UPAM-K
Universal Paging Access Module Kit
Installation Manual

Document No. 518-600-031

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Universal Paging Access Module
Installation Manual

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Federal Communications Commission (FCC) Statement (Part 68)

This equipment is component registered with the Federal Communications Commission (FCC) in accordance with Part 68 of its rules. In compliance with the rules, be advised of the following:

Registered equipment may not be used with Coin Telephone Lines. Equipment may be used with Party Lines in areas where state tariffs permit such connections and when equipment is adaptable for such service.

This equipment is registered as follows:

Registration Number - CD23CH-17705-KX-N

Ringer Equivalence - 1.2B

If trouble is experienced, the equipment should be disconnected from the interface to determine if this equipment, or the telephone line is the trouble source. If the equipment is determined to be malfunctioning, it should not be reconnected until repairs are effected.

Repairs to this equipment, other than routine repairs, can be made only by the manufacturer or its authorized agents.

If the equipment causes harm to the telephone network, the local telephone company may temporarily discontinue your service and, if possible, notify you in advance. If advance notice is not practical, you will be notified as soon as possible. You will be given the opportunity to correct the problem and informed of your right to file a complaint with the FCC.

The local telephone company may make changes in its facilities, operations, or procedures that could affect the proper functioning of your equipment. If they do, you will be given adequate notice in writing to allow you an opportunity to maintain uninterrupted telephone service.

Table of Contents

Illustrations

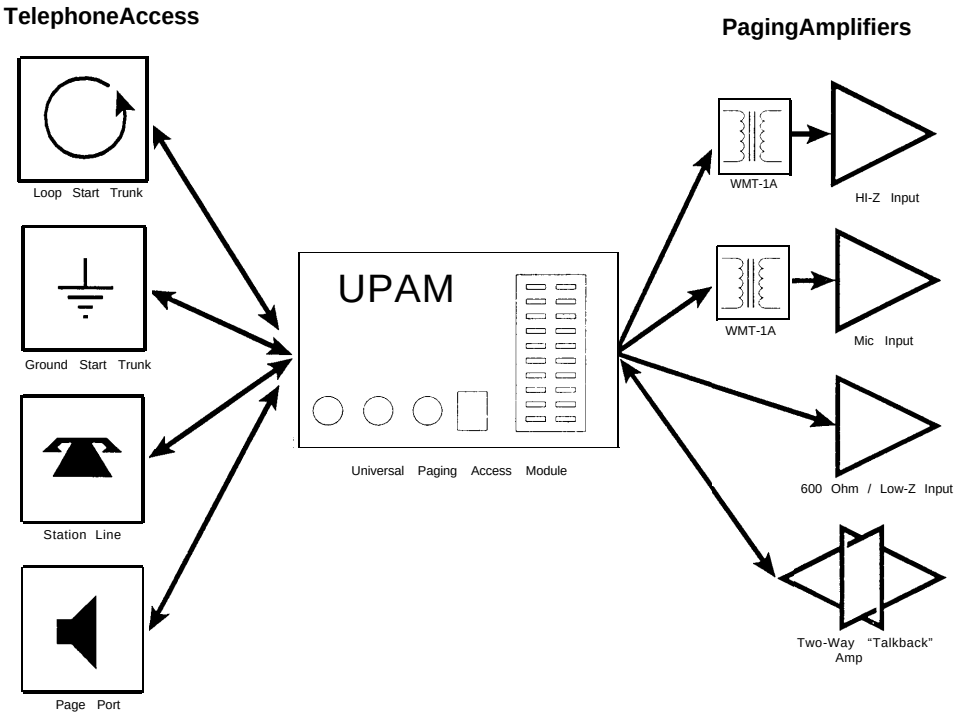
1. Product Identification

UPAM-K Universal Paging Access Module Kit

The UPAM-K Universal Paging Adaptor Module Kit designed to provide telephone access to most commonly available paging systems. It works with loop- and ground-start trunk ports, station ports or paging ports, and is compatible with the full range of currently available telephone equipment, i.e., PABX, stand-alone 1A2-Key, Electronic Key, Hybrid Electronic Key, or Centrex.

Overview

The Model UPAM-K consists of the access module, 48-volt power supply, interface transformer and miscellaneous connectors (listed below). The functional unit provides telephone and paging system connections, background music input (BGM) and modular page port connector, switches to select operational features, and adjustment controls. The unit is compact, housed in a steel case and is designed to be mounted on a wall.



Components

Item	Description	Part No.
UPAM-K	**Universal Paging Access Module Kit**	405891698
UPAM	Functional unit	405899972
PRS-48	48V power supply	405742735
WMT-1A	Line-matching transformer	405891680
ATMC	Miscellaneous connectors:	405891706
	8-conductor modular connector cord	
	RCA jack connector cord	
	RCA jack to phone jack adaptor	
	RCA jack to mini-jack adaptor	

Features

- **Acts as point of demarcation**
  Acts as a point of demarcation between telephone system and customer paging equipment.

- **24V or 48V operation (trunk port operation)**
  Mode switches let you select 24-volt or 48-volt operation. A 48-volt power supply is included to provide 48-volt trunk port operation (a 24-volt power supply is required for 24-volt operation).

- **Preannounce and Confirmation Tones**
  A preannounce tone (heard at the telephone and the loudspeakers) or confirmation tone (heard only at the telephone) can be selected with mode switches (one of these modes must be selected for the unit to operate properly). A screwdriver-adjustable control **(TONE VOL)** sets the level of each.
  (Note: when used with ground-start trunk ports, only the preannounce option can be used.)

- **VOX Delay Timer**
  Voice controlled disconnect timer, for use in station port operation is enabled with a mode switch. This automatically disconnects the line after a predetermined interval of silence (from 2 to 6 seconds, set with the **VOX DELAY** control; the setting may be critical with telephone systems that issue a rapid reorder tone after the paging party hangs up).

- **Default Timer**
  A default timer sets the maximum time allotment for paging (6 to 35 seconds, set with the **PAGING TIME** control). This timer ensures that the unit will always disengage the line by forcing a disconnect, if the other disconnect functions are disabled or not available with a specific telephone switch.
  Note: The timer may be inhibited; see Default Timer Modifications on page 9 for procedure.

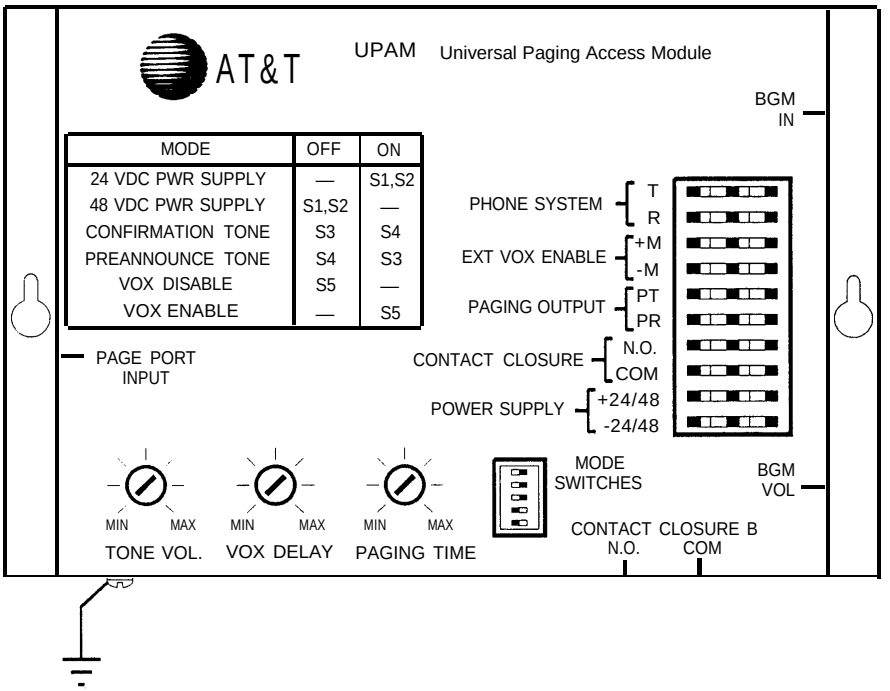
- **Background music input jack and volume control**
  An RCA-type jack **(BGM IN)** accepts background music sources from the paging system. The level can be set with the **BGM VOL** control. An RCA-jack connector cord and RCA jack adaptors are included in the kit to connect with some common background music sources.

- **Contact Closures**
  Two normally-open contact closures are provided on the UPAM which change state when the unit is activated. One set is located on the punch block (terminals **N.O.** and **COM),** and the other one on the bottom side of the unit (terminal strip). One contact closure can be used for ground start operation. The second contact closure is available to provide control of external equipment or functions. When the UPAM is used on a loop start trunk, page port, or station line, both contact closures become available to provide control of external equipment or functions.

- **Direct connection to page ports through a modular jack on the side of the unit**
  An 8-conductor modular connector cable is included for easy connection to modular page ports.

