



Universal Paging Access Module

Installation and Use Manual

Issue 2, June 2005

© 1999 Bogen Communications, Inc.

All rights reserved. 54-2003-01R2 0506

LUUPAM: SAP Material Code: 405891698

LUPS: SAP Material Code: 405742735

LUWMT1A: SAP Material Code: 405891680

LUATMC: SAP Material Code: 405891706

Select Code: 701-000-106

Notice

Every effort was made to ensure that the information in this guide was complete and accurate at the time of printing. However, information is subject to change.

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, then 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.

Important Safety Information

Always follow these basic safety precautions when installing and using the system:

1. Read and understand all instructions.
2. Follow all warnings and instructions marked on the product.
3. DO NOT block or cover the ventilation slots and openings. They prevent the product from overheating. DO NOT place the product in a separate enclosure or cabinet, unless proper ventilation is provided.

4. Never spill liquid on the product or drop objects into the ventilation slots and openings. Doing so may result in serious damage to the components.

5. Repair or service must be performed by a factory authorized repair facility.

6. The product is provided with a UL-CSA approved, 3-wire ground type plug. This is a safety feature. DO NOT defeat the safety purpose of the grounding type plug. DO NOT staple or otherwise attach the AC power supply cord to building surfaces.

7. DO NOT use the product near water or in a wet or damp place (such as a wet basement).

8. DO NOT use extension cords. The product must be installed within 6 feet of a grounded outlet receptacle.

9. DO NOT install telephone wiring during a lightning storm.

10. DO NOT install telephone jacks in a wet location unless the jack is specifically designed for wet locations.

11. Never touch uninsulated wires or terminals, unless the line has been disconnected at the paging or controller interface.

12. Use caution when installing or modifying paging or control lines.

Support Information

Paging systems integrated with small phone systems such as Merlin Legend and Partner are supported by the National Service Assistance Center (NSAC). The main number for the NSAC is 800-628-2888. Paging systems integrated with large switches such as the DEFINITY G3 are supported by the Technical Service Center (TSC). The main number for the TSC is 800-242-2121.

Domestic and International Approvals

UL Listed; FCC Part 68.

Contents

| | |
|---|-----------|
| 1. Product Identification..... | 5 |
| UPAM Universal Paging Access Module | 5 |
| Overview..... | 5 |
| Features | 6 |
| Components | 6 |
| 2. Connecting to the Telephone System..... | 7 |
| General Instructions | 7 |
| Trunk Port Connections - Loop Start | 9 |
| Trunk Port Connections - Ground Start | 11 |
| Station Port/Centrex Connections..... | 13 |
| Trunk Port Connections - Page Port..... | 17 |
| 3. Connecting to the Paging System..... | 19 |
| General Guidelines | 19 |
| Typical Installations | 19 |
| Connection to an Amplifier's Lo-Z/600-ohm Input | 19 |
| Connection to an Amplifier's Hi-Z AUX Input | 22 |
| Connection to an Amplifier's MIC Inputs | 24 |
| Connection to a Self-Amplified Paging System | 26 |
| 4. Troubleshooting | 28 |
| Functional Test Guide | 28 |
| Troubleshooting Notes | 30 |

This page left blank intentionally.

1. Product Identification

UPAM Universal Paging Access Module

The UPAM Universal Paging Access Module is designed to provide telephone access to most commonly available paging systems. It works with PBX loop, ground start trunk ports, and station 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 CO and Centrex. (see Figure 1)

Overview

The UPAM provides telephone and paging system connectors, BGM (background music) input and a modular page port connector, as well as mode setting switches and adjustment controls. The unit is compact, housed in a steel case and is designed to be mounted on a wall.

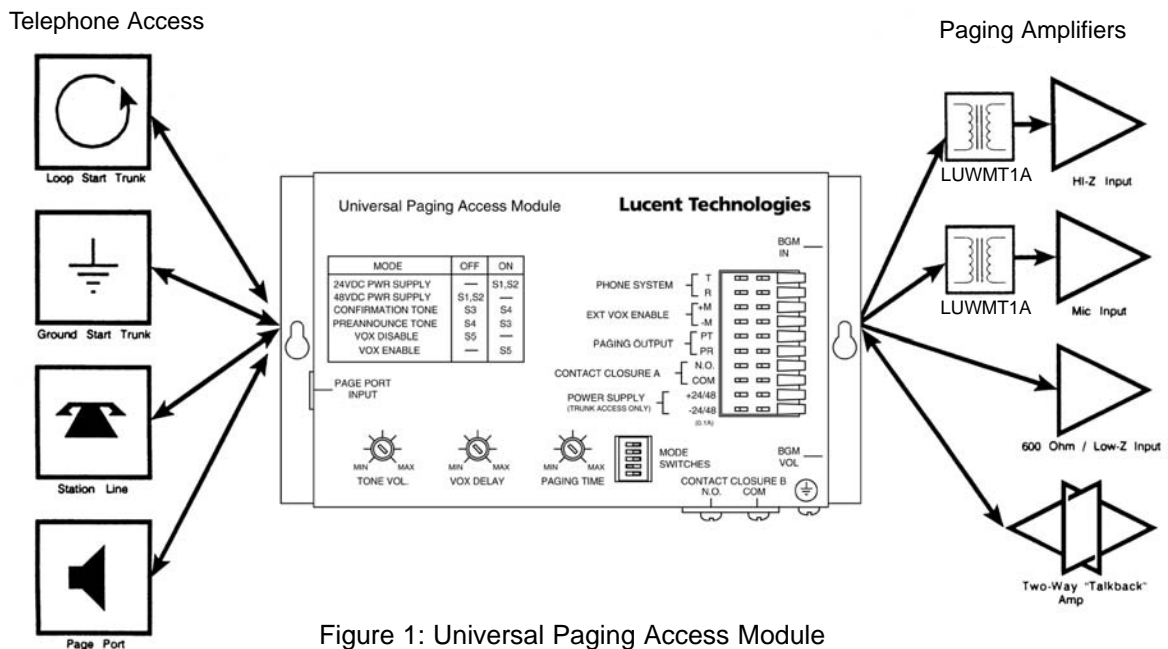


Figure 1: Universal Paging Access Module

Features

| | |
|---|---|
| 24V or 48V Operation (Trunk Port Operation) | MODE switches let you select 24V or 48V power supply. A 48-volt power supply is included to provide 48-volt trunk port operation. |
| Pre-announce and Confirmation Tones | A pre-announce 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 pre-announce 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 recorder 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 extended or inhibited; see Default Timer Settings section (page 16) for more information. |
| 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. |
| 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 set is located on the bottom side of the unit (terminal strip). |
| Direct Page Port Connection | An 8-conductor modular connectors cable is included for easy connection to modular page ports. |

Components

| <i>Item</i> | <i>Description</i> | <i>SAP Material Code</i> |
|----------------|---|--------------------------|
| LUUPAM | Universal Paging Access Module Kit | 405891698 |
| UPAM | Universal Paging Access Module | |
| LUPS | 48V Power Supply | 405742735 |
| LUWMT1A | Line-matching Transformer | 405891680 |
| LUATMC | Miscellaneous Connectors: 8-Conductor modular connector cable, RCA jack connector cable, RCA jack to phone jack adaptor, RCA jack to mini-jack adaptor. | 405891706 |

2. Connection to the Telephone System

General Instructions

Overview 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, or page port). Refer to Section 3 for connections to the paging system.

