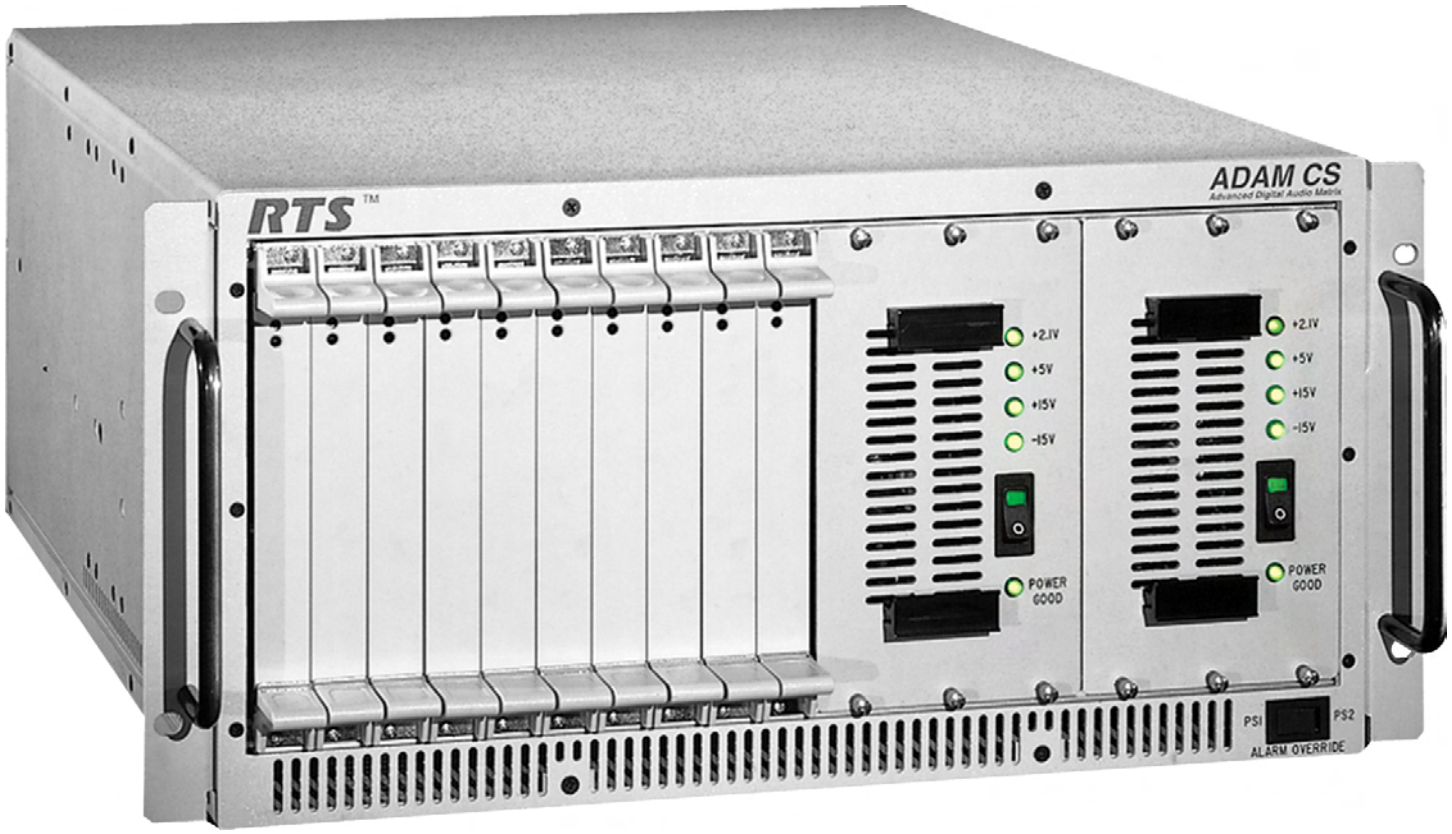
RTS Digital Matrix Intercom

Innovating the Future of Communications

# *ADAM CS*

## *Advanced Digital Audio Matrix*

## *System Installation Guide*



## Proprietary Notice



## Copyright Notice



## Warranty Notice

See the enclosed warranty card for further details.

## Customer Support

Technical questions should be directed to:

Customer Service Department
Bosch Security Systems, Inc.
12000 Portland Avenue South
Burnsville, MN 55337 USA
info@rtsintercoms.com
Telephone: 800-392-3497
Fax: 800-323-0498
Factory Service: 800-553-5992

## Return Shipping Instructions

Customer Service Department
Bosch Security Systems, Inc. (Lincoln, NE)
Telephone: 402-467-5321
Fax: 402-467-3279
Factory Service: 800-553-5992

Please include a note in the box which supplies the company name, address, phone number, a person to contact regarding the repair, the type and quantity of equipment, a description of the problem and the serial number(s).

## Shipping to the Manufacturer

All shipments of product should be made via UPS Ground, prepaid (you may request from Factory Service a different shipment method). Any shipment upgrades will be paid by the customer. The equipment should be shipped in the original packing carton. If the original carton is not available, use any suitable container that is rigid and of adequate size. If a substitute container is used, the equipment should be wrapped in paper and surrounded with at least four (4) inches of excelsior or similar shock-absorbing material. All shipments must be sent to the following address and must include the Proof of Purchase for warranty repair. Upon completion of any repair the equipment will be returned via United Parcel Service or specified shipper, collect.

Factory Service Department
Bosch Security Systems, Inc.
8601 East Cornhusker Hwy.
Lincoln, NE 68507 U.S.A.
Attn: Service

# Table of Contents

# *List of Tables*

# *List of Figures*

CHAPTER 1

# *Introduction and Installation*

**IMPORTANT:** These servicing instructions are for use by qualified personnel only. To avoid electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

## *ADAM CS Front Panel*

There are 10 card slots in the front panel. Starting from the left side, slots 1 through 8 are for **AIO** (Audio Input/Output) cards. Slots 9 and 10 are for main and backup Master Controller cards.

The two (2) large bays at the right side of the front panel contain main and backup power supplies. These power supplies are mounted in shuttles that may be pulled out for quick access/replacement. The power supplies are designed for automatic switch-over in the event of a power supply failure. There is an audible alarm for indication of power supply failure. An alarm override switch lets the user turn off the audible alarm after notification, allowing the affected power supply to be replaced at a later time.

## *ADAM CS Back Panel*

There are two (2) fused AC Power connectors with on/off switches. The AC1 connector provides power to the PS1 power supply. The AC2 connector provides power to the PS2 power supply.

Four AC-powered fans along the top of the back panel provide cooling for the power supplies and circuit cards. Either AC on/off switch activates the cooling fans and the associated power supply.

The bottom half of the back panel is reserved for the connector panel. Three (3) styles of connector types are available, offering a choice of intercom port connectors:

RJ-11, 9-pin male D-sub, or 50-pin Telco. At the left side of the connector panel are four (4) additional connectors:

| | |
|---|---|
| *J900* | DE-9S female) connector for RS232 connection for system configuration. |
| *J901* | DE-9S Connector for RS485/232 connection to an RTS Trunking System |
| *J902* | DE-9S Connector for RS485/232 connection of Program Assign Panels, LCP-102 Level Control Panels, and UIO-256/GPIO-16 Universal Input/Output Frames |
| *J903* | DB-25S (female) connector for general purpose interface. Provides eight (8) digital inputs and eight (8) open collector outputs. |

## *ADAM CS Frame Installation*

The ADAM CS frame is equipped with rubber feet for placement on a desktop. For installation in an equipment rack, it may be necessary to remove the feet. Verify that the ventilation holes on the front and back are not obstructed. Allow space in back for connector attachment (at least 24 inches).

## *Circuit Cards*

### Card Installation and Removal

**IMPORTANT:** READ THIS BEFORE INSTALLING CIRCUIT CARDS!

The connector pins on the back plane inside the ADAM CS frame can be easily damage by improper or hurried insertion of circuit cards.

To **install a card in the ADAM CS**, do the following:

1. Insert the **card edges** into the upper and lower card guides in the frame.
2. Slowly push the **card** straight back into the slot until initial resistance is felt.
3. When initial resistance is felt, apply slightly **more pressure** to begin engaging the connector pins.
4. Once the connector pins have started to engage, press **firmly** to completely seat the connectors.
   *When the card is properly seated, the card plate on the front of the card should be flush with the front of the ADAM CS frame, and the ejector levers on the card plate should be in the horizontal position.*
5. Secure the **card** in the frame at top and bottom with the screws provided. Otherwise, vibration of the frame could cause the cards to loosen over time.

To **remove a card from the ADAM CS**, do the following:

1. If applicable, remove the **screws** used to secure the card in the frame.
2. Press **down** on the lower ejector lever and **up** on the upper ejector lever.
3. Once the card is released from the back plane connector, pull **the card** straight out of the frame.

**NOTE:** All ADAM CS circuit cards can be removed or installed while the equipment is operating. This permits continuous operation of the intercom system, with no interruptions, in the event of any card failure.

### Unused Card Slots

To ensure proper air flow, each unused front card slot should be fitted with a card blank (p/n 9000-7467-003) to cover the opening.

### Card Reset and Fail Indication

Each circuit card is equipped with a reset switch located near the top-front of the card. Directly under the reset switch is a red fail indicator. The fail indicator remains off during normal operation. If the fail indicator turns on, first attempt to restore normal operation by momentarily pressing the reset button. Allow 15 to 30 seconds for reset. If the fail indicator does not turn off after this time, check that the card is properly seated, or replace the affected card.

### Audio I/O Card Notes

- When an AIO card is removed during normal operation, the displays on any keypanels connected to that card display asterisks instead of the normal key assignments. After a card is reinstalled, it may take a few moments for the keypanel displays to return to normal.
- All system clock signals are derived from the AIO card in slot number 5, with the clock backup provided by slot number 4. Therefore, if your intercom system uses fewer than eight (8) AIO cards, make sure that slots 4 and 5 are filled with a card.

**IMPORTANT:** Never remove cards 4 and 5 at the same time, as the intercom system will cease to operate.

### Master Controller Notes

- As shipped from the factory, all master controller card DIP switches are set for default operation. These settings are satisfactory for most applications. Optional settings are summarized in Table 2 on page 21. If you change any settings, make sure both the main and backup master controller cards are set the same.

## *Power Supply Removal /Installation*

To install a power supply, insert the metal flanges on the top and bottom of the shuttle into the upper and lower guides in the frame. Push the shuttle into the slot until it is firmly seated. Tighten the captive screws.