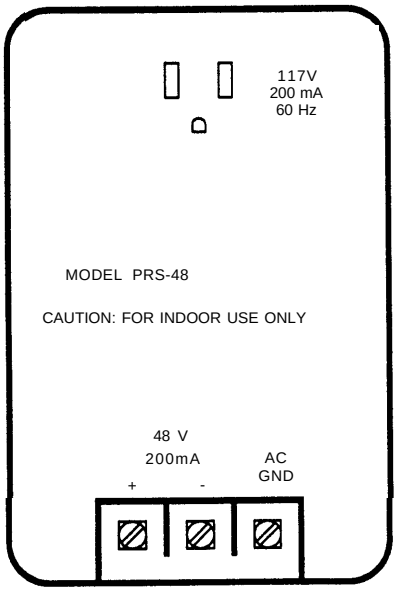
UPAM Front Panel

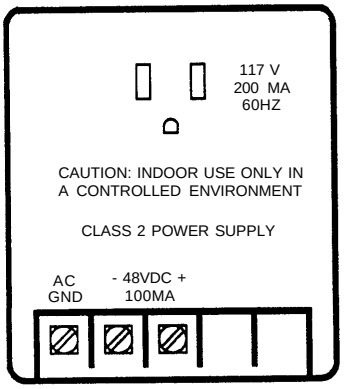
405899972



Important Power Supply Note

One of two types of power supply are shipped with the UPAM-K. The drawings below will assist you in locating the proper terminals so that you can connect it to the UPAM correctly.
Note: the order of the terminals differs from one supply to the other. **Be sure to observe correct polarity when connecting power supply.**





2. Connection to the Telephone System

General Instructions

This section contains installation procedures for connection to the telephone system. You should first follow the General Instructions and then refer to the Specific Instructions for the type of telephone switch to be connected (loop- or ground-start trunk port, station port, page port). Finally, refer to Section 3 for connections to the paging system.

You will need the following tools for installation: standard flat-blade screwdriver; phillips-head screwdriver; wire cutter/stripper/crimper; punch-down tool for Type 66 Block.

Select location and physical installation

The UPAM may be mounted on a wall or backboard. It can be located either in close proximity to the telephone equipment (a modular cord is included and can be used to connect the unit to the telephone system) or near the paging equipment. To install the unit using the keyhole slots, install two screws (not included) with a 7-½" center, letting the screw heads protrude ¼" from the wall. Position the unit on the screws through the slots then tighten the screws. A 110V AC outlet should be located nearby when using the UPAM with trunk port equipment.

Grounding

The UPAM is designed with protection devices which are intended to shunt to ground any excess (surge) voltage appearing on the **T**ip and **R**ing input pair. The metal case of the UPAM must be grounded to a ground shorting bar, if available, or to a suitable electrical (earth) ground. Connect a ground wire (with a fork-terminal, included) between the case and the screw on the lower left-hand corner of the module. An external-tooth lockwasher ensures a good connection between the case and ground terminal.

Mode switches

A set of 5 mode switches **(S1** through **S5, see the illustration on the previous page)** is included to set the power supply voltage, confirmation or preannounce tone, and VOX operation. These switches are accessible through an opening in the front cover and can be moved with a pointed tool, such as the tip of a ball point pen. Set the switches as described in the Specific Instructions, which follow.

Power supply connections

No power supply is required when the UPAM is connected to a PABX station port (supplying analog ring voltage and approximately 48-volt of Talk Battery) or Centrex line. One of two types of power supply is included in the UPAM-K. You can identify the power supply from the illustration on page 3. **Note the location of the output terminals; they are not in the same order.** Either supply will power the UPAM and provide 48 volt talk battery for trunk port or page port operation. The illustrations in the Specific Instructions section show the correct connections from a typical power supply to the UPAM module.

Internal adjustments

Certain options are available (described in Specific Instructions section) which require the removal of the cover and the modification of certain components. The illustrations on page 11 show the different revision levels of the printed circuit boards used, and identify the location of the important components.

A small parts bag is located under the cover, either taped to the inside of the cover or wedged between the case and a large capacitor in the upper right-hand corner of the chassis.

Paging system connections

Illustrations showing connection of the UPAM to a typical paging system are included in the third section of this manual. If you need more information about paging systems, consult the UPAM CPE Reference Guide, available from AT&T.

Troubleshooting

A Functional Test Guide in Section 4 isolates problem areas, if they arise, following installation.

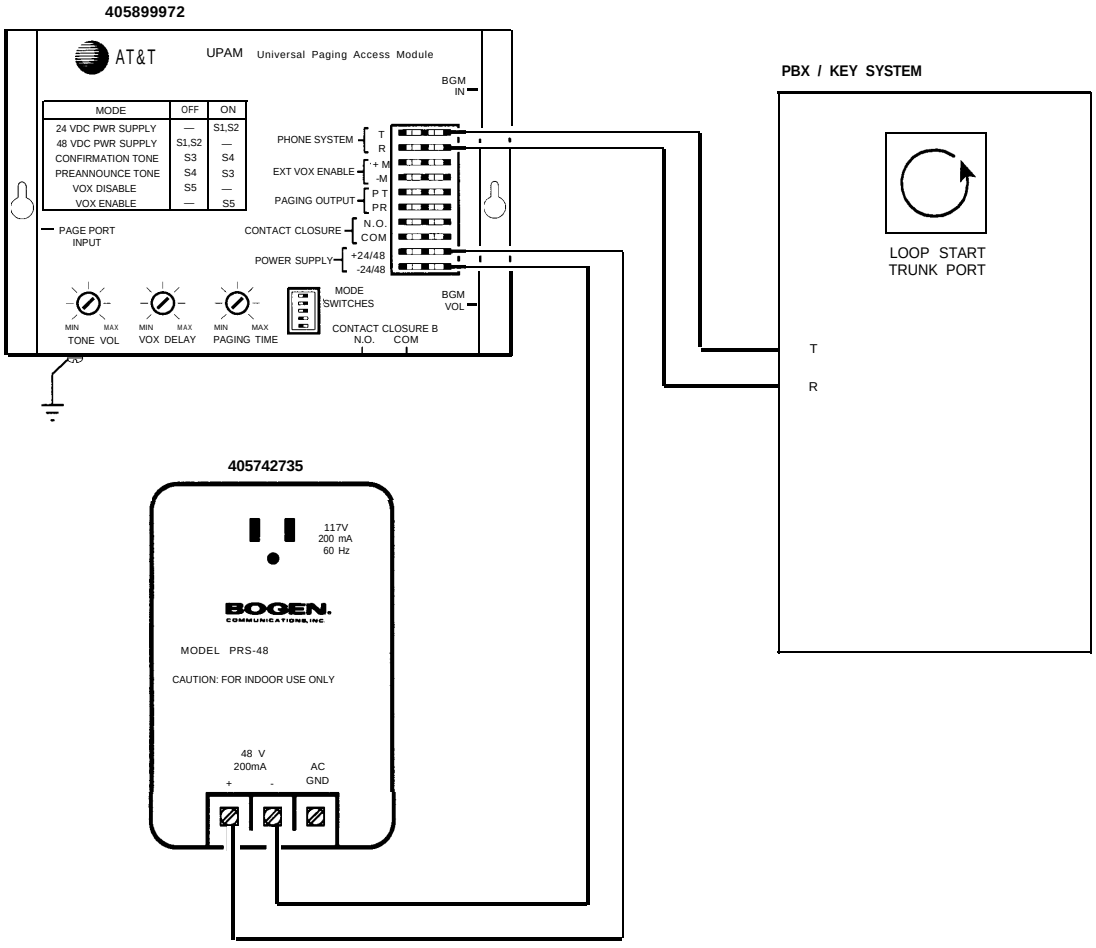
Specific Instructions

Trunk Port Connections — Loop Start

Controls for VOX Delay, Page Time, and Mode Switch S5 are not operable in this mode.

Procedure

1. Mount and ground the UPAM as described in the General Instructions.
2. Set mode switches **S1** and **S2** in OFF position for use with the 48-volt power supply, or ON position if a 24-volt power supply is used.
3. Set mode switches **S3** and **S4** for Preannounce or Confirmation tone (as desired).
4. Connect “Tip” of trunk port to **T** terminal on UPAM.
5. Connect “Ring” of trunk port to **R** terminal on UPAM.
6. Connect **PT** and **PR** terminals on UPAM to the paging system, as shown in Section 3. Also, connect any background music source to the **BGM IN** jack on the UPAM.
7. Connect power supply + and - terminals to the **+24V/48V** and **-24V/48V** terminals on UPAM, respectively. Plug the power supply into a grounded 110VAC wall outlet.
8. Call the system and adjust the volume of the page using the paging system’s amplifier volume control.
9. Hang up and adjust the background music level using the UPAM **BGM VOL** control.
10. Call the system and adjust the volume of the preannounce/confirmation tone, using the UPAM **TONE VOL** control.



