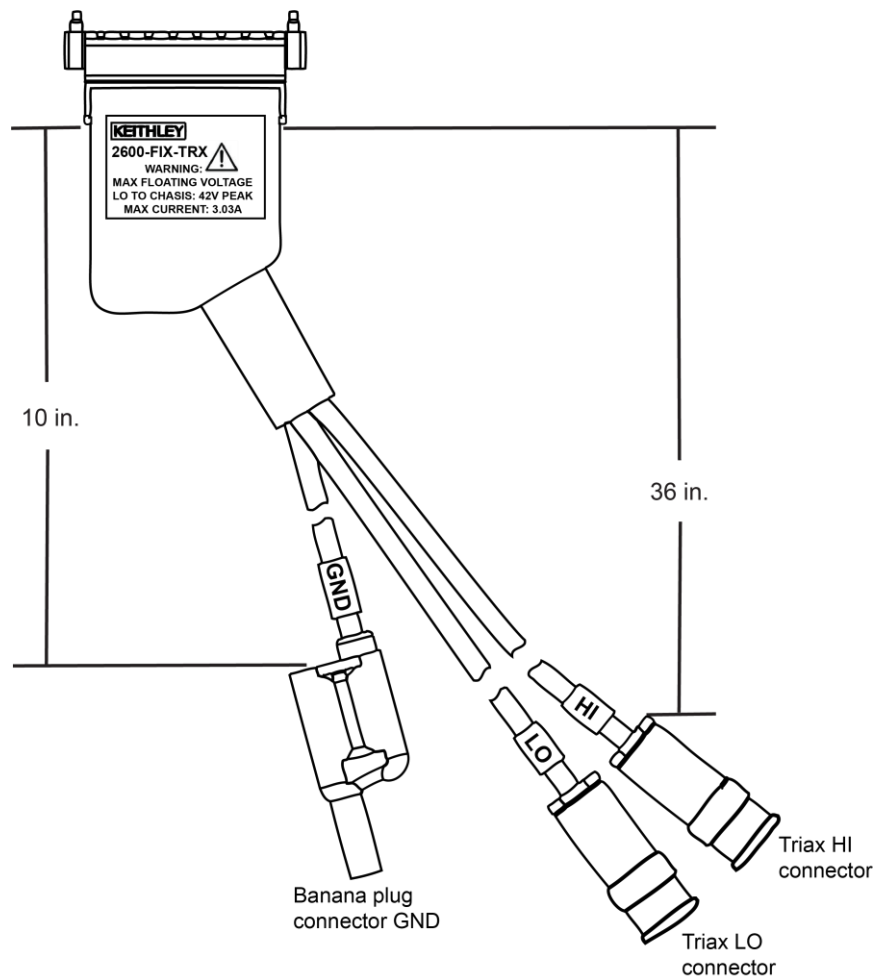


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Instruction Sheet**Model 2600-FIX-TRX**

The Keithley Instruments Model 2600-FIX-TRX Grounded Phoenix-to-Triax Cable Adapter is a combination dual triaxial connector and low-noise chassis ground banana-plug connector that provides simple connection pathways between the rear-panel terminal blocks for Models 2601, 2602, 2611, and 2612 System SourceMeter® instruments (Series 2600, 2600A, and 2600B) and Models 8101-4TRX and LR:8028 test fixtures.

Figure 1: Model 2600-FIX-TRX Grounded Phoenix-to-Triax Cable Adapter



Connections

This section identifies the connections that are made within the cable adapter and how to connect it between the instruments and fixtures.

WARNING

The information in this section is intended for qualified service personnel only, as described by the types of product users in the [Safety precautions](#) (on page 5). Do not attempt these procedures unless you are qualified to do so. Failure to recognize and observe normal safety precautions could result in personal injury or death.

Do not touch connectors when this assembly is connected. Possible exposure to hazardous voltages could result in personal injury or death.

You must provide an additional safety barrier to prevent the possibility of electrical shock if this cable adapter is used with an instrument that can source voltages greater than 42 V.

No interlock features are provided by this device. Make all connections properly before turning on the power to any instrumentation connected to this assembly.

NOTE

The Model 2600-FIX-TRX should not be used for 4-wire measurements because the sense leads are not connected in these connector assemblies.

The following table describes the connection pathways between the rear-panel terminal blocks of the System SourceMeter instruments and Model 8101-4TRX and LR:8028 test fixtures.

Connector	Outer shield	Inner shield	Center conductor
Triax HI	LO SMU Pin 1	Guard SMU Pin 3	HI SMU Pin 4
Triax LO	LO SMU Pin 1	LO SMU Pin 1	LO SMU Pin 1
Banana GND	N/A	N/A	LO SMU Pin 1

GND is a banana plug connector that connects to the System SourceMeter low-noise chassis ground banana jack. The banana jack is connected to the chassis through a frequency variable resistor (FVR). You can use the banana jack as a common signal ground point for input and output LO signals.