### AC Power Connection

1. Place the AC switches on the back panel of the ADAM CS frame in the **OFF (O) position**.
2. Place the power supply on/off switch on the front of each power supply in the **OFF (O) position**.
3. Connect the **AC power** to both of the AC jacks on the back of the ADAM frame.
   *Connecting both AC inputs insures continued operation of the ADAM CS frame in the event that one (1) power supply fails. If desired, two (2) separate AC power phases may be connected. This protects not only against a power supply failure, but also against a loss of power to one (1) phase.*

CHAPTER 2

# Operation

## System Power Up

For proper power supply loading, at least two (2) circuit cards should be installed in the frame before turning on the power supplies.

To **power up the system**, do the following:

1. Place the AC switches on the back of the ADAM CS frame in the **ON position**.
   *The AC fans should turn on.*
2. Place the ALARM OVERRIDE switch on the front panel in the **center position**.
3. Place the on/off switch on the front of the power supply in the **ON position**.
   *The POWER indicators and all the voltage indicators should be lit.*

While the system is initializing, the red fail indicators are lit on all circuit cards. Allow 15 to 30 seconds for all fail indicators to turn off.

**NOTE:** If the system fails to initialize, make sure all circuit cards, especially the cards in slots 4 and 5 are properly seated.

## Alarm Operation

If there is a power supply fault during operation, an audible alarm sounds and one (1) more indicator lights on the affected power supply turns off.

To **deactivate the alarm**, do the following:

1. Set the Alarm Override switch to **the position** for the affected power supply.
2. Turn **OFF** the defective supply and repair or replace it as soon as possible to ensure continued backup protection in the event of another power supply failure.

   **NOTE:** The power supply alarm sounds if a power supply is not turned on. This is normal. Either turn on the power supply, or set the ALARM OVERRIDE switch.

## *Computer Connection*

Connect from J900 on the ADAM CS frame to COM1 or COM2 of the configuration PC (the default for AZedit is COM1). The interconnect cable is a null modem cable. The wiring diagram is shown in Figure 19 on page 14.

## *Software Installation*

Once the ADAM CS frame is operating and the configuration computer is connected, you are ready to install the AZedit software and verify the computer can communicate with the intercom system. Follow the directions that accompanied the AZedit CD to install the software.

AZedit gives you online help after starting the software. When the keypanel setup window appears, press **F1** to start the help.

Once the software is installed, you can begin connecting the intercom stations and other devices to the intercom system as described in the following paragraphs.

## *Intercom Port Connections*

### General Information

Each intercom port uses two (2) wires for audio input, two (2) wires for audio output, and two (2) for data. Depending on the type of device being connected, some pairs of wires may not be used.

The audio input and output wires typically provide the talk and listen connections for an intercom stations, but other types of audio devices could also be connected.

For example, a program source could be connected to the audio input wires, and in this case the audio output wires would be available for other uses.

Foe example, a program source could be connected to the audio input wires, and in this case the audio output wires would be available for other uses.

The data wires are used to send and receive control information between the connected device and the AIO Card in the ADAM CS frame. The data wires are only used by keypanels, by the **TIF** (Telephone Interface), and by the **CDP-950** (Camera Delegate Panel). The type of data transmitted includes key press information and display information. For example, when a key is pressed on a keypanel, this information is sent on the data wires to the ADAM CS frame. The Master Controllers in the ADAM CS frame then routes the audio to the proper destination as defined in the intercom system's configuration program. The Master Controller also sends data to the device being called; for example, to display the caller's name at a keypanel, or to activate a telephone line at the TIF, etc.

### Logical Keypanel Address Numbers

Even though there are separate data pins for each intercom port, these pins do not actually represent a unique data port. Rather, groups of intercom ports share a common data port. In an ADAM CS intercom system, data groups consist of eight (8) intercom ports, and each AIO card represents one (1) data group. To distinguish between data devices connected to the same data group, a logical keypanel address number (1 – 8) is assigned to each device at the time of connection. The relationship between intercom port numbers, AIO card numbers and logical keypanel address numbers are shown in Table 3 on page 22. Specific information about setting logical keypanel address numbers is discussed in the installation notes on the following pages.

### General Procedure for Connecting Devices to Intercom Ports

To connect devices to an intercom port, do the following:

1. Make a **copy** of the appropriate planning worksheet.

   **NOTE:** For ADAM CS frames that use RJ-11 or DE-9 back panels, use Table 8 on page 24. For ADAM CS frames that use a 50-pin Telco back panel, use Table 9 on page 26.

2. For each device connected, fill in a **row** on the worksheet:
   - Briefly note the device type (keypanel, TIF, program source, CDP-950, etc.). Other useful information might include the device location and usage, as well as any labeling on the intercom cable.
   - Write down a name of up to eight (8) characters in the *Alpha* column of the worksheet. Enter this name into the intercom system later using AZedit. Then, whenever you assign the port to an intercom key, the name appears in the keypanel display for that key.
   - If the intercom system uses optional trunking (where two (2) or more intercom systems are interconnected and users can intercommunicate using special equipment) you may wire a second name in the *Alias* column of the worksheet, if desired. An alias may be useful, for example, to prevent confusion when the same alpha name is already being used by two (2) intercom ports located in separate intercom systems. when one (1) of these ports in one (1) intercom system is assigned to a keypanel key in the other intercom system, the alias name, and not the alpha name appear in the display.

**NOTE:** In AZedit you can enter alias names at the same time as you enter alpha names. If you do not enter an alias name, AZedit automatically uses the alpha name as the default.

By default, AZedit is not configured for trunking operation. If you want to enter alias names and use trunking with AZedit, you must enable trunking.

To **enable trunking**, do the following:

1. From the Options menu, select **Preferences**, and then **Advanced** page.
2. On the Advanced page, select **Enable Trunking Support**.
   *Once you have made this change, you are able to enter alias names in AZedit.*
3. Connect **devices** to the intercom ports as noted in the worksheet.

   **NOTE:** For each type of device, refer to any installation notes included on the following pages. Or, refer to the installation information supplied with the device. The ADAM CS frame with a 50-pin Telco back panel can be connected to any of the following breakout formats:

   punch blocks
   jack fields
   XCP-954-48
   XCP-955
4. Using AZedit, enter the **alpha and alias names** that you recorded in your worksheets.
5. Click the **Port Alpha icon** on the toolbar, then press **F1** on the keyboard to get help, if necessary.
6. Complete the **intercom system configuration**, as described in the AZedit software help, under *General Procedure to Configure the Intercom System*.

## *Trunking System*

### General Theory of Operation

In a trunking system, the audio lines (not data) of two (2) intercom ports are interconnected between two (2) separate intercom systems. The system administrator in each intercom system then places restrictions on these ports to prohibit them from being assigned to any keys. This reserves the port for exclusive use as a trunking line. A special data link is also connected from each intercom system to the trunking system for exchange of system control signals. Once the interconnects on are completed, the trunking system is programmed in the TrunkEdit software.

After the trunking system has been programmed, system administrators or keypanel users in each intercom system may request lists of persons, party lines, etc. from the other intercom systems for purposes of key assignment just as they would in their own intercom system. After keys are assigned, keypanel operators can activate them to talk or listen, just like in their own intercom system. There is no apparent difference to keypanel operators, but what actually occurs in the system electronics is slightly different.

When a keypanel operator activates a key to talk to a destination located in another intercom system, the intercom system's Master Controller does not act itself to close any crosspoints, but rather, it sends this information to the trunking system via the data connection. The trunking system Master Controller then checks for an available trunk line. If one is available, it notifies the Master Controllers in the affected intercom systems to establish the communication path using the trunk line that it specifies. If no trunk lines are available, the trunking system notifies the Master Controller in the caller's intercom system, that in turn, sends a busy signal to the calling keypanel.

If more than two (2) intercom systems are interconnected, additional trunk lines must be reserved and interconnected between the systems. However, it is not always necessary that two (2) intercom systems be reserved and interconnected as long as there is a path somewhere to connect the two (2) systems. The trunking system can be programmed to permit cascaded trunking in which a pathway is established through multiple intercom systems to connect two (2) end points.

## *UIO-256/GPIO-16 Input/Output Frame*

### General Description

Each UIO-256/GPI-16 provides 16 GPI inputs and 16 GPI outputs. The GPI inputs can be used just like keypanel keys to activate intercom ports, party lines, relays, etc. Each relay output provides a choice of normal open and normal closed contacts. The relays can be assigned for activation from keypanel keys, and can be used to control lighting, or to key remote transmitters, paging systems, etc.

**NOTE:** The maximum number of devices that can be connected when using a GPIO-16 are as follows:

- Zeus, Zeus II, and ADAM CS – 4 devices (64 relays)
- ADAM and Cronus – 16 devices (256 relays)

### UIO-256/GPIO-16 Connection

#### *One UIO-256/GPIO-16*

To **connect a UIO-256 or GPIO-16 to the ADAM CS**, do the following:

1. Connect **J2** of the UIO-256/GPIO-16 **to J902** of the ADAM CS.

   **NOTE:** The interconnect cable should be wired as shown in Figure 24 on page 17. If a program assign panel is also being used, it may be wired to the same connector as shown in Figure 24 on page 17.

2. Set the **SW-1 DIP switches** on the back of the UIO-256/GPIO-16 to select range 1–16, as shown in Table 6 on page 23. The SW-2 DIP switches are not used and their positions do not matter.

   **NOTE:** For a pinout of the relay connector, refer to Table 6 on page 23. For a pinout of the opto-isolator connector, refer to Table 7 on page 24.

3. Connect **AC Power** to the UIO-256/GPIO-16.

### *Additional UIO-256/GPIO-16*

Up to 15 additional UIO-256/GPIO-16 frames may be connected in a parallel bus configuration using the 15-pin ribbon cables provided.

To **add additional UIO-256s or GPIO-16s to the system**, do the following:

1. Connect the J3 output of the ADAM MC to the J2 connection on the UIO-256/GPIO-16.
2. Connect J2 output of the first UIO-256/GPIO-16 to the input for the second UIO-256/GPIO-16 to the J2 input of the third UIO-256/GPIO_16. Continue connection more UIO-256/GPIO-16s in this manner.
3. Set SW-1 DIP switches on each UIO-256/GPIO-16 to select a unique panel number as summarized in Table 6 on page 23.
4. Connect the opto-isolator outputs and relay inputs as for the first UIO-256/GPIO-16.

   **NOTE:** The first eight (8) inputs and outputs of the first UIO-256/GPIO-16 operate in parallel with J903 on the back panel of the ADAM CS.