Trunk Port Connections — Loop Start

Specific Instructions

Trunk Port Connections — Ground Start

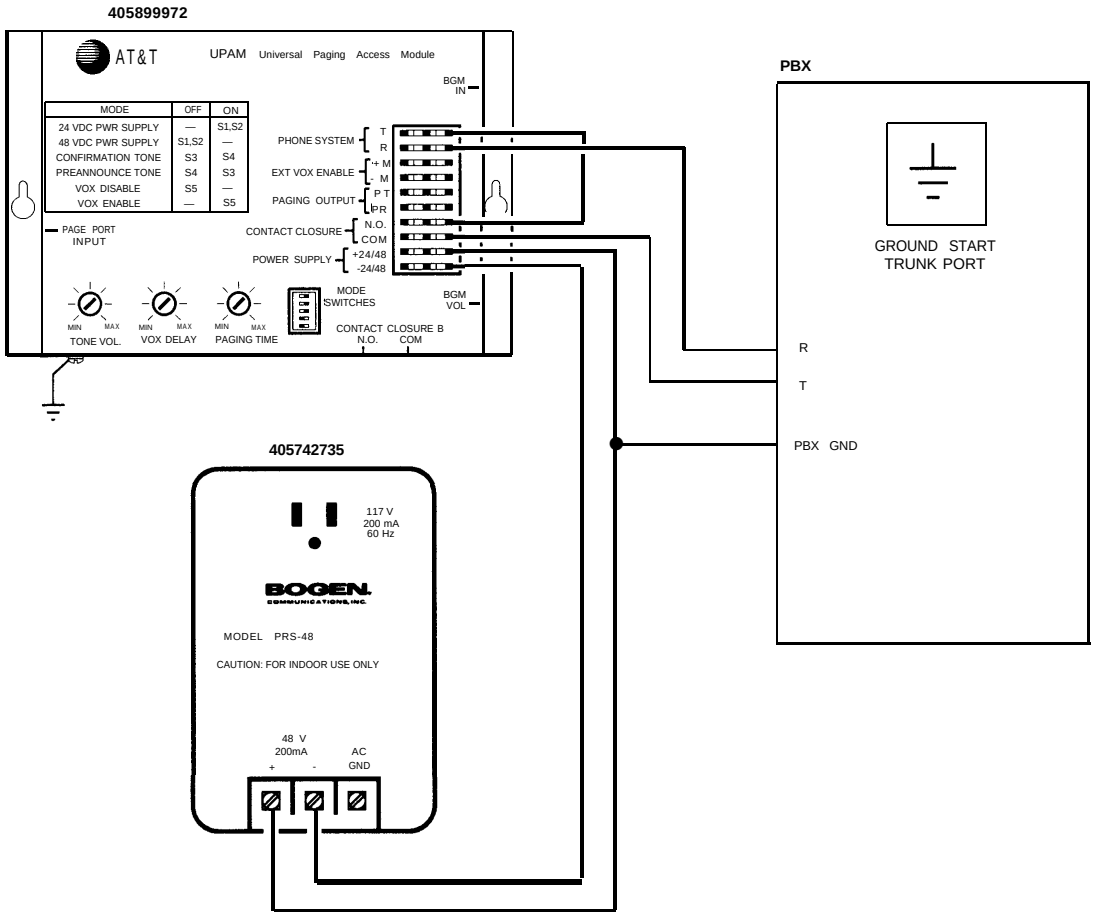
Controls for VOX Delay, Page Time, and Mode Switch S5 are not operable in this mode.

Procedure

1. Mount and ground the UPAM as described in General Instructions.
2. Set mode switches **S1** and **S2** in OFF position for use with the 48-volt power supply, or ON position if a 24-volt power supply is used.
3. Set mode switch **S3** to ON position and **S4** to OFF position (see Note 1).
4. Connect a jumper wire between **N.O.** and **T** terminals on UPAM.
5. Connect “Tip” of trunk port to **COM** terminal on UPAM.
6. Connect “Ring” of trunk port to **R** terminal on UPAM.
7. Connect **PT** and **PR** terminals on UPAM to the paging system, as shown in Section 3. Also, connect any background music source to the **BGM IN** jack on the UPAM.
8. Connect UPAM **+24/48V** terminal to PBX ground (see Note 2).
9. Connect power supply + and - terminals to **+24V/48V** and **-24V/48V** terminals on UPAM, respectively. Plug the power supply into a grounded 110VAC wall outlet.
10. Call the system and adjust the volume of the page using the paging system’s amplifier volume control.
11. Hang up and adjust the background music level using UPAM **BGM VOL** control.
12. Call the system and adjust the volume of the preannounce tone using UPAM **TONE VOL** control.

Notes:

1. Only preannounce tone is available for ground start trunk applications.
2. Usually the **AC GND** terminal on the 48 volt power supply included can be used to provide this connection.



Trunk Port Connections – Ground Start

Specific Instructions

Station Port/Centrex Connections

Disconnect methods

In station port operation, the UPAM provides CPC — calling-party-controlled (loop current interruption) disconnect, default timer disconnect, or optional voice-operated (VOX) disconnect. The calling-party-controlled disconnect recognizes a line-issued disconnect signal and immediately disengages the UPAM from the line (this feature cannot be adjusted or inhibited). The default timer causes the UPAM to release after a user-determined period of time ensuring that the UPAM will always disengage the line if the other disconnect functions are disabled or inoperative. (The default time is approximately 6 to 35 seconds, but can be increased or inhibited; see Default Timer Modifications, on the next page.) The voice-operated (VOX) disconnect feature has the ability to preempt the default timer and disconnect the line after a predetermined interval of silence (approx. 2 to 6 seconds, set with **VOX DELAY)** has elapsed. The VOX feature is turned on or off with mode switch **S5.**

Procedure

No power supply is used for Station Port/Centrex operation.

1. Mount and the ground the UPAM as described in General Instructions.
2. Set mode switches **S3** and **S4** for Preannounce or Confirmation tone (as desired).

One of these modes must be selected for UPAM to operate correctly.

3. Place mode switch **S5** in the Off position.
4. Connect “Tip” of station port to **T** terminal of UPAM.
5. Connect “Ring” of station port to **R** terminal of UPAM.
6. Connect **PT** and **PR** terminals on UPAM to the paging system, as shown in Section 3. Also, connect any background music source to the **BGM IN** jack on the UPAM.
7. Set the Default Timer by calling the system, and measuring the length of time before the call is disconnected. Adjust the **PAGING TIME** control and repeat and readjust as necessary.
8. Call system and set the page volume using the paging system’s amplifier volume control.
9. Hang up and adjust the background music level using UPAM **BGM VOL** control.
10. Call the system and adjust the volume of the preannounce/confirmation tone volume using the **TONE VOL** control. (Note: If the tone can be heard over the paging system but is shortened, or if it is absent in the handset, it may be necessary to increase the length of ring before the UPAM answers. See Ring Delay on page 10.)
11. If the VOX disconnect is to be used, adjust the VOX delay. To do this, make sure mode switch **S5** is in the ON position and proceed as follows:

    11.1 Rotate **VOX DELAY** control approximately 1/2 way.

    11.2 Call the system and, after the preannounce or confirmation tone, speak into the telephone for 5 seconds at a normal voice level then stop and evaluate the time delay before disconnection. If it is sufficiently long to allow for pauses in phrases without disconnecting, proceed to the next step. If necessary, readjust **VOX DELAY** and repeat step.
    Note: The minimum VOX delay is approximately 2 seconds. On some systems, which return a reorder tone to the called party within 2 seconds of hang up, VOX DELAY cannot be used.

Default Timer Modifications

Inhibit default timer

A field modification is available to inhibit the default timer. Do not inhibit the timer if jumpers **J2** & **J3** have been removed as outlined in **Important Centrex Modification,** below, and the VOX delay timer has been disabled **(S5** is OFF). This situation may cause the UPAM to remain off-hook indefinitely. **Also, do not inhibit both timers unless the station line has CPC capability.**

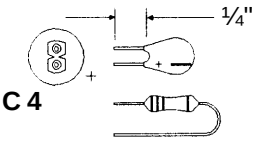
Some older UPAM equipment may not have jumper **J3** (refer to the illustrations on page 11 to determine the revision level of the pc board and the location of the jumpers). Do not inhibit the default and VOX disconnect features and rely solely on CPC to provide disconnect control on these models. If this is unavoidable, then replace the UPAM with one showing a date code of 90A or later. (The date code is the first two numbers and letter of the unit's serial number, printed on a sticker on the rear panel of the unit. The code is also stamped on the outer carton below the UPAM-K name.)

To inhibit the default timer, proceed as follows (note that the other disconnect methods are still available when the default timer is inhibited):

1. Open UPAM by removing 4 screws. Lift cover straight off while tilting up the left side of the cover to clear the punch block.
2. Locate and remove capacitor **C4** mounted in a 2-pin socket on the upper left corner of the printed circuit board (refer to the illustrations on page 11 for the location of the capacitor).
3. Replace the capacitor with the 10kilohm resistor (color code: brown-black-orange) supplied in the parts bag. The parts bag is either taped to the inside cover or wedged between a large capacitor and the upper right-hand corner of the chassis. Bend and cut the resistor wire as shown below.
4. Replace the cover and screws.