Required Tools You will need the following tools for installation:
standard flat-blade screwdriver; Phillips-head screwdriver;
wire cutters/stripper/crimper; and 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's page port) or near the paging equipment. To install the unit using the keyhole slots, install two screws (not included) with a 7-1/2" center, letting the screw heads protrude 1/4" 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 and page port equipment.

Punch Block Connections All wiring to the punch block must be 26AWG to conform to National Electric Code ANSI/NFPA No. 70-1987.

Grounding



The UPAM is designed with protection devices which are intended to shunt to ground any excess (surge) voltage appearing on the Tip and Ring 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 to the fork-terminal (included between the case and the screw on the lower corner of the module). An external-tooth lockwasher ensures a good connection between the case and the ground terminal. **To conform with National Electric Code ANSI/NFPA No. 70-1987, use 14AWG or larger wire with green/yellow insulation.**

General Instructions (cont'd)

- MODE Switches (on front of unit)** A set of 5 MODE switches (S1 through S5, see Figure 1 on page 5) is included to set the power supply voltage, confirmation or pre-announce 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 ballpoint pen. Set the switches as described in the Specific Instructions (pages 9 - 18).
- Power Supply Connections** No power supply is required when the UPAM is connected to a PABX station port (supplying analog ring voltage and approximately 48V of Talk Battery) or Centrex line. The included power 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 (pages 9 - 18) show the correct connections from the power supply to the UPAM module.
- Auxiliary Switch Bank
(On top of unit)** Certain options are available (described in Specific Instructions on pages 9 - 18) and are selected by setting DIP switches on the AUX switch bank, accessible through an opening in the top of the UPAM case. See Figure 5 (page 16) for its location on top of the unit.
- Paging System Connections** Illustrations showing connection of the UPAM to a typical paging system are included in Section 3.
- Troubleshooting** A Functional Test Guide in Section 4 isolates problem areas, if they arise, following installation.

Specific Instructions

Trunk Port Connections - Loop Start

NOTE: Controls for VOX DELAY, PAGING TIME, MODE Switch S5 and AUX switches S1, S2, S3, and S5 are not operable in this mode.

Procedure

1. Mount and ground the UPAM as described in the General Instructions (pages 7-8).
2. Set MODE switches S1 and S2 to OFF position for use with the 48-volt power supply.
3. Set MODE switches S3 and S4 for Pre-announce or Confirmation tone (as desired).
Note: One of these modes must be selected for UPAM to operate correctly.
4. Set AUX switch S4 to ON position (located on top edge of unit - see Figure 5 on page 16).
5. Connect "Tip" of trunk port to T terminal on UPAM (see Figure 2 on next page).
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. Connect the N.O. and COM terminals to the control pair of the amplifier, if required. Also, connect any background music source to the BGM IN jack on the UPAM.
8. Connect power supply + and - terminals to the +24V/48V and -24V/48V terminals on UPAM, respectively. Plug the power supply into a grounded 110V AC wall outlet.
9. 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 the UPAM BGM VOL control.
11. Call the system and adjust the volume of the pre-announce/confirmation tone, using the UPAM TONE VOL control.

Trunk Port Connections - Loop Start (cont'd)

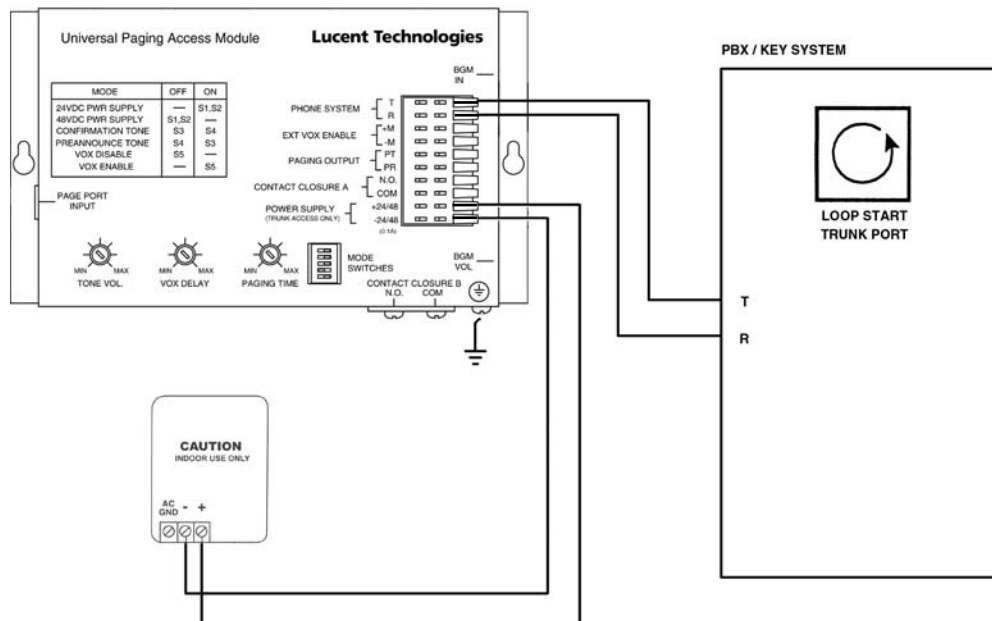


Figure 2: Trunk Port Connection: Loop Start Trunk Port

Specific Instructions

Trunk Port Connections - Ground Start

NOTE: Controls for VOX DELAY, PAGING TIME, MODE Switch S5 and AUX switches S1, S2, S3, and S5 are not operable in this mode.

