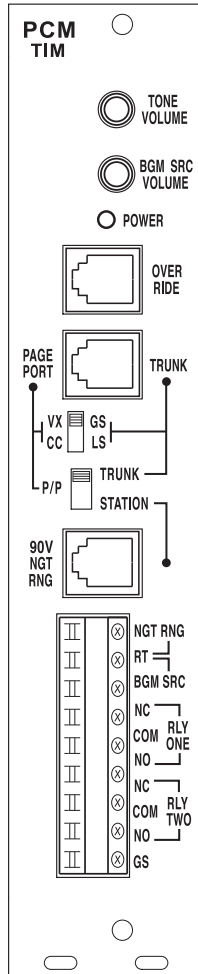


# Bogen Model PCMTIM

*Telephone Interface Module for  
Bogen's PCM2000 Zone Paging System*



## **UL Approved**

### **Notice**

Every effort was made to ensure that the information in this manual 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 - CD2KOR-74854-PA-N

Ringer Equivalence - 1.0B

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.

## 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-CUL 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

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## Section 1 - Connecting The Telephone Interface

### Description

The Bogen Model PCMTIM is the Telephone Interface Module for the Bogen PCM Zone Paging System. Only one PCMTIM module is required per system (1 through 99 zones). The PCMTIM provides the telephone interface (including talk battery), night ringer input, emergency override input, background music source input, and auxiliary relay contacts for the system. The module is also responsible for all tone signaling features. Controls are included for background music volume and tone volume.

For instructions on the physical installation of the module to other system modules, refer to the documentation supplied with the PCMCPU module.

### Interface

The PCM connects to virtually any analog telephone port, including:

- PBX station lines and CO lines,
- PBX Loop Start Trunk Ports,
- PBX Ground Start Trunk Ports, and
- Page Ports (using contact closure or VOX activation).

Interface installation consists of setting slide switches and connecting with modular (RJ11) telephone plugs.

Refer to the appropriate procedure on the following pages to connect the PCM2000 to your telephone system. In all cases, make sure that power is off before performing the installation.

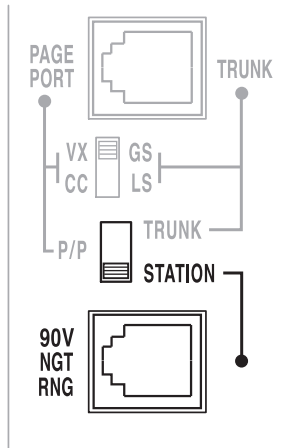
# PCMTIM

## PBX Station Access/CO line

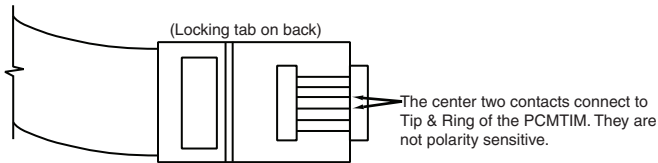
In the PBX Station Access/CO line configuration, the unit answers after the first full ring. As soon as it answers, the default timer is started. The default timer determines the maximum length of any page. When a paging zone is selected, the VOX timer is started (if enabled). This timer repeatedly resets as long as audio is detected on the line. If no audio is detected within the VOX time period, the page will end. If audio continues to be detected, the default timer will control page length.

The unit will also respond to CPC pulses (a short loss of loop current when the calling party hangs up). When a CPC pulse is detected, the unit will immediately drop the line.

1. Make sure that power is off and all connections completed before proceeding.
2. Move the TELEPHONE INTERFACE SLIDE SWITCH on the module to the position shown in the illustration below.



3. Use a modular RJ11 telephone cord (minimum 2-conductor) to connect the module to the phone system. The two center conductors are Tip and Ring and are not polarity sensitive (see illustration below). Plug one end of the cord in to the PBX or CO modular jack and the other end in to the STATION jack on the module.



4. Finish all system connections and connect power.
5. Set Default and VOX timers. (See Programming section for procedure.)

*NOTE: The default timeout is factory set to 30 seconds, and the VOX timeout is set to 6 seconds. If both the default and VOX timers are inhibited, the only way to disconnect the system from the station line is the CPC pulse.*

# PCMTIM

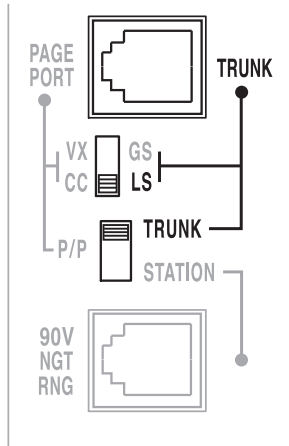
## PBX Loop Start Trunk Port

In the PBX Loop Start Trunk Port configuration, the unit supplies a 48V talk battery and detects loop current.