The FVR is a virtual short (zero ohms) for DC to 60 Hz. Isolate SMUs from high frequencies on the chassis.

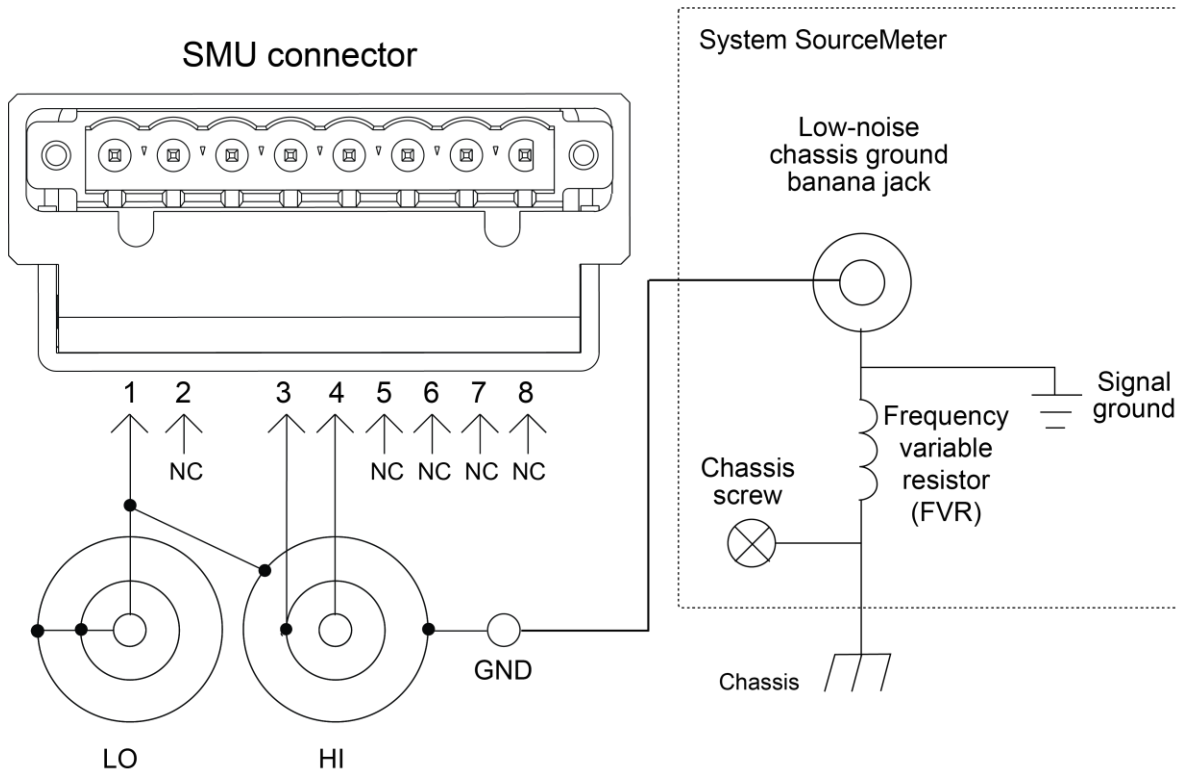
Do not use the chassis screw terminal to make signal connections to external circuitry. High frequency (>1 MHz) on the chassis may result in higher noise.

Connector schematic

The following figure shows the connector schematic for both the triaxial connectors and the low-noise chassis ground banana jack.

Proper use of these cable adapters and fixtures together ensures that the source-measure units used to test a device share a common ground connection, yielding accurate measurements.

