AT&T

PagePac® 20 Voice Paging System
ZoneMate™ 3 Service Manual
MERLIN™ CS Connection And Operation

ZoneMate™ 3
Service Manual
For
PagePac® 20
Voice Paging System
and
Merlin* Communications System
Models 1030 and 3070

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1. Introduction

Overview

ZoneMate™ 3 is an optional module of the PagePac® 20 voice paging system, and is used with MERLIN CS Models 1030 and 3070.

ZoneMate 3 connects to the PowerMate™ module and provides three separate paging zones, all-zone paging (paging into all three zones at the same time), and a night bell tone. ZoneMate 3 may be wall-mounted or placed on a flat surface within 7 feet of the MERLIN* CS Control Unit. Talk-back may be provided by adding the optional TalkMate module to the system. The physical characteristics of ZoneMate 3, PowerMate, and TalkMate are shown in Figure 1-1 and also listed in Table 1-A.
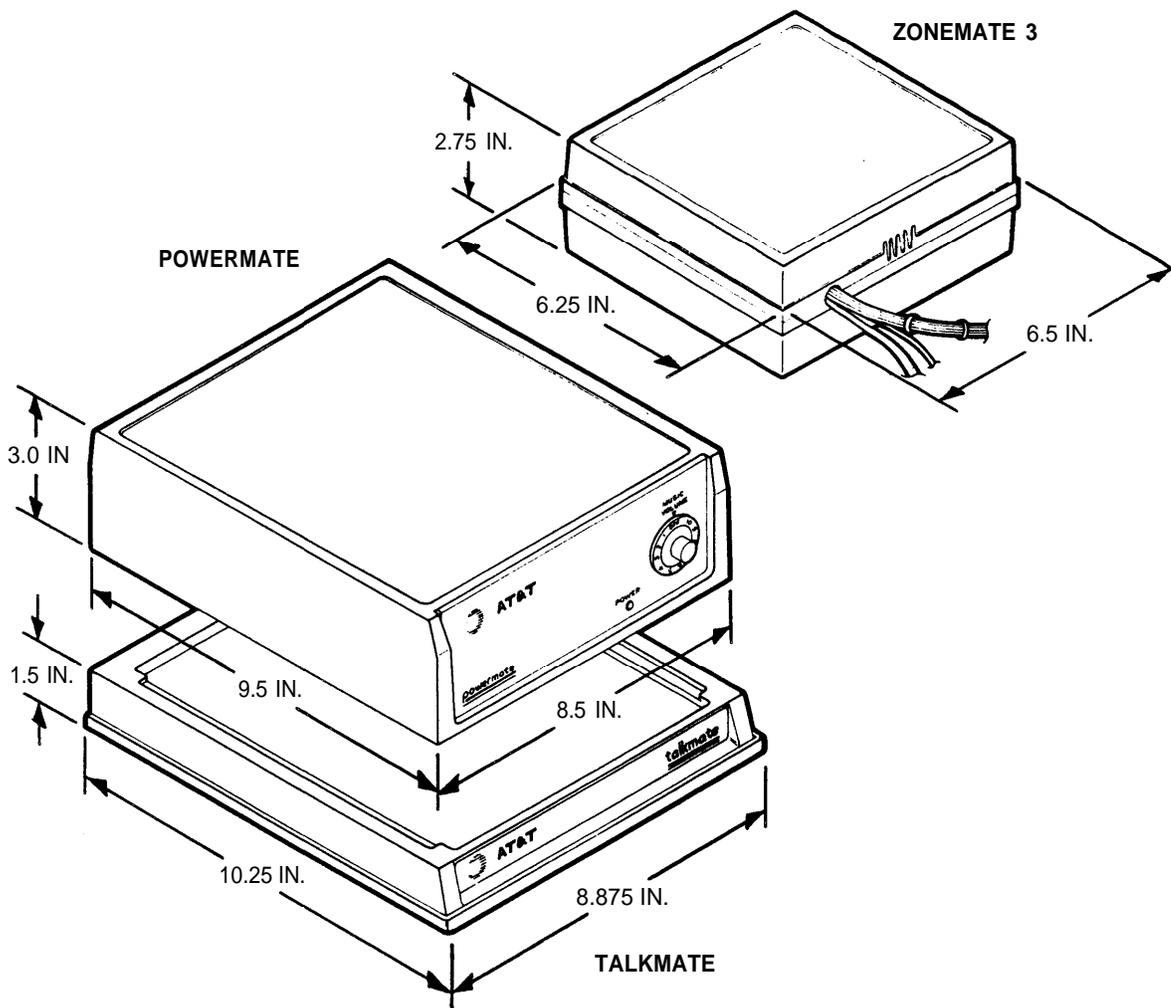

Figure 1-1. ZoneMate 3, TalkMate, and PowerMate

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A paging zone is a specific area in which a page is heard. For example, the showroom of a new car dealership could be zone 1, the service area zone 2 and the parts department zone 3. ZoneMate 3 makes it possible to page into a particular zone or into all three zones at the same time. The total number of speakers in all zones must not exceed the maximum output load of the PowerMate. Refer to Table 2-A, Speaker Capacity Calculation in the PowerMate Service Manual. Use the table to calculate the load in each zone, then add the values for all zones. The total load must not exceed 300 points.

