

Chapter 3

INTRODUCTION

This section of the *289H LSS Installation & Operation Manual* describes the requirements and procedures for installing the 289H monitor in the central office. If you have not yet completed all of the procedures described in Section 2 of this manual, please do so before proceeding.

UNPACKING EQUIPMENT

1. Carefully unpack the 289H LSS shipping carton(s) and check the contents for damage.

Note: System Studies Incorporated is not responsible for damages sustained during shipment or unpacking. If it is apparent that the equipment has been damaged, please notify the shipping agent before you proceed with the instructions in this section of the manual. It is also advisable to take photographs, if possible, of the damaged shipping container(s). The photos may be helpful with efforts to settle potential damage claims.

2. Verify that all of the required components have been shipped. The enclosed packing slip indicates the quantity and type of components included in the shipment.

The basic 289H LSS includes the following components:

- 289H chassis (card cage with hinged front)
 - 289H Controller Card or LAN Controller Card (packaged separately)
 - 289H Utility Card or Tone Utility Card (packaged separately)
 - Relay card(s) — quantity and type vary with order (packaged separately)
 - Connector block(s) — quantity and type vary with order
 - Connector cables — quantity, length and type vary with order
 - Four (4) rack mounting screws (10-32 x 3/4 stainless steel oval head standard)
 - 289H LSS spare fuse kit
 - RJ-11 to RJ-11 telephone line cable (6 ft.)
 - Module: Jack/IDC Connection
3. If any of the components ordered have not been included in the shipment, please notify the System Studies Incorporated Shipping Department at (800) 247-8255 or (831) 475-5777.

INSTALLING THE 289H LSS MONITOR

The following tools are required during the installation of the 289H:

- Medium straight-blade screwdriver (for mounting chassis)
- Small straight-blade screwdriver (for securing power connection)
- Wire strippers

- Wire wrap tool for securing device pair tip and ring jumpers to the 289H connector blocks

Before beginning the 289H installation, make sure you have a copy of the central office work order that was prepared for the 289H LSS installation. This work order identifies the equipment rack number and position for the chassis, the fuse bay and fuse number required for power connection, the phone line assigned for use with the monitor (if applicable), and the connector block bay number and position.

Once this information has been determined, you can install the 289H equipment as described below:

1. Using the screws provided, install the 289H chassis in the designated equipment rack. (It is recommended that two technicians secure the chassis in place, due to its size and weight.)
2. Locate the 289H Controller Card (or LAN Controller Card). This card contains the modem or LAN module, expansion chassis connections, and micro controller chip.
3. Slide the Controller Card into the first slot of the chassis, (labeled CTLR), using the 289H's top and bottom guide rails (FIGURE 3-1). To prevent you from installing a card improperly, the card is keyed so that it cannot be inserted upside down.

