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**CVS-1454**

# USER MANUAL

## NI CVS I/O Accessory

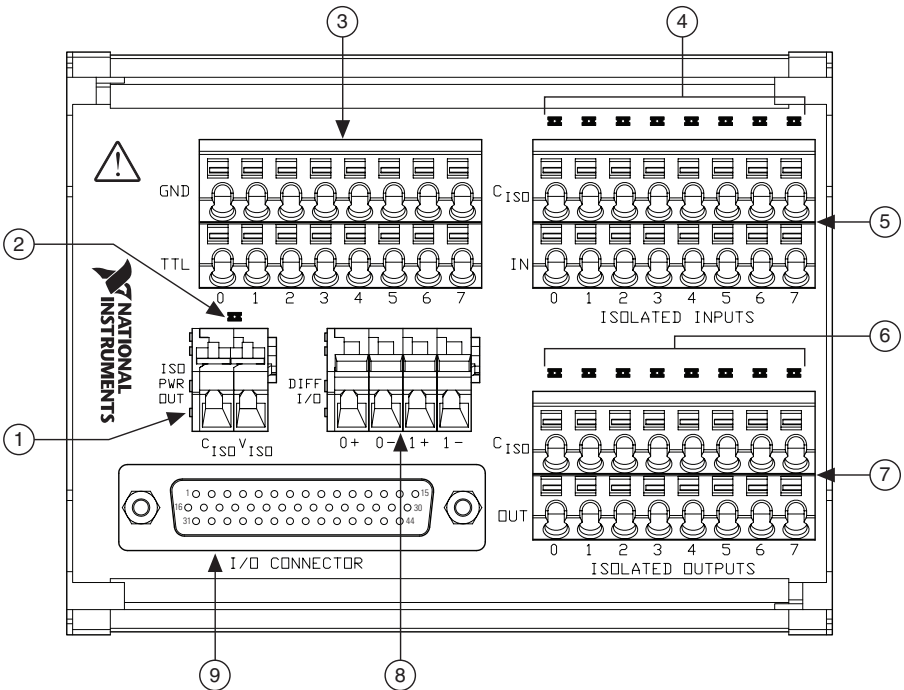
The I/O Accessory for NI Compact Vision Systems (I/O Accessory) is a terminal block that simplifies power and I/O signal configuration for NI Compact Vision Systems (NI CVS).



**Note** The I/O Accessory is not compatible with the NI CVS-1454, NI CVS-1455, or NI CVS-1456.

This document describes features, what you need to get started, installation and operation instructions, and related documentation for the I/O Accessory.

**Figure 1.** I/O Accessory for NI CVS



- |                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> <li>1 ISO PWR OUT outputs a voltage reference from the ISO power connector on the NI CVS</li> <li>2 Power status LED illuminates to indicate ISO power through the NI CVS</li> <li>3 TTL I/O connectors</li> <li>4 Isolated input LEDs illuminate to indicate an input channel is on</li> </ol> | <ol style="list-style-type: none"> <li>5 Isolated input connectors</li> <li>6 Isolated output LEDs illuminate to indicate an output channel is on</li> <li>7 Isolated output connectors</li> <li>8 Differential input/output connectors</li> <li>9 44-Pin Digital I/O D-SUB connector to NI CVS</li> </ol> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

# Features

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- 44-pin male D-SUB connector
- Spring terminals for each NI CVS I/O signal
- Replaceable fuse for the isolated power from the NI CVS ( $V_{ISO}$ )
- Isolated I/O status LEDs
- Built-in DIN rail clips for easy mounting
- Compact dimensions ( $4.4 \times 3.35 \times 1.7$  in.,  $112 \times 85 \times 43$  mm)

## What You Need to Get Started

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- I/O Accessory kit, including the accessory and male-to-female 44-pin D-SUB cable
- A compatible NI Compact Vision System
- 14-28 AWG Wire
- Wire cutter
- Wire insulation stripper

## Related Documentation

The following documents contain additional information you may find helpful as you set up and use the I/O Accessory.

- *NI CVS-1457RT Getting Started Guide*—Explains how to install and configure the NI CVS-1457RT.
- *NI CVS-1457RT Specifications*—Contains detailed specifications for the NI CVS-1457RT.
- *NI CVS-1457RT User Manual*—Contains connector pinouts, configuration information, mounting information, and answers to common troubleshooting questions for the NI CVS-1457RT.

# Installing the I/O Accessory

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1. Install the NI CVS per the instructions in the device documentation. Refer to the [Related Documentation](#) section for a list of documents that contain installation information.
2. Connect the female end of the D-SUB cable to the I/O connector on the I/O Accessory, and the male end of the D-SUB cable to the Digital I/O connector on the NI CVS.
3. Connect signal wires to the spring terminals on the I/O Accessory:
  - a. Strip 1/4 in. of insulation from the signal wire.
  - b. Depress the lever or push the button on the spring terminal.
  - c. Insert the wire into the terminal.

Refer to the [Signal Descriptions](#) section for a description of each signal.

4. If using isolated outputs, connect a power supply to the ISO power connector on the NI CVS. Supply voltage range for  $V_{ISO}$  is 5 VDC to 24 VDC.



**Caution** Do not connect voltages greater than 24 VDC to the isolated inputs on the I/O Accessory. Input voltages greater than 24 VDC can damage the accessory, all devices connected to it, and the NI CVS. National Instruments is *not* liable for damage or injury resulting from such misuse.

## Testing and Replacing the Fuse

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The I/O Accessory has a replaceable fuse on the rear of the board. If this fuse is blown, replace it with a Littelfuse part number 0453003. The Littelfuse 0453003 is a 3 A, 125 V Very Fast-Acting Nano<sup>2</sup> subminiature ceramic fuse measuring  $6.10 \times 2.69$  mm.

You can use a handheld DMM to verify the continuity of a fuse.

Complete the following steps to replace a blown fuse:

1. Disconnect all power to the NI CVS, and all power to any equipment connected to the NI CVS or I/O Accessory.
2. Remove all signal wires and cables from the I/O Accessory.
3. Remove a side panel. Use a Phillips head screwdriver to remove the 2 retaining screws.
4. Slide the circuit board out.
5. Replace the blown fuse with an equivalent replacement fuse.

# Signal Descriptions

Refer to the NI CVS device documentation for pin location and definition on the NI CVS Digital I/O connector.

**Table 1. I/O Connector Signals**

Connector	Signal Name	Description
ISO PWR OUT	C <sub>ISO</sub>	Common ground reference for isolated inputs and outputs*
	V <sub>ISO</sub>	Isolated power voltage reference output
TTL	GND	Digital ground reference for TTL and differential I/O
	TTL 0 to 7	Bidirectional TTL input/output signals 0 to 7
DIFF I/O	0+	RS-422 differential input or output 0 (positive side) or quadrature encoder phase A+
	0-	RS-422 differential input or output 0 (negative side) or quadrature encoder phase A-
	1+	RS-422 differential input or output 1 (positive side) or quadrature encoder phase B+
	1-	RS-422 differential input or output 1 (negative side) or quadrature encoder phase B-
ISOLATED INPUTS	C <sub>ISO</sub> 0 to 7	Common ground reference for isolated inputs and outputs*
	IN 0 to 7	General purpose isolated input signals 0 to 7
ISOLATED OUTPUTS	C <sub>ISO</sub> 0 to 7	Common ground reference for isolated inputs and outputs*
	OUT 0 to 7	General purpose isolated output signals 0 to 7
* All C <sub>ISO</sub> signals on the I/O Accessory board are connected together.		

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