When the night bell feature of the MERLIN CS is active, ZoneMate 3 provides a night bell tone which is heard in the paging speakers while an incoming call is ringing. The call may be picked up by any telephone in the system.

Table 1-A. Physical Characteristics

Module	Specification
PowerMate	
Width	8.5 inches (21.59 cm)
Length	9.5 inches (24.13 cm)
Height	3.0 inches (7.62 cm)
Weight	6.5 pounds (2.95 kg)
TalkMate	
Width	8.875 inches (22.54 cm)
Length	10.25 inches (26.03 cm)
Height	1.5 inches (3.81 cm)
Weight	4.0 pounds (1.81 kg)
ZoneMate 3	
Width	6.5 inches (16.51 cm)
Length	6.25 inches (15.87 cm)
Height	2.75 inches (6.98 cm)
Weight	1.0 pound (0.4536 kg)

PowerMate

PowerMate is a compact 20-watt, telephone-integrated loudspeaker paging system designed to be placed on a desk or shelf. This basic system provides one-way paging into a single paging zone. For single-zone paging, the PowerMate is connected directly to the MERLIN CS 183 Services Module (Figure 1-2). For more information on PowerMate, refer to the manual supplied with the module.

MusicMate™

Background music may be provided to the paging system by adding MusicMate™ or other appropriate source of music. For more
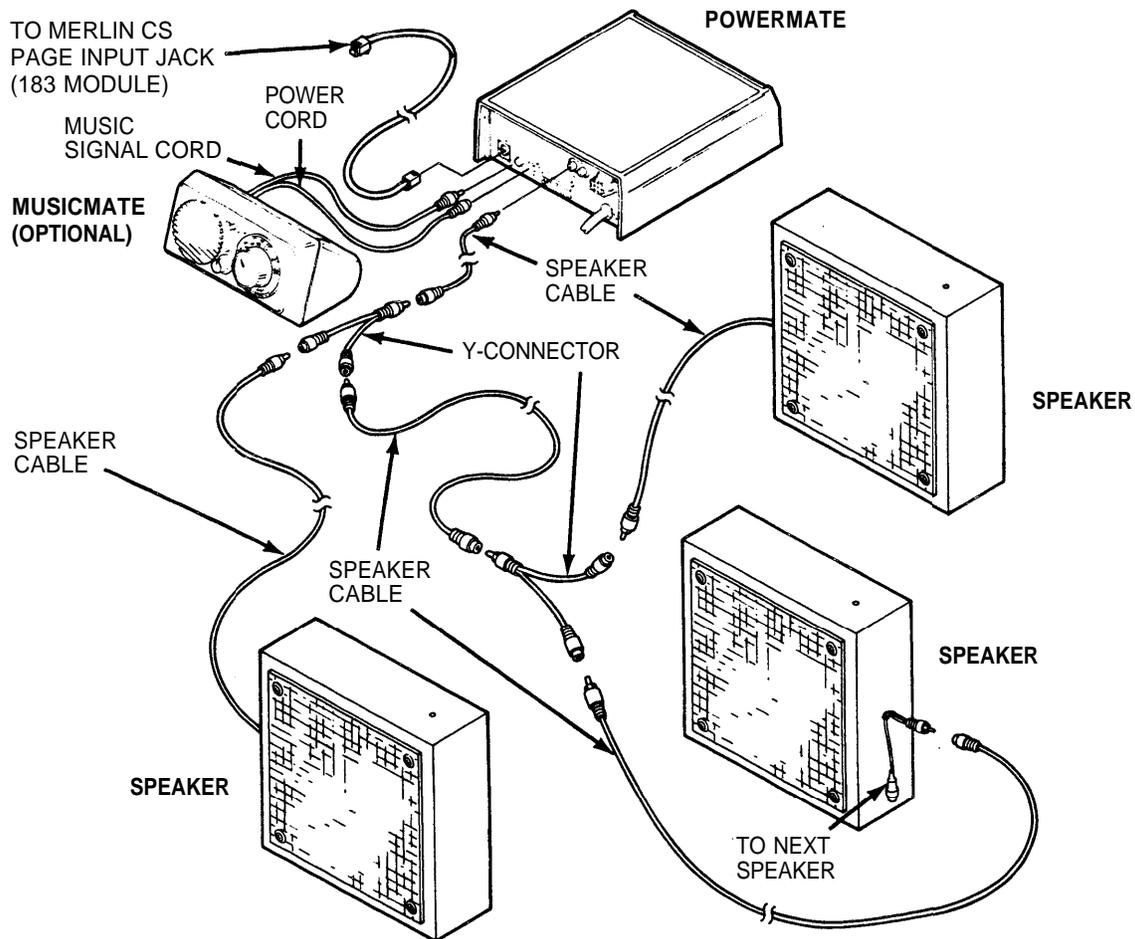
Note: MusicMate provides music only to system speakers.