There are two modes of operation for Loop Start Trunk. When the unit detects a loop resistance between Tip and Ring, it activates. When the loop opens, the page ends. When the Trunk Disconnect feature is inhibited (factory default), the VOX and Default timers are not used.

If the Trunk Disconnect feature is enabled, the unit will operate as above, except it will also provide a one-second hook flash if the page is still active when the VOX and/or Default timers expire. Operation in this mode will enable the unit to automatically disconnect itself from the loop start trunk of the PBX. This will prevent the paging system from being locked up indefinitely in the event a telephone is accidentally left off hook after a page has been completed. The feature codes are 014 to inhibit and 015 to enable this feature. The factory default feature code is 014 (inhibited).

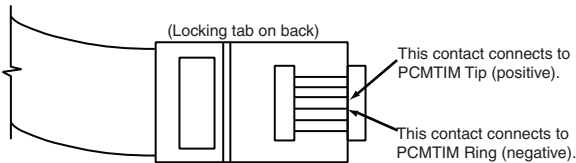
1. Make sure that the power is OFF and all connections completed before proceeding.
2. Move the TELEPHONE INTERFACE SLIDE SWITCHES on the module to the positions shown in the illustration below.





3. Use a modular telephone cord to connect the module to the phone system. Plug one end of the cord into the Loop Start Trunk (using a modular jack) and the other end in to the TRUNK jack on the module.

The two center conductors are Tip and Ring 48V DC and have a specific polarity. If the polarity of trunk is opposite, you can use a reversing modular cord to make the connection or reverse the connection through a modular block. Refer to the illustration below for more information.



**Caution:** The polarity of the Tip & Ring contacts of the RJ11 jack for the Trunk and Override were chosen so that when a standard modular cord (one with the tops of both end plugs on the same side of the flat cable) is used to connect the PCM to a modular wall block, the modular block G (Tip) terminal will be positive with respect to the R (Ring) terminal. Because of variations in types of modular cords, and when stripping a modular cord for direct connection, always check the polarity of the center conductors or R & G terminals to determine Tip & Ring (the positive lead is Tip and the negative lead is Ring).

4. Finish all system wiring and connect power.
5. Set VOX and Default times if the Trunk Disconnect feature (previously described) has been enabled.

# PCMTIM

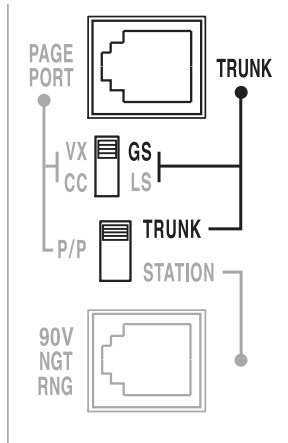
## PBX Ground Start Trunk Port

In the PBX Ground Start Trunk Port configuration, the unit supplies 48V talk battery and detects loop current. When the ground start trunk grounds the PCM's Ring, the PCM responds by closing the connection to its Tip, which completes the access procedure.

There are two disconnect modes for Ground Start Trunk. When the unit detects a loss of loop current between Tip and Ring, the page ends. If the Trunk Disconnect feature is inhibited (factory default), the VOX and Default timers are not used.

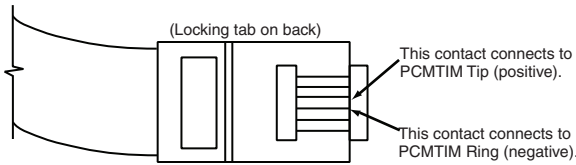
If the Trunk Disconnect feature is enabled, the unit will operate as above, except it will also provide a one-second hook flash if the page is still active when the VOX and/or Default timers expire. Operation in this mode will enable the unit to automatically disconnect itself from the loop start trunk of the PBX. This will prevent the paging system from being locked up indefinitely in the event a telephone is accidentally left off hook after a page has been completed. The feature codes are 014 to inhibit and 015 to enable this feature. The factory default feature code is 014 (inhibited).

1. Make sure that the power is OFF and all connection completed before proceeding.
2. Move the TELEPHONE INTERFACE SLIDE SWITCHES on the module to the positions shown in the illustration below.



3. Use a modular telephone cord to connect the module to the phone system. Plug one end of the cord into the Ground Start Trunk (using a modular jack) and the other end in to the TRUNK jack on the module.

The two center conductors are Tip and Ring 48V DC and are polarity sensitive. If the polarity of trunk is opposite, you can use a reversing modular cord to make the connection or reverse the connection through a modular block. Refer to the illustration below for more information.



4. Use 24-gauge solid wire to connect the GS (Ground Start) terminal on the module to the PBX ground. This is typically the AC ground for the PBX system.