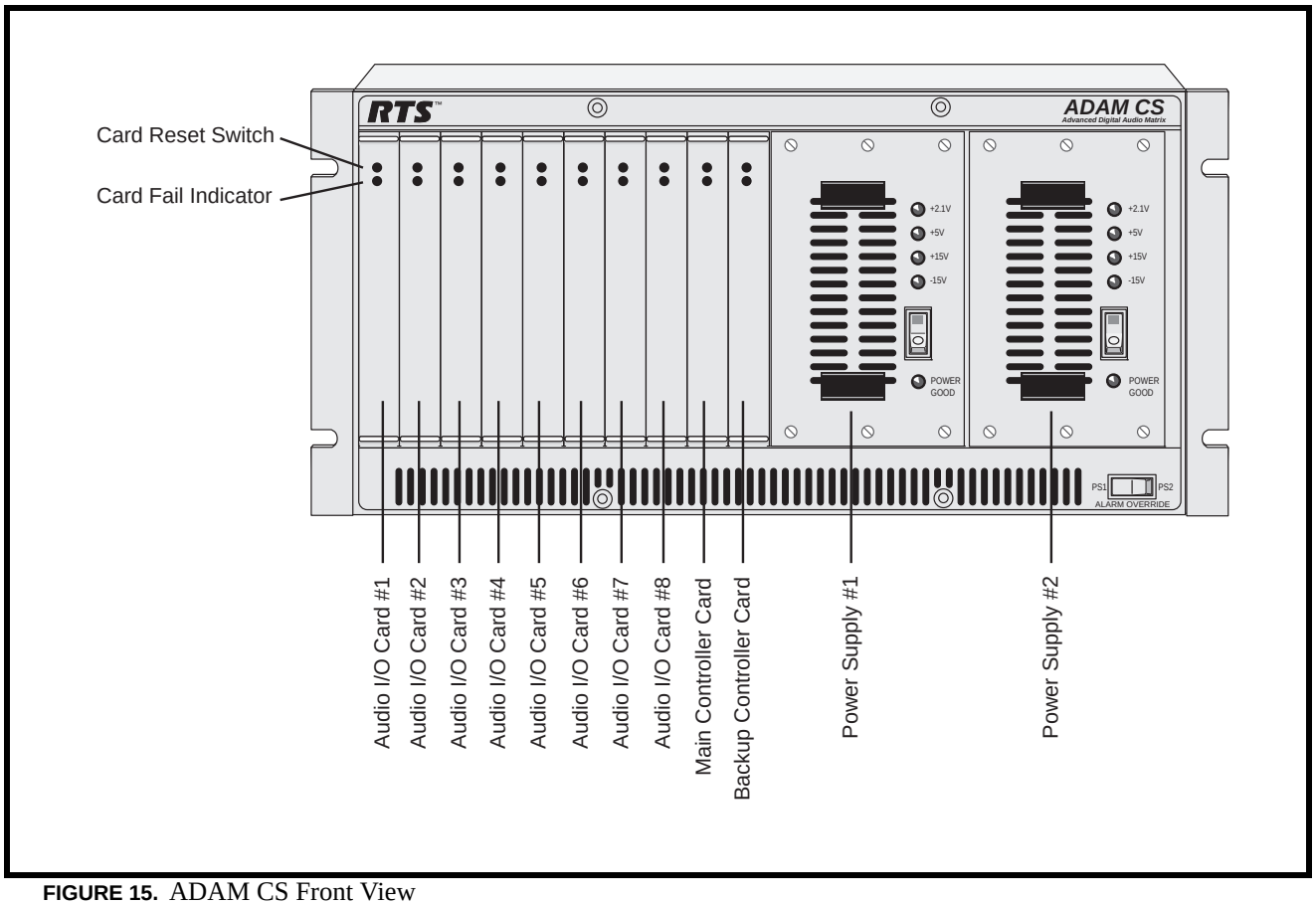



**FIGURE 15.** ADAM CS Front View

GPI inputs are connected via 50-pin Telco connector on the back of the UIO-256/GPIO-16. Each input requires +5 to +18VDC for activation. The positive input and common connections may be provided from a remote source. Or +18VDC is supplied at the connector by the UIO-256/GPIO-16 and may be used for input activation, with the user supplying the external switch.