Figure 1-2. PowerMate Paging System Connected Directly to MERLIN CS

information on MusicMate, refer to the manual provided with the
modules.

TalkMate™

The optional TalkMate module is designed to fit under the Power-
Mate (Figure 1-1) and provides talk-back when added to the system.
Talk-back allows people in the paging area to respond by using the
speakers as microphones.

Talk-back may be selected by switches in ZoneMate 3 for an in-
dividual zone, any two zones, or in all three zones. However, talk-back
may be used in zone 3 only if voice coil speakers are used.

For more information on TalkMate, refer to the manual supplied
with the module.

Speakers

Voice Coil and 70.7V Speakers

When used alone, PowerMate provides voice coil and 70.7V outputs to the system speakers. Both outputs can be used at the same time, provided each is connected to the proper type of speakers.

The PagePac 20 system is supplied with 45-ohm voice coil speakers. The transformer-equipped 70.7V speakers are generally used when more speaker power is required.

The ZoneMate 3 paging system requires voice coil speakers in zones 1 and 2, but zone 3 can be used with either voice coil or 70.7V speakers. The V.C./70V switch located inside ZoneMate 3 selects either voice coil or 70.7V output to match the speaker type being used.

Checklist of Required Items

Before proceeding to the Installation section, verify that the following items are available:

- ZoneMate 3
- MERLIN CS Interconnect Cord and Installation Instructions (shipped separately)
- MERLIN CS Night Bell Cord (optional, shipped separately)

The following items if MusicMate is to be used to supply music to speakers and host system:

- MusicMate
- Extra 24-foot section of speaker cable
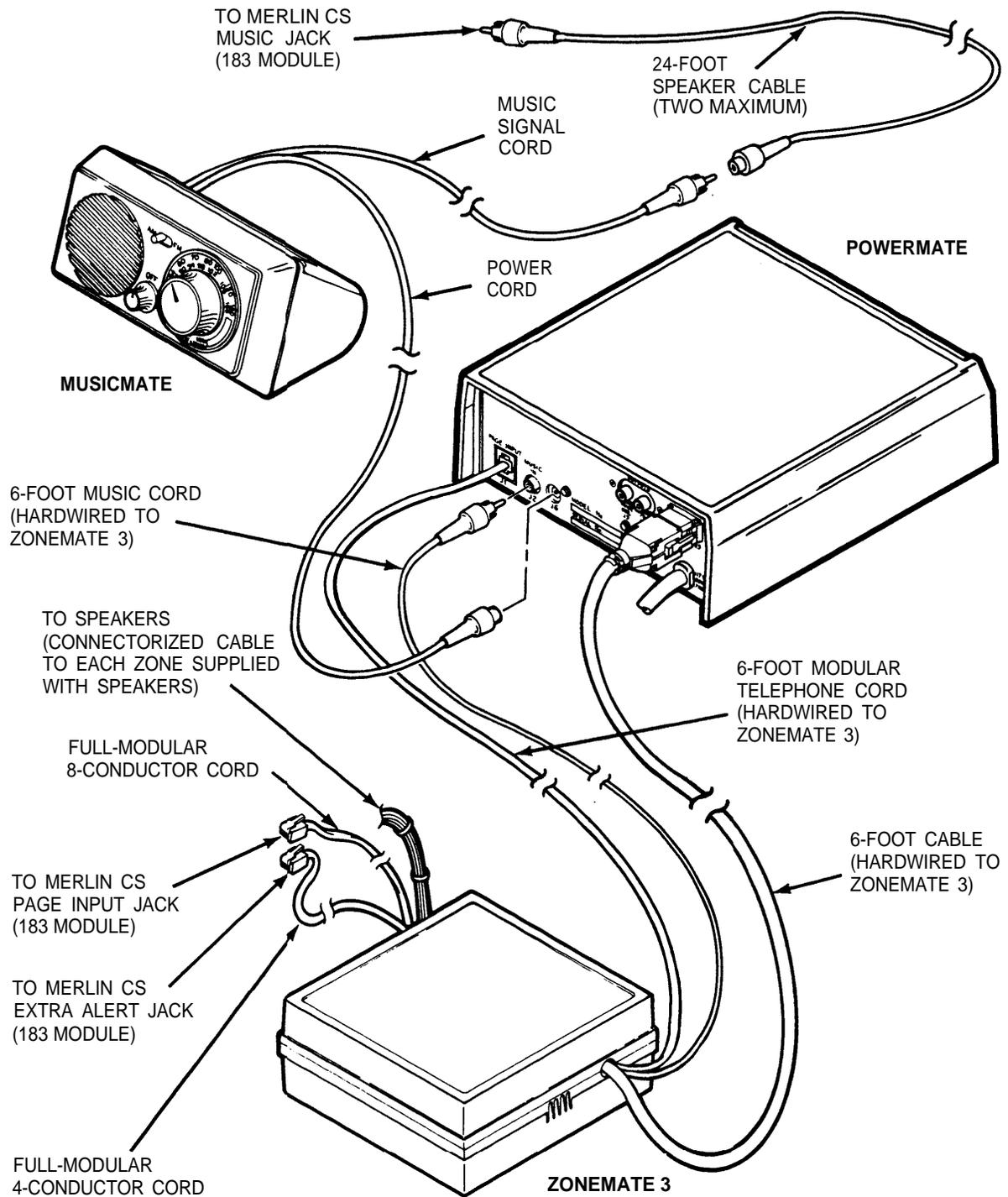
2. Installation