*NOTE: It is very important that no other terminals of the PCM system connect to AC ground when using the ground start interface. Also, the case of the PCM2000 system cannot be connected to AC ground. If the system is not working and no PCM terminals (except the GS terminal) are directly connected to AC ground, there may be an indirect connection. Check the connections to any equipment that has a 3-wire AC plug. Make sure that unbalanced inputs and outputs of this equipment are isolated using a model WMT1A transformer before connecting the equipment to the PCM system.*

*NOTE: The PAOUT and HPBGM terminals on the PCM system do not have to be ground-isolated.*

5. Finish all system wiring and connect power.
6. Set VOX and Default times if the Trunk Disconnect feature (previously described) has been enabled.

# PCMTIM

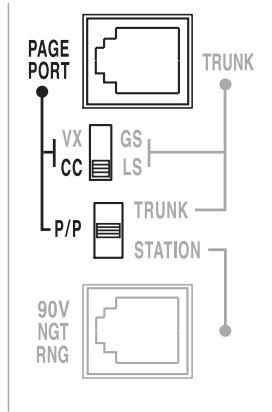
## Page Port - Contact Closure

In the Page Port/Contact Closure configuration, the unit responds to a contact shorting the +5 contact closure source to its return (see RJ11 figure below). When the short is removed, the page ends. No timers are used in this mode. Audio is provided to the system through a separate pair of leads.

1. Make sure that the power is OFF and all connections completed before proceeding.

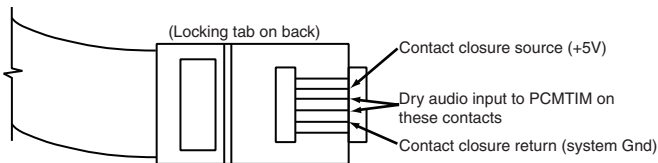
*NOTE: Make sure that the page port produces DTMF tones. The page port must also be bi-directional in order to use the talk back feature of the PCMTBM module if installed.*

2. Move the TELEPHONE INTERFACE SLIDE SWITCHES on the module to the positions shown in the illustration below.



3. Use a modular telephone cord to connect the module to the phone system. Plug one end of the cord into the Page Port and the other end in to the PAGE PORT jack on the module.

The center 2 conductors are used for dry audio and the connectors on either side are connected to the page port contact closure. The maximum resistance of the page port contact closure is 1000 ohms. Refer to the illustration below for more information.

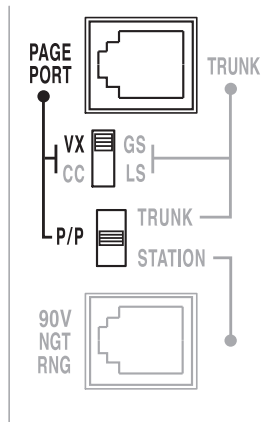


4. Finish all system wiring and connect power.

## Page Port VOX

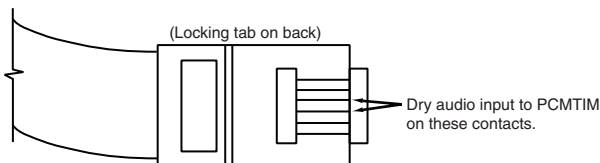
In the Page Port/VOX configuration, a dry audio pair is used to detect audio and activate the system. Paging ends when the VOX timer or default timer times out.

1. Make sure that the power is OFF and all connections completed before proceeding.
2. Move the TELEPHONE INTERFACE SLIDE SWITCHES on the module to the positions shown in the illustration below.



3. Use a modular telephone cord to connect the module to the phone system. Plug one end of the cord into the Page Port and the other end in to the PAGE PORT jack on the module.

The center 2 conductors are used for dry audio. The unit will activate on detection of the first DTMF tone. Refer to the illustration below for more information.



4. Finish all system wiring and connect power.

# PCMTIM

5. Program the Default and VOX timers. See Programming section. Note that the VOX timer can be inhibited, however, Do Not Inhibit the Default Timer or else the system will not drop the page. If this happens, the system power will have to be removed and reconnected.
6. If the dialing timeout feature was inhibited, it must be enabled (it is enabled as a factory default, code 013). This will ensure that the page will be dropped if the zone access is not complete.

If the confirmation tone is enabled, it will only sound after the first DTMF digit. If it causes interference, it should be inhibited.

