

## Introduction

This document contains information on the 4500-CQIV-\* cable set. This cable set is used to make signal connections to a 450x-QIVC card for LIV test and measurements of a DUT (device under test).

## Connection precautions

**WARNING** While the 450x-QIVC cards do not incorporate a laser, they are designed to operate (power) laser diode devices. The following safety practices must be used to protect operators and other users of this cable set from potential exposure to laser radiation:

- Operators must be protected from radiation and electrical hazards at all times.
- The installer must comply with all applicable laws and regulations on laser safety. This requirement includes warning signs and operator training.
- The interlock is required for safe operation. The test fixtures must ensure that the interlock circuit is disabled (source outputs inhibited) so that an operator is not exposed to any radiation. The test fixture interlock must not be defeated.
- When servicing the test system, any required personnel protection equipment (e.g., laser safety goggles) must be provided by the customer's responsible body.
- The customer's Laser Safety Officer (LSO) must review and approve all installations before being put into operation. Any safety concerns must be immediately reported to the customer's LSO.
- Maximum isolation from earth ground is  $\pm 20\text{V}$ . Exceeding this value may result in a shock hazard.
- When making connections, do not leave any exposed connections. Be sure that all external circuits are properly insulated.

## Handling precautions

To avoid possible contamination that could degrade measurement performance, observe these precautions:

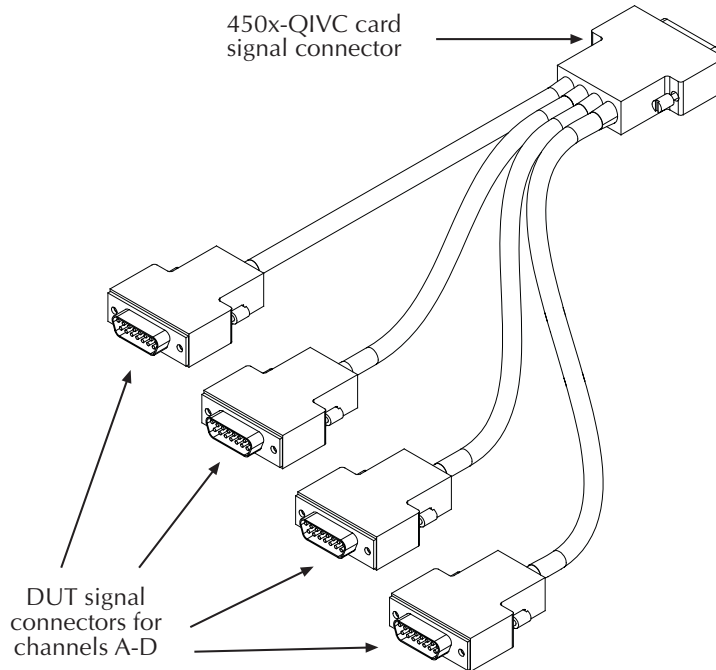
- Operate the card and cable set only in a clean environment.
- Do not touch cable or card connector pins.
- If the connectors become contaminated, they can be cleaned with clean methanol and then blown dry with dry nitrogen gas. Allow the cable connectors to dry for several hours at  $50^{\circ}\text{C}$  before use.

# Description

## Cable configuration

The overall configuration of the 4500-CQIV-\* cable set is shown in Figure 1. The cable includes a 40-pin connector that mates with the 450x-QIVC card signal connector on one end. It separates into a 15 pin D-Sub connector for each of the four channels, A to D. Each 15-pin connector provides voltage bias, current source, and voltage measure connections to the DUT.

Figure 1  
**4500-CQIV-\* cable configuration**



## Cable lengths

As summarized in Table 1 below, the 4500-CQIV-\* cable set is available in four different lengths. The 2 meter length cable (4500-CQIV-2) is supplied with the 450x-QIVC card.

Table 1  
**4500-CQIV-\* cable lengths**

Model	Length (meters)**
4500-CQIV-0.5	0.5
4500-CQIV-1	1
4500-CQIV-2*	2
4500-CQIV-3	3

\* Cable supplied with 450x-QIVC card

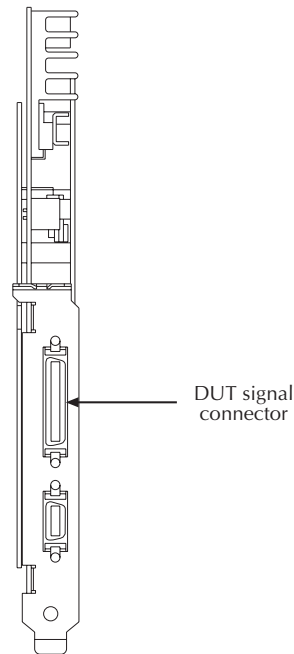
\*\* 0.5 to 2 meter cables are recommended for use with the 4501-QIVC. 3 meter cables are recommended for use with the 4500-QIVC.

# Connections

## Card connections

To connect the cable to the card, connect the 40-pin cable connector to the signal connector on the 450x-QIVC card (Figure 2).

Figure 2  
**450x-QIVC card signal connector**



## DUT connections

### Connector terminal designations

Table 2 lists card connector terminal designations for each of the four channels.

### Typical DUT connections

Typical DUT connections for each of the four channels are shown in Figure 3. Note that laser diode connections are made to the 450x-QIVC card current source and voltage measurement circuits. Photodiode connections are made to the card voltage bias source and current measurement circuits.

### Mating connector

To facilitate DUT connections, the following 15-pin solder cup mating connector for each of the four channel DUT connectors on the 4500-CQIV-\* cable is available: Keithley part number 4500-CIV-KIT-1.

Table 2  
**Connector terminal designations (each channel)**

Signal	Connector pin(s)
I-SOURCE HI <sup>1</sup>	3 and 11
V-MEASURE HI <sup>1</sup>	4
V-MEASURE LO <sup>1</sup>	12
I-SOURCE LO <sup>1</sup>	5 and 13
V-BIAS HI <sup>2</sup>	1
GUARD <sup>2</sup>	2
V-BIAS SENSE LO <sup>2</sup>	10
V-BIAS LO <sup>2</sup>	9

1. Laser diode connections  
 2. Photodiode connections

Figure 3  
**DUT signal connections**