Changing default time

To change the timing of the default timer, replace component **C4** (located in the upper left-hand corner by the transistor with the black heat sink) with the 100μF, 6.3V Tantalum capacitor supplied in the parts bag located inside the UPAM enclosure. This capacitor will change the default time to 17 seconds minimum to 2 minutes maximum. First follow steps 1 and 2 above and then install the capacitor by cutting its leads to approximately 1/4 inch and inserting into the socket at C4 so that the lead marked with a (+), or with a vertical bar is in the lower socket hole, as shown:



Important Centrex Modification

Some phone systems (in particular, Centrex-type systems) may produce open-switch-intervals (OSIs) when the UPAM first answers the line. OSIs are short breaks in loop current resulting when the central office switches equipment on and off the line. The UPAM may misinterpret these OSIs as disconnect signals. It may be necessary to remove jumpers **J2** and **J3** from the printed circuit board (see the illustrations on page 11 for the location of these jumpers) if the UPAM exhibits any of the following symptoms during station mode operation. **Do not remove the jumpers unless you are confident that an OSI problem exists, and the UPAM has been verified as functional by following the troubleshooting procedures in Section 4.**

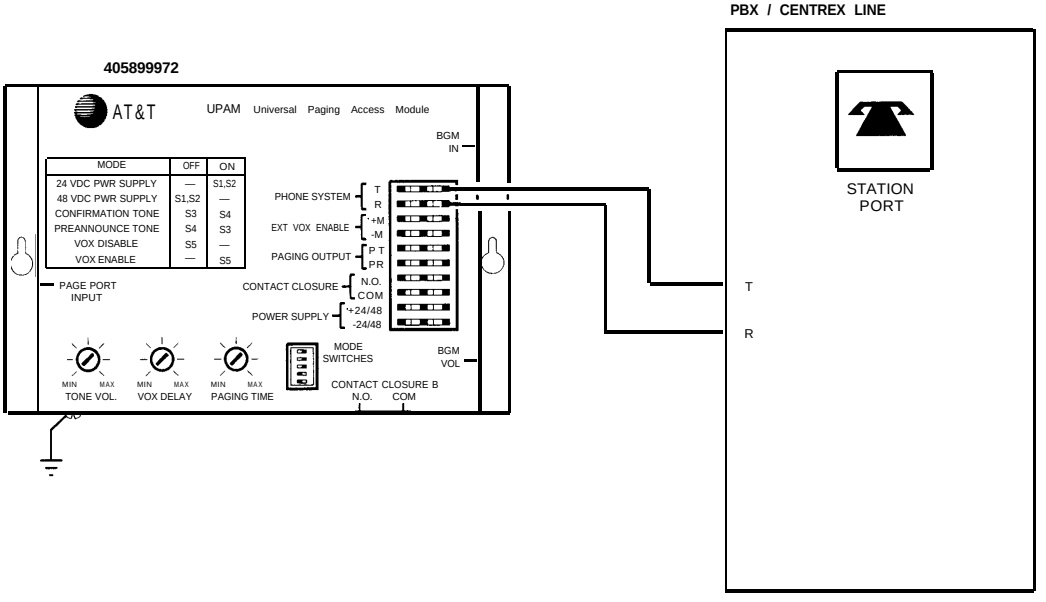
Symptoms:

1. UPAM disconnects from the line immediately after answering.
2. UPAM answers and remains connected to line but the page audio does not come through the paging system. This condition is verified if the UPAM external contact closures are still open during a page.

Ring delay

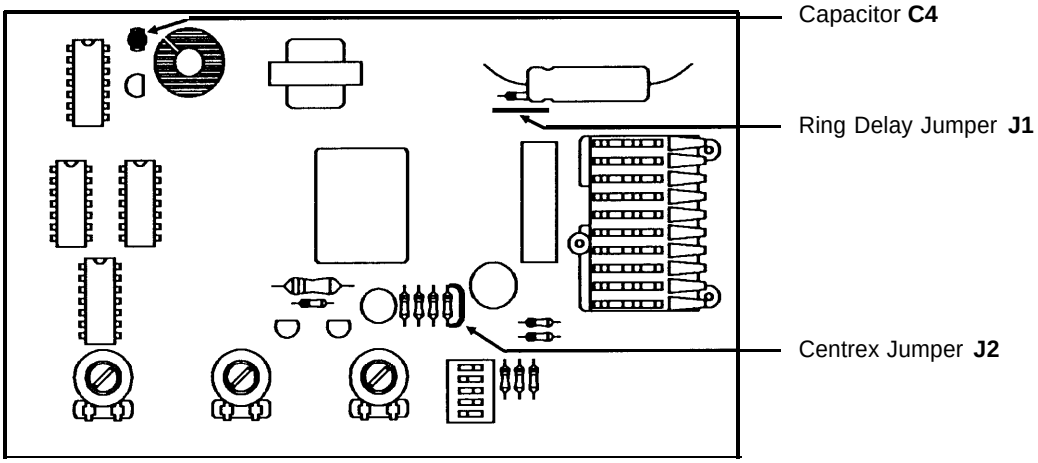
Cutting jumper **J1** increases the length of time it takes to answer the ringing line. This allows time for a talk path to be established before the UPAM answers, thereby ensuring that the preannounce or confirmation tone will be heard. **Central office or Centrex lines, which may be slower than other switching equipment, may require this modification.** (The jumper seldom needs to be cut.)

1. Open UPAM by removing 4 screws. Lift cover straight off while tilting up the left side of the cover to clear the punch block.
2. Move large axial lead capacitor to expose jumper **J1.** (Refer to the illustrations on page 11 to determine the revision level of the pc board and the location of the jumpers.)
3. Cut jumper.
4. Replace cover in reverse order of Step 1.

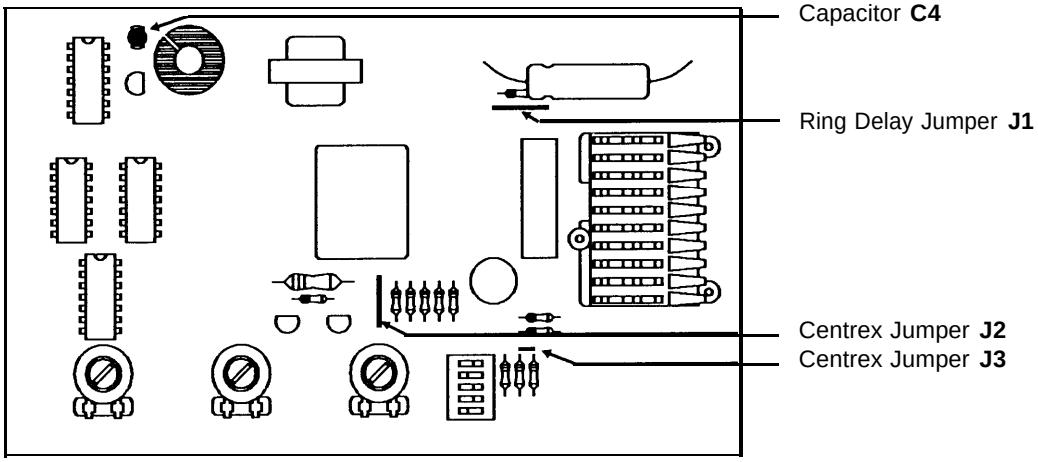


Station Port/Centrex Connections

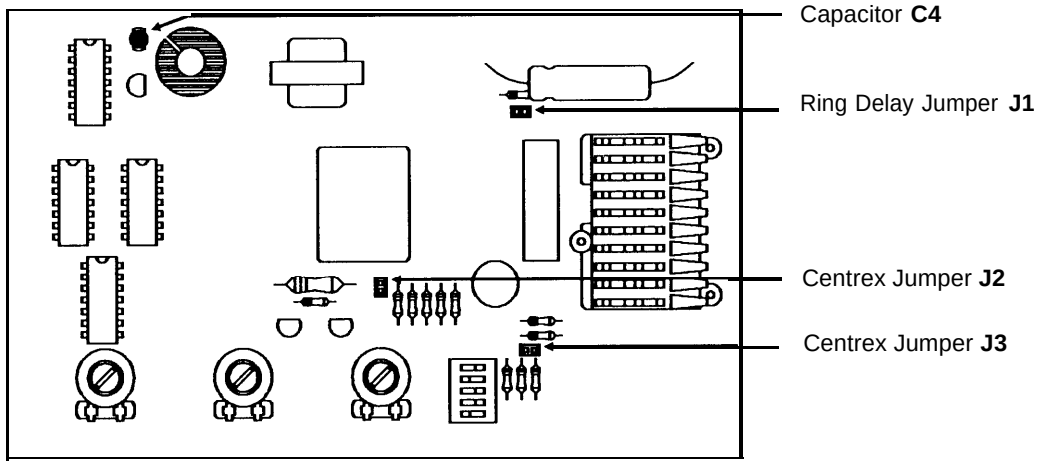
UPAM Printed Circuit Board (Rev. 8, 9, 10) Components Location