Procedure

1. Mount and ground the UPAM as described in General Instructions (pages 7 - 8).
2. Set MODE switches S1 and S2 to OFF position for use with the 48-volt power supply (or ON position if a 24-volt supply is used).
3. Set MODE switch S3 to ON position and S4 to OFF position.

NOTE: Only pre-announce tone is available for ground start trunk applications.

4. Set AUX switch S4 to ON position (located on top edge of unit - see Figure 5 on page 16).
5. Connect a jumper wire between N.O. and T terminals on UPAM.
6. Connect "Tip" of trunk port to COM terminal on UPAM.
7. Connect "Ring" of trunk port to R terminal on UPAM.
8. Connect PT and PR terminals on UPAM to the paging system, as shown in Section 3. Connect the N.O. and COM terminals to the control pair of the amplifier, if required. Also, connect any background music source to the BGM IN jack on the UPAM.

Trunk Port Connections - Ground Start (cont'd)

9. Connect UPAM +24/48V terminal to PBX ground.

NOTE: Usually the AC GND terminal on the included 48-volt power supply can be used to provide this connection.

10. Connect power supply + and - terminals to +24V/48V and -24V/48V terminals on UPAM, respectively. Plug the power supply into a grounded 110V AC wall outlet.
11. Call the system and adjust the volume of the page using the paging system's amplifier volume control.
12. Hang up and adjust the background music level using UPAM BGM VOL control.
13. Call the system and adjust the volume of the pre-announce tone using UPAM TONE VOL control.

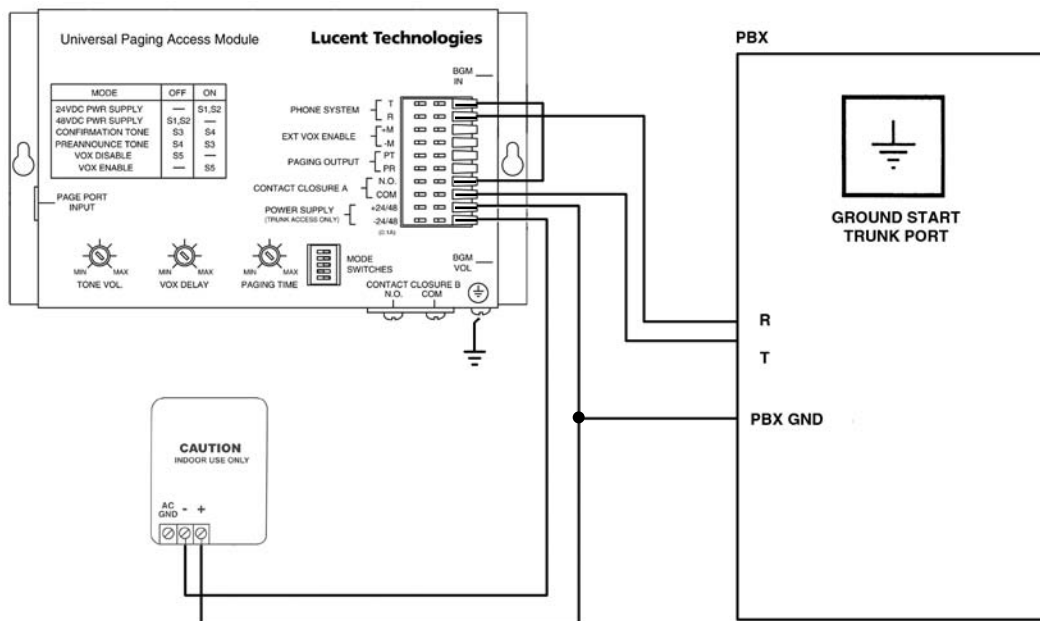


Figure 3. Trunk Port Connection: Ground Start Trunk Port

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 Inhibit Default Timer and Changing Default Timer Range on page 16.) The voice-operated (VOX) disconnect feature has the ability to pre-empt 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.

IMPORTANT *No power supply is used for Station Port/Centrex operation. Mode switches S1, S2 and AUX are not operable.*

Procedure

1. Mount and ground the UPAM as described in General Instructions (pages 7 - 8).
2. Set MODE switches S3 and S4 for Pre-announce or Confirmation tone (as desired).

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

3. Set MODE switch S5 in the OFF position.
4. Set AUX switches S3, S4 and S5 to ON position (see Figure 5 on page 16).

Station Port / Centrex Connections (cont'd)

5. Connect "Tip" of station port to T terminal of UPAM (see Figure 4 on next page).
6. Connect "Ring" of station port to R terminal of UPAM.
7. Connect PT and PR terminals on UPAM to the paging system, as shown in Section 3. Connect the N.O. and COM terminals to the control pair of the amplifier, if required. Also, connect any background music source to the BGM IN jack on the UPAM.
8. 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.
9. Call the system and set the page volume 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 pre-announce/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 (page 16).
12. If the VOX disconnect is to be used, adjust the VOX delay. To do this, make sure mode switch #5 is in the ON position and proceed as follows:
 - Rotate VOX DELAY control approximately 1/2 way.
 - Call the system and, after the pre-announce 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 not sufficiently long to allow for pauses in phrases without disconnecting, readjust VOX DELAY and repeat this 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.

Station Port / Centrex Connections (cont'd)

Important Centrex Settings

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 set AUX switch bank switches S4 and S5 in their OFF positions (AUX switches are located on top edge of unit - see Figure 5 on page 16) if the UPAM exhibits any of the following symptoms during station mode operation.

Symptoms

1. UPAM disconnects from the line immediately after answering.
2. UPAM answers and remains connected to the 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.

