

Model 2280-001 Output Mating Connector

Installation Instructions

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Introduction

The Model 2280-001 Output Mating Connector allows you to make 2-wire and 4-wire sense connections with the Series 2280 Precision Measurement Power supplies. This document contains information that will help you install the output mating connector.

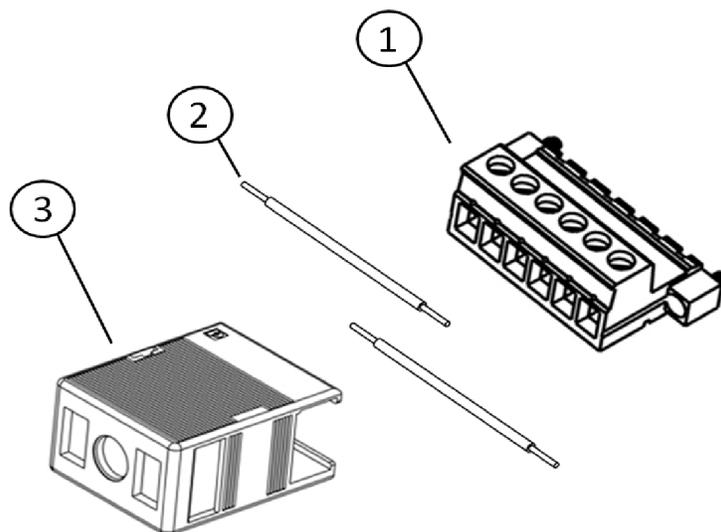
Electrical characteristics

- Rating: 300 V AC/DC, 12 A
- Applicable wire size: 24 to 12 AWG
- Insulation withstands voltage: 2000 V AC for 1 minute
- Insulation resistance: $\geq 500 \text{ M}\Omega$ at 500 V DC
- Screw torque value: 0.5 Nm (4.4 in. lb.)

Parts list

The following figure shows the hardware supplied with this connector; the table below it contains part names, numbers, and supplied quantities.

Figure 1: Model 2280-001 Output Mating Connector



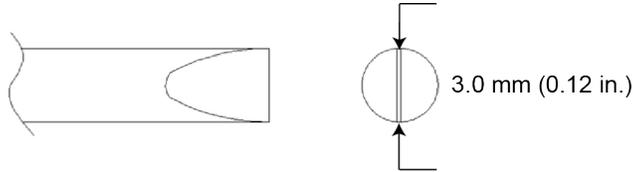
	Description	Part number	Quantity
1	Plug connector	131917500	1
2	Jumper wire	174656900	2
3	Cable housing	380126600	1



Tools required for installation

- Flat-head screwdriver

Figure 2: Screwdriver specifications



Installation precautions

Use the following procedure to install the Model 2280-001 Output Mating Connector.

WARNING

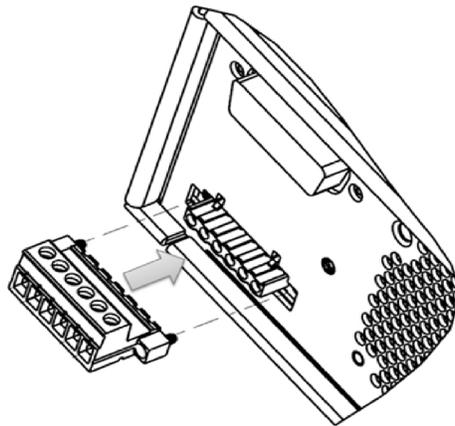
Turn off instrument power before installing the mating connector to the instrument. Failure to remove power before installation may cause personal injury or death from electrical shock.