Overview

This section contains a description of the paging system jacks, cables, terminals, and controls, and installation and connection instructions.

System Jacks, Cables, and Terminals

The jacks, cables, and terminals used to make connections to the PowerMate, ZoneMate 3, and system speakers (Figure 2-1) are described in the paragraphs that follow.

Zonemate 3

- **Modular Telephone Cord—**The hardwired 6-foot cord carries the tip, ring, and control leads and plugs into PAGE INPUT jack J1 (Figure 2-1) on PowerMate or PAGE INPUT jack J101 on TalkMate (Figure 2-2).

- **9-Conductor Cable—**The hardwired 6-foot cable carries power and audio circuits and plugs into jack J3 on PowerMate (Figure 2-1) or jack J301 on TalkMate (Figure 2-2).

- **Music Cord—**The hardwired 6-foot cord carries the background music signal from the host system and plugs into MUSIC IN jack J2 on PowerMate (Figure 2-1).

- **ZONE 1 thru 3 Speaker Jacks—**ZoneMate 3 has one jack for each of the 3 zones (Figure 2-3). Use connectorized speaker cable supplied with speakers to make connection between ZONE jack and speaker(s) in the zone. Refer to manual supplied with PowerMate for additional information on speaker installation.

- **MERLIN INTERCONN. jack J4—**A full-modular, 8-conductor cord plugs into jack J4 (Figure 2-3) and PAGE jack on MERLIN CS 183 Services Module.

- **NIGHT BELL INPUT jack J5—**A full-modular, 4-conductor cord plugs into jack J5 (Figure 2-3) and EXTRA ALERT jack on MERLIN CS 183 Services Module. The night bell input responds to an AC or DC voltage signal (105 VDC maximum or 130 VAC maximum).

TO MERLIN CS
MUSIC JACK
(183 MODULE)

24-FOOT
SPEAKER CABLE
(TWO MAXIMUM)

MUSIC
SIGNAL
CORD

POWERMATE

POWER
CORD

MUSICMATE

6-FOOT MUSIC CORD
(HARDWIRED TO
ZONEMATE 3)

TO SPEAKERS
(CONNECTORIZED CABLE
TO EACH ZONE SUPPLIED
WITH SPEAKERS)

6-FOOT MODULAR
TELEPHONE CORD
(HARDWIRED TO
ZONEMATE 3)

FULL-MODULAR
8-CONDUCTOR CORD

6-FOOT CABLE
(HARDWIRED TO
ZONEMATE 3)

TO MERLIN CS
PAGE INPUT JACK
(183 MODULE)

TO MERLIN CS
EXTRA ALERT JACK
(183 MODULE)

FULL-MODULAR
4-CONDUCTOR CORD

ZONEMATE 3

NOTE: MusicMate provides music to both speakers and host system.

Figure 2-1. PagePac 20/3 Voice Paging System Connections

TO MERLIN CS
MUSIC JACK
(183 MODULE)

24-FOOT
SPEAKER CABLE
(TWO MAXIMUM)

MUSIC
SIGNAL
CORD

POWERMATE

POWER
CORD

MUSICMATE

6-FOOT MUSIC CORD
(HARDWIRED TO
ZONEMATE 3)

TALKMATE

TO SPEAKERS
(CONNECTORIZED CABLE
TO EACH ZONE SUPPLIED
WITH SPEAKERS)

6-FOOT MODULAR
TELEPHONE CORD
(HARDWIRED TO
ZONEMATE 3)

FULL-MODULAR
8-CONDUCTOR CORD

TO MERLIN CS
PAGE INPUT JACK
(183 MODULE)

6-FOOT CABLE
(HARDWIRED TO
ZONEMATE 3)

TO MERLIN CS
EXTRA ALERT JACK
(183 MODULE)

FULL-MODULAR
4-CONDUCTOR CORD

ZONEMATE 3

NOTE: MusicMate provides music to both speakers and host system.