*NOTE: If a paging zone selection error is made, the PCM2000 will return a busy signal for approximately 5 seconds. When the busy tone stops, the system will be ready to accept another zone selection.*

(it is enabled as a factory default, code 013)

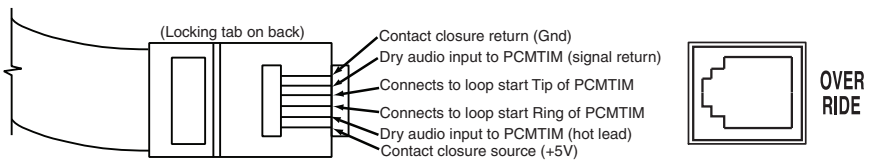
## Override

The Override is a non-programmable feature that lets the caller take priority over all paging functions and make a system-wide page to all speakers. The feature can be activated using a loop start trunk or dedicated telephone. Provisions are also included to interface with other signaling equipment.

The Override feature includes a quad beep pre-announce tone which can be enabled or inhibited. (The default is inhibited. See Programming section to enable the tone.)

1. Make sure that the power is OFF and all connections completed before proceeding.
2. Plug modular cord into OVER RIDE (RJ11) jack.

The center 2 conductors interface directly to a Loop Start Trunk or dedicated phone. When the trunk becomes active, the PCM system goes into Override mode.



A contact closure and dry audio source can also be used for the Override input. The two conductors flanking the talk battery conductors provide a dry audio gateway into the system wide Override. Override is activated by shorting outermost conductors. Maximum contact closure resistance is 1000 ohms.

3. Make all system connections and connect power.
4. Refer to the Programming section to enable or inhibit the pre-announce tone.

*NOTE: See page 34 for an illustration showing the connection of the PCM system to a microphone.*

# PCMTIM

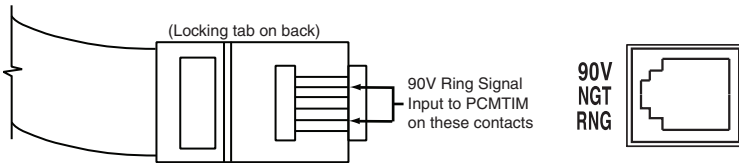
## Night Ring

The PCM Night Ringer signaling feature is designed to alert personnel to incoming calls after normal business hours. The feature can be activated either by a 90V ring signal or by a contact closure. In the factory default configuration, the night ringer sounds over all zones, however, a zone group can be programmed which will sound the night ringer only over a user-selected group of zones.

The night ringer normally sounds a simulated ring tone. The ringer can be programmed to sound a chime tone or a tone provided by a user-supplied external tone generator (see page 35).

Follow the instructions below for night ringer connections. Refer to the Programming section to set up a night ringer zone group or to change to ringer tone.

### 1. Make sure that the power is OFF.



### 2A. For 90V Night Ring (RJ11) Jack Connection

Plug a modular cord into the 90V NGT RNG(RJ11) jack. The center conductors are used for Station Access. The flanking conductors are for the 90V Night Ring Signal.

### 2B. For Screw Terminal Connection

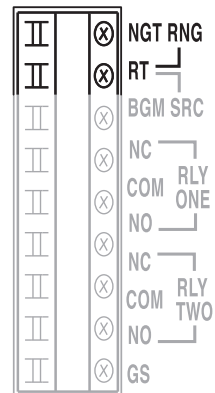
Screw terminal connections are provided for Night Ring Contact Closure activation. Maximum contact resistance for contact closure activation is 1000 ohms.

NGT RNG is the contact closure source (+5V).

RT is the contact closure return (GND).

*NOTE: The Night Ring feature has priority over background music only. There is a 5 second delay after the night ring stops before background music is restored (bridges inter-ring pause).*

### 3. Reconnect power.





## **Section 2 - Accessing Paging Zones**

### **Zone Accessing**

The PCM system supports from 1 to 99 different paging zones (in groups of 3). It also supports up to 32 paging zone groups for voice paging applications, and 11 zone groups for signaling applications (night ringer, code call, EM/SC, 8 time triggers). Each zone group consists of 1 to 99 (user-programmed) zones. Paging zone groups are accessible by dialing a specific zone group number through the telephone. Signaling zone groups are automatically activated by the system.

Each individual paging zone can be one of two types: one-way paging or two-way talk back (talk back requires a PCMTBM module and is operable only in centrally-amplified zones). Talk back is not available to zone groups. Refer to the instructions furnished with the PCMZPM module or PCMTBM module for more information about the talk back feature.

Refer to the Programming section for instructions on how to program zones and zone groups.

### **To Page A Zone**

1. Dial the paging access number for your telephone system.
2. Listen for the confirmation tone if enabled (a double beep).
3. Dial the number of the zone you wish to page. All dialing must be two (2) digits, i.e.,  
[0] [1] for zone 1,  
[0] [2] for zone 2, etc., through [0] [9] for zone 9, then up to  
[9] [9] for zone 99.

If a zone number does not exist, the caller will hear a busy tone.

4. Make the page. Hang up when finished.

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## To Make An All-Call Page

1. Dial the paging access number for your telephone system.
2. Listen for the confirmation tone if enabled (double beep).
3. Dial [0] [0].
4. Make page and hang up when finished.