Installing the Model 2280-001 Output Mating Connector

To install the connector for 2-wire operation:

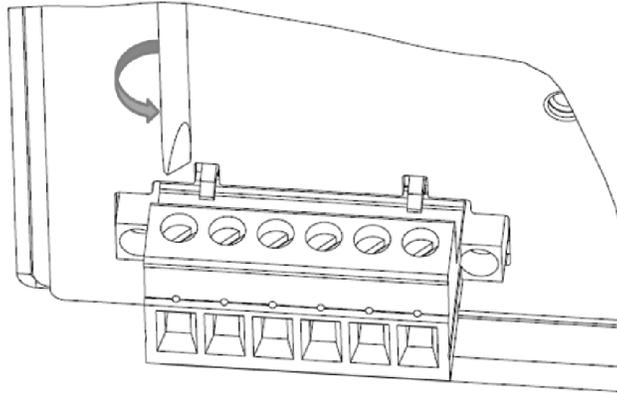
1. Power off the instrument.
2. Insert the plug connector into the female connector on the Series 2280.

Figure 3: Install the plug connector



- Loosen the flat head screws on the output mating connector

Figure 4: Loosen the screws



- Insert the two jumper wires into the plug connector. One jumper goes in terminals 1 and 2 and the other goes in terminals 5 and 6, as shown below.

⚠ CAUTION

Make sure that the jumpers connect to the correct pins on the plug connector. Incorrect connections may cause instrument damage.

Figure 5: Install the jumper wires

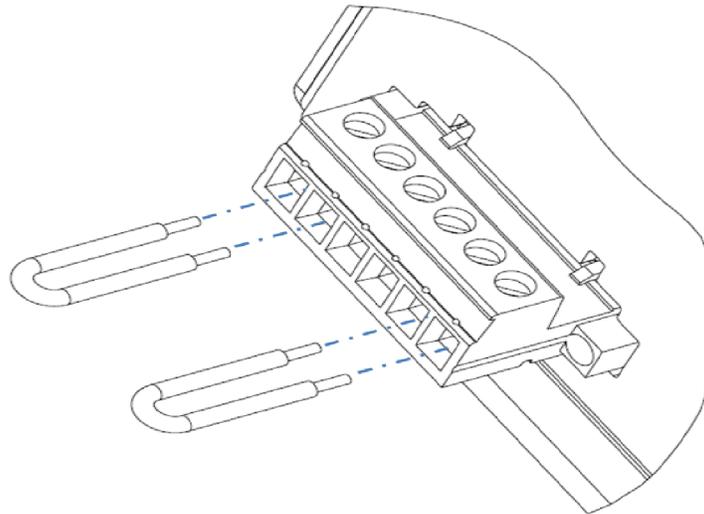
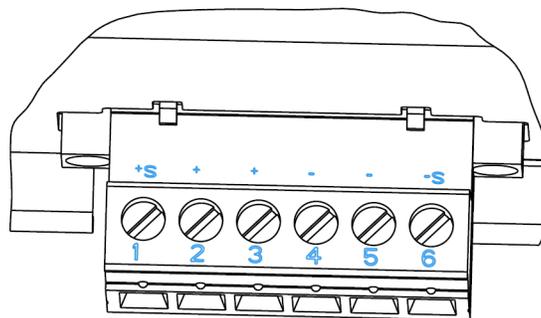


Figure 6: Connector terminals



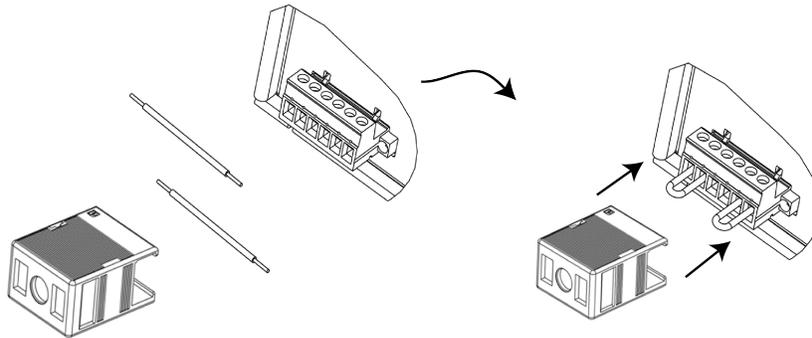
5. Tighten the screws with the screwdriver.
6. Connect the output wires (Source HI is connected to terminal 3 and Source LO is connected to terminal 4, as shown above).
7. Slide the cable housing over the output mating connector and wires.