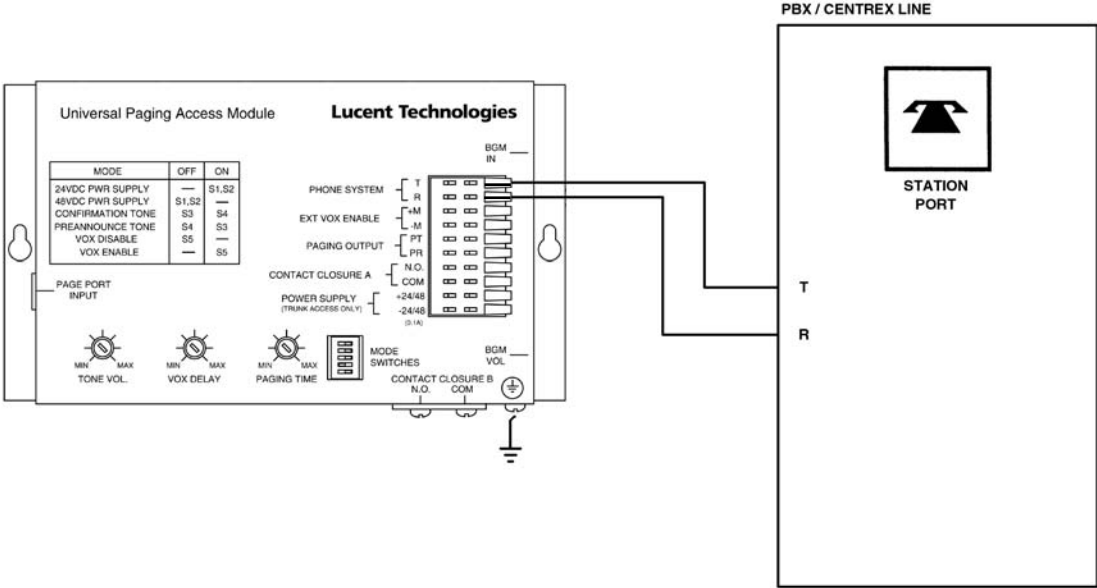


Figure 4. Station Port / Centrex Connections

Station Port / Centrex Connections (cont'd)

Inhibit Default Timer

An option is available to inhibit the default timer. Do not inhibit the timer if AUX switches S4 and S5 are in the OFF position (outlined in Important Centrex Settings on page 15) and the VOX DELAY timer has been disabled (MODE switch S5 is OFF). This situation may cause the UPAM to remain off-hook indefinitely. Also, **do not inhibit both the default and VOX timers unless the station line has CPC capability.**

To inhibit the default timer, set AUX switch S2 in the ON position. (*NOTE: The VOX and CPC disconnect methods are still available when the default timer is inhibited.*)

Changing Default Timer Range

To change the timing of the default timer, set AUX switch S1 to the ON position (make sure that AUX switch S2 is OFF). This switch position will change the default time to approximately 25 seconds minimum to 2 minutes 30 seconds maximum.

Ring Delay

Setting AUX switch S3 in the OFF position 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 pre-announce or confirmation tone will be heard. Central office or Centrex lines, which may be slower than other switching equipment, may require this change.

Table 1. AUX Switch Settings

| AUX Switch Bank | OFF | ON |
|--------------------------------------|--------|--------|
| Default Timer Enable | | |
| 6 sec. - 35 sec. | S1, S2 | — |
| 25 sec. - 2.5 min. | S2 | S1 |
| Default Timer Disable | — | S2 |
| Ring Delay Enable | S3 | — |
| Ring Delay Disable | — | S3 |
| Page Port, Loop/Gnd. Start Operation | — | S4 |
| Std. Station Port Operations | | S4, S5 |
| Centrex/OSI Operation | S4, S5 | |

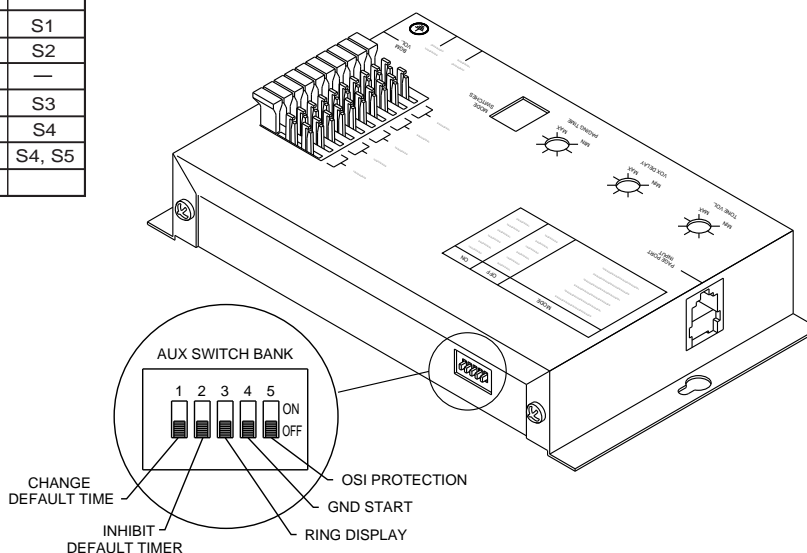


Figure 5. AUX Switch Bank Location (top edge of unit)

Specific Instructions

Trunk Port Connections - Page Port

NOTE: Controls for VOX DELAY, PAGING TIME, MODE Switch S5 and AUX switches S1, S2, S3, and S5 are not operable in this mode.

Procedure

1. Mount and ground the UPAM as described in the General Instructions (pages 7 - 8).
2. Set MODE switches S1 and S2 to 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 Pre-announce or Confirmation tone (as desired).
Note: One of these modes must be selected for UPAM to operate correctly.
4. Set AUX switch S4 to ON position.
5. Plug the 8-conductor RJ45 modular cable (supplied) into the modular PAGE PORT INPUT jack on the side of the UPAM. **Do not insert RJ11 plugs.**

NOTE: 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 center 2 conductors of the page port jack supply a dry audio signal and the two conductors flanking them provide a normally open contact closure.

6. Plug the other end of the 8-conductor modular cable into the modular page port jack of the telephone switch.

NOTE: When connecting to a non-modular type of page port, cut off one end of the 8-conductor modular cable, strip it, and connect the wires as shown in Figure 6. The color arrangement of wires in the cable may not be standard among cables. Use the plug detail diagram on page 18 to guide you in determining the correct wire colors for connections to the page port.

Trunk Port Connections - Page Port (cont'd)

7. Connect PT and PR terminals and contact closure on UPAM to the paging system, as shown in Section 3. Connect the N.O. and COM terminals to the control pair of the amplifier, if required. Also, connect any background music source to the BGM IN jack on the UPAM.
8. Connect power supply + and - terminals to the +24V/48V and -24V/48V terminals on UPAM, respectively. Plug the power supply into a grounded 110V AC wall outlet.
9. 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 the UPAM BGM VOL control.
11. Call the system and adjust the volume of the pre-announce/confirmation tone, using the UPAM TONE VOL control.