*NOTE: See Programming section to disable All-Call.*

## To Page A Zone Group

1. Dial the paging access number for your telephone system.
2. Listen for the confirmation tone if enabled (a double beep).
3. Dial [\*] and the zone group number you wish to page. Zone group numbers consist of 2 digits (from 01 to 32).

For example, dial:

[\*] [0] [1] for zone group 1,

[\*] [0] [2] for zone group 2, etc., through

[\*] [0] [9] for zone group 9, then up to

[\*] [3] [2] for zone group 32 (maximum number of zone groups).

*NOTE: Dialing numbers above 32, or dialing a zone group that does not exist will result in a busy signal.*

*NOTE: Talk Back is not available in zone group paging.*

4. Make page and hang up when finished.

## Code Calling

Code calling is the ability to activate a series of chime tones over a signaling zone group (the specific zones in the zone group are determined by the user - up to 99 zones). The PCM supports "pattern" and "echo" code calling.

- Pattern code calling sounds a factory-set pattern of chime tones in response to a single keypad selection.
- Echo code calling sounds chime tones that correspond to the actual 2-digit keypad numbers entered.

The code calling feature is inhibited as the factory default. An auto repeat feature is provided to repeat the code call once or twice with a 5-second delay between repeats. No paging access is allowed until a code call is complete (including repeats).

*NOTE: The voice paging function of the PCM system is inhibited during code calling. A code call is discarded if interrupted by a higher priority function.*

## To Make A Pattern Code Call

Refer to the Programming section for instructions on how to activate the code call feature and to select the pattern code call, and/or activate the auto repeat feature. (At a minimum, the code call type must be selected in order to use this feature.)

1. Dial the paging access number for your telephone system.
2. Listen for the confirmation tone if enabled (a double beep).
3. Press [#] followed by a number key from [0] through [9], then hang up. The resulting code call pattern will correspond to the number in the Code Call Table (see below).

If the auto repeat feature is activated, the code call will automatically repeat after a five second delay. (See Programming section.)

### Code Call Table

[0] = CC	[5] = CC_CC
[1] = C_C	[6] = CC_CCC
[2] = C_CC	[7] = CCC_C
[3] = C_CCC	[8] = CCC_CC
[4] = CC_C	[9] = CCC_CCC

C = Chime tone, \_ = pause.

## To Make an Echo Code Call

Refer to the Programming section for instructions on how to enable the code call feature and to select the echo code call, and/or enable the auto repeat feature.

1. Dial the paging access number for your telephone system.
2. Listen for the confirmation tone if enabled (a double beep).
3. Press [#] and two number keys, then hang up.

**Example:** [#] [3] [1] produces three chime tones followed by a single chime.

You must always enter two digits. If the auto repeat feature is enabled, the code call will automatically repeat after a five second delay. See Programming section for repeat options.

## Code Call Notes:

- Only one code call can be made per access.
- On station access, the system drops the line after the code call is complete.
- After the code call digits are entered, the system provides a short confirmation beep and the code call proceeds.
- The caller will not hear the code call over the handset.
- On trunk port/page port with contact, a caller may call into the system during a code call but the system will not produce any acknowledgement until the code call is complete.
- On page port VOX, another code call request can be made immediately after the code call is complete without disconnecting.
- The code call feature can be inhibited. See Programming section.

## **Section 3 - BGM, Tone, Zone & Zone Group Features**

### **BGM SRC Volume**

The BGM SRC VOLUME control is only used when a single amplifier provides paging and background music in the system. Background music in all zones will be interrupted during a page. The BGM source must be connected to the BGM SRC IN & RT terminals. See instructions in the PCMZPM and PCMPCU module manuals for amplifier connection details. Clockwise rotation of the control increases the BGM level without affecting the paging level. Counterclockwise rotation decreases the BGM level without affecting the paging level.

### **Single Amp BGM/Page Connections**

The PCM can be used with one central amplifier, with the amplifier providing page amplification and background music amplification. The background music source is connected to the PCMTIM module terminals marked IN & RT of BGM SRC. See the instructions included with the PCMPCU module for connections to the amplifier.

# PCMTIM

## Tones

In addition to the Override and Night Ring tones described previously, the PCM system provides the following additional tones.

*Confirmation Tone.* A double-beep tone heard by the caller after dialing the paging access number and before entering the desired zone number. The default for the tone is enabled. The tone can also be inhibited. See Programming section if you wish to inhibit this tone.

*Pre-announce Tone.* This tone is heard at the speakers being paged and at the telephone. It is either a chime (default) or beep. The pre-announce tone can also be inhibited. See Programming section to change or inhibit this tone.