Printed Circuit Board (Rev. 8) Components Location



Printed Circuit Board (Rev. 9) Components Location



Printed Circuit Board (Rev. 10) Components Location

Specific Instructions

Page Port Connections

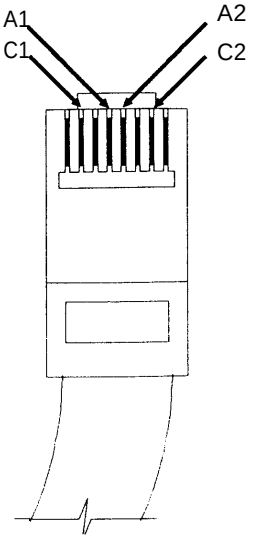
VOX DELAY, PAGING TIME, and Mode Switch S5 are not operable in this mode

Procedure

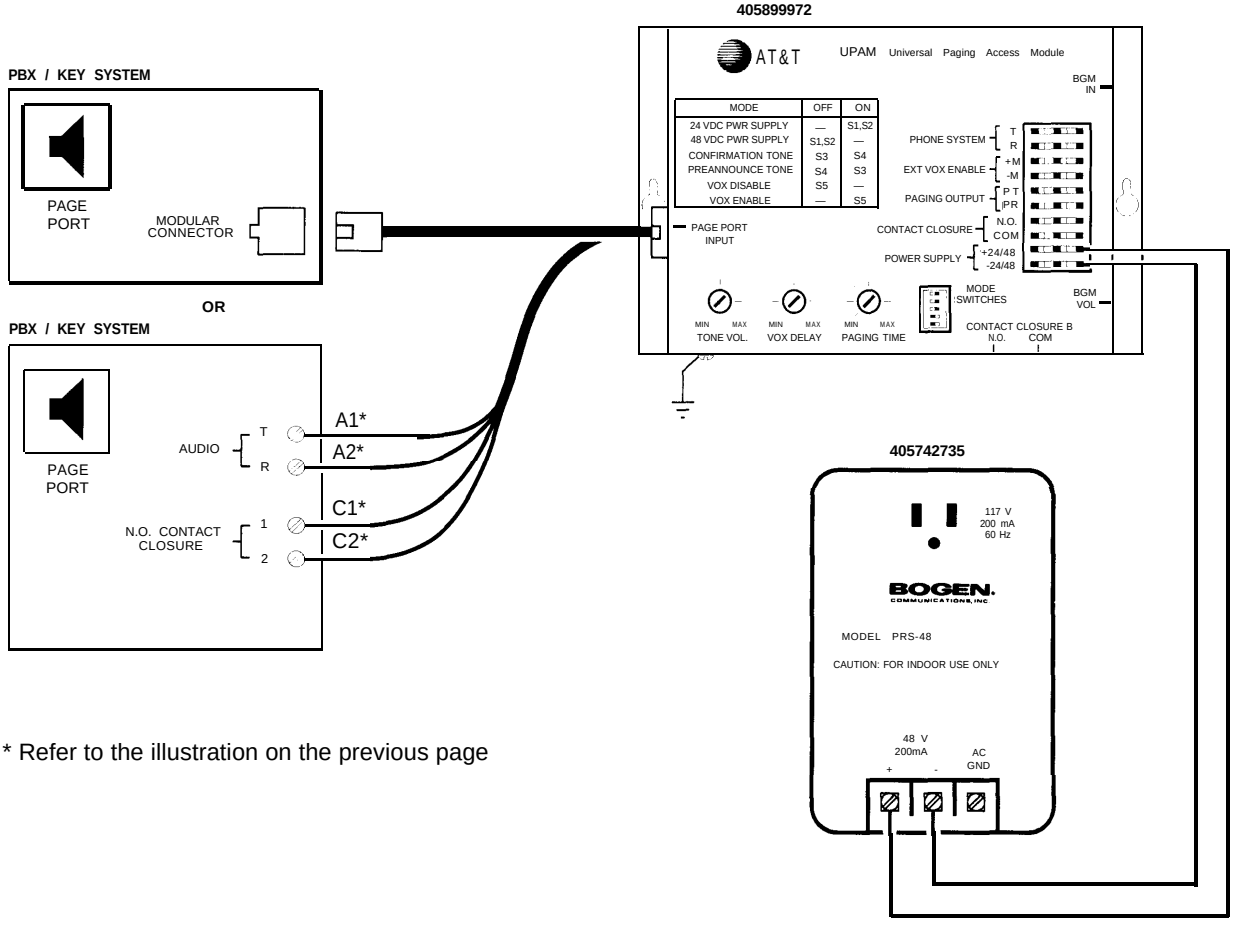
1. Mount and ground the UPAM as described in General Instructions.
2. Set mode switches **S1** and **S2** in OFF position for use with the 48-volt power supply, or ON position if a 24-volt power supply is used.
3. Set mode switches **S3** and **S4** for confirmation or preannounce tone (as desired).
4. Plug the **8-conductor modular cable** into **PAGE PORT INPUT** jack on the side of UPAM (see Note 1).
5. Plug other end of the **8-conductor modular cable** into the modular page port jack (see Note 2).
6. Connect **PT** and **PR** terminals on UPAM to paging system as shown in Section 3.
7. Connect power supply + and - terminals to **+24V/48V** and **-24V/48V** terminals on UPAM, respectively. Plug power supply into a grounded 110VAC wall outlet.
8. Call the system and adjust the volume of the page using the paging system's amplifier volume control.
10. Hang up and adjust the background music level using UPAM **BGM VOL** control.
11. Call the system and adjust the volume of the preannounce tone using UPAM **TONE VOL** control.

Notes:

1. The modular jack on the side of the UPAM can usually be connected directly to the telephone switch page port (via the **8-conductor modular cable,** included) when the two center conductors of the page port jack supply a dry audio signal and the two remaining conductors flanking the center conductors provide a normally open contact closure.
2. When connecting to a non-modular type of page port, cut off one end of the **8-conductor modular cable** and strip and connect wires as shown in the illustration on the next page. Note: Color arrangement of wires may not be standard among cables. The illustration below will guide you in determining the correct wire colors for connection to the page port.
   Wire connected to contact labelled **"A1"** to page port "Tip";
   Wire connected to contact labelled **"A2"** to page port "Ring";
   Wires connected to contacts labelled **"C1" and "C2"** to the page port's normally open contacts.



8-Conductor Modular Plug (shown with locking tab facing back)



* Refer to the illustration on the previous page

Page Port Connections

3. Connection to the Paging System

General Guidelines

The UPAM is designed to connect to typical “centrally-amplified” and “self-amplified” paging and sound systems. “Centrally-amplified” systems generally use one amplifier to distribute the page audio to large numbers of speakers. “Self-amplified” systems generally rely on small amplifiers, built-in on each speaker or horn. Since the types of connectors used on this equipment varies, and is not standard between manufactures, you should be familiar with the basic features of these systems so that you can connect the UPAM to the correct input.

Installation consists of connecting the **PR** and **PT** terminals on the UPAM to the proper paging system input terminals. In a central-amplified system, the amplifier’s 600-ohm/Lo-Z input provides the ideal connection; however connection can be made to Hi-Z or microphone inputs, when the transformer (Model WMT-1A) included in the UPAM-K is used. In self-amplified systems, connection can be made to the individual amplifiers or to a smaller buffer amplifier.

The illustrations in this section provide basic hookup information to typical equipment, and **procedures may vary.** Read the UPAM CPE Reference Guide to gain a better understanding of paging systems and input types.

You should be aware that certain self-contained, customer-owned telephone paging systems (i.e., Terryphone) are not compatible with UPAM installation. These systems were originally installed with dedicated telephones or handsets. They were not designed to work in conjunction with a telephone system, and provide no compatibility for page port access.

