female four-position pigtail to connect to an external voltage source. The following figure lists the connections between an external voltage source (of +8 V to +28 V) and the NI-9870.

Caution To ensure the specified EMC performance, do not connect the power input to a DC mains supply or to any supply requiring a connecting cable longer than 30 m (100 ft). A DC mains supply is a local DC electricity supply network in the infrastructure of a certain site or building.

Figure 1. Four-Position External Power Connector



1. V sup
2. V sup
3. COM

4. COM

Figure 2 shows the method of power connection to the NI-9870 module. Attach an isolated power supply to the V_{SUP} and COM terminals using the included pigtail.

Figure 2. Powering the NI-9870 from an Isolated Power Source

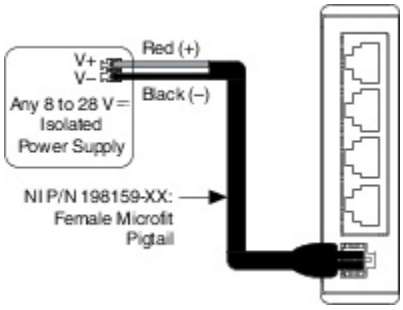
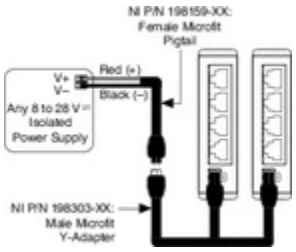


Figure 3 shows how to use the optional Y-adapter (available at ni.com/serial) to connect power to more than one module using the same power source. One Y-adapter is needed for each additional module. Ensure that the power supply can handle maximum power requirements for all modules connected.

Caution Make all connections before applying power.

Figure 3. Powering Multiple Modules from a Single Power Supply



Sleep Mode (CompactRIO Only)

You can enable sleep mode for the CompactRIO system in software. In sleep mode, the system consumes less power and may dissipate less heat. Typically, when a system is in sleep mode, you cannot communicate with the modules. Refer to the ***Specifications*** for more information about power consumption and thermal dissipation.

Conformal Coating

The NI-9870 is available with conformal coating for additional protection in corrosive and condensing environments, including environments with molds and dust.

In addition to the environmental specifications listed in the ***NI-9870 Safety, Environmental, and Regulatory Information***, the NI-9870 with conformal coating meets the following specification for the device temperature range. To meet this specification, you must follow the appropriate setup requirements for condensing environments. Refer to ***Conformal Coating and NI RIO Products*** for more information about conformal coating and the setup requirements for condensing environments.

Operating humidity (IEC 60068-2-30 Test Db)	80 to 100% RH, condensing

Related information:

- Conformal Coating and NI RIO Products