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Assembly and Mounting Instructions

Introduction

The Model 4288-10 Rear Support Mount Kit is a rack mount kit that is intended for use with the Model 3706A System Switch/Multimeter in a standard 19-inch equipment rack.

Keithley Instruments recommends that you support the rear of the Model 3706A in all installations. This kit includes the hardware that you need to provide this support for one Model 3706A.

This kit should be used in addition to the rack mount hardware that is supplied with the Model 3706A. The supplied kit provides support for the front of the instrument. The Model 4288-10 provides the support for the rear.

CAUTION

The Model 4288-10 Rear Support Mount Kit is intended for use in fixed installations only. It is not intended for mobile applications or any other application where the rack mount and mounted instruments are subject to vibration or shock.

Tools required

- Medium (#2) Phillips-head screwdriver

Parts list

The table below lists the hardware that is supplied with this kit.

Item description	Part number	Quantity
Rear support bracket	3706-354	2
Support bracket	3706-355	1
Retaining clip (with captive nut)	FA-148	4
10-32 × 5/8 in. Phillips truss-head screw	10-32X5/8PHTRHD	4
8-32 × 3/8 in. Phillips truss-head screw	8-32X3/8PHTRHD	12
8 × 3/4 washer	8FENWA	12



General guidelines

For most installations, the Model 3706A fills 2U of vertical rack space.

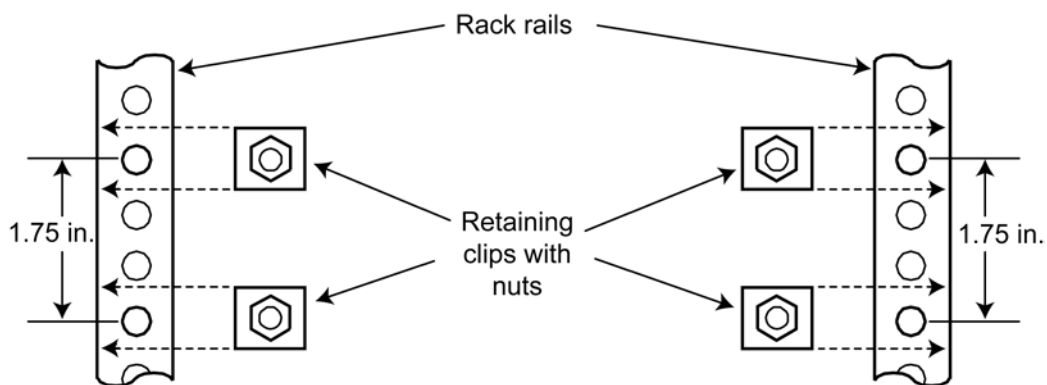
If you are using a screw terminal block accessory with auto cold junction compensation (CJC) thermocouple measurements, such as the Model 3720-ST, be aware that this accessory has built-in temperature sensors. The sensors monitor the temperature of the screw terminals when temperature measurements are being made with thermocouples. To make sure the temperature measurements are accurate, these sensors must be in stable ambient conditions (not subjected to hot spots).

Prepare the rack for Model 3706A installation

To prepare the rack for Model 3706A installation:

1. If possible, remove the cabinet sides from the rack.
2. Select a location in the rack to install the instrument.
3. To make it easier to install the instrument, clear as much space as possible around the selected rack location.
4. Measure the distance from the front rail to the rear rail to determine where the support brackets will need to be mounted on the instrument.
5. Install the eight retaining clips, four on the front rack rail and four on the rear rack rail. Slide each retaining clip over a mounting hole so that the captive nut is on the inside of the rack cabinet.

Figure 1: Retaining clip spacing



Prepare the Model 3706A for rack mount installation

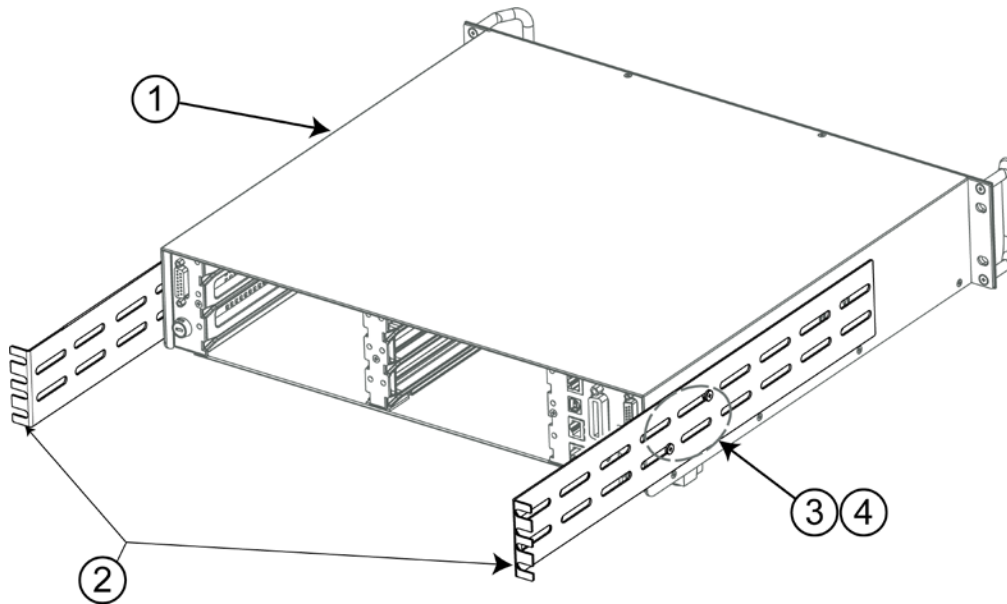
⚠ WARNING

Before installing the instrument, disconnect all external power from the equipment and disconnect the line cord. Failure to disconnect all power may expose you to hazardous voltages, which, if contacted, could cause personal injury or death.