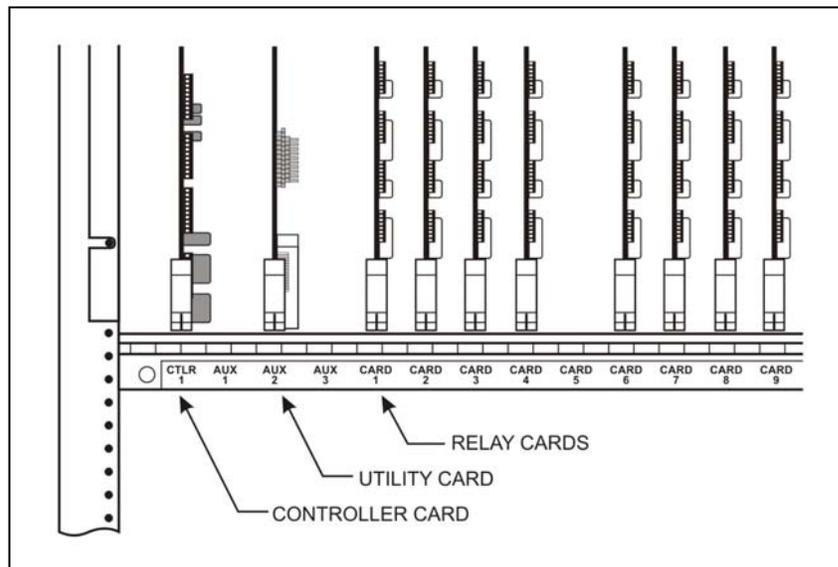


FIGURE 3-1: 289H CARD PLACEMENT POSITIONS

4. Pull the card's ejector clips straight out. (These plastic clips are located on the top and bottom front edge of the card.) If they are positioned inward, the card cannot be inserted into the chassis.
5. Locate the Utility Card (or Tone Utility Card). Make sure that the power switch on this card is in the OFF position (see FIGURE 3-2).

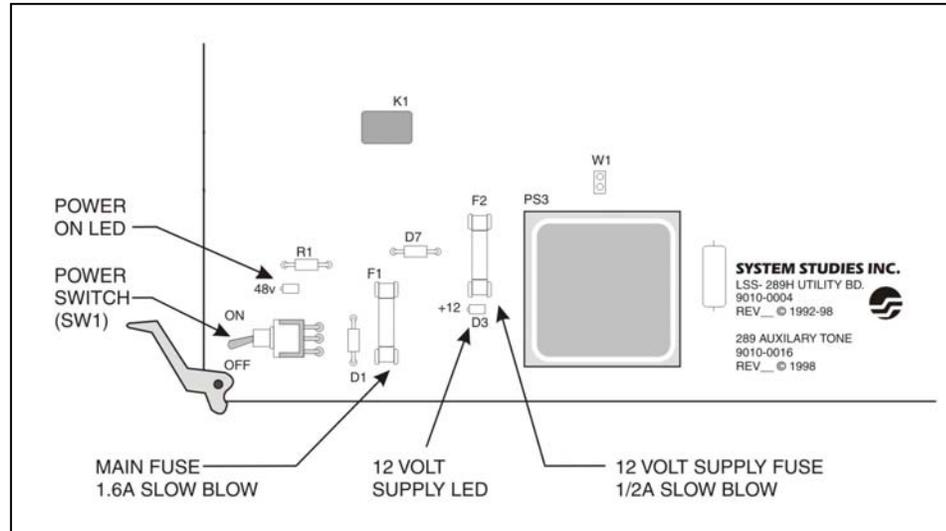


FIGURE 3-2: 289H UTILITY CARD POWER SWITCH

- If using a Tone Utility Card, check to make sure that the tone jumper is set correctly. Locate the Utility Tone Jumper (J6/J7), to the left of the backplane connector as viewed from the back of the chassis. Make sure that the jumper is in the J7 position (default setting), shown in FIGURE 3-3.

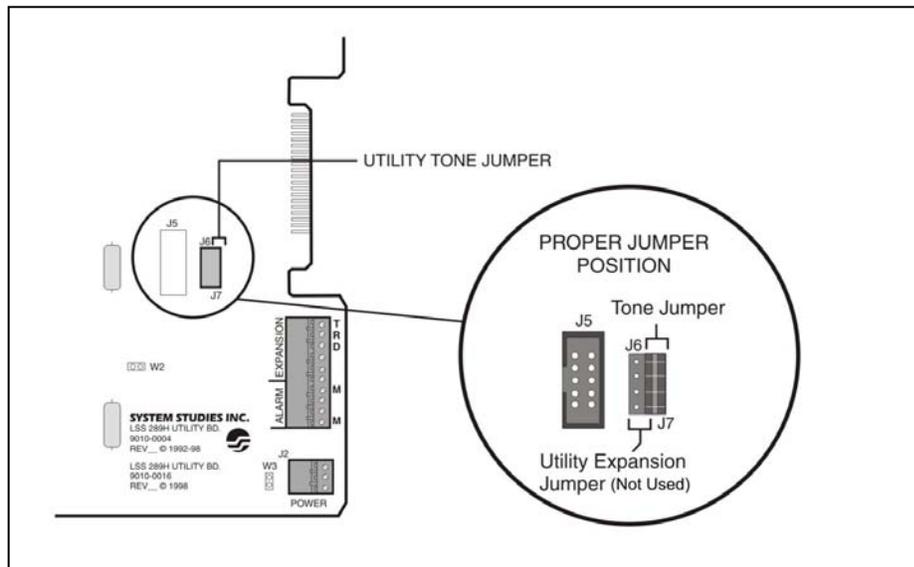


FIGURE 3-3: TONE JUMPER SETTING FOR UTILITY CARD POWER SWITCH

Note: The jumper can be removed by pulling it straight upward.