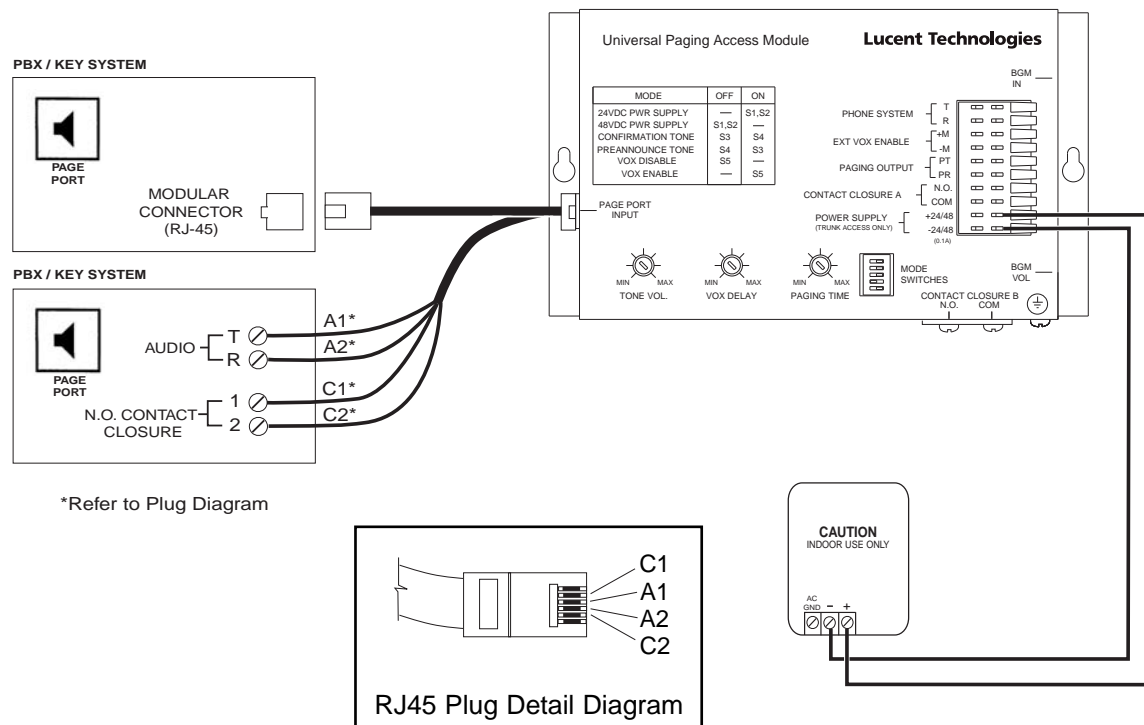


Figure 6. Trunk Port Connections - Page Port

3. Connection to the Paging System

General Guidelines

The UPAM is designed to connect to typical central-amplified and self-amplified paging and sound systems. Central-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 manufacturers, 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 LUWMT1A) included with the UPAM is used. In self-amplified systems, connection can be made to the individual amplifiers.

The illustrations in this section provide basic hookup information to typical equipment. Procedures may vary.

NOTE: Be certain that all paging equipment is powered down or unplugged before making any connections.

Typical Installation: 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 outlined may vary. Figure 7 shows a typical installation.

Connecting the UPAM to an Amplifier's Lo-Z/600-ohm Input (cont'd)

1. Make sure that the amplifier is turned off or unplugged.
2. Connect one side of the amplifier's input to the UPAM PT terminal.
3. Connect the other side of the amplifier's input to the UPAM PR terminal.
4. Connect any background music source to the BGM IN jack (RCA-type) on UPAM.
5. Connect the N.O. and COM terminals to the control pair of the amplifier, if required.

CAUTION *If the amplifier's input is unbalanced (one side of the input terminal 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 LUWMT1A transformer can be used to "float" the unbalanced input and eliminate this problem.)*

6. Connect speaker loads to amplifier output terminals, if necessary.

NOTE: Use 22 AWG shielded, twisted pair on all wire runs (SAP Material Code 401882956).

7. Turn amplifier volume control counterclockwise to minimum.
8. Turn amplifier on.
9. Set amplifier level (see Specific Instructions for the particular telephone access mode being used).

Connecting the UPAM to an Amplifier's Lo-Z/600-ohm Input (cont'd)

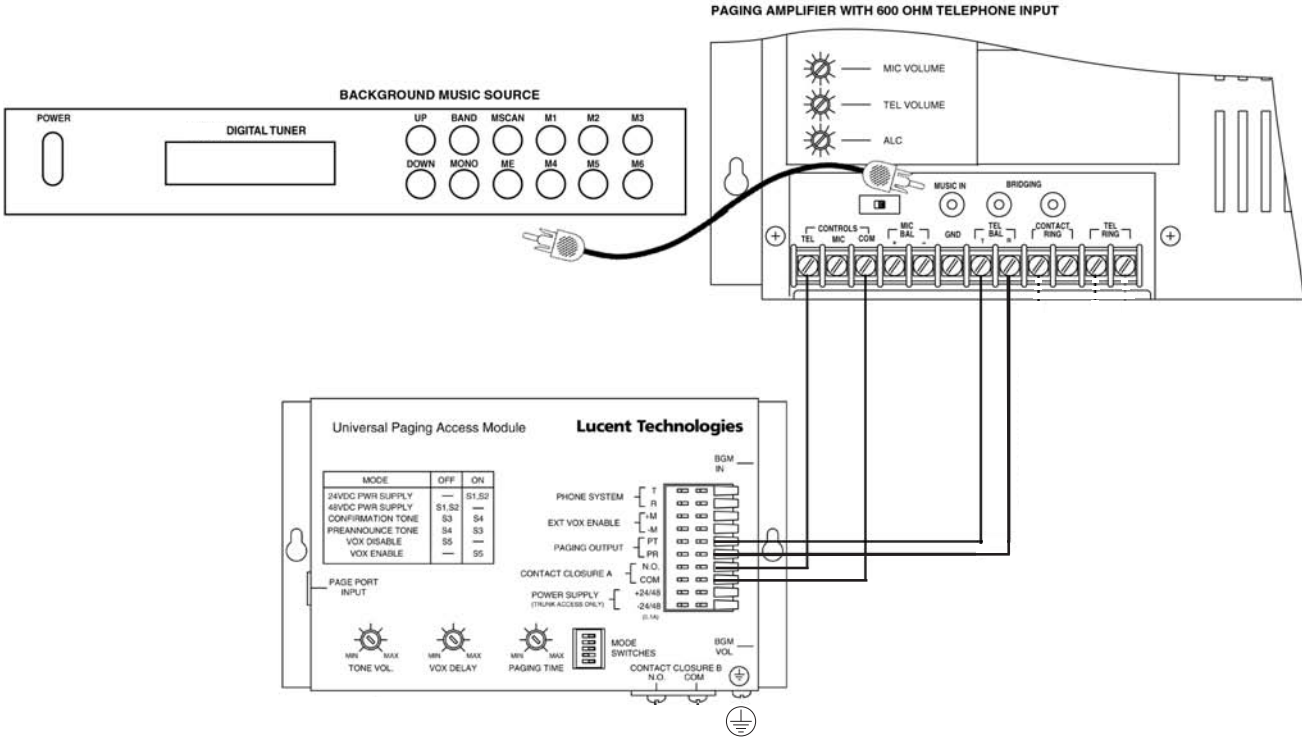


Figure 7. Typical Connection to a Lo-Z/600-ohm Input

Typical Installation: 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 LUWMT1A transformer (included) to match the UPAM output to the amplifier input (see Figure 8). Make sure the LUWMT1A is set for line level operation (see the instructions included with the transformer for connection details).