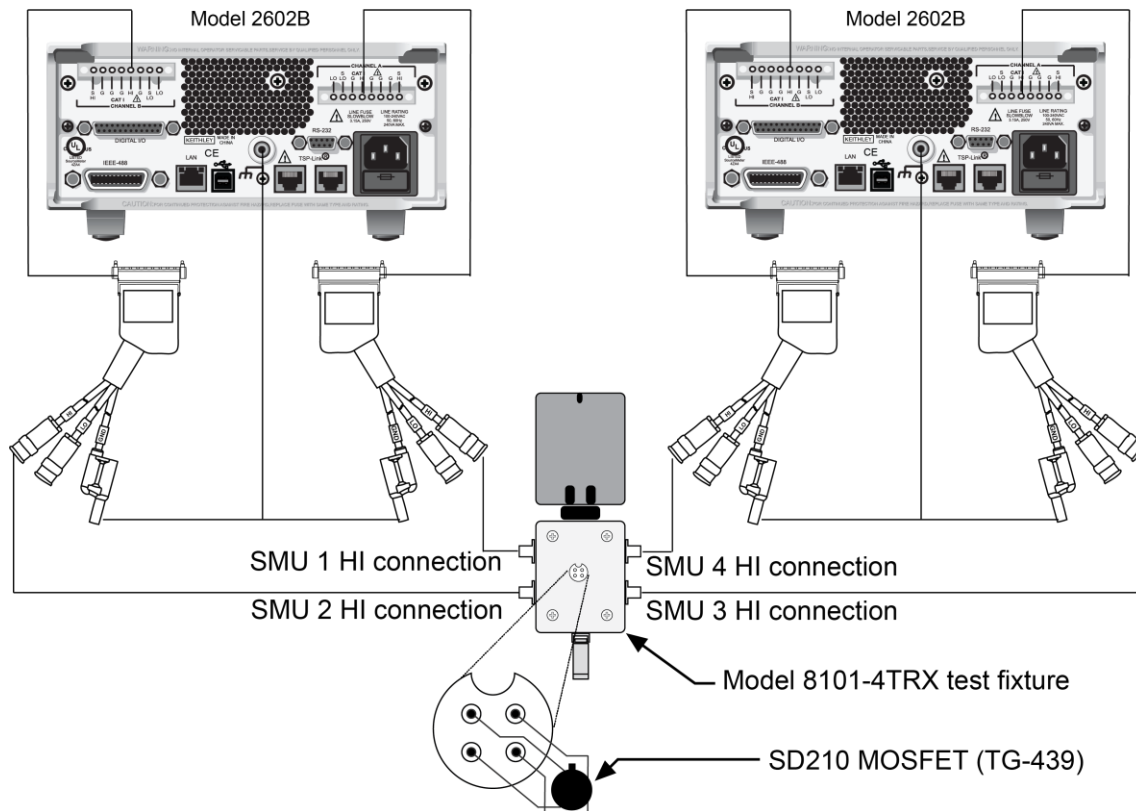
Figure 2: 2600-FIX-TRX connector schematic



Example test connections

The example in the following figure demonstrates how to connect two Model 2602B System SourceMeter instruments to a Model 8101-4TRX test fixture.

Figure 3: MOSFET testing example using four Model 2600-FIX-TRX cable adapters



For additional connection information, refer to the reference manual for your instrument.

Handling and cleaning

Performance to current leakage specifications depend on a clean fixture. Avoid contamination that could cause degraded performance and increase current leakages beyond specified limits.

Never use the 2600, 2600A, or 2600B instrument chassis as a ground point for signal connections; it should only be used as a safety shield. Because high frequencies present on the chassis may result in higher noise, use the low-noise chassis ground banana jack instead. Use the chassis screw for connections to the instrument chassis.

Observe the following precautions when handling components:

- Wear cotton gloves.
- Avoid unnecessary physical contact with the connectors.

To clean the connectors:

1. Swab the connector with methanol.
2. Quickly dry the test connector after cleaning by blowing dry nitrogen gas over it.
3. Allow the connector to dry in a 50 °C low-humidity environment for one hour.

The following safety precautions should be observed before using this product and any associated instrumentation. Although some instruments and accessories would normally be used with nonhazardous voltages, there are situations where hazardous conditions may be present.

This product is intended for use by personnel who recognize shock hazards and are familiar with the safety precautions required to avoid possible injury. Read and follow all installation, operation, and maintenance information carefully before using the product. Refer to the user documentation for complete product specifications.

If the product is used in a manner not specified, the protection provided by the product warranty may be impaired.

The types of product users are:

Responsible body is the individual or group responsible for the use and maintenance of equipment, for ensuring that the equipment is operated within its specifications and operating limits, and for ensuring that operators are adequately trained.

Operators use the product for its intended function. They must be trained in electrical safety procedures and proper use of the instrument. They must be protected from electric shock and contact with hazardous live circuits.

Maintenance personnel perform routine procedures on the product to keep it operating properly, for example, setting the line voltage or replacing consumable materials. Maintenance procedures are described in the user documentation. The procedures explicitly state if the operator may perform them. Otherwise, they should be performed only by service personnel.

Service personnel are trained to work on live circuits, perform safe installations, and repair products. Only properly trained service personnel may perform installation and service procedures.

Keithley products are designed for use with electrical signals that are measurement, control, and data I/O connections, with low transient overvoltages, and must not be directly connected to mains voltage or to voltage sources with high transient overvoltages. Measurement Category II (as referenced in IEC 60664) connections require protection for high transient overvoltages often associated with local AC mains connections. Certain Keithley measuring instruments may be connected to mains. These instruments will be marked as category II or higher.

Unless explicitly allowed in the specifications, operating manual, and instrument labels, do not connect any instrument to mains.