*Privacy Beep.* This short (100ms.) tone is produced every 15 seconds into active talk back zones. The default for this tone is enabled. The tone can also be inhibited. See Programming section if you wish to inhibit this tone.

*Emergency/Shift Change (EM/SC) Tone.* This tone is activated when the EM/SC terminal on the PCM CPU module is shorted to the GND terminal. (Refer to the instructions included with the PCM CPU module for wiring.) This tone has the second highest priority after Override. Tone options available are: no tone, a user selectable 2 to 7 second tone burst (3 seconds is default), a tone duration that follows the contact closure, a chime tone, or a quad beep. See Programming section to change the tone.

*Time-Triggered Tone.* The PCMTBM module contains a real-time clock and a time-trigger feature that provides up to eight (8) time-triggered tones with separate signaling zone groups. The tone choices are: no tone, a selectable 1 - 8 second tone burst (3 seconds is the default), or a chime tone. See Programming section to set this feature.

*Setup Tone.* This tone can be activated only when the PCM system is in its Program mode (set with Run/Program switch on PCM CPU module). It is a system-wide interrupted tone which can be used by the installer to check speaker operation, set operational level of speaker zones, balance zones, etc.

## Tone Notes

The volume level of all of the tones are controlled by the single TONE VOLUME control on the PCMTIM module. All tones will sound at same level. Clockwise rotation of the control increases the level. Counterclockwise rotation of the control decreases the level.

## Relay Contacts

The PCM system provides a set of dual "C-form" contacts which can be used to activate external equipment. The relay contacts are rated at 2A 30V DC/0.6A 120V AC (resistive). The contacts change from the state shown on the front panel when the PCM becomes active and return to the labeled state when the PCM goes idle. An exception to this is when the PCM is configured for Page Port VOX control. In this configuration, the contacts don't change until the system detects the first DTMF tone of the zone number.

## Priority Order

The following is a list of the priority operation of the PCM2000:

- |             |                                |
|-------------|--------------------------------|
| 1 (Highest) | Override                       |
| 2           | Emergency/Shift Change (EM/SC) |
| 3           | Time Triggers                  |
| 4           | Voice Page/Code Call           |
| 5           | Night Ring                     |
| 6 (Lowest)  | Background Music               |

## Section 4 - Programming

### System Programming

System Programming lets you set certain PCM system operations and tone features using the DTMF keys of a telephone. It also lets you program paging zone groups and signaling zone groups.

*NOTE: Paging and tone signaling are not allowed during programming.*

### Recommended Initial Programming Procedure

All programming is accomplished through the TRUNK jack, using whatever interface has been installed. To simplify initial programming, it is suggested that you change the interface type to loop start trunk and connect a single-line telephone to the TRUNK jack. Once initial programming is completed, re-select the proper interface type and reconnect the access line.

### To Program the PCM2000 System

(System Installed, Power On):

1. Remove the switch lock and place the Program/Run switch on the PCM CPU module to the Program position (the green LED will illuminate).
2. Access the PCM2000 system (either go off hook with the single-line telephone connected as suggested above, or dial the paging access number for the telephone system).
3. You will hear 3 beep tones, indicating access to the Programming Mode.
4. Dial the Feature Code for the feature you wish to program. Feature Codes and their default values are listed in the chart on pages 31-35.



*NOTE: After you have entered a Feature Code (and any other data), you must press the [#] key to enter it into the system. If the system accepts the code (and data), you will hear a short double beep. You can then continue with the next Feature Code immediately after the double beep by following the same procedure. If information is not accepted, you will hear a busy tone. In this case, you should hang up, check the code and the data, then re-access the system and try again. When the phone goes on-hook, any data not yet entered (by dialing [#]) will be lost, however, all previously entered data is saved. If you make a mistake while programming, and do not wish to complete the programming of a feature, simply hang up without dialing [#] and previous data will be unchanged.*

5. Once you have finished programming, you must first hang up the programming phone and then place the Program/Run switch in the Run position. The green LED will go out. Replace the switch lock.

## Programming Paging Zone Groups

32 paging zone groups can be created. Each zone group can consist of up to 99 zones. To create a zone group:

1. Dial [\*] followed by the 2-digit number of the zone group (01 - 32) you want to create. Follow this with the two-digit numbers of the zones you want in the zone group.
2. When finished, save the zone group data into memory by pressing [#].  
**Example:** If you want to create zone group 7, consisting of zones 2, 3, and 12, you would dial: [\*] [0] [7] [0] [2] [0] [3] [1] [2] [#].
3. Repeat the above procedure to program additional zone groups.

## To Erase A Zone Group (Paging or Signaling Groups)

1. Press [\*] and the 2-digit zone group number, then press [#]. Once done, any attempt to call the zone group will produce a busy tone.