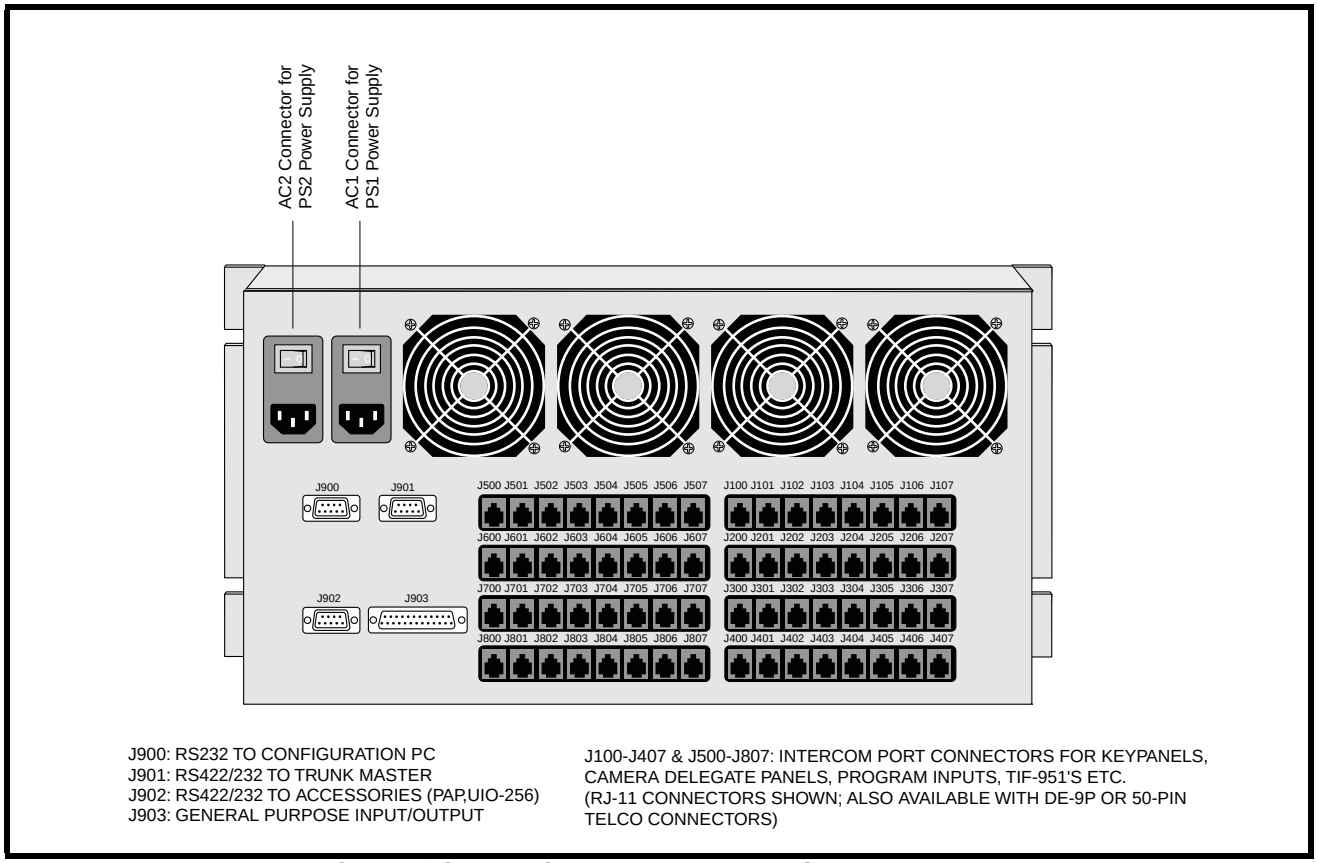



**FIGURE 16.** ADAM CS Back View (Shown with RJ-11 Connector Panel)

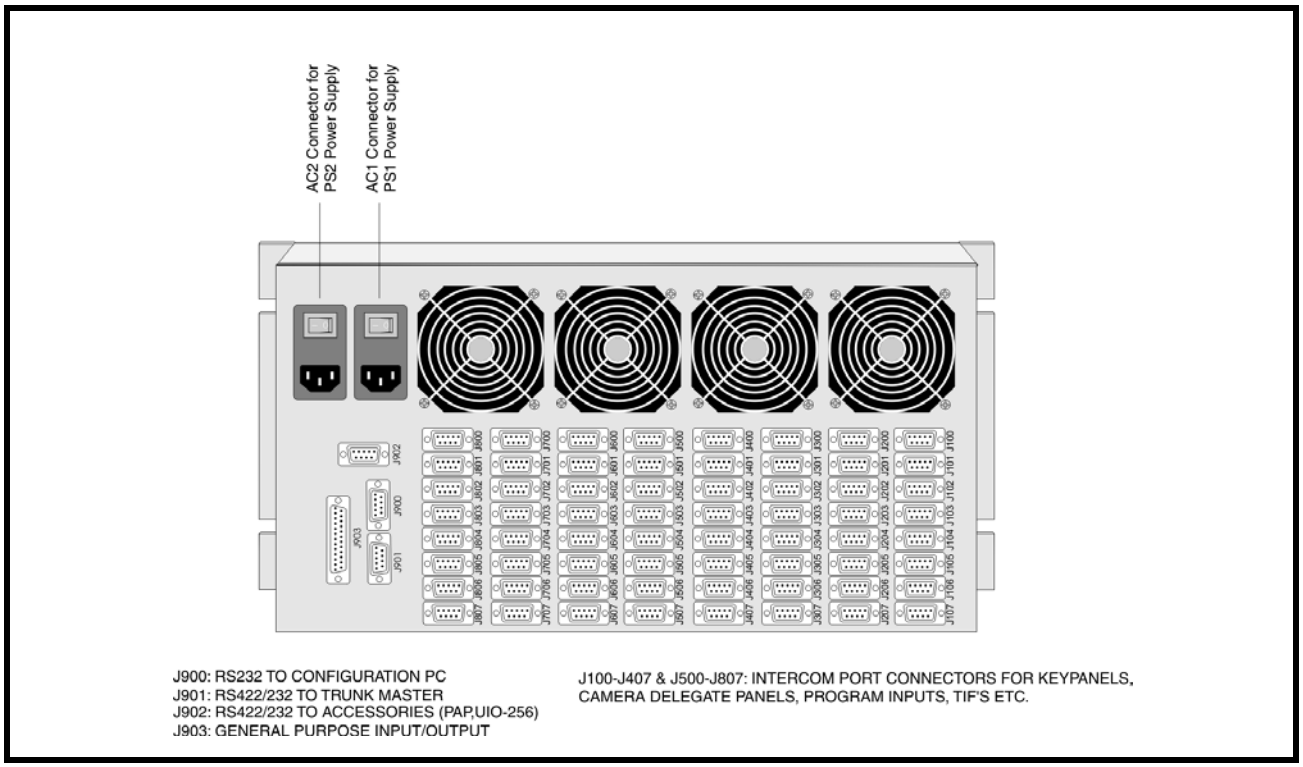



**FIGURE 17.** ADAM CS Back View (Shown with DB-9 Connector Panel)

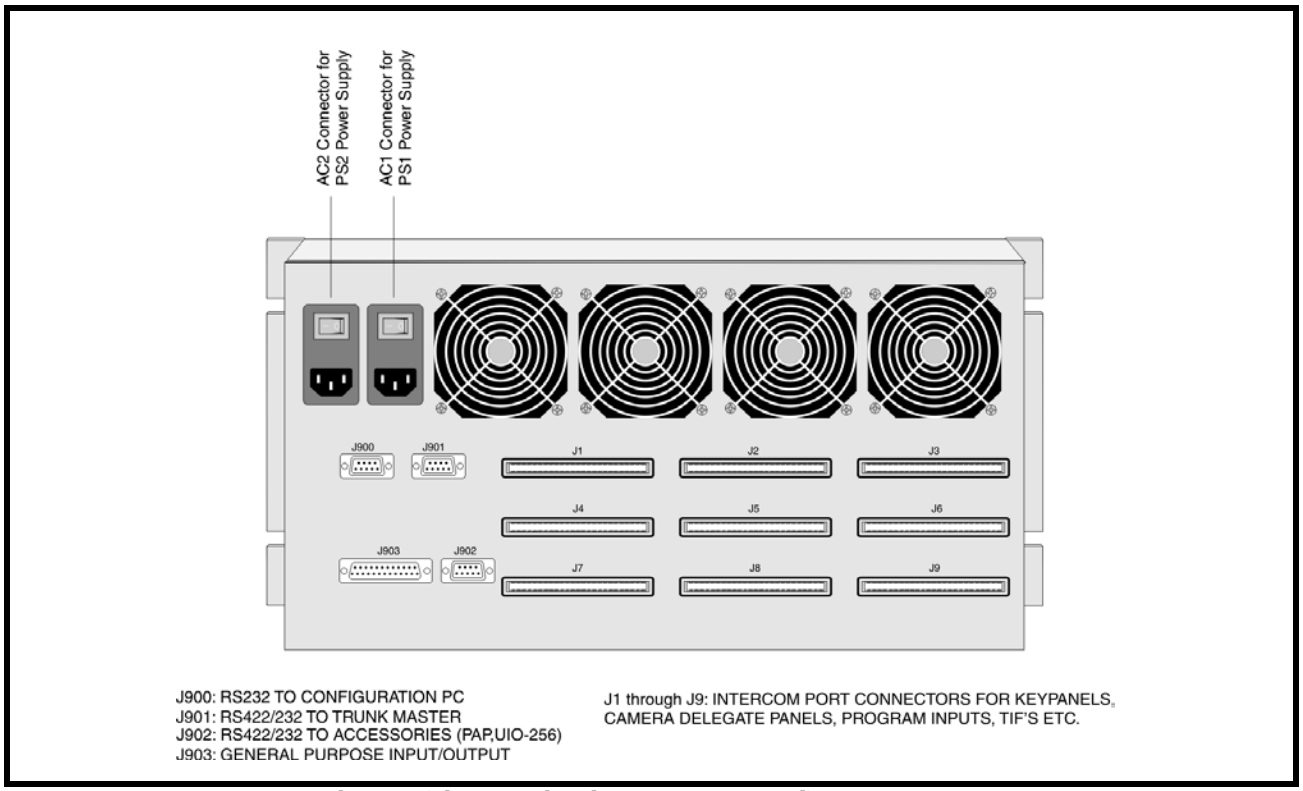



**FIGURE 18.** ADAM CS Back View (Shown with Telco Connector Panel).

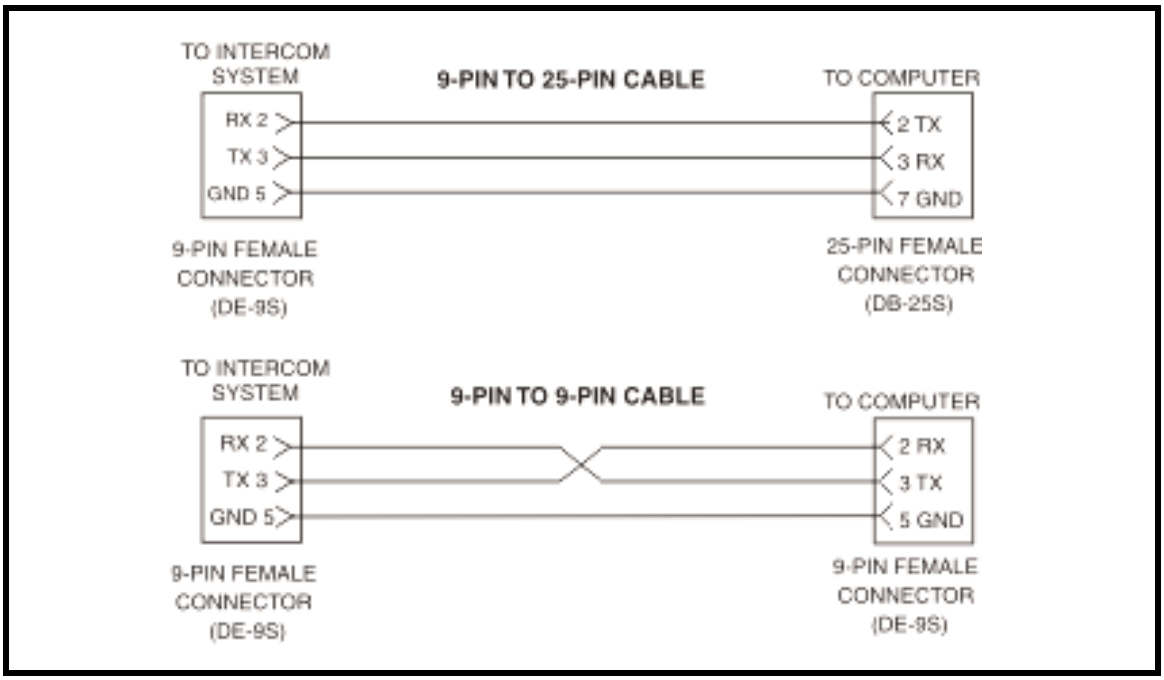



**FIGURE 19.** ADAM CS J900 to Computer Interconnect Cables (ADAM CS with male J900 connector).

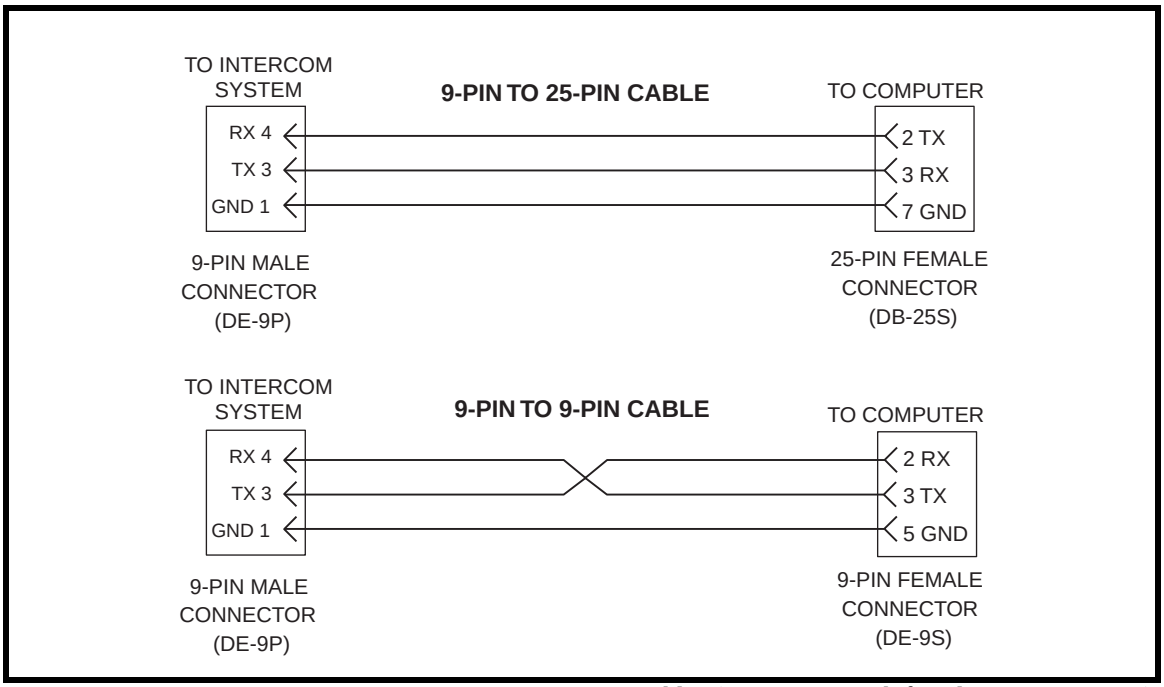



**FIGURE 20.** ADAM CS J900 to Computer Interconnect Cables (ADAM CS with female J900 connector).

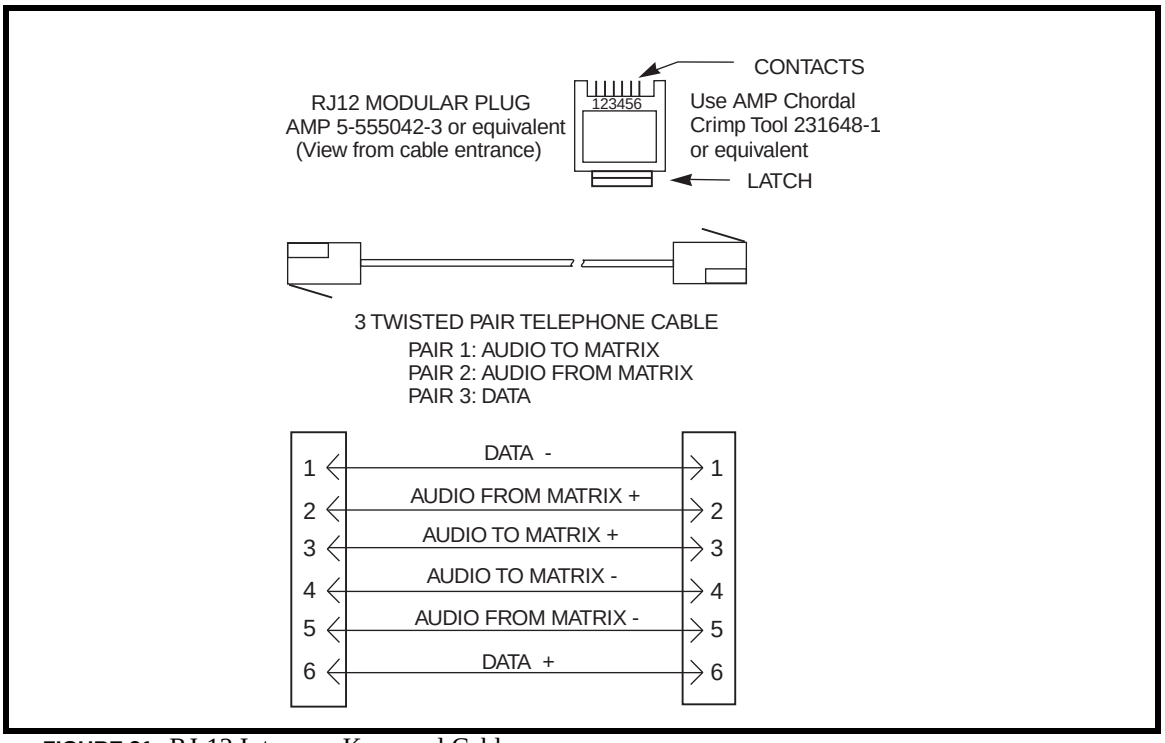



**FIGURE 21.** RJ-12 Intercom Keypanel Cable

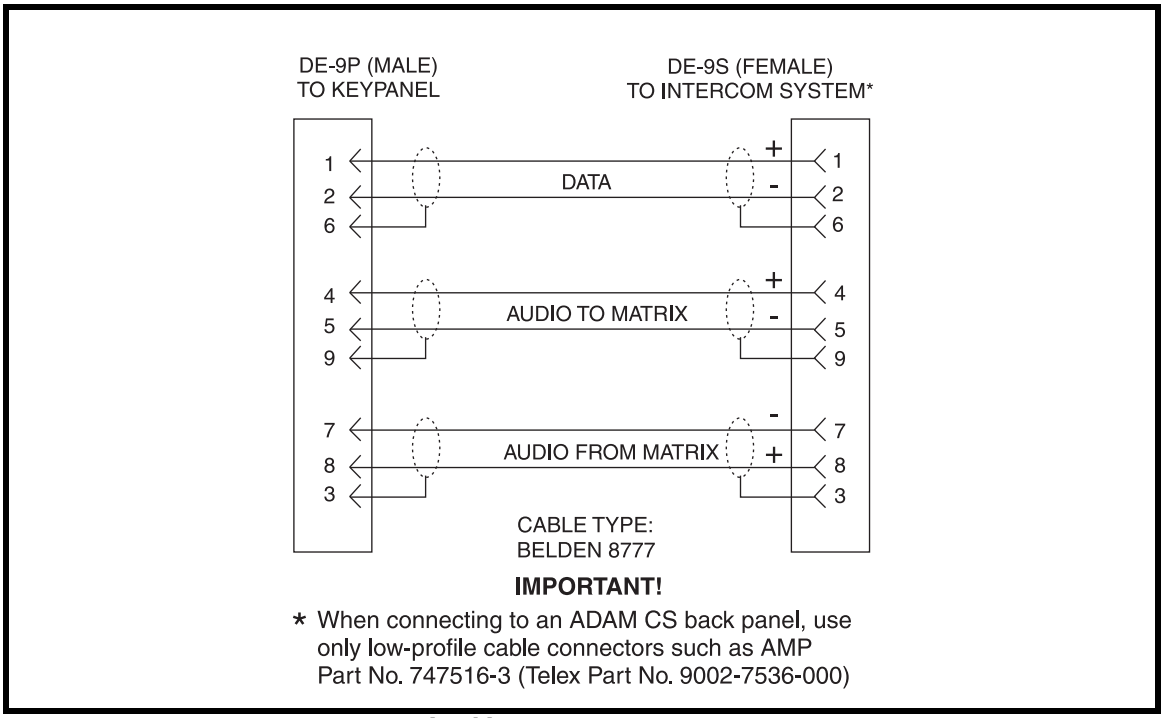



**FIGURE 22.** 9-pin Intercom Keypanel Cable

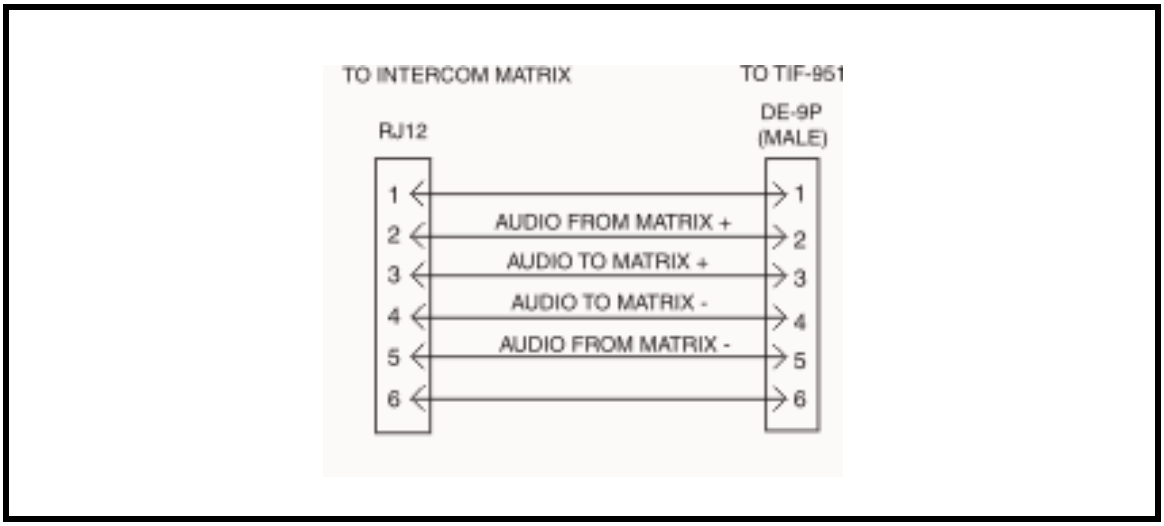