1. Make sure that the amplifier is turned off or unplugged.
2. Connect PT terminal of the UPAM to one of the outside screw terminals on the LUWMT1A.
3. Connect PR terminal of the UPAM to the other outside screw terminal on the LUWMT1A.
4. Plug the RCA-type connector from the LUWMT1A transformer into the amplifier's Hi-Z input. Adapters 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 UPAM.
6. Connect speaker loads to the amplifier's output terminals, if necessary.
7. Turn amplifier volume control counterclockwise to minimum.
8. Turn amplifier on.
9. Set amplifier level (see Specific Instructions for the particular telephone access mode being used).

Connecting the UPAM to an Amplifier's Hi-Z AUX Input (cont'd)

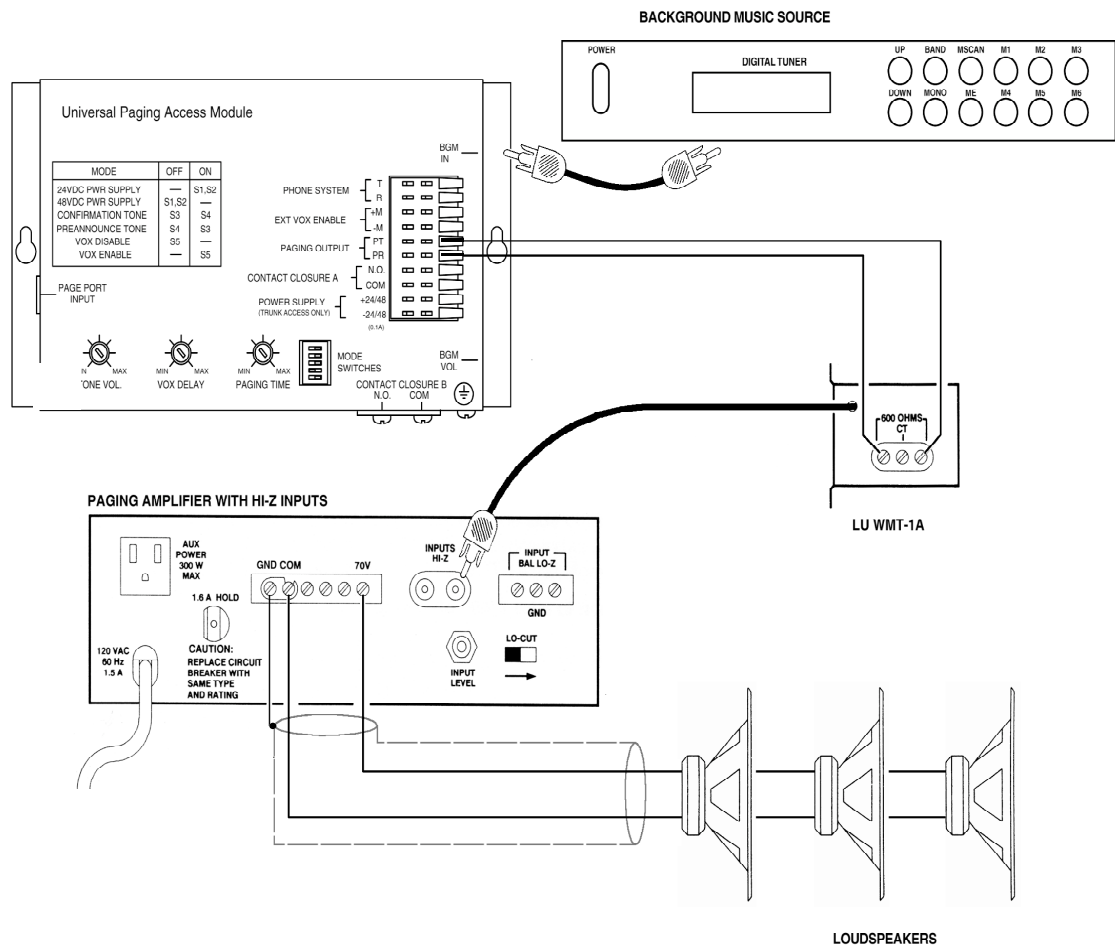


Figure 8. Typical Connection to a Hi-Z Input

Typical Installation: Connecting the UPAM to an Amplifier's MIC Input

Due to the higher sensitivity of Hi-Z microphone inputs, they should be used only as a last resort. Both Hi-Z and Lo-Z inputs can be accommodated. 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 LUWMT1A transformer (see Figure 9). This transformer includes a microphone input modification to provide the proper attenuation.

1. Make sure the amplifier is turned off or unplugged. Modify the LUWMT1A transformer by moving the push-on lug to the center terminal on the terminal strip (see inset diagram in Figure 9 for proper jumper placement).
2. Connect PT terminal of the UPAM to one of the outside screw terminals on the LUWMT1A transformer.
3. Connect PR terminal of UPAM to the other outside screw terminal on the LUWMT1A.
4. Connect a suitable adapter to the RCA-type plug on the LUWMT1A (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 counterclockwise to minimum.
8. Turn amplifier on.
9. Set amplifier level (see Specific Instructions on pages 9 - 18 for the particular telephone access mode being used).