**Figure 2-2. PagePac 20/3 Voice Paging System Connections
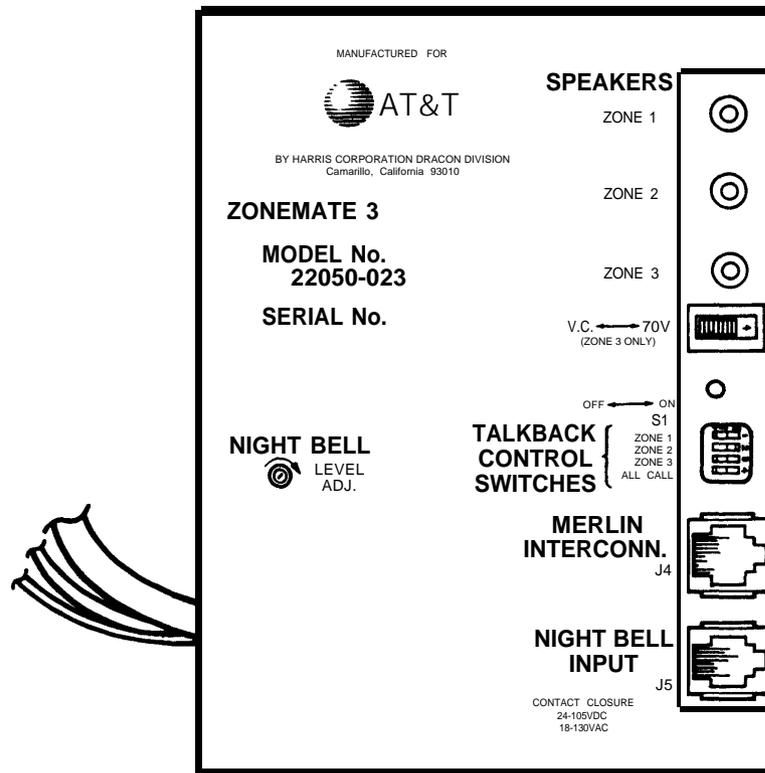With TalkMate Option**

Figure 2-3. ZoneMate 3 Connections and Controls (Cover Removed)

MusicMate (Optional)

- **Music Signal Cord—**The hardwired cord has an RCA-type phono
  plug and plugs into MUSIC IN jack J2 on PowerMate (Figure 1-2) or
  MUSIC jack on MERLIN CS 183 Services Module. If necessary, use
  a 24-foot section of speaker cable (two maximum) to extend music
  cord to the MERLIN CS Control Unit location (Figures 2-1 and 2-2).

- **Power Cord—**The hardwired cord has a miniature female connector
  and plugs into jack J6 on PowerMate which supplies power to the
  MusicMate (Figures 1-2, 2-1, and 2-2).

Controls

ZoneMate 3 controls the speakers in all zones (Figure 2-3).

V.C./70V Switch

Selects either voice coil or 70.7V output for speakers in Zone 3
only.

TALKBACK CONTROL SWITCHES S1

The ON position of the applicable segment of DIP switch S1 selects talk-back in zones 1, 2, or 3 or all zones as follows:

Switch	Zone Selected
S1-1	1
S1-2	2
S1-3	3
S1-4	ALL CALL (all zones regardless of position of S1-1, S1-2, and S1-3)

NIGHT BELL LEVEL ADJ. Control

Screwdriver adjustment sets volume of night bell tone heard over speakers. Clockwise adjustment increases volume; counterclockwise adjustment decreases volume.

System Installation and Connections

If you are connecting ZoneMate 3 to an operating PowerMate, start at step 1. If installation is new, first install and connect PowerMate as directed in the PowerMate Service Manual. If installation also includes TalkMate option, connect PowerMate to TalkMate as directed in the TalkMate Service Manual, then go to step 5.

Note: ZoneMate 3 is not required for a single-zone system. Instead, plug the 6-foot modular, 4-conductor cord supplied with Power-Mate into PAGE INPUT jack on MERLIN CS 183 Services Module and PAGE INPUT jack J1 on PowerMate (Figure 2-1) or J101 on TalkMate option (Figure 2-2). Plug speaker cable into PowerMate VOICE COIL jack J5 or 70.7V LINE jack J4, as appropriate, or the TALKBACK VOICE COIL OUT jack on TalkMate option (voice coil speaker(s) only).