Typical Installations

Connecting the UPAM to an amplifier’s Lo-Z/600-ohm input

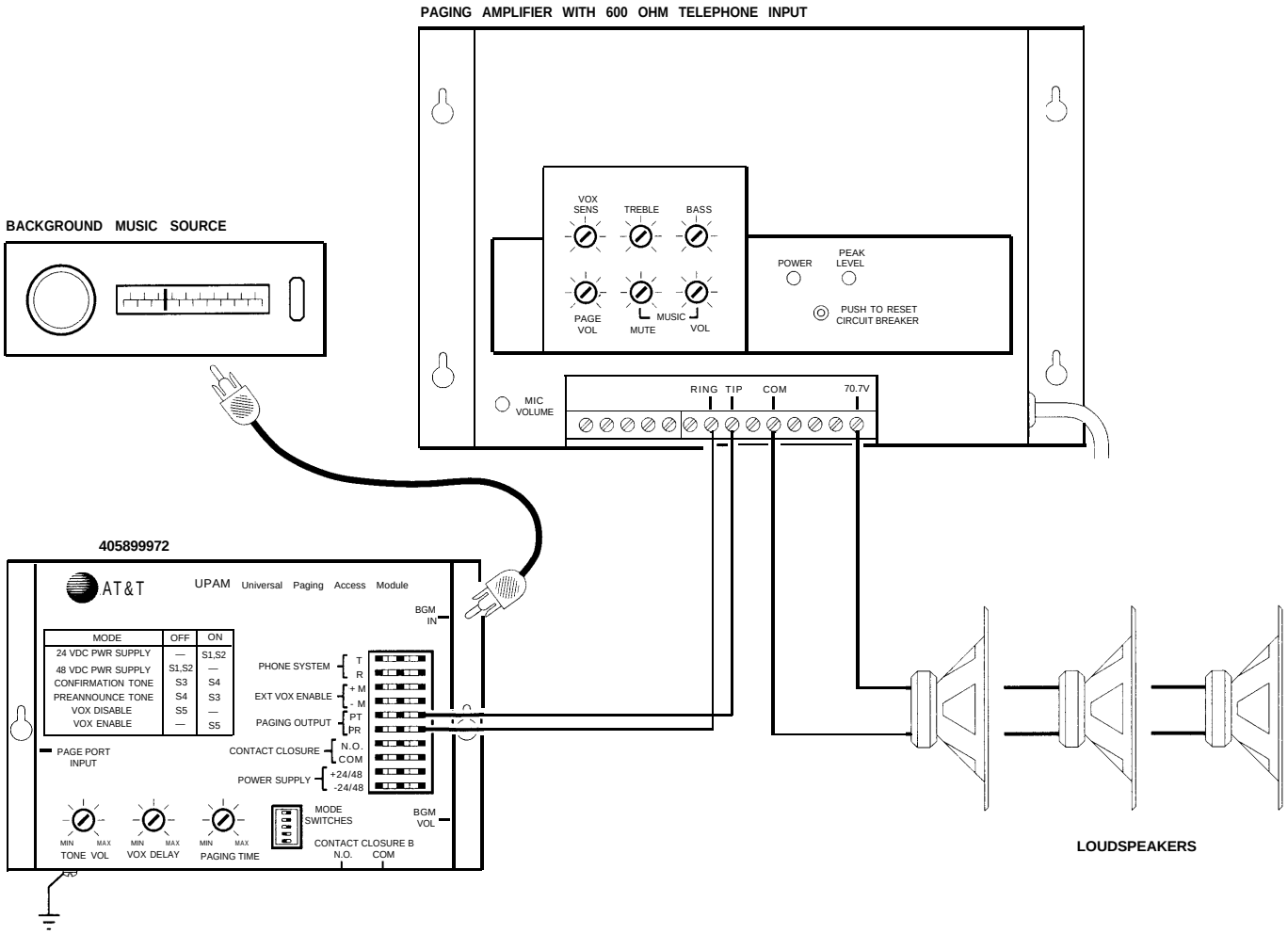
You can connect the UPAM directly to an amplifier’s 600-ohm input. Some of the procedures below may vary. The illustration on the next page shows a typical installation.

1. Make sure that the amplifier is turned off.
2. Connect one side of the amplifier input to the UPAM **PT** terminal.
3. Connect the other the other side of the amplifier input to the UPAM **PR** terminal.
4. Connect any background music source to the **BGM IN** jack (RCA-type) on the UPAM.

Caution

If the amplifier’s input is unbalanced (one side of the input terminal is connected to ground), you must connect the PR terminal on the UPAM to the grounded amplifier terminal. Reversing these connections can short the BGM source output. (The WMT-1A transformer can be used to "float" the unbalanced input and eliminate this problem.

5. Connect speaker loads to amplifier’s output terminals, if necessary.
6. Turn amplifier volume control to minimum.
7. Turn amplifier on.
8. Set amplifier level (see Specific Instructions for the particular telephone access mode being used).

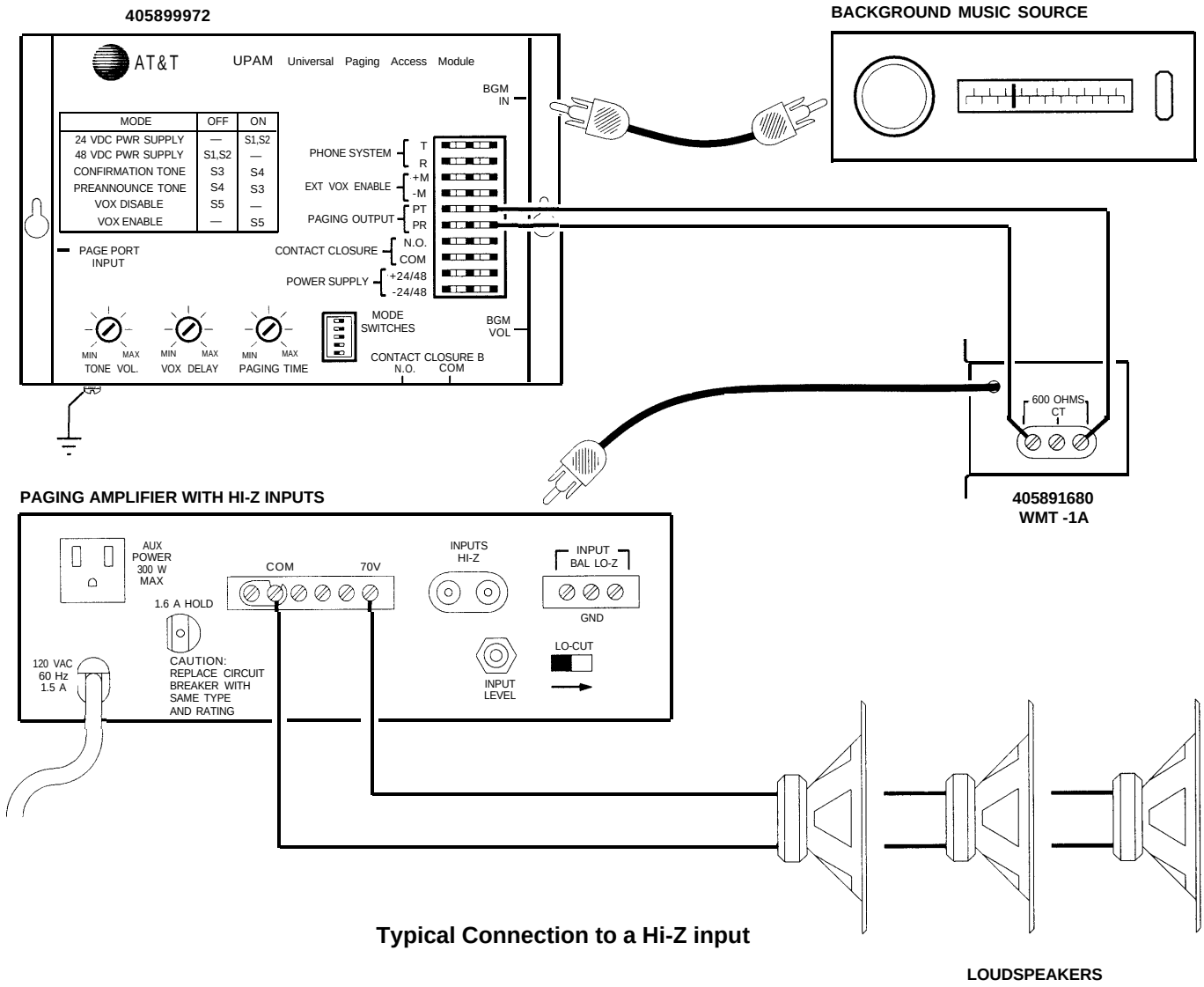


Typical Connection to a Lo-Z/600 ohm input

Connecting the UPAM to an amplifier's Hi-Z AUX input

You can connect the UPAM to an amplifier's Hi-Z input by using the WMT-1A transformer (included) to match the UPAM output to the amplifier input. Make sure the WMT-1A is set correctly; **see the instructions included with the transformer for connection details.**

1. Make sure that the amplifier is turned off.
2. Connect **PT** terminal of the UPAM to one of the outside screw terminals on the WMT-1A.
3. Connect **PR** terminal of the UPAM to the other outside screw terminal on the WMT-1A.
4. Plug the RCA-type connector from the WMT-1A transformer into the amplifier's Hi-Z input. Adaptors are included in the kit for connecting to 1/4" phone and mini-jack inputs.
5. Connect any background music source to **BGM IN** jack (RCA-type) on the UPAM.
6. Connect speaker loads to the amplifier's output terminals, if necessary.
7. Turn amplifier volume control to minimum.
8. Turn amplifier on.
9. Set amplifier level (see Specific Instructions for the particular telephone access mode being used).