- Insert the Utility Card into one of the three auxiliary (AUX) slots on the left side of the chassis (FIGURE 3-1). Slide the card into the slot using the 289H's top and bottom guide rails. To prevent you from installing a card improperly, the card is keyed so that it cannot be inserted upside down.

Power Supply Hookup

1. The central office installation work order specifies what fuse panel to use for supplying CO battery to the 289H monitor. Make sure that you use only CO talk battery. This CO power provides for the filtering of spikes that may occur when the central office batteries are being charged with AC power.
2. Check the continuity of the power leads from the central office battery fuse panel to the 289H monitor. You must be able to identify the -48 volt power lead, the +48 volt return, and the frame ground.

Note: The frame ground wire should be 18 to 20 AWG wire. The -48 volt power lead and the +48 volt return conductor should be 18 to 22 AWG wire. The ground wire should be the same gauge as the power conductor or one gauge thicker (one gauge number smaller). However, the ground wire should never be thicker than 18 AWG.

3. Find and remove the power connection block on the 289H Utility Card. This small green or black rectangular block is located near the bottom edge of the card, as viewed from the back of the 289H chassis (see FIGURE 3-4). It is recommended that you remove the power connection block from the Utility Card before attempting to wire it. This will simplify the wiring process and prevent accidental damage to the card. The connector block can be removed (unplugged) from the card by pulling it straight out the back of the card. Only moderate force is required.

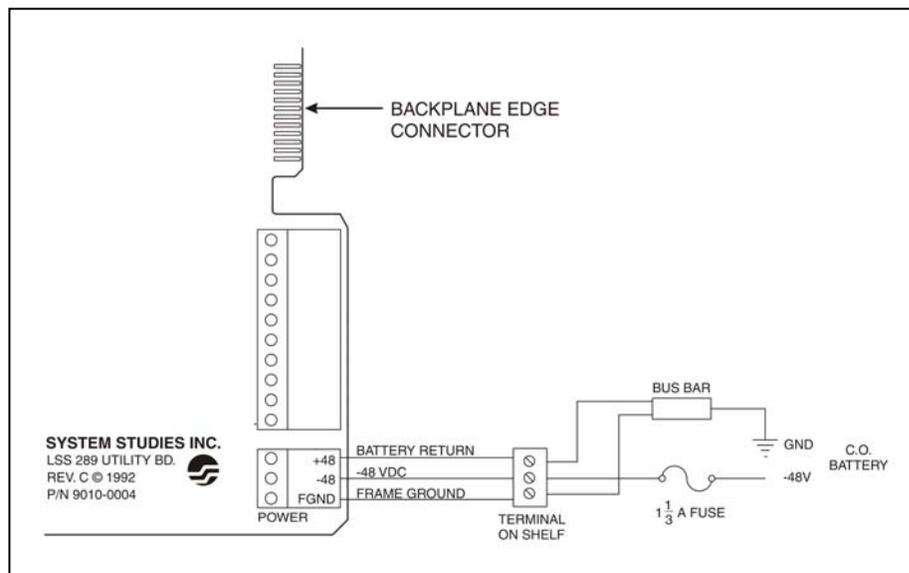


FIGURE 3-4: 289H UTILITY CARD WIRING SCHEMATIC

4. Using a small, straight-blade screwdriver, unscrew the terminal jaws on the Utility Card's power connection block. The terminal jaws, which are used to lock the conductors in place, are shown enlarged in FIGURE 3-5. When turned counterclockwise, the adjustment screws on the top of the block open the jaws so that the power, return and ground leads may be inserted.

