NI-9475 Getting Started

2025-03-21

Contents

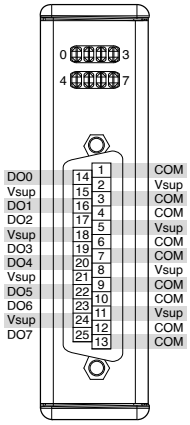
NI-9475 Getting Started 3

NI-9475 Getting Started

NI-9475 Pinout

The NI-9475 provides connections for eight digital output channels.

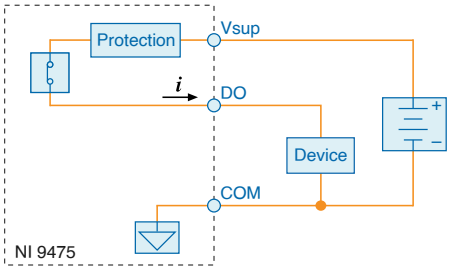
Figure 1. NI-9475 Pinout



NI-9475 Block Diagram

The NI-9475 is an 8-channel digital output module suitable for generating signals up to 60 VDC with 1 A continuous output current per channel.

Figure 2. NI-9475 Block Diagram



Signals

Each channel of the NI-9475 has a DO pin to which you can connect a device. Each channel also has a COM pin and a Vsup pin. NI recommends you provide independent COM and Vsup wiring for each channel to minimize current flow in the COM and Vsup

wiring. The COM pins are all connected together internally.

Each channel has an LED that indicates the state of the channel. When a channel LED is lit, the channel is on. When the LED is dark, the channel is off.

Connecting an External Power Supply

You must connect an external power supply to the NI-9475. This power supply provides the current for the devices you connect to the module. Connect the positive lead of the power supply to Vsup and the negative lead of the power supply to COM.

Caution Do not remove or insert modules if the external power supply connected to the Vsup and COM pins is powered on.

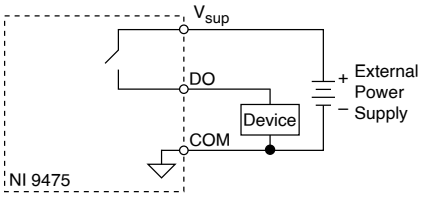
The NI-9475 has current sourcing outputs, which means the DO pin is driven to Vsup when the channel is turned on.

Connecting a Device

You can directly connect the NI-9475 to a variety of industrial devices such as solenoids, motors, actuators, relays, and lamps. Make sure the devices you connect to the NI-9475 are compatible with the output specifications of the module.

Connect the device to DO and connect the common of the device to COM.

Figure 3. Connecting a Device to the NI-9475

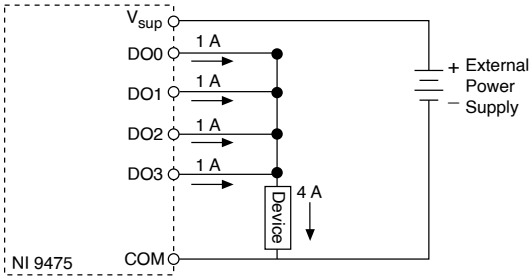


Note When the device is off, DO is not connected to COM. For large source impedances, you must use a pull-down resistor between DO and COM. Visit ni.com/info and enter the Info Code `CSeriesDOPulseGen` for more information.

Increasing Current Drive

Each channel has a continuous output current of 1 A. If you want to increase the output current to a device, you can connect any number of channels together in parallel. For example, if you want to drive 4 A of current, connect DO<0..3> in parallel as shown in the following figure. You must turn all parallel channels on and off simultaneously so that the current on any single channel cannot exceed the 1 A rating.

Figure 4. Increasing the Current to a Device Connected to the NI-9475



I/O Protection

The NI-9475 provides short-circuit protection.

Each channel has circuitry that protects it from current surges resulting from short circuits over 14 A.

Note Refer to the module specifications at ni.com/docs for maximum continous output current, short-circuit behavior, and short-circuit trip time specifications and information about conditions that may damage the module.

Note Refer to the IEC 61131-2 standard for more information about short-circuit-proof devices.

Note Because the NI-9475 includes internal flyback diodes, you do not need to add external diodes when connecting to switching devices that store energy.

Detecting an Overcurrent Condition

If a device connected to the module is not working while the channel is on, the module channel may be in an overcurrent state. Neither the software nor the module LEDs indicate if an overcurrent condition occurs. A channel LED may be on even if the channel is off because of an overcurrent condition.

To determine if the channel is in an overcurrent state, measure the voltage between DO and Vsup. If the voltage is equal to the voltage of the external power supply connected to the module, the channel is in an overcurrent state.

Power Supplies and Overcurrent Conditions

If a short-circuit occurs, the current through DO can exceed the current rating for the power supply and the maximum continuous output current for the NI-9475.

If the power supply you are using with the NI-9475 cannot supply more than 13 A, the module may be damaged if a short-circuit condition occurs.

Resetting Channels after an Overcurrent Condition

After you have determined and fixed the cause of an overcurrent condition, reset the channel by turning it off.

Alternatively, you can disconnect the external power supply from the chassis. However, doing so disconnects power from all the module channels.

Normal operation can resume after you correct the overcurrent condition and reset the channel.

Conformal Coating

The NI-9475 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-9475 Safety, Environmental, and Regulatory Information***, the NI-9475 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