## Programming Signaling Zone Groups

Use the following procedure to create the signaling zone groups (Emergency/Shift Change, Night Ring, Code Call).

1. Dial the Feature Code for the zone group you wish to create ([\*] [9] [2] for EM/SC, [\*] [9] [3] for Night Ring, or [\*] [9] [4] for Code Call).

Follow this with the two-digit numbers of the zones you want to be in the zone group.

2. When finished, save the zone group data into memory by pressing [#].  
**Example:** If you want to create the EM/SC zone group, consisting of zones 2, 3, and 12, you would dial: [\*] [9] [2] [0] [2] [0] [3] [1] [2] [#].
3. Repeat the above procedure to program additional zone groups.

## Interface Default Timer

If the PCM system is connected to a PBX station port, loop start, ground start, or Page Port VOX, you can set the maximum page duration (default timer). The factory default for this timer is 30 seconds. To change the time, enter the Feature Code and the new 2-digit number corresponding to the time desired. The 2-digit number represents 10's of seconds (see Note 3 in Notes to Feature Codes on page 35). If you wish to inhibit the default timer, enter the Feature Code followed by "00".

## Interface VOX Timer

If the PCM system is connected to a PBX station port, loop start, ground start, or Page Port Vox, you can set the default timer for the VOX timeout. The default value is 6 seconds. To change the time, enter the Feature Code followed by a single digit from 1 to 9, corresponding to 1 to 9 seconds of silence. To inhibit the timer, enter the Feature Code followed by "0".

## Dialing Timeout

When the dialing timeout is enabled, the user must dial a DTMF digit within 15 seconds of the last digit or else the system will produce an error tone. The user will then have to hang up and access the system again. In station access mode and trunk ports, too, the PCM system will drop the line or produce a Trunk Disconnect after 5 seconds of the error tone. This will free the paging system for another page access.

## Trunk Disconnect

Allows the PCM2000 to issue a one-second disconnect signal (loss of loop current) after its default time or VOX time has elapsed. This applies only to Loop Start and Ground Start applications and is defeatable. This disconnect signal can allow compatible equipment to clear the paging line should a paging phone be improperly hung up.

## Single Amp BGM Enable

Single amplifier BGM operation lets the PCM2000 use the paging amplifier to provide high-power BGM to passive speakers when the paging system is idle. When this option is enabled, the BGM SRC terminals are connected to the paging amplifier's input and HPBGM bus is connected to the paging amplifier's output. As soon as the PCM2000 becomes active, the BGM SRC and HPBGM connections to paging amplifier are removed and the amplifier is ready for paging. When a page or tone signal is in progress, BGM is lost in all passive speaker zones not being paged. The 1 amp BGM option must be inhibited when a second amplifier is used to supply the high powered BGM.

## Programming Real Time Clock

When the PCMTBM module is used in a system, its built-in real time clock keeps track of the time of day for time-triggered signal events. The manual included with the PCMTBM module contains more complete information on the clock feature. See the Feature Codes Chart for the code required to set the clock. Time must be entered in 24-hour format. To convert AM/PM time, refer to the chart on the next page and enter time in 24:00 hour format.

## 24:00 Hour Time Chart

00:00 - Midnight	08:00 - 8 am	16:00 - 4 pm
01:00 - 1 am	09:00 - 9 am	17:00 - 5 pm
02:00 - 2 am	10:00 - 10 am	18:00 - 6 pm
03:00 - 3 am	11:00 - 11 am	19:00 - 7 pm
04:00 - 4 am	12:00 - Noon	20:00 - 8 pm
05:00 - 5 am	13:00 - 1 pm	21:00 - 9 pm
06:00 - 6 am	14:00 - 2 pm	22:00 - 10 pm
07:00 - 7 am	15:00 - 3 pm	23:00 - 11 pm

## Clock Synchronization

An option is available to synchronize the PCM2000's real time clock to an external reference clock. The reference clock must provide a contact closure at a particular time of day. The clock sync. code of the PCM2000 is programmed for that same time of day. When the reference clock closes the contacts, the real time clock in the PCM2000 will reset itself to the programmed time of day. The clock sync. function works independently of the clock set function. This function can be inhibited to prevent accidental resetting of the real time clock.

## Time-Triggered Events

The real time clock in the PCMTBM module gives the ability to have up to eight time-triggered tone events. They can be used to signal breaks and shift changes throughout the day. Time-triggered events will sound at the same time every day of the week. Each time trigger has its own zone group and tone selection. Time-triggered tones can also be inhibited and enabled without changing any of the other programmed data for that particular tone.

## Setup Tone

The Setup tone is available to assist in the adjustment of speaker volume. The Setup tone is only available in the Programming Mode. To activate the Setup tone, dial 000, then #. The tone will continue to sound until the access phone is hung up.