1. Turn PowerMate MUSIC VOLUME control counterclockwise to OFF. The POWER indicator will go off.

2. Unplug PowerMate power cord from its AC outlet.

3. Disconnect page input modular cord from PAGE INPUT jack J1 on PowerMate or J101 on TalkMate option.

4. Disconnect speaker cable(s) from PowerMate 70.7V LINE jack J4 and/or VOICE COIL jack J5 or the TALKBACK VOICE COIL OUT jack on TalkMate option. If Y-connectors are being used, disconnect them also.

5. Remove cover from ZoneMate 3 by pressing on push-in snap (indicated by several raised bars) on either side of case and pulling apart the top and bottom halves of the case.

6. Plug ZoneMate 3 modular cord (hardwired 6-foot modular cord with telephone plug) into PAGE INPUT jack J1 on PowerMate (Figure 2-1), or J101 on TalkMate option (Figure 2-2).

7. Plug ZoneMate 3 cable (hardwired 6-foot cable with box-like modular connector) into connector J3 on PowerMate (Figure 2-1) or J301 on TalkMate option (Figure 2-2).

8. Plug ZoneMate 3 music cord (hardwired 6-foot cord with phono plug) into MUSIC IN jack J2 on PowerMate (Figure 2-1).

   Note: If music is supplied from host system, no further music connections are necessary. However, if MusicMate is used, connect as shown in Figure 2-1 or 2-2.

9. Plug one end of a full-modular, 8-conductor cord into MERLIN INTERCONN. jack J4 on ZoneMate 3 (Figure 2-3) and the other end into the PAGE INPUT jack on the MERLIN CS 183 Services Module.

10. If your system has a night bell, plug one end of a full-modular, 4-conductor cord (not supplied) into NIGHT BELL INPUT jack J5 on ZoneMate 3 (Figure 2-3) and the other end into the EXTRA ALERT jack on the MERLIN CS 183 Services Module.

11. Plug speaker cable from each zone into appropriate ZONE jack on ZoneMate 3.

12. Set V.C./70V switch (Figure 2-3) for the type of speaker(s) being used in zone 3.

13. If TalkMate is used, set ZoneMate 3 TALKBACK CONTROL SWITCHES S1 (Figure 2-3) to enable talkback in the desired zone (refer to **Controls** in this section for settings).

14. Plug PowerMate power cord into a 120 VAC, 60 Hz outlet.

15. Turn PowerMate MUSIC VOLUME control clockwise to 1. The POWER indicator will light.

16. Music volume is set with the PowerMate MUSIC VOLUME control. If music is provided, turn MUSIC VOLUME control clockwise to 3 or 4. Music should be heard over the system speakers. If music is not provided, set MUSIC VOLUME control to 1. Refer to MusicMate Service Manual for more information about music sources and their connection.

17. Set host system for night bell operation.

18. Arrange for an outside call to host system.

19. Adjust ZoneMate 3 NIGHT BELL LEVEL ADJ. control until the night bell tone is at the desired volume level.

20. Set host system for normal operation.

21. Reinstall cover on ZoneMate 3.

3. Operation for Systems Testing

Overview

This section contains instructions for operating and testing the paging system after installation and programming. If the system fails to operate properly, refer to Section 4, Maintenance and Troubleshooting.

Paging

Page into a single zone or all zones at once as follows:

1. Press INTERCOM either INTERCOM button on any telephone connected to the MERLIN CS.

2. Lift telephone handset.

3. Dial zone code shown below, or press button programmed to access that zone. Music, if provided, will stop. You will hear a connection tone if the TONE switch on the MERLIN CS 183 Services Module is set to ON. The TONE switch activates a connection tone that is heard in the telephone as well as in the speakers each time a zone is accessed.

Access Code	Zone
80	All Zone
81	1
82	2
83	3

   Note: You may program any programmable button on the MERLIN telephone to access a paging zone by programming the button for the appropriate access code, as shown above. Refer to the MERLIN CS manual for directions on how to program Custom Feature Buttons.

4. Speak into telephone in a normal manner. Your voice should be heard from all speakers in the zone selected.

   Note: IF system has talk-back option and talk-back is enabled (ZoneMate 3 TALKBACK CONTROL SWITCHES set to ON), individuals near speakers should be able to respond to you by using speakers. Since your voice controls talk-back switch, you will cut someone off in mid-sentence if you speak or make any sound while they are using talk-back.

The use of talk-back in a zone using more than 2 or 3 speakers is not recommended. The combined background noise levels of the speakers may cause inferior talk-back performance.

5. When your page is completed, replace handset. Music, if provided, should be heard again in the speakers.

4. Maintenance and Troubleshooting

Overview

This section contains instructions on how to isolate a problem in the PagePac 20 3-zone paging system to an individual module or the host telephone system. To troubleshoot by symptom, refer to Table 4-A for a list of common troubles and possible causes and solutions.