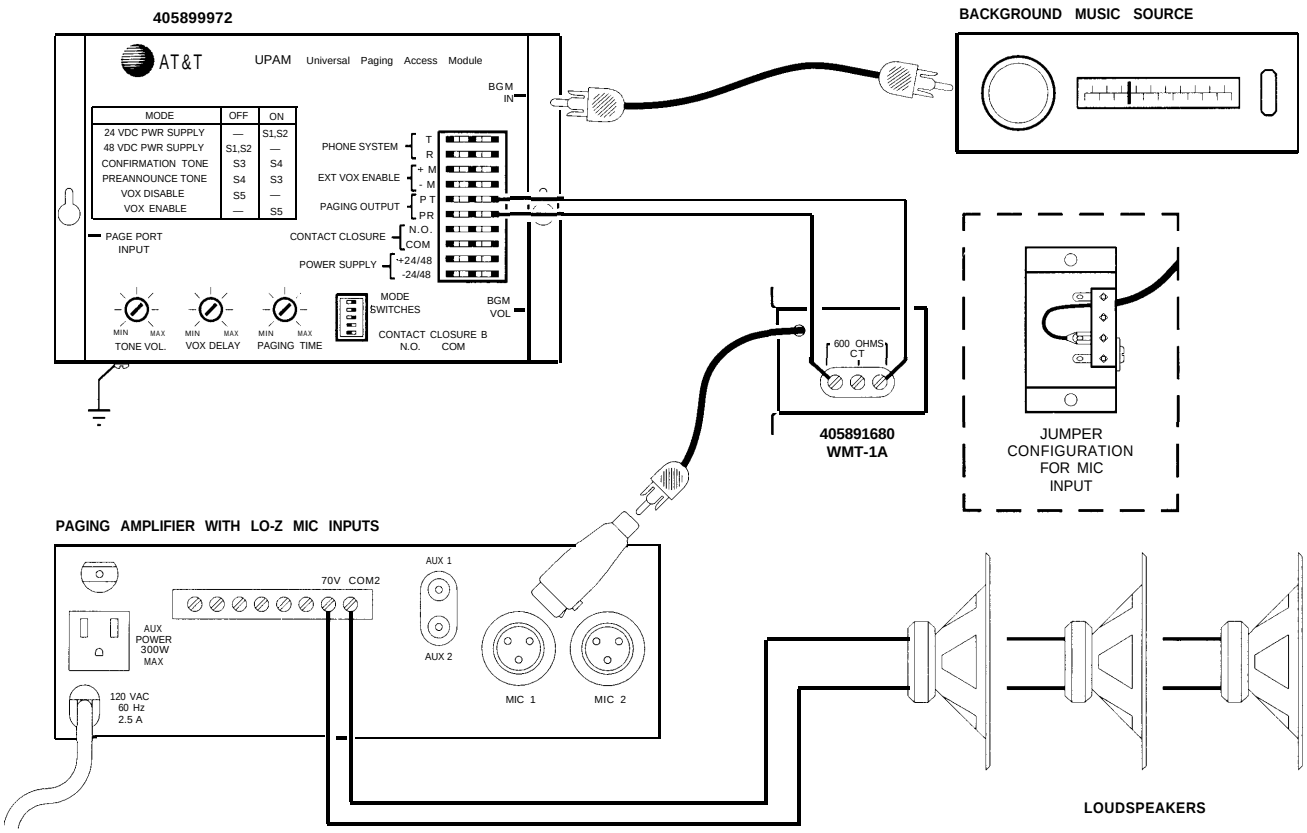
Typical Connection to a Hi-Z input

Connecting the UPAM to an amplifier's MIC input

Due to the higher sensitivity of microphone inputs, they should be used only as a last resort. The Lo-Z microphone connection is the more desirable of the two because it is less susceptible to noise pickup. The UPAM connects to the MIC input using the WMT-1A transformer. This transformer includes a modification to provide the proper attenuation (see instructions packed with the transformer). More information on microphone inputs is provided in the UPAM CPE Reference Guide.

1. Make sure the amplifier is turned off.

   Modify the WMT-1A transformer by moving the push-on lug to the center terminal on the terminal strip (see inset diagram in the figure below for proper jumper placement).
2. Connect **PT** terminal of the UPAM to one of the outside screw terminals on the WMT-1A.
3. Connect **PR** terminal of UPAM to the other outside screw terminal on the WMT-1A.
4. Connect a suitable adaptor to the RCA-type plug on the WMT-1A (if required).
5. Connect any background music source to **BGM IN** jack (RCA-type) on the UPAM.
6. Connect speaker loads to the amplifier's output terminals, if necessary.
7. Set amplifier volume control to minimum.
8. Turn amplifier on.
9. Set amplifier level (see Specific Instructions for the particular telephone access mode being used).

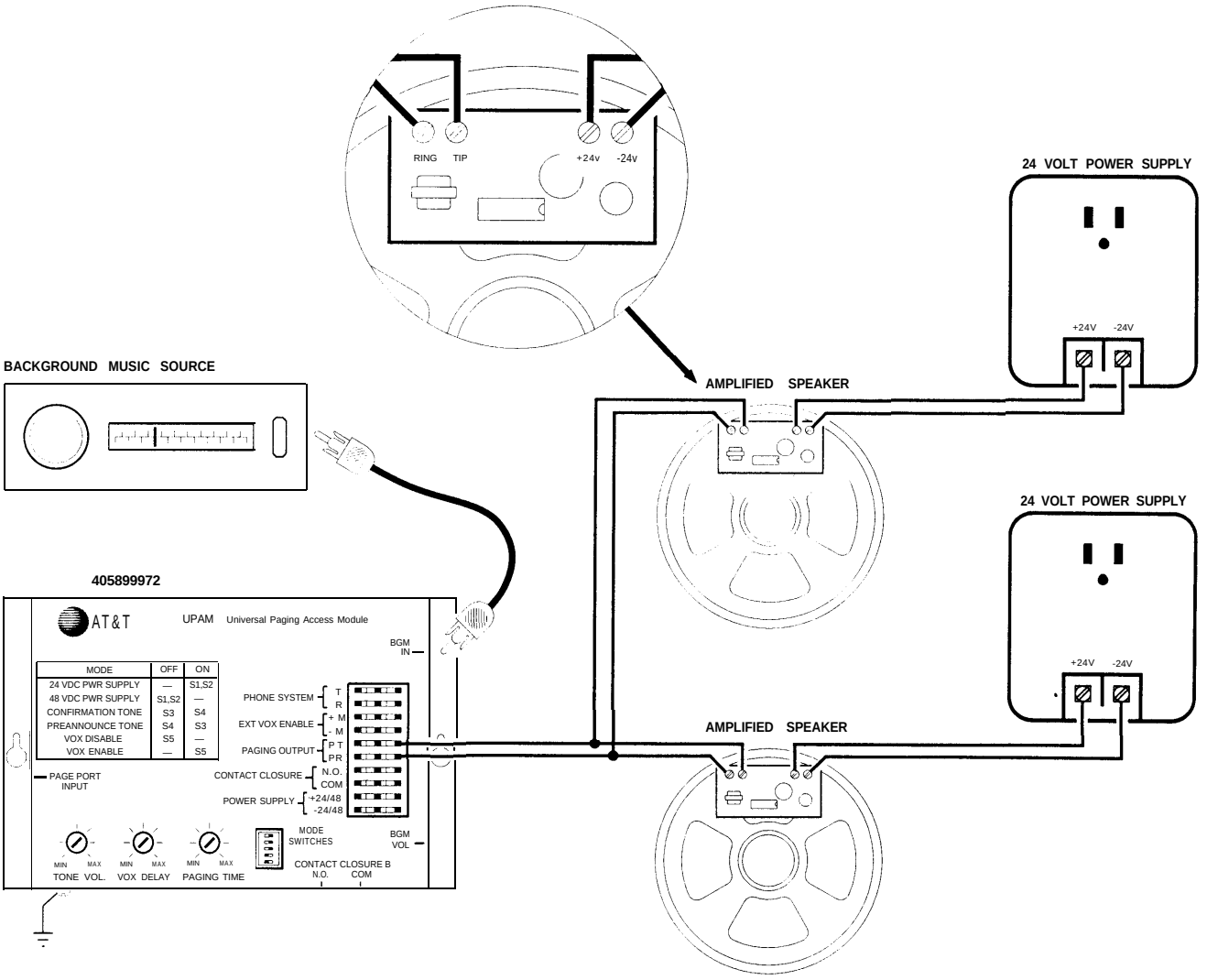


Typical connection to a MIC input

Connecting the UPAM to a self-amplified paging system

Connection to a self-amplified system usually consists of connecting the UPAM output to the line feeding the system's self-contained amplifiers. In some cases, connection may be made to a small buffer amplifier, which is used in some systems to provide an adequate signal level for large numbers of speakers.