Connecting the UPAM to an Amplifier's MIC Input (cont'd)

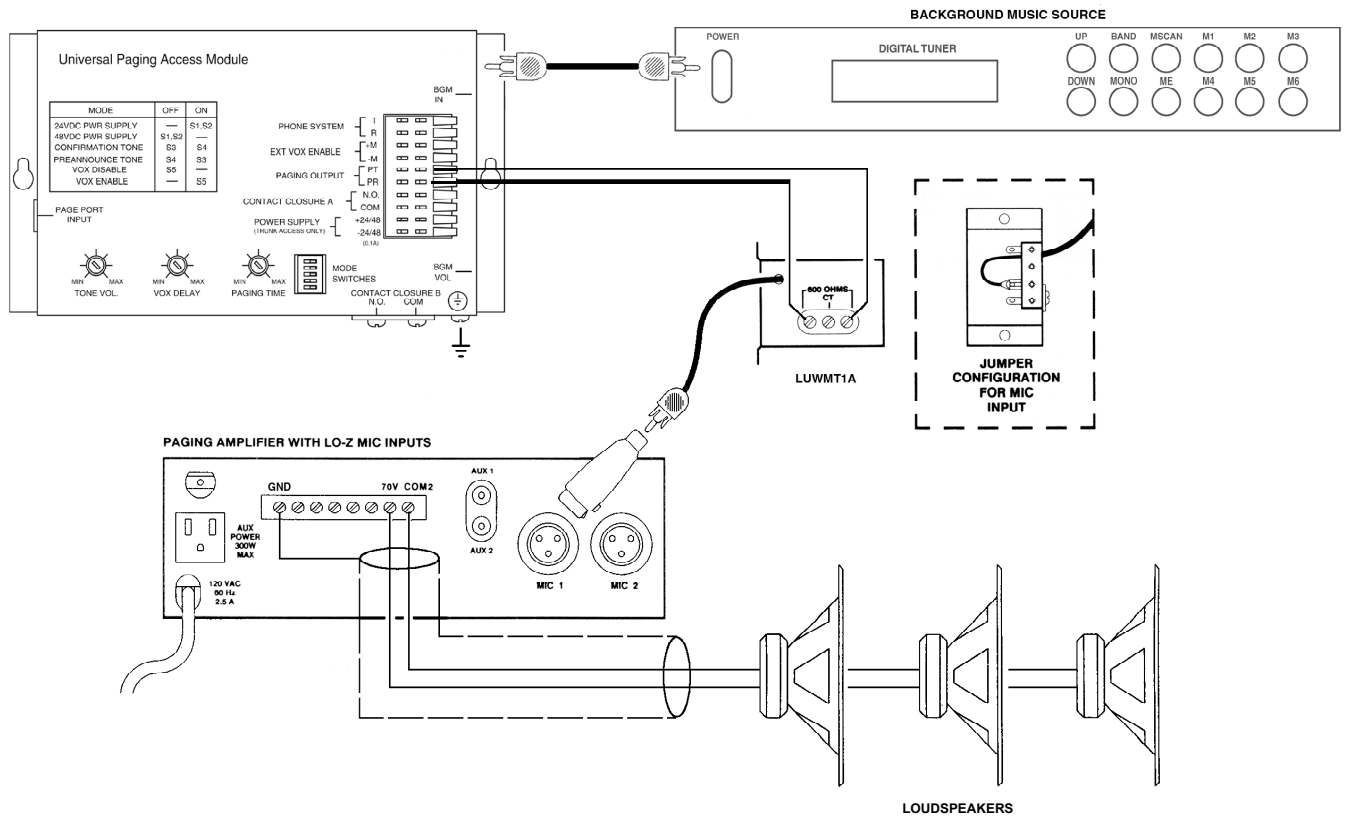


Figure 9. Typical Connection to a MIC Input

Typical Installation: 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 individual amplifiers. In some cases, connection can be made to a small buffer amplifier, which is used in some systems to provide an adequate signal level for multiple 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 amplified speaker's "Tip" lead.
3. Connect PR terminal of the UPAM to the distribution line from the amplified speaker's "Ring" lead.
4. Connect any background music source to the BGM jack (RCA-type) on the UPAM.
5. Adjust the volume level. Self-amplified systems usually provide a volume control at each speaker.

Connecting the UPAM to a Self-Amplified Paging System (cont'd)