Exercise extreme caution when a shock hazard is present. Lethal voltage may be present on cable connector jacks or test fixtures. The American National Standards Institute (ANSI) states that a shock hazard exists when voltage levels greater than 30 V RMS, 42.4 V peak, or 60 VDC are present. A good safety practice is to expect that hazardous voltage is present in any unknown circuit before measuring.

Operators of this product must be protected from electric shock at all times. The responsible body must ensure that operators are prevented access and/or insulated from every connection point. In some cases, connections must be exposed to potential human contact. Product operators in these circumstances must be trained to protect themselves from the risk of electric shock. If the circuit is capable of operating at or above 1000 V, no conductive part of the circuit may be exposed.

Do not connect switching cards directly to unlimited power circuits. They are intended to be used with impedance-limited sources. NEVER connect switching cards directly to AC mains. When connecting sources to switching cards, install protective devices to limit fault current and voltage to the card.

Before operating an instrument, ensure that the line cord is connected to a properly-grounded power receptacle. Inspect the connecting cables, test leads, and jumpers for possible wear, cracks, or breaks before each use.

When installing equipment where access to the main power cord is restricted, such as rack mounting, a separate main input power disconnect device must be provided in close proximity to the equipment and within easy reach of the operator.

For maximum safety, do not touch the product, test cables, or any other instruments while power is applied to the circuit under test. ALWAYS remove power from the entire test system and discharge any capacitors before: connecting or disconnecting cables or jumpers, installing or removing switching cards, or making internal changes, such as installing or removing jumpers.

Do not touch any object that could provide a current path to the common side of the circuit under test or power line (earth) ground. Always make measurements with dry hands while standing on a dry, insulated surface capable of withstanding the voltage being measured.


For safety, instruments and accessories must be used in accordance with the operating instructions. If the instruments or accessories are used in a manner not specified in the operating instructions, the protection provided by the equipment may be impaired.


Do not exceed the maximum signal levels of the instruments and accessories. Maximum signal levels are defined in the specifications and operating information and shown on the instrument panels, test fixture panels, and switching cards.

When fuses are used in a product, replace with the same type and rating for continued protection against fire hazard.

Chassis connections must only be used as shield connections for measuring circuits, NOT as protective earth (safety ground) connections.

If you are using a test fixture, keep the lid closed while power is applied to the device under test. Safe operation requires the use of a lid interlock.


If a  screw is present, connect it to protective earth (safety ground) using the wire recommended in the user documentation.

The  symbol on an instrument means caution, risk of hazard. The user must refer to the operating instructions located in the user documentation in all cases where the symbol is marked on the instrument.

The  symbol on an instrument means warning, risk of electric shock. Use standard safety precautions to avoid personal contact with these voltages.


The  symbol on an instrument shows that the surface may be hot. Avoid personal contact to prevent burns.

The  symbol indicates a connection terminal to the equipment frame.

If this  symbol is on a product, it indicates that mercury is present in the display lamp. Please note that the lamp must be properly disposed of according to federal, state, and local laws.

The **WARNING** heading in the user documentation explains hazards that might result in personal injury or death. Always read the associated information very carefully before performing the indicated procedure.

The **CAUTION** heading in the user documentation explains hazards that could damage the instrument. Such damage may invalidate the warranty.

The **CAUTION** heading with the  symbol in the user documentation explains hazards that could result in moderate or minor injury or damage the instrument. Always read the associated information very carefully before performing the indicated procedure. Damage to the instrument may invalidate the warranty.

Instrumentation and accessories shall not be connected to humans.

Before performing any maintenance, disconnect the line cord and all test cables.

To maintain protection from electric shock and fire, replacement components in mains circuits — including the power transformer, test leads, and input jacks — must be purchased from Keithley. Standard fuses with applicable national safety approvals may be used if the rating and type are the same. The detachable mains power cord provided with the instrument may only be replaced with a similarly rated power cord. Other components that are not safety-related may be purchased from other suppliers as long as they are equivalent to the original component (note that selected parts should be purchased only through Keithley to maintain accuracy and functionality of the product). If you are unsure about the applicability of a replacement component, call a Keithley office for information.

Unless otherwise noted in product-specific literature, Keithley instruments are designed to operate indoors only, in the following environment: Altitude at or below 2,000 m (6,562 ft); temperature 0 °C to 50 °C (32 °F to 122 °F); and pollution degree 1 or 2.

To clean an instrument, use a cloth dampened with deionized water or mild, water-based cleaner. Clean the exterior of the instrument only. Do not apply cleaner directly to the instrument or allow liquids to enter or spill on the instrument. Products that consist of a circuit board with no case or chassis (e.g., a data acquisition board for installation into a computer) should never require cleaning if handled according to instructions. If the board becomes contaminated and operation is affected, the board should be returned to the factory for proper cleaning/servicing.

Safety precaution revision as of June 2017.