1. Most self-amplified systems operate at low voltages and do not present a shock hazard. If possible, however, turn off the power supplies.
2. Connect **PT** terminal of the UPAM to the distribution line from the amplifier's "Tip.
3. Connect **PR** terminal of the UPAM to the distribution line from the amplifier's "Ring.
4. Connect any background music source to the **BGM IN** jack (RCA-type) on the UPAM.
5. Adjust the volume level. Self-amplified systems usually provide a volume control at each speaker.



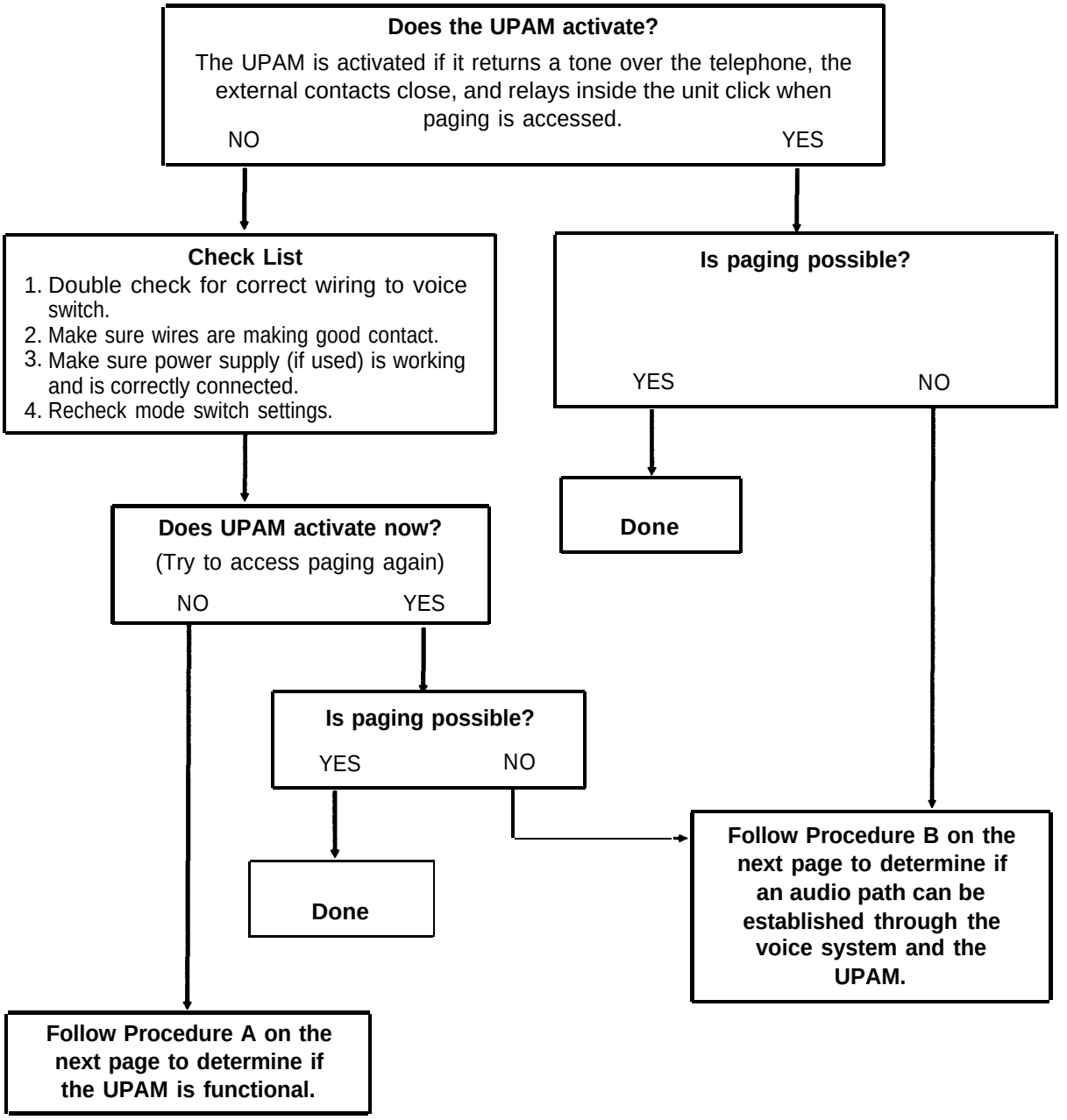
Typical connection to a self-amplified paging system

4. TROUBLESHOOTING

Functional Test Guide

Use the following guide to troubleshoot problems that arise after installation.

To start the test, pick up a telephone and call the UPAM.



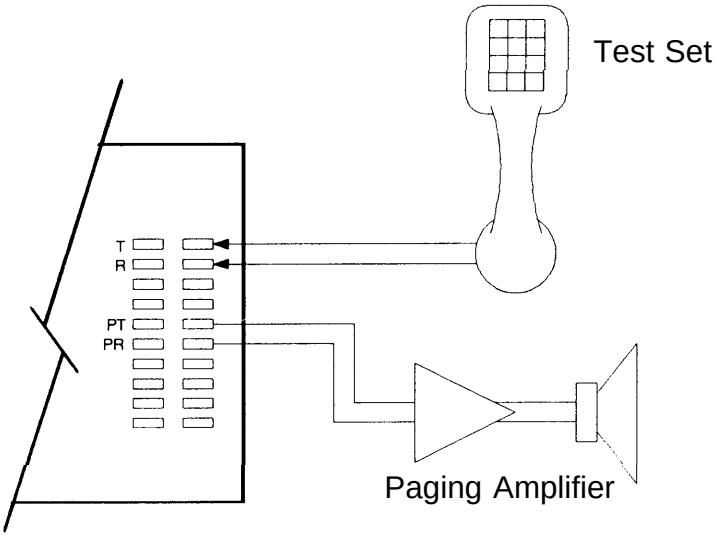
Procedure A

1. Disconnect the UPAM from the telephone equipment.
2. Confirm that the power supply is properly connected and that the mode switches are in the correct positions (make sure mode switches **S3** and **S4** are not in the same position).
3. Connect a test set to **T** & **R** terminals on UPAM (test set should be on hook).
4. Take test set off hook.

   If the UPAM activates and you can make a page, the UPAM and paging system are functioning correctly. The problem must be with the voice switch or interface wiring.

   If the UPAM does not activate, it may be defective. Swap out with another UPAM if possible.

   If the UPAM activates, but paging is not possible, perform Procedure B

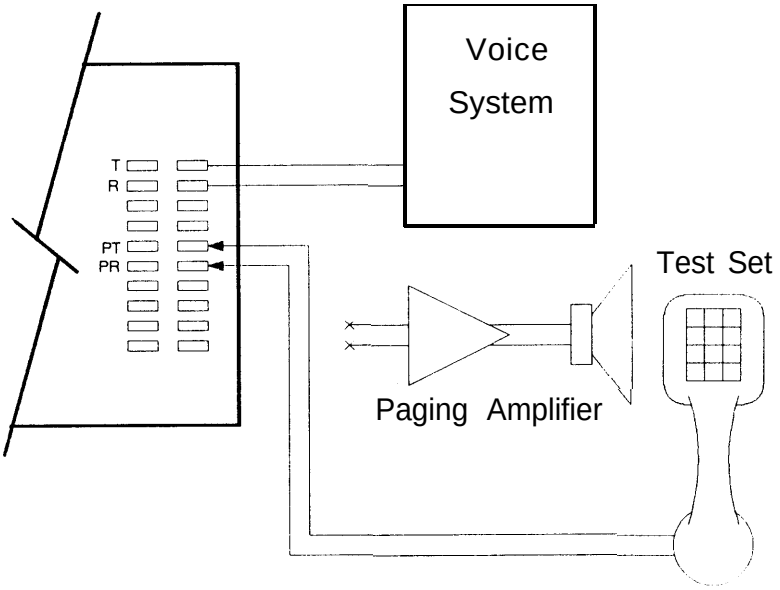


Procedure B

1. Disconnect the UPAM from the paging system.
2. Connect a test set to **PT** & **PR** terminals on UPAM.
3. Place the test set in the monitor position.
4. Make a page from a telephone system phone. Listen to the test set. Audio should be comfortably loud (approximately telephone level) and not distorted.

   If audio is loud and clear, the paging interface is working correctly. The problem must be in the paging system.

   If audio is not heard, the UPAM may be defective. Swap out with another UPAM if possible.



Troubleshooting Notes

Latching relays

Under certain circumstances, the installation procedure may jar the latching relays, causing a busy tone to be heard in the handset when you try to call the UPAM. When connected to a station port, the relays will reset when the default timer times out (max. 35 sec.) On ground start trunk ports, short terminals **T** & **R** together for 5 seconds to reset the relays.

Ring Delay

If the preannounce/confirmation tone can be heard over the paging system, but is shortened, or absent in the handset, it may be necessary to increase the length of ring before the UPAM answers. See Ring Delay in Section 2 for the procedure to follow to increase the delay.