

## Introduction

**NOTE** This 4200-RM Rack Mount Kit is for installation in 4200-CAB series cabinets only.

The Model 4200-RM is a fixed rack mount kit for cabinet mounting of the Model 4200 Semiconductor Characterization System (4200-SCS).

## Parts list

Refer to Table 1 below for a list of parts included in the kit:

Table 1  
Model 4200-RM parts list

Item	Quantity	Description	Keithley Part No.
A	2	Instrument Support Shelves	4200-381
B	2	Rack Mount Ears	4200-341
C	2	Handles	HH-30-3
D	12	#10-32 × 5/8 Phil. Truss Hd Fastener Screw	—
E	4	#8-32 × 3/8 Flat Hd Fastener Screw	—
F	8	M5 Thread Cage Nut Fastener	FA-274

**CAUTION** The Model 4200-SCS chassis weighs in excess of 60 pounds. One person alone should not attempt the cabinet preparation, chassis installation, or chassis removal procedures. Obtain assistance. Failure to comply could result in personal injury and/or equipment damage.

## Cabinet preparation

1. Select a location in the cabinet.
2. Hold the system up to the selected location in the cabinet.
3. Determine and mark where the rack mount ears (Item B) and instrument support shelves (Item A) are to be installed.
4. Install the cage nuts (Item F) for the rack mount ears and the instrument support shelves. Use the locations marked in Step 3.

## 4200-SCS chassis preparation

Refer to Figure 1.

1. Attach the handles (Item C) to the rack mount ears. Attach the rack mount ears to the 4200-SCS Chassis using the supplied screws (Items D and E).
2. Attach the instrument support shelves to the cabinet rack using the supplied screws. Fasten the screws to the cage nuts located in Step 4 of the cabinet preparation instructions (previous page).
3. Position the instrument chassis assembly in the cabinet to adjust the support brackets and instrument support shelves. Note the location for the fasteners on the cabinet rails.

## 4200-SCS chassis installation

Refer to Figure 1.

1. Grasp the 4200-SCS chassis by the handles and insert it into the cabinet.
2. Fasten the rack mount ears to the front rails of the cabinet rack using supplied screws.