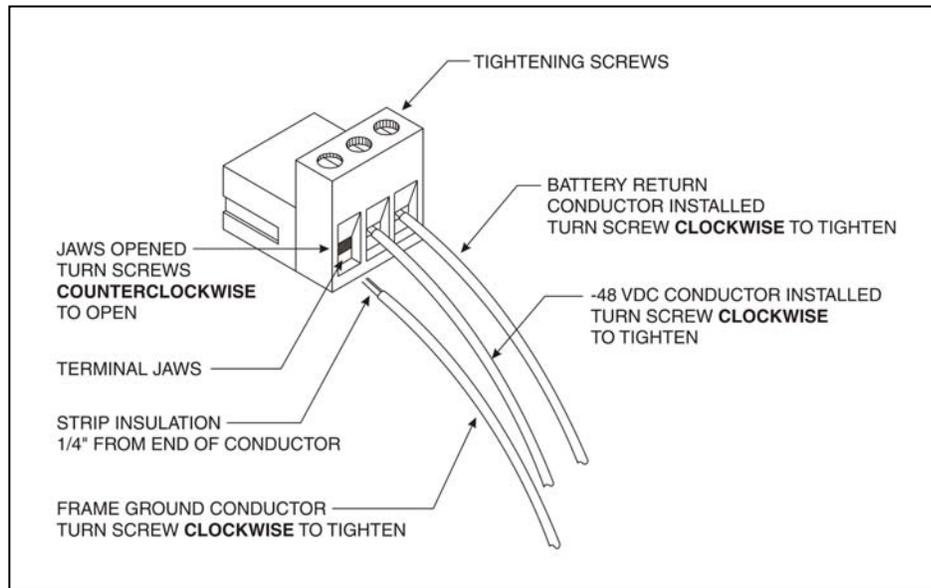


FIGURE 3-5: 289H UTILITY CARD POWER CONNECTOR WIRING

Note: Make sure that the jaws are opened all the way (so they are no longer visible) before you insert the ends of the conductors.

5. Identify the conductor that provides the -48 volt power supply from the CO battery. Insert this lead into the CENTER terminal jaw and tighten the appropriate adjustment screw (by turning it clockwise) to ensure a proper connection. As you tighten the screw, the jaw will push the conductors toward the side of the block with the adjustment screw.
6. Insert the other conductors. The +48 volt return conductor is installed above the power lead in the top terminal jaw. The frame ground (FGND) is installed in the bottom jaw. Both of these connections are shown in FIGURE 3-5.

Note: A short 18 to 20 AWG wire should be used to connect FGND directly to the CO earth ground bus. This connection should be as close as possible to the 289H. The ground wire should be the same gauge as the power conductor or one gauge thicker (one gauge number smaller). An incorrect connection may cause erratic device readings.

WARNING: A good frame ground or earth ground must be established or the 289H LSS will not operate properly. Make sure that the wire used for grounding can be manually traced back to an acceptable earth ground. Do not merely assume that established grounding procedures are satisfactory.

7. Plug the connection block back into the 289H Utility Card, making sure you replace it in its proper position (see FIGURE 3-4).

8. After the power connection block has been securely fastened in the Utility Card, flip the power supply switch on. In a few seconds the 289H's power supply indicator will light, indicating that the unit is properly powered.

Relay Card Installation

If the devices in your system are wired to a mix of dedicated and subscriber pairs, it will be necessary to map devices from the field to the 289H connector blocks BEFORE you can establish an order for installing relay cards in the 289H chassis. This cutover process is described in Section 4.

If you are using all of one type of monitoring pair (all dedicated or all subscriber pairs, for example), you can install the 289H relay cards during the initial setup process as described below.

Please note that newer, special-application relay cards, such as the Sparton Dedicated Replacement Card (SPDR), require that the Controller Card's EPROM version is compatible with the relay card. In the case of the SPDR, for example, only version C07, D04, E04, or F03 Controller Cards may be used.

Note: EPROM versions, compatibility requirements and capabilities are described in Release Note 68 (2570701.*HD), which is available on the System Studies website (www.airtalk.com/z_ref-3.html).