**FIGURE 23.** RJ-11 to 9-pin Intercom Cable. Used for TIF connection to ADAM CS with RJ-11 Back Panel

**TABLE 1.** ADAM CS, J903 Connector Pinout

| Pin No. | Function |
|---|---|
| 1 | Digital (GPI) Input #1 High |
| 2 | Digital (GPI) Input #2 High |
| 3 | Digital (GPI) Input #3 High |
| 4 | Digital (GPI) Input #4 High |
| 5 | Digital (GPI) Input #5 High |
| 6 | Digital (GPI) Input #6 High |
| 7 | Digital (GPI) Input #7 High |
| 8 | Digital (GPI) Input #8 High |
| 9 | Ground |
| 10 | Ground |
| 11 | Ground |
| 12 | Ground |
| 13 | Ground |
| 14 | Digital (GPI) Out #1 |
| 15 | Digital (GPI) Out #1 |
| 16 | Digital (GPI) Out #1 |
| 17 | Digital (GPI) Out #1 |
| 18 | Digital (GPI) Out #1 |
| 19 | Digital (GPI) Out #1 |
| 20 | Digital (GPI) Out #1 |
| 21 | Digital (GPI) Out #1 |
| 22 | Ground |
| 23 | Ground |
| 24 | Ground |
| 25 | Ground |

Use a convenient ground pin for each digital input and digital output.