Troubleshooting

Should trouble develop in the PagePac 20 system, verify that:

- System power cord is plugged in and power is available at outlet being used.
- All cables and speaker wires are properly connected.

Trouble conditions originating outside of the PagePac 20 system should be located and cleared using normal telephone repair procedures. The following equipment is required:

- Standard 2500-type telephone (touch tone) with full-modular cord.
- Dracon Six-Wire In-Line Modular Adapter (Part Number 10220-000).
- Two 6-inch long jumper wires with clips.

One Or More Speakers Fail (No Music and No Page)

1.   Check all connections, including Y-connectors, if used, that might affect defective speaker(s). Also check speaker cable for breaks or shorts, such as staples driven through cable.

2.   If one or more speakers are defective and others operate normally, replace defective speaker(s) with working speakers.

3.   If problems continue, follow maintenance instructions in PowerMate manual.

Paging Is Not Possible

1.   Verify that PowerMate power cord is plugged in.

2.   Ensure that power is available at outlet being used. If power is available and POWER indicator on PowerMate remains off, the PowerMate needs repair. If POWER indicator on Power-Mate is on, proceed to step 3.

Test PowerMate

3. Turn system off by turning PowerMate MUSIC VOLUME control counterclockwise to OFF. The POWER indicator will go off.

4. Disconnect TalkMate from PowerMate (unplug modular cord P1 and cable P3 from PAGE INPUT jack J1 and connector J3, respectively, on PowerMate). If system does not have TalkMate option, disconnect ZoneMate 3 from PowerMate (unplug modular cord and 9-conductor cable from PAGE INPUT jack J1 and connector J3, respectively, on PowerMate).

5. Unplug a voice coil speaker cable from ZoneMate 3 and plug cable into VOICE COIL jack J5 on PowerMate.

6. Plug a Six-Wire In-Line Modular Adapter into PAGE INPUT jack J1 on PowerMate. Short adapter terminal BK to G and R to Y.

7. Plug a standard 2500-type telephone into adapter.

8. Turn PowerMate MUSIC VOLUME control clockwise to 1. The POWER indicator will light.

9. Attempt to page. If paging is not possible, the problem is most likely in the PowerMate. If your voice can be heard in the speakers connected to PowerMate, go to step 10.

    Note: The audio level at the speakers will be much lower than normal when accessing PowerMate in this way.

Test Host Telephone System

10. Unplug telephone and adapter from PAGE INPUT jack J1 on PowerMate.

11. Unplug full modular, 8-conductor cord from PAGE INPUT jack on MERLIN CS 183 Services Module.

12. Plug one end of the modular, 6-foot, 4-conductor cord supplied with PowerMate into PAGE INPUT jack on MERLIN CS 183 Services Module and plug the other end into PAGE INPUT jack J1 on PowerMate. This connects PowerMate to host telephone system.

13. Press INTERCOM button on any telephone connected to the MERLIN CS. Lift telephone handset, dial all-zone code or press button assigned to all-zone and speak into handset. If paging is not possible, the problem is most likely in the host telephone system. If your voice can be heard in the speakers connected to PowerMate and system has TalkMate option, go to step 14.

Test Talkmate Option

14.　Turn system off by turning PowerMate MUSIC VOLUME control counterclockwise to OFF. The power indicator will go off.

15.　Disconnect ZoneMate 3 from TalkMate by unplugging modular cord and 9-conductor cable from PAGE INPUT jack J101 and connector J301, respectively, on TalkMate.

16.　Unplug modular page input cord from PAGE INPUT jack J1 on PowerMate, and plug into PAGE INPUT jack J101 on TalkMate. This connects TalkMate to host telephone system.

17.　Reconnect TalkMate to PowerMate by plugging TalkMate modular cord P1 and cable P3 into PAGE INPUT jack J1 and connector J3, respectively, on PowerMate.

18.　Unplug speaker cable from VOICE COIL jack J5 on PowerMate and plug cable into TALKBACK VOICE COIL OUT jack on TalkMate.

19.　Turn PowerMate MUSIC VOLUME control clockwise to 1. The power indicator will light. Attempt to page. If your voice can be heard in the speakers connected to TalkMate, the problem is most likely in ZoneMate 3.

Note: TalkMate and ZoneMate 3 interact. If replacing ZoneMate 3 does not solve the problem, we suggest that TalkMate also be replaced.

Paging Does Not Work In Some Zones

If paging does not work in one or two zones, but functions normally in the other zone(s), the problem may be in ZoneMate 3. However, the MERLIN CS 183 cartridge may not close the zone control leads selected by the dial code. In this case, the problem is with the host system.