⚠ CAUTION

The jumper cables must be installed if you are going to use 2-wire connections.

Even if you are using the front-panel connectors, the output mating connector (with jumper wires installed) must be connected to the Series 2280 rear-panel output connector to ensure proper instrument performance.

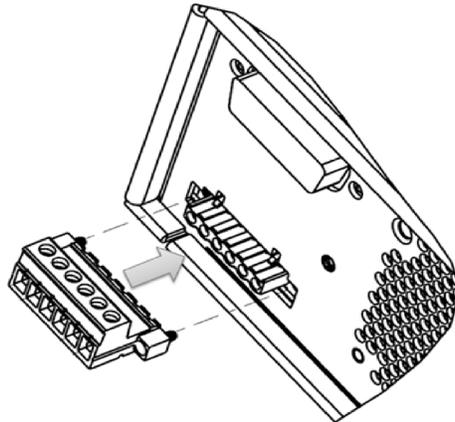
Figure 7: Install the output mating connector for 2-wire operation



To install the connector for 4-wire operation:

1. Power off the instrument.
2. Insert the output mating connector into the female connector on the rear panel of the Series 2280.

Figure 8: Install the plug connector



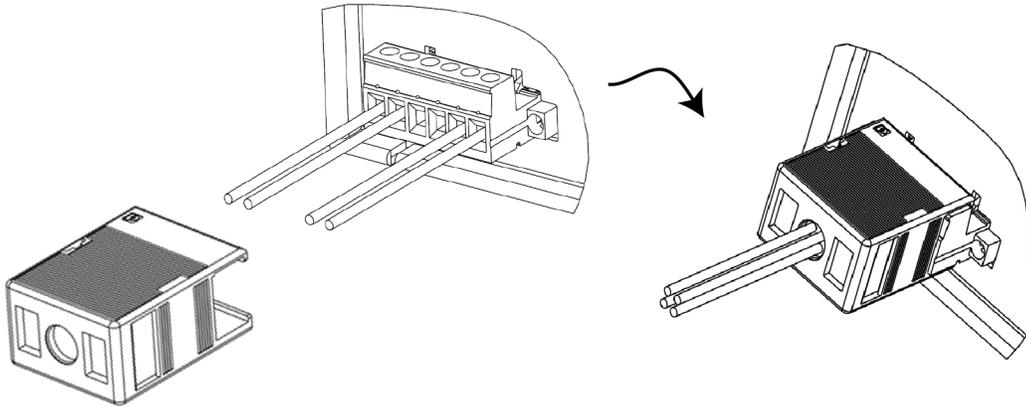
3. Loosen the flat-head screws on the output mating connector.
4. Insert the source wires and the sense wires into the plug connector.

⚠ CAUTION

Make sure that the source and sense wires connect to the appropriate terminals of the plug connector (Source HI is connected to terminal 2 and Source LO is connected to terminal 5; Sense HI is connected to terminal 1 and Sense LO is connected to terminal 6). An incorrect connection may cause instrument damage.

5. Tighten the screws with the screwdriver.

Figure 9: Install the output mating connector for 4-wire operation



6. Slide the cable housing over the output mating connector and wires.

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 qualified 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 Instruments 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.

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, as defined in the specifications and operating information, and as shown on the instrument or test fixture panels, or switching card.

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

The **WARNING** heading in the user documentation explains dangers 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.

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 Instruments. Standard fuses with applicable national safety approvals may be used if the rating and type are the same. 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 Instruments to maintain accuracy and functionality of the product). If you are unsure about the applicability of a replacement component, call a Keithley Instruments office for information.

To clean an instrument, use a damp cloth 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 January 2013.