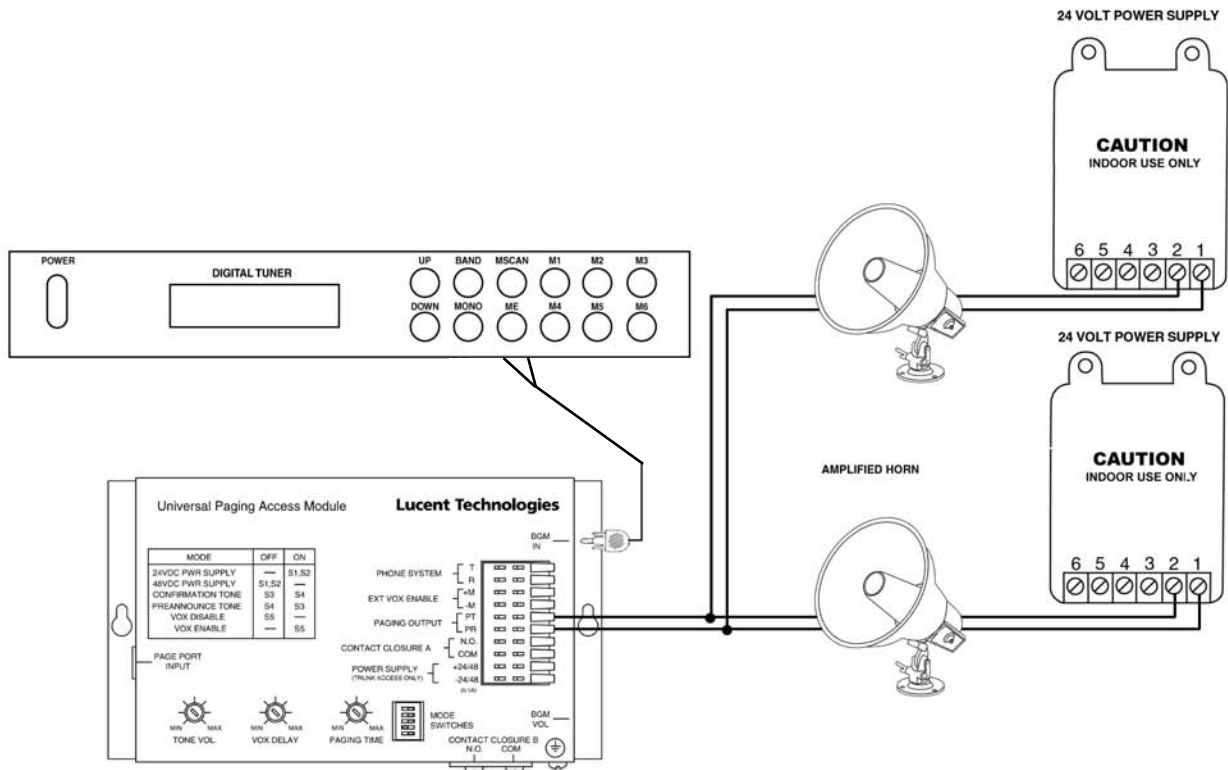
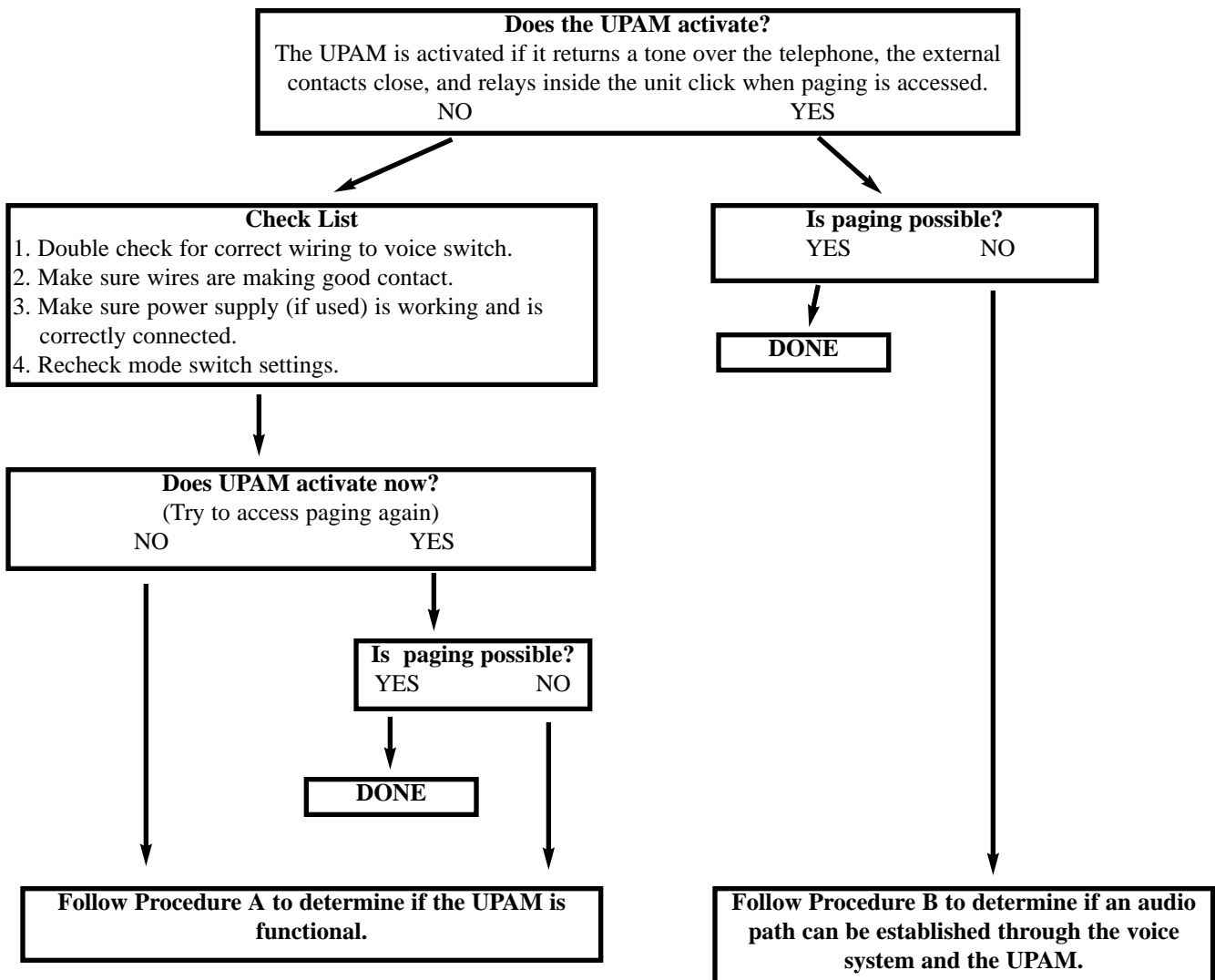


Figure 10. Typical Connection to a Self-Amplified Paging System

4. Troubleshooting

Functional Test Guide

Use the following chart to verify proper operation 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). *Note: If in station mode, connect the power supply.*
3. Connect a test set to T & R terminals on UPAM (test set should be on hook). See Figure 11.
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, contact Technical Support.

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

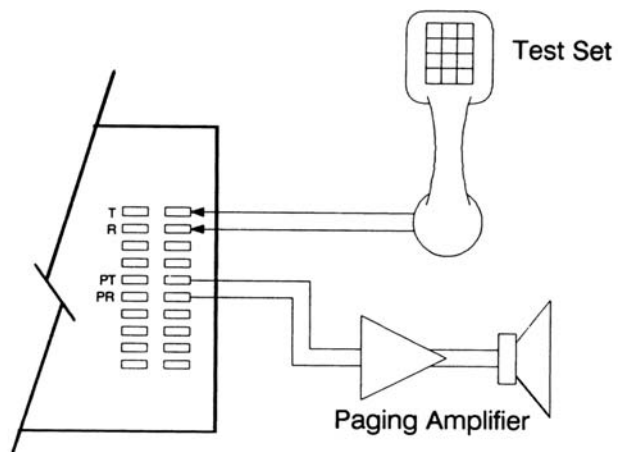


Figure 11. Test Procedure A

Troubleshooting (cont'd)

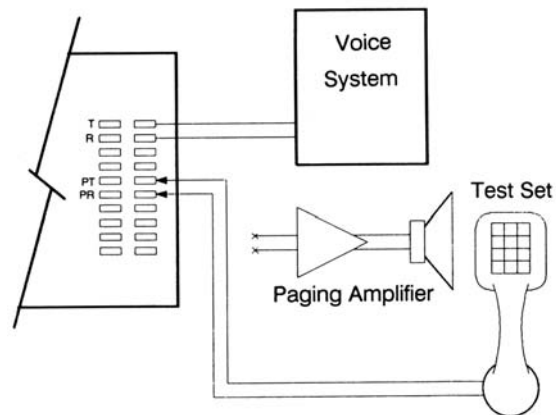
Procedure B

1. Disconnect the UPAM from the paging system.
2. Connect a test set to PT & PR terminals on UPAM (see Figure 12).
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, contact Technical Support.

Figure 12. Test Procedure B



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 pre-announce/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.