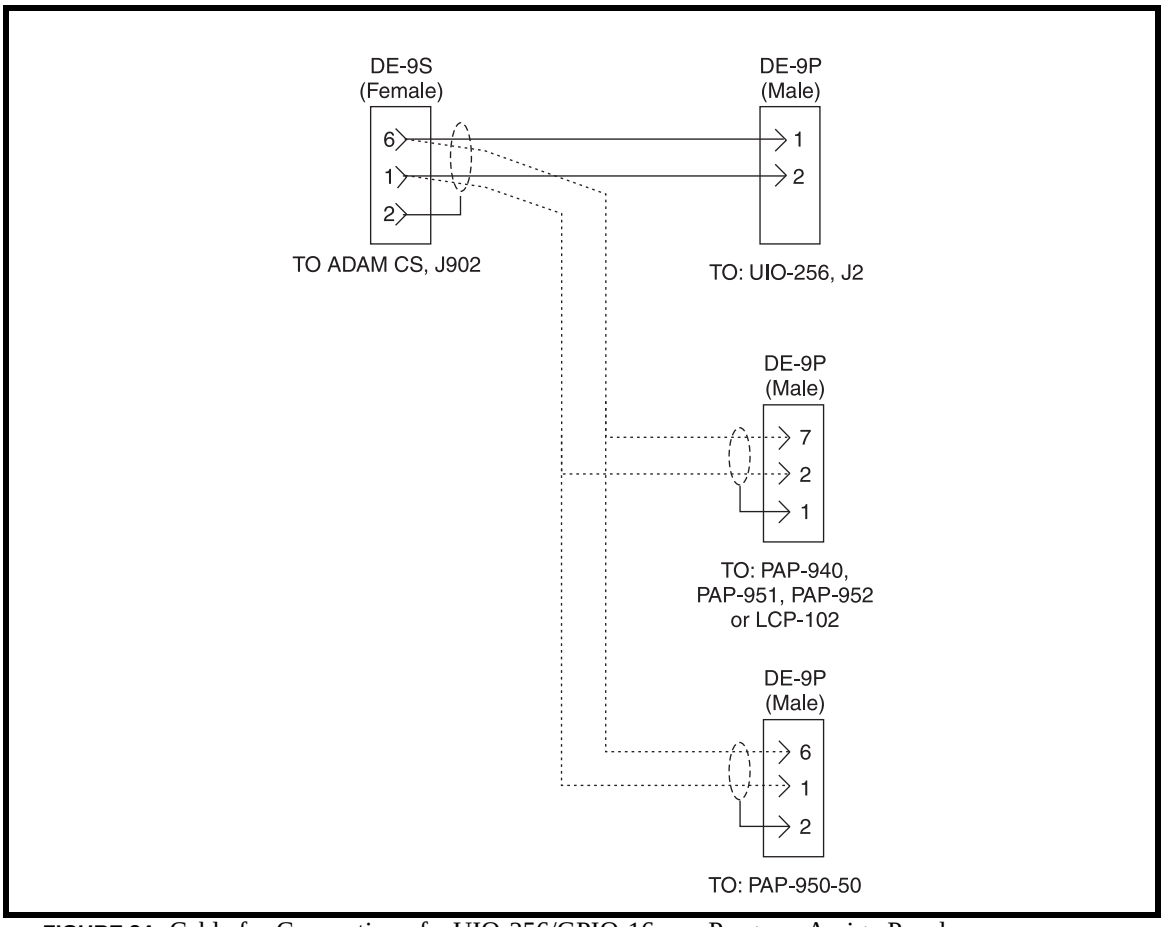



**FIGURE 24.** Cable for Connection of a UIO-256/GPIO-16 or a Program Assign Panel

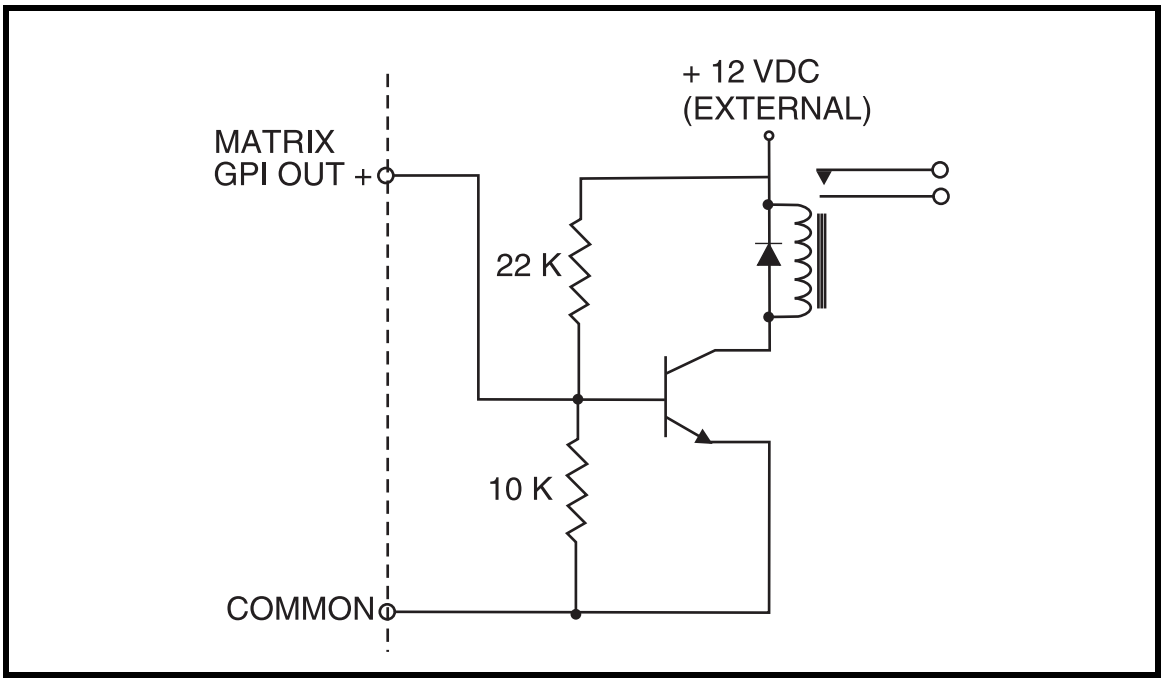



**FIGURE 25.** Using an ADAM CS GPI Output to Operate a Relay (See Table 1 on page 16 for GPI Connector Pinout

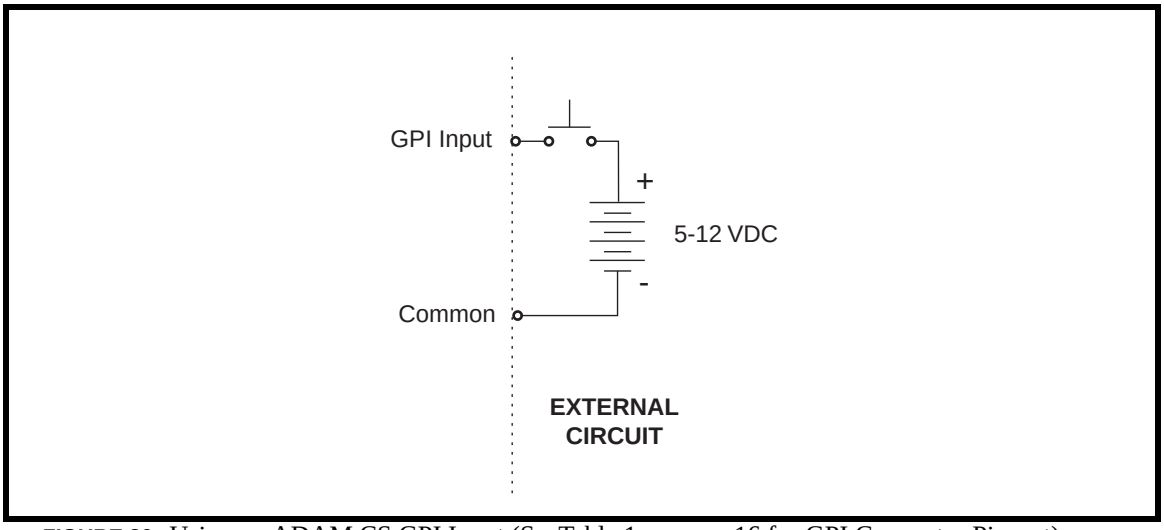



**FIGURE 26.** Using an ADAM CS GPI Input (SeeTable 1 on page 16 for GPI Connector Pin-out)

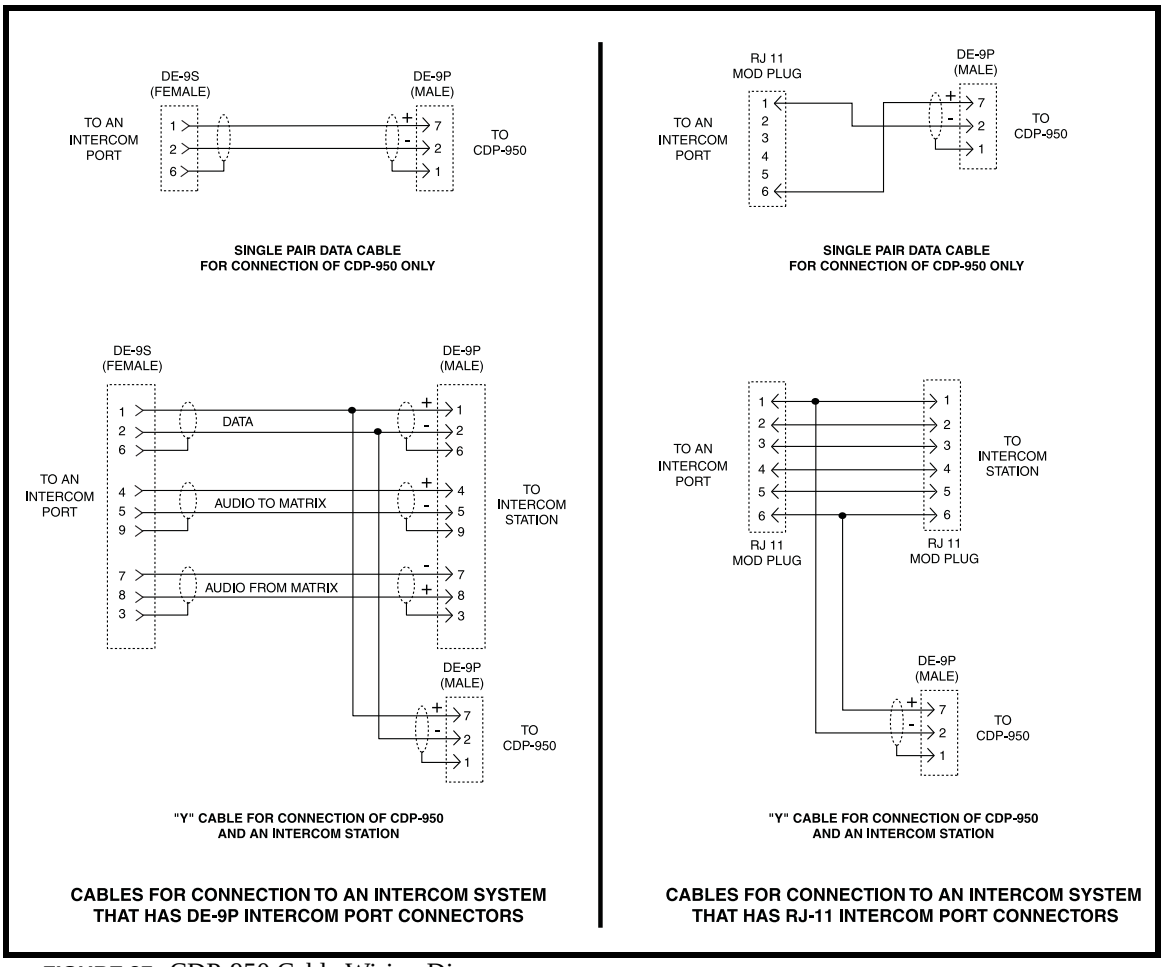



**FIGURE 27.** CDP-950 Cable Wiring Diagrams

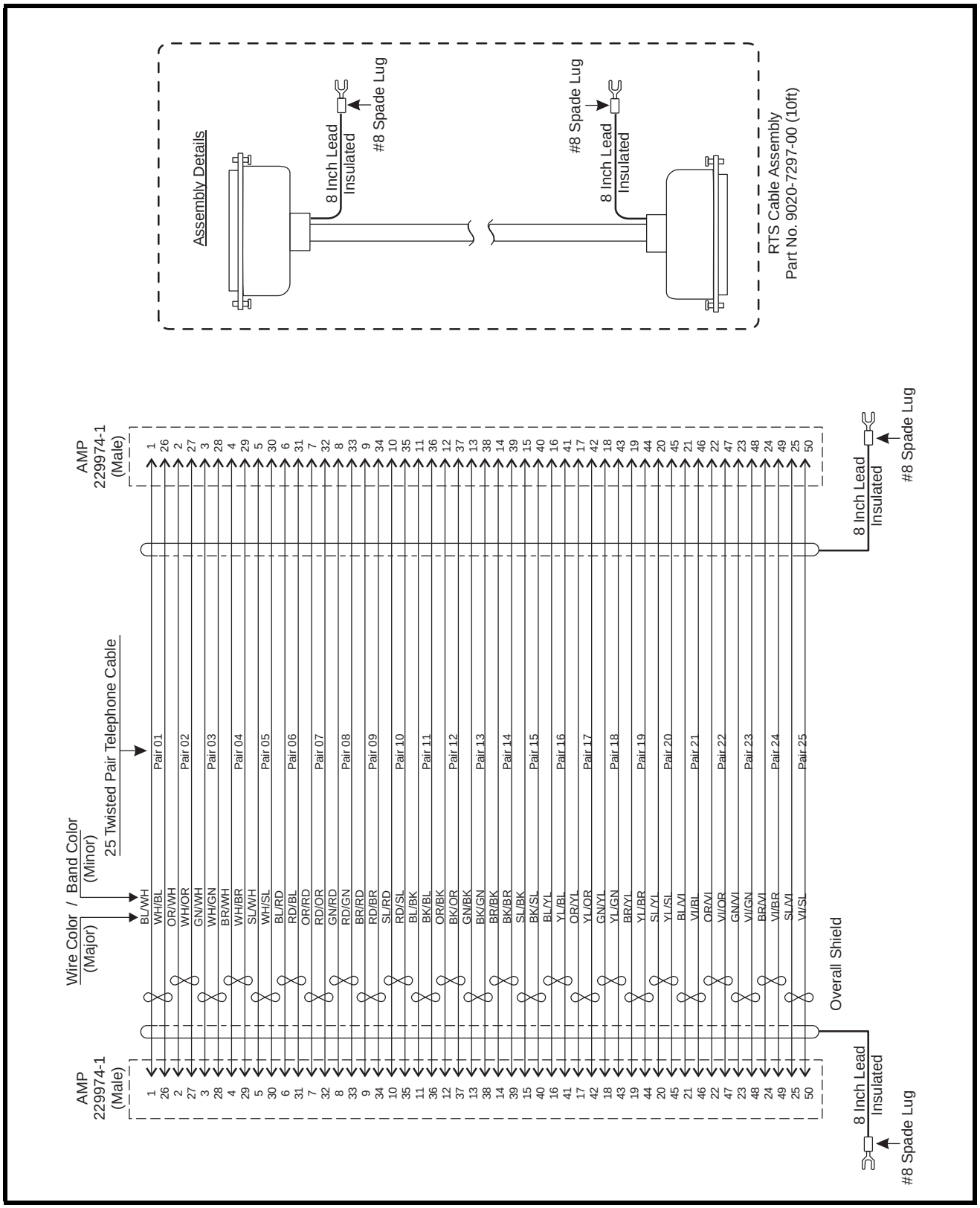



**FIGURE 28.** 50-Pin Telco Cable Wiring Diagram

**TABLE 2.** ADAM CS Master Controller Card DIP Switch Settings

| Switch No. | Description<br>ON=Closed; OFF=Open | Default Settings<br>ON=Closed;<br>OFF=Open |
|---|---|---|
| 1 | AZedit baud rate select[1]<br><br>OFF=9600 baud<br>ON=38.4k baud | ON |
| 2 | Keypanel incoming message option[2]<br><br>OFF=Normal operation<br>ON=All callers display in the Incoming Messages window | OFF |
| 3 | Keypanel *in-use* and *busy* flash[3]<br><br>OFF=Enable<br>ON=Disable | OFF |
| 4 | Not Used, set to OFF | OFF |
| 5 | Used to set Altera version | ON |
| 6 | Not Used, set to OFF | OFF |
| 7 | Primary/Secondary card frame select. (ADAM systems only. MUST BE LEFT IN ON POSITION FOR ADAM CS)<br><br>OFF=Secondary Frame<br>ON=Primary Frame | ON |
| 8 | Test ON/OFF<br><br>OFF=Normal Operation<br>ON=Test Mode | OFF |

1. Make sure the rate set here matches the rate set in AZedit. 9600 baud permits a longer PC cable, but uploads and downloads are slower. Alternatively, 38.4k baud provides faster uploads and downloads, but some older PCs may not operate reliably at this speed.
2. Normally, when a call is received by a keypanel, the keypanel checks for a talk key assigned to the caller. If there is a talk key assigned, the display above that key flashes. If no key is assigned, the caller's name appears in the Incoming Messages window. Some intercom systems may have many keypanels that do not have alphanumeric talk key displays. In this case, it may be preferable to have every caller's name appear in the Incoming Messages window.
3. The i*n-use* flash is indicated by a slow and continuous flashing display above a talk key. The *in-use* flash is provided for IFBs, ISOs, and trunk lines. The *in-use* flash occurs, for example, on all keypanels that have keys assigned to a particular IFB, when that IFB is in-use by any keypanel. The displays for those keys continue to flash until the IFB is no longer in-use. Any user could activate their talk key to talk to the IFB while the display is flashing, but they may not interrupt a conversation that is in progress.

   The *busy* flash is indicated by a display that alternates between the normal key assignment and a double asterisk (**) when the talk key is pressed. A *busy* flash occurs when a keypanel tries to talk to an IFB or trunk line that is currently in-use by another keypanel that has a higher IFB or trunking priority. When a busy flash is indicated, the user cannot talk to the destination assigned to the talk key.

   While some people may find the in-use and busy indications helpful, the option to disable them is provided because some may object to the alternating display.

**TABLE 3.** Relationship between Audio Input/Output Cards, Intercom Ports, and Logical Keypanel Numbers

| ADAM CS Intercom Port Numbers (Grouped by Audio Input/Output Card Numbers) | | | | | | | | Logical Keypanel Number (See Table X for DIP Switch Settings) |
|---|---|---|---|---|---|---|---|---|
| Card 1 | Card 2 | Card 3 | Card 4 | Card 5 | Card 6 | Card 7 | Card 8 | |
| 1 | 9 | 17 | 25 | 33 | 41 | 49 | 57 | 1 |
| 2 | 10 | 18 | 26 | 34 | 42 | 50 | 58 | 2 |
| 3 | 11 | 19 | 27 | 35 | 43 | 51 | 59 | 3 |
| 4 | 12 | 20 | 28 | 36 | 44 | 52 | 60 | 4 |
| 5 | 13 | 21 | 29 | 37 | 45 | 53 | 61 | 5 |
| 6 | 14 | 22 | 30 | 38 | 46 | 54 | 62 | 6 |
| 7 | 15 | 23 | 31 | 39 | 47 | 55 | 63 | 7 |
| 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 8 |