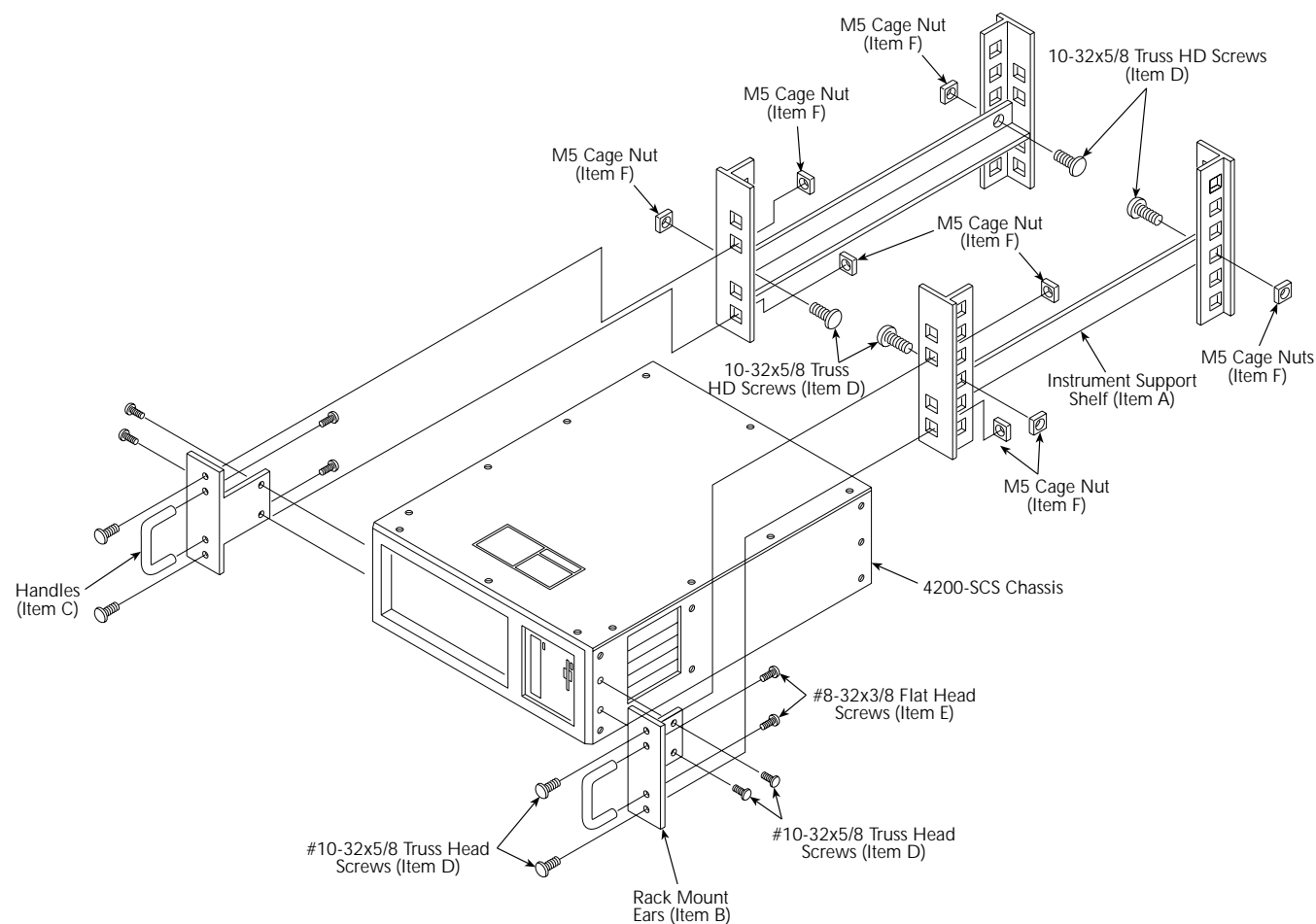
## 4200-SCS chassis removal

Refer to Figure 1.

1. Remove the four screws mounting the rack mount ears to the cabinet rack and slide the 4200-SCS chassis out. Make sure the rear of the unit is supported as it slides out.

**WARNING** The Model 4200-SCS must be separately connected to a safety earth ground to maintain protection against possible shock hazard. Failure to connect the unit to a safety earth ground may result in personal injury or death due to an electric shock.

Figure 1  
Mounting kit installation



## Safety precautions

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 non-hazardous 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 the operating information carefully before using the product.

## General safety definitions


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, for example, setting the line voltage or replacing consumable materials. Maintenance procedures are described in the manual. 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, and perform safe installations and repairs of products. Only properly trained service personnel may perform installation and service procedures.

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

The  symbol on an instrument indicates that the user should refer to the operating instructions located in the manual.

The  symbol on an instrument shows that it can source or measure 1000 volts or more, including the combined effect of normal and common mode voltages. Use standard safety precautions to avoid personal contact with these voltages.

The **WARNING** heading in a manual 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 a manual explains hazards that could damage the instrument. Such damage may invalidate the warranty.

## Installation safety

Keithley products are designed for use with electrical signals that are rated Installation Category I and Installation Category II, as described in the International Electrotechnical Commission (IEC) Standard IEC 60664. Most measurement, control, and data I/O signals are Installation Category I and must not be directly connected to mains voltage or to voltage sources with high transient over-voltages. Installation Category II connections require protection for high transient over-voltages often associated with local AC mains connections. The user should assume all measurement, control, and data I/O connections are for connection to Category I sources unless otherwise marked or described in the Manual.

Users of this product must be protected from electric shock at all times. The responsible body must ensure that users are prevented access and/or insulated from every connection point. In some cases, connections must be exposed to potential human contact. Product users 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 volts, **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, make sure 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.

## Operation safety

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 30V RMS, 42.4V peak, or 60VDC are present. **A good safety practice is to expect that hazardous voltage is present in any unknown circuit before measuring.**

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.

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.

The instrument and accessories must be used in accordance with its specifications and operating instructions or the safety of the equipment may be impaired.

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

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

Instrumentation and accessories shall not be connected to humans.

## Maintenance and service for safety

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.

## Cleaning

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., 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.