## Reset Default Values

A Feature Code (999, then #) is available to reset the PCM2000 system to the original factory default values. Note: All zone groups are also reset. This process takes 5 - 10 seconds. Wait for confirmation tone before hanging up.

## Feature Codes & Defaults

Feature	Feature Code	Additional Required Data	Factory Default
<b><i>Privacy Beep</i></b>			
Inhibit	006		
Enable	007		Enable
<b><i>Pre-announce Tone</i></b>			
Inhibit	003		
Beep	004		
Chime	005		Chime
<b><i>Confirmation Tone</i></b>			
Inhibit	001		
Enable	002		Enable
<b><i>Emergency Override Tone</i></b>			
Inhibit	008		Inhibit
Enable	009		
<b><i>All-Call</i></b>			
Inhibit	010		
Enable	011		Enable
<b><i>Dialing Timeout</i></b>			
Inhibit	012		
Enable	013		Enable
<b><i>Trunk Disconnect</i></b>			
Inhibit	014		Inhibit
Enable	015		
<b><i>1 Amp BGM</i></b>			
Inhibit	018		Inhibit
Enable	019		
<b><i>Default Timer</i></b>	050	00 - 99	03 - See Note 1
<b><i>VOX Timer</i></b>	051	0 - 9	6 - See Note 2

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<b>Feature</b>	<b>Feature Code</b>	<b>Additional Required Data</b>	<b>Factory Default</b>
<b><i>Zone Groups</i></b>	*01	Zone Numbers	No Zones
	.	"	
	.	"	
	.	"	
	*32	"	
<b><i>Emergency/ Shift Change</i></b>			
Zone Group	*92	Zone Numbers	All-Call
No Tone	020		
Follow Contact	021		
2 sec. tone	022		
3 sec. tone	023		3 sec. tone
4 sec. tone	024		
5 sec. tone	025		
6 sec. tone	026		
7 sec. tone	027		
Chime	028		
Quad Beep	029		
<b><i>Night Ring</i></b>			
Zone Group	*93	Zone Numbers	All-Call
No Tone	030		
Simulated Ring	031		Ring
Chime	032		
<b><i>Code Call</i></b>			
Zone Group	*94	Zone Numbers	All-Call
Inhibit	040		Inhibit
Pattern	041		
Echo	042		
1 Play	043		1 Play
1 Repeat	044		
2 Repeat	045		
<b><i>Clock Set</i></b>	060	HHMM	00:00
<b><i>Clock Sync.</i></b>	067	HHMM	See Note 3
Inhibit	068		Inhibit
Enable	069		

<b>Feature</b>	<b>Feature Code</b>	<b>Additional Required Data</b>	<b>Factory Default</b>
<b><i>Time Trigger 1</i></b>			
Zone Group	*81	Zone Numbers	No Zones
Inhibit	110		Inhibit
Enable	111	HHMM	See Note 3
2 sec. tone	112		
3 sec. tone	113		3 sec. tone
4 sec. tone	114		
5 sec. tone	115		
6 sec. tone	116		
7 sec. tone	117		
8 sec. tone	118		
Chime	119		
<b><i>Time Trigger 2</i></b>			
Zone Group	*82	Zone Numbers	No Zones
Inhibit	120		Inhibit
Enable	121	HHMM	See Note 3
2 sec. tone	122		
3 sec. tone	123		3 sec. tone
4 sec. tone	124		
5 sec. tone	125		
6 sec. tone	126		
7 sec. tone	127		
8 sec. tone	128		
Chime	129		
<b><i>Time Trigger 3</i></b>			
Zone Group	*83	Zone Numbers	No Zones
Inhibit	130		Inhibit
Enable	131	HHMM	See Note 3
2 sec. tone	132		
3 sec. tone	133		3 sec. tone
4 sec. tone	134		
5 sec. tone	135		
6 sec. tone	136		
7 sec. tone	137		
8 sec. tone	138		
Chime	139		

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<b>Feature</b>	<b>Feature Code</b>	<b>Additional Required Data</b>	<b>Factory Default</b>
<b><i>Time Trigger 4</i></b>			
Zone Group	*84	Zone Numbers	No Zones
Inhibit	140		Inhibit
Enable	141	HHMM	See Note 3
2 sec. tone	142		
3 sec. tone	143		3 sec. tone
4 sec. tone	144		
5 sec. tone	145		
6 sec. tone	146		
7 sec. tone	147		
8 sec. tone	148		
Chime	149		
<b><i>Time Trigger 5</i></b>			
Zone Group	*85	Zone Numbers	No Zones
Inhibit	150		Inhibit
Enable	151	HHMM	See Note 3
2 sec. tone	152		
3 sec. tone	153		3 sec. tone
4 sec. tone	154		
5 