**TABLE 4.** Address Switch Settings for KP-95/96/97/98 Keypanels and the TIF Telephone Interface

| Logical Keypanel Number | Address DIP Switch Settings | | | |
|---|---|---|---|---|
| | SW4 | SW5 | SW6 | SW7 |
| 1 | Closed | Open | Open | Open |
| 2 | Open | Closed | Open | Open |
| 3 | Closed | Closed | Open | Open |
| 4 | Open | Open | Closed | Open |
| 5 | Closed | Open | Closed | Open |
| 6 | Open | Closed | Closed | Open |
| 7 | Closed | Closed | Closed | Open |
| 8 | Open | Open | Open | Closed |

## *KP-32 Addressing*

A rotary switch is used to indicate the logical port address the keypanel is to use when communicating with the Matrix. The switch is read continuously through polling by the Matrix. If the port address is changed the new address is not seen on a powered unit until the power is recycled.

**NOTE:** The Address port, by default, is shipped with an invalid address to ensure there are no conflicts with existing keypanels. It is important to set the address port for the KP-32 keypanel for it to function properly.

In Zeus, ADAM CS, and ADAM intercom systems, intercom ports are arranged in groups of eight (8). Within each group, each keypanel is uniquely identified by its Address switch setting.

**TABLE 5.** UIO-256/GPIO-16 DIP Switch SW1 Setting for Input/Output Ranger

| UIO-256/ GPIO-16 Frame | Input/Output Range | DIP Switch Settings | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| #1 | 1–16 | Open | Closed | Open | Open | Open | Open | Open | Closed |
| #2 | 17–32 | Open | Closed | Open | Closed | Open | Open | Open | Closed |
| #3 | 33–48 | Open | Closed | Open | Open | Closed | Open | Open | Closed |
| #4 | 49–64 | Open | Closed | Open | Closed | Closed | Open | Open | Closed |

**TABLE 6.** UIO-256/GPIO-16 Output Connectors (J5)

| Relay Output Numbers[1] | | | | Relay Contact Pin Numbers[2] | | |
|---|---|---|---|---|---|---|
| UIO-256 #1 | UIO-256 #2 | UIO-256 #3 | UIO-256 #4 | NC Contact | Common | NO Contact |
| 1 | 17 | 33 | 49 | 38 | 13 | 40 |
| 2 | 18 | 34 | 50 | 39 | 14 | 15 |
| 4 | 20 | 36 | 52 | 42 | 17 | 18 |
| 5 | 21 | 37 | 53 | 44 | 19 | 46 |
| 6 | 22 | 38 | 54 | 45 | 20 | 21 |
| 7 | 23 | 39 | 55 | 47 | 22 | 49 |
| 8 | 24 | 40 | 56 | 48 | 23 | 24 |
| 9 | 25 | 41 | 57 | 26 | 1 | 28 |
| 10 | 26 | 42 | 58 | 27 | 2 | 3 |
| 11 | 27 | 43 | 59 | 29 | 4 | 31 |
| 12 | 28 | 44 | 60 | 30 | 5 | 6 |
| 13 | 29 | 45 | 61 | 32 | 7 | 34 |
| 14 | 30 | 46 | 62 | 33 | 8 | 9 |
| 15 | 31 | 47 | 63 | 35 | 10 | 37 |
| 16 | 32 | 48 | 64 | 36 | 11 | 12 |

1. Dependant upon UIO-256/GPIO-16 DIP switch SW1, settings for Input/Output Range as summarized in Table 5 .
2. The relay contacts are rated for 0.5A at 120VAC; 1A 24VDC; 0.3A at 60VDC.

**TABLE 7.** UIO-256 GPI Input Connector (J7)

| GPI Input Numbers[1] | | | GPIO Input Pin Numbers[2] | | |
|---|---|---|---|---|---|
| UIO-256 Frame 1 | UIO-256 Frame 2 | UIO-256 Frame 3 | UIO-256 Frame 4 | DC Control Input Minus | DC Control Input Plus |
| 1 | 17 | 33 | 49 | 9 | 34 |
| 2 | 18 | 34 | 50 | 10 | 35 |
| 3 | 19 | 35 | 51 | 11 | 36 |
| 4 | 20 | 36 | 52 | 12 | 37 |
| 5 | 21 | 37 | 53 | 13 | 38 |
| 6 | 22 | 38 | 54 | 14 | 39 |
| 7 | 23 | 39 | 55 | 15 | 40 |
| 8 | 24 | 40 | 56 | 16 | 41 |
| 9 | 25 | 41 | 57 | 1 | 26 |
| 10 | 26 | 42 | 58 | 2 | 27 |
| 11 | 27 | 43 | 59 | 3 | 28 |
| 12 | 28 | 44 | 60 | 4 | 29 |
| 13 | 29 | 45 | 61 | 5 | 30 |
| 14 | 30 | 46 | 62 | 6 | 31 |
| 15 | 31 | 47 | 63 | 7 | 32 |
| 16 | 32 | 48 | 64 | 8 | 33 |

1. Dependent on UIO-256/GPIO-16 DIP SW1 settings for Input/Output range as summarized in Table 5
2. Inputs sink 100mA max at a maximum input voltage of +18VDC. For operation from an external DC voltage source, connect the external control voltage to the plus pin, and connect the external common to the minus pin. The UIO-256/GPIO-16 has an internal 18 VDC source, which is available at pins 18 to 22. Ground is available at pins 24 and 25. To use the internal 18VDC source, ground the minus pin for the desired control input, then use an external switch to connect from the 18 VDC internal source to the plus input pin.