Talk-Back Does Not Function

If talk-back does not work in some zones, check that ZoneMate 3 TALKBACK CONTROL SWITCHES have been set to enable talk-back in those zones (Section 2). If talk-back has been correctly programmed, but still does not function, the problem is most likely in the TalkMate.

Note: Only voice-coil type speakers can be used in talk-back systems.

No Background Music

Ensure that MusicMate or an alternate music source is properly connected and properly tuned, using procedures appropriate for that particular music source. When an alternate source is used, check that it is connected to the proper power source. Ensure that the PowerMate MUSIC VOLUME control is not set too low. Also refer to the MusicMate manual for troubleshooting procedures.

Background Music Does Not Stop During Page

Should background music continue playing during a page, replace PowerMate.

Table 4-A. Trouble Analysis

Trouble	Possible Cause	Possible Solution
Background music and page dead in all zones	Paging system power off	Check AC power source
	Defective TalkMate	Test paging with TalkMate removed from system
	Defective ZoneMate 3	Test PowerMate* paging with ZoneMate 3 removed from system—connect one zone to PowerMate jack J4 (70V) or jack J5 (voice coil)
	Wrong type of speakers	Ensure that correct type speakers (voice coil or 70V) are used
	Defective PowerMate	Test PowerMate*
Page can be heard but level is very low	Speaker output set too low	Adjust power tap, attenuator, or volume control on speakers as appropriate
	Wrong type of speakers	Ensure that correct type of speakers (voice coil or 70V) are used

Table 4-A. Trouble Analysis (Continued)

Trouble	Possible Cause	Possible Solution
Page satisfactory but music dead or distorted	Music source volume control improperly set	Adjust music source volume control—generally set at midrange
	PowerMate MUSIC VOLUME control improperly set	Adjust MUSIC VOLUME control on PowerMate—generally set between 3 and 5
	Defective music source	Replace music source
	Defective PowerMate	Test PowerMate*
Background music satisfactory, music is silenced when page attempted, but can not page	Defective TalkMate	Test paging with TalkMate removed from system
	Defective ZoneMate 3	Test PowerMate* paging with ZoneMate 3 removed from system— connect one zone to PowerMate Jack J4 (70V) or Jack J5 (voice coil)
	Defective MERLIN CS 183 Services Module	Replace module
	Defective PowerMate	Test PowerMate*
Background music satisfactory, music is not silenced when page attempted, can not page	Defective PowerMate	Test PowerMate*
	Defective MERLIN CS 183 Services Module	Replace module
Page and music satisfactory but talk-back works poorly or is locked in LISTEN mode	Too many talk-back speakers	Use no more than 2 or 3 speakers in each zone for talk-back; do not use talk-back during all-zone paging
	TalkMate TALK/ LISTEN SWITCH SENSITIVITY and LISTEN VOLUME controls improperly set	Adjust controls on TalkMate
	Defective TalkMate	Replace TalkMate

Table 4-A. Trouble Analysis (Continued)

Trouble	Possible Cause	Possible Solution
Page and music satisfactory but talk-back does not work or will not work in some zones	ZoneMate 3 TALKBACK CONTROL SWITCHES improperly set	Set ZoneMate 3 TALKBACK CONTROL SWITCHES to enable talk-back
	TalkMate TALK/ LISTEN SWITCH SEN-SITIVITY and LISTEN VOLUME controls improperly set	Adjust controls on TalkMate
	Zone 3 has voice coil speaker(s) but Zone-Mate 3 V.C./70V switch improperly set	Set V.C./70V switch to V.C.
	Wrong type of speakers	Ensure that only voice coil speakers are used with talk-back
	Speaker run is too long	Ensure that no voice coil speaker is located more than 600 feet from ZoneMate 3
	Defective TalkMate	Replace TalkMate
	Defective ZoneMate 3	If one or two zones do not have talk-back, test individual jacks by connecting a *nonworking* zone cable to a working SPEAKERS jack on Zone-Mate 3
		If all zones do not have talk-back, test paging with ZoneMate 3 removed from system— connect a zone to TALK-BACK VOICE COIL OUT jack on TalkMate
Night bell tone is not loud enough	ZoneMate 3 NIGHT BELL LEVEL ADJ. control improperly set	Adjust ZoneMate 3 NIGHT BELL LEVEL ADJ. control

Table 4-A. Trouble Analysis (Continued)

Trouble	Possible Cause	Possible Solution
Night bell tone not heard	ZoneMate 3	Replace ZoneMate 3
	Defective MERLIN CS 138 Services Module	Replace module
*The PowerMate test procedure is contained in the MAINTENANCE section of the PowerMate Service Manual supplied with each PowerMate.		

Repairs and Warranty

The modules of the PagePac 20 paging system do not require periodic maintenance and are not field repairable.

All terms and conditions of your agreement with AT&T Information Systems apply. For service information, call the AT&T Information Systems Service Number that is provided for your communications system.