1. Make sure that power to the 289H LSS is turned OFF before you install the relay cards.
2. Slide the first relay card into the CARD 1 slot of the chassis using the 289H's top and bottom guide rails. To prevent you from installing a card improperly, all relay cards are keyed so that they cannot be inserted upside down.

Note: Card slots are numbered on the inside of the 289H faceplate near the hinge (Figure 3-1). Please note that the first four slots are specified as CTRL, AUX1, AUX2, AUX3, respectively. Even though AUX2 and AUX3 may be empty, do not place relay cards in these slots.

If you are installing SPDR relay cards, they must be placed in the chassis in front of other relay card types. Instructions for configuring the cards are provided in Section 4.

3. Pull the card's ejector clips straight out. (These plastic clips are located on the top and bottom front edge of the card.) If they are positioned inward, the card cannot be inserted into the chassis.
4. Each succeeding card should be placed in the next available slot to the right of the CARD 1 slot. The maximum number of relay cards that a 289H chassis will accommodate is 16.
5. As you insert each card, check to see that the card's edge connector is in line with the connector on the unit's backplane. You may have to reach in and slightly adjust the edge connector to the right or left before the card will slide into the backplane connector.

- Secure the card in place by pressing the ejector clips toward the center of the card. Each clip fits into a hole in the 289H's steel chassis to provide leverage for locking the card into position.

CONNECTOR BLOCK INSTALLATION

As part of the 289H installation process, you will need to mount the 289H connector blocks in the designated equipment bays as described below:

- Determine the location(s) of the designated equipment bays from the central office work order.
- Arrange to obtain a suitable mounting bracket for the connector blocks. System Studies supplies a mounting bar for this purpose (Part No. 9800-6090), intended for use with the 9800-6055 and 6056 connector blocks. Both blocks are equipped with a variety of slots for easy installation (FIGURE 3-6).

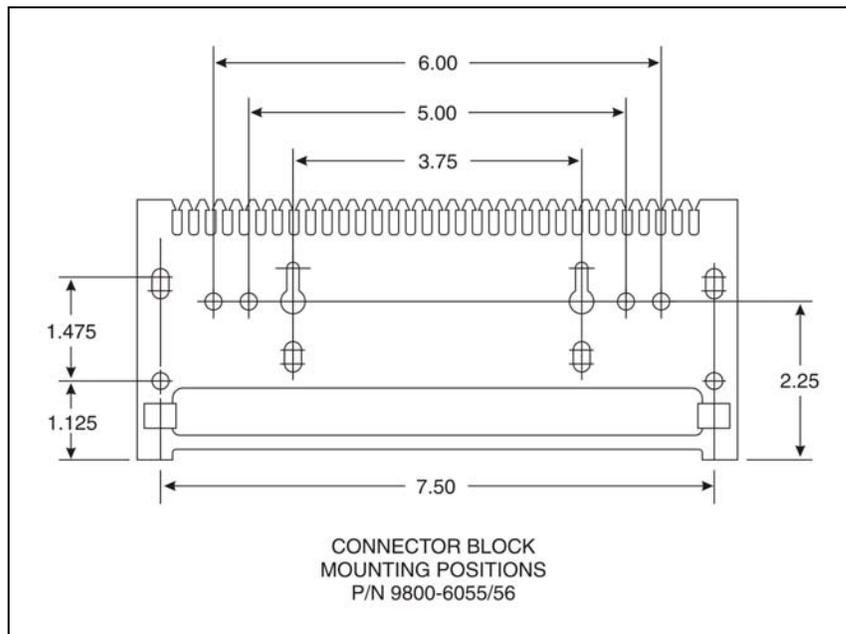


FIGURE 3-6: 289H CONNECTOR BLOCK MOUNTING POSITIONS

- Bolt any mounting brackets that are not already in place into the designated equipment bays.
- Before you bolt the blocks into the brackets, make sure that there is sufficient room below each one to insert the connector cables. If there is adequate access to the blocks, bolt the blocks onto the equipment bay brackets using the nuts and bolts provided.

With the connector blocks in place and the 289H chassis installed, the final installation procedures involve wiring the blocks and making the proper cable connections to the 289H relay cards. These procedures are described in Section 4 of this manual.