**TABLE 8.** Planning Worksheet for ADAM CS with RJ-11 or DE9 Back Panel

| ADAM CS Connector No. | ADAM CS AIO Card No. | Logical Keypanel Number[1] | Port No. | Alpha | Alias | Description (Device Type, location, user, etc.) |
|---|---|---|---|---|---|---|
| J100 | 1 | 1 | 1 | | | |
| J101 | 1 | 2 | 2 | | | |
| J102 | 1 | 3 | 3 | | | |
| J103 | 1 | 4 | 4 | | | |
| J104 | 1 | 5 | 5 | | | |
| J105 | 1 | 6 | 6 | | | |
| J106 | 1 | 7 | 7 | | | |
| J107 | 1 | 8 | 8 | | | |
| J200 | 2 | 1 | 9 | | | |
| J201 | 2 | 2 | 10 | | | |
| J202 | 2 | 3 | 11 | | | |
| J203 | 2 | 4 | 12 | | | |
| J204 | 2 | 5 | 13 | | | |
| J205 | 2 | 6 | 14 | | | |
| J206 | 2 | 7 | 15 | | | |
| J207 | 2 | 8 | 16 | | | |
| J300 | 3 | 1 | 17 | | | |

**TABLE 8.** Planning Worksheet for ADAM CS with RJ-11 or DE9 Back Panel

| ADAM CS Connector No. | ADAM CS AIO Card No. | Logical Keypanel Number[1] | Port No. | Alpha | Alias | Description (Device Type, location, user, etc.) |
|---|---|---|---|---|---|---|
| J301 | 3 | 2 | 18 | | | |
| J302 | 3 | 3 | 19 | | | |
| J303 | 3 | 4 | 20 | | | |
| J304 | 3 | 5 | 21 | | | |
| J305 | 3 | 6 | 22 | | | |
| J306 | 3 | 7 | 23 | | | |
| J307 | 3 | 8 | 24 | | | |
| J400 | 4 | 1 | 25 | | | |
| J401 | 4 | 2 | 26 | | | |
| J402 | 4 | 3 | 27 | | | |
| J403 | 4 | 4 | 28 | | | |
| J404 | 4 | 5 | 29 | | | |
| J405 | 4 | 6 | 30 | | | |
| J406 | 4 | 7 | 31 | | | |
| J407 | 4 | 8 | 32 | | | |
| J500 | 5 | 1 | 33 | | | |
| J501 | 5 | 2 | 34 | | | |
| J502 | 5 | 3 | 35 | | | |
| J503 | 5 | 4 | 36 | | | |
| J504 | 5 | 5 | 37 | | | |
| J505 | 5 | 6 | 38 | | | |
| J506 | 5 | 7 | 39 | | | |
| J507 | 5 | 8 | 40 | | | |
| J600 | 6 | 1 | 41 | | | |
| J601 | 6 | 2 | 42 | | | |
| J602 | 6 | 3 | 43 | | | |
| J603 | 6 | 4 | 44 | | | |
| J604 | 6 | 5 | 45 | | | |
| J605 | 6 | 6 | 46 | | | |
| J606 | 6 | 7 | 47 | | | |
| J607 | 6 | 8 | 48 | | | |
| J700 | 7 | 1 | 49 | | | |
| J701 | 7 | 2 | 50 | | | |
| J702 | 7 | 3 | 51 | | | |
| J703 | 7 | 4 | 52 | | | |
| J704 | 7 | 5 | 53 | | | |
| J705 | 7 | 6 | 54 | | | |
| J706 | 7 | 7 | 55 | | | |
| J707 | 7 | 8 | 56 | | | |
| J800 | 8 | 1 | 57 | | | |
| J801 | 8 | 2 | 58 | | | |
| J802 | 8 | 3 | 59 | | | |
| J803 | 8 | 4 | 60 | | | |
| J804 | 8 | 5 | 61 | | | |
| J805 | 8 | 6 | 62 | | | |
| J806 | 8 | 7 | 63 | | | |
| J807 | 8 | 8 | 64 | | | |

1. The Logical Keypanel Number is used to set the address DIP switches when connecting a KP-9X Series Keypanel or TIF. See Table 3 on page 22 for address switch settings.

**TABLE 9.** Planning Worksheet for ADAM CS with 50-pin Telco Back Panel

| ADAM CS AIO Card No. | Audio Input Connector | Audio Output Connector | Data Connector | (+) Pin | (-) Pin | Logical Keypanel Number[1] | Part No. | Alpha | Alias | Description (Device type, location, user, etc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | J9 | J6 | J3 | 1 | 26 | 1 | 1 | | | |
| 1 | J9 | J6 | J3 | 2 | 27 | 2 | 2 | | | |
| 1 | J9 | J6 | J3 | 3 | 28 | 3 | 3 | | | |
| 1 | J9 | J6 | J3 | 4 | 29 | 4 | 4 | | | |
| 1 | J9 | J6 | J3 | 5 | 30 | 5 | 5 | | | |
| 1 | J9 | J6 | J3 | 6 | 31 | 6 | 6 | | | |
| 1 | J9 | J6 | J3 | 7 | 32 | 7 | 7 | | | |
| 1 | J9 | J6 | J3 | 8 | 33 | 8 | 8 | | | |
| 2 | J9 | J6 | J3 | 9 | 34 | 1 | 9 | | | |
| 2 | J9 | J6 | J3 | 10 | 35 | 2 | 10 | | | |
| 2 | J9 | J6 | J3 | 11 | 36 | 3 | 11 | | | |
| 2 | J9 | J6 | J3 | 12 | 37 | 4 | 12 | | | |
| 2 | J9 | J6 | J3 | 13 | 38 | 5 | 13 | | | |
| 2 | J9 | J6 | J3 | 14 | 39 | 6 | 14 | | | |
| 2 | J9 | J6 | J3 | 15 | 40 | 7 | 15 | | | |
| 2 | J9 | J6 | J3 | 16 | 41 | 8 | 16 | | | |
| 3 | J9 | J6 | J3 | 17 | 42 | 1 | 17 | | | |
| 3 | J9 | J6 | J3 | 18 | 43 | 2 | 18 | | | |
| 3 | J9 | J6 | J3 | 19 | 44 | 3 | 19 | | | |
| 3 | J9 | J6 | J3 | 20 | 45 | 4 | 20 | | | |
| 3 | J9 | J6 | J3 | 21 | 46 | 5 | 21 | | | |
| 3 | J9 | J6 | J3 | 22 | 47 | 6 | 22 | | | |
| 3 | J9 | J6 | J3 | 23 | 48 | 7 | 23 | | | |
| 3 | J9 | J6 | J3 | 24 | 49 | 8 | 24 | | | |
| 4 | J8 | J5 | J2 | 1 | 26 | 1 | 25 | | | |
| 4 | J8 | J5 | J2 | 2 | 27 | 2 | 26 | | | |
| 4 | J8 | J5 | J2 | 3 | 28 | 3 | 27 | | | |
| 4 | J8 | J5 | J2 | 4 | 29 | 4 | 28 | | | |
| 4 | J8 | J5 | J2 | 5 | 30 | 5 | 29 | | | |
| 4 | J8 | J5 | J2 | 6 | 31 | 6 | 30 | | | |
| 4 | J8 | J5 | J2 | 7 | 32 | 7 | 31 | | | |
| 4 | J8 | J5 | J2 | 8 | 33 | 8 | 32 | | | |

**TABLE 9.** Planning Worksheet for ADAM CS with 50-pin Telco Back Panel

| ADAM CS AIO Card No. | Audio Input Connector | Audio Output Connector | Data Connector | (+) Pin | (-) Pin | Logical Keypanel Number[1] | Part No. | Alpha | Alias | Description (Device type, location, user, etc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| 5 | J8 | J5 | J2 | 9 | 34 | 1 | 33 | | | |
| 5 | J8 | J5 | J2 | 10 | 35 | 2 | 34 | | | |
| 5 | J8 | J5 | J2 | 11 | 36 | 3 | 35 | | | |
| 5 | J8 | J5 | J2 | 12 | 37 | 4 | 36 | | | |
| 5 | J8 | J5 | J2 | 13 | 38 | 5 | 37 | | | |
| 5 | J8 | J5 | J2 | 14 | 39 | 6 | 38 | | | |
| 5 | J8 | J5 | J2 | 15 | 40 | 7 | 39 | | | |
| 5 | J8 | J5 | J2 | 16 | 41 | 8 | 40 | | | |
| 6 | J8 | J5 | J2 | 17 | 42 | 1 | 41 | | | |
| 6 | J8 | J5 | J2 | 18 | 43 | 2 | 42 | | | |
| 6 | J8 | J5 | J2 | 19 | 44 | 3 | 43 | | | |
| 6 | J8 | J5 | J2 | 20 | 45 | 4 | 44 | | | |
| 6 | J8 | J5 | J2 | 21 | 46 | 5 | 45 | | | |
| 6 | J8 | J5 | J2 | 22 | 47 | 6 | 46 | | | |
| 6 | J8 | J5 | J2 | 23 | 48 | 7 | 47 | | | |
| 6 | J8 | J5 | J2 | 24 | 49 | 8 | 48 | | | |
| 7 | J7 | J4 | J1 | 1 | 26 | 1 | 49 | | | |
| 7 | J7 | J4 | J1 | 2 | 27 | 2 | 50 | | | |
| 7 | J7 | J4 | J1 | 3 | 28 | 3 | 51 | | | |
| 7 | J7 | J4 | J1 | 4 | 29 | 4 | 52 | | | |
| 7 | J7 | J4 | J1 | 5 | 30 | 5 | 53 | | | |
| 7 | J7 | J4 | J1 | 6 | 31 | 6 | 54 | | | |
| 7 | J7 | J4 | J1 | 7 | 32 | 7 | 55 | | | |
| 7 | J7 | J4 | J1 | 8 | 33 | 8 | 56 | | | |
| 8 | J7 | J4 | J1 | 9 | 34 | 1 | 57 | | | |
| 8 | J7 | J4 | J1 | 10 | 35 | 2 | 58 | | | |
| 8 | J7 | J4 | J1 | 11 | 36 | 3 | 59 | | | |
| 8 | J7 | J4 | J1 | 12 | 37 | 4 | 60 | | | |
| 8 | J7 | J4 | J1 | 13 | 38 | 5 | 61 | | | |
| 8 | J7 | J4 | J1 | 14 | 39 | 6 | 62 | | | |
| 8 | J7 | J4 | J1 | 15 | 40 | 7 | 63 | | | |
| 8 | J7 | J4 | J1 | 16 | 41 | 8 | 64 | | | |

1. The Logical Keypanel Number is used to set the address DIP switches when connecting a KP-9A Series Keypanel or TIF. See Table 3 on page 22 for address DIP switch settings.