To prepare the instrument for mounting:

1. Verify that power is disconnected from the instrument.
2. Place the instrument upside-down.
3. From the four foot assemblies on the bottom of the instrument, remove the rubber centers.
4. Use a Phillips-head screwdriver to remove the four foot assemblies. Retain the rubber foot assemblies for future use.
5. Place the instrument right-side up.
6. Determine the placement of the rear support brackets (3706-354), using the measurement that you took when preparing the rack. Make sure the flanges on the rear support brackets are oriented to the outside of the instrument as shown in the following figure.
7. Use four of the #8-32 screws with washers to loosely attach the two rear support brackets to the Model 3706A. You will use two screws and washers on each side. Do not tighten the screws fully at this time.

Figure 2: Rear support bracket installation



1	Model 3706A
2	Flanges of the rear support brackets (part number 3706-354)
3	#8-32 screws
4	#8 x 3/4 washer

Install the Model 3706A in the rack

NOTE

You will need two people to install the Model 3706A in the rack.

To install the Model 3706A in the rack:

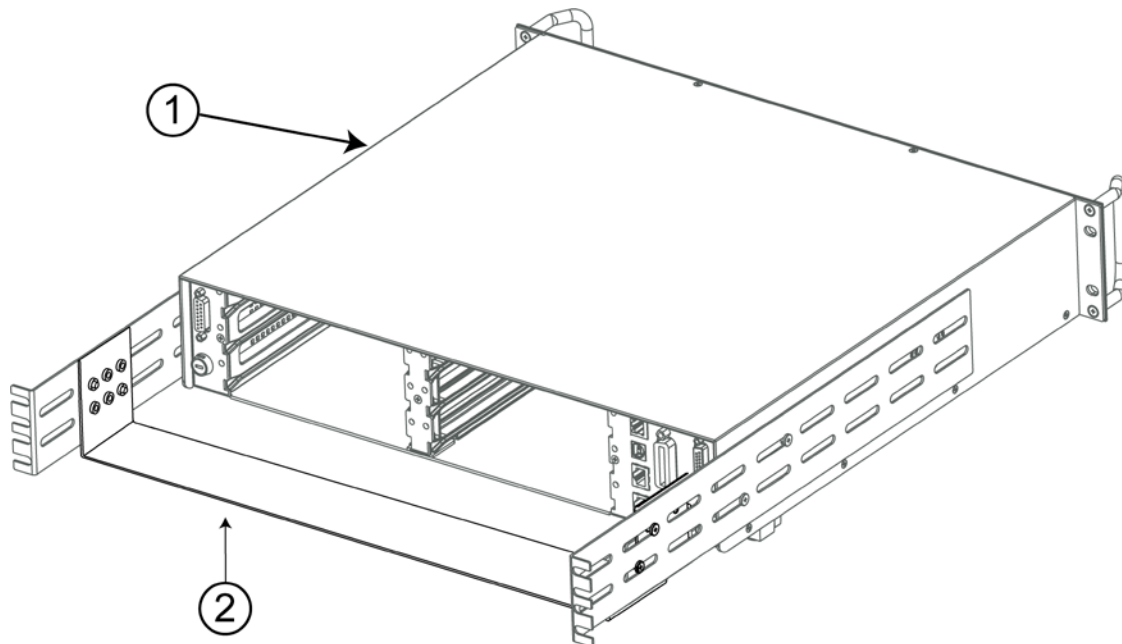
1. Place the Model 3706A in the rack. You will need to insert it at an angle and flex the support brackets to fit them into proper placement in the rack.
2. Loosely attach the front panel to the front rack rails using four of the #10-32 screws.
3. Loosely attach the rear support brackets to the rear rack rails using the remaining four #10-32 screws.
4. Tighten the #10-32 screws to secure the instrument to the rack.
5. Tighten the #8-32 screws that secure the rear support brackets to the Model 3706A.

Install the support bracket

To install the support bracket:

1. Mount the support bracket to the rear support brackets using the #8-32 screws and washers. Note that actual location of the bracket will depend on the placement of the support brackets. The following figure shows a typical location.

Figure 3: Install the card support bracket



2. Install cards in the Model 3706A.
3. On the rack, replace the side panels and other items that might have been removed to prepare for Model 3706A installation.

1	Model 3706A
2	Support bracket (part number 3706-355)
3	#8-32 screws
4	#8 x 3/4 washer

Contact information

If you have any questions after you review the information in this documentation, please contact your local Keithley Instruments office, sales partner, or distributor. You can also call the corporate headquarters of Keithley Instruments (toll-free inside the U.S. and Canada only) at 1-800-935-5595, or from outside the U.S. at +1-440-248-0400. For worldwide contact numbers, visit the [Keithley Instruments website](http://www.tek.com/keithley) (<http://www.tek.com/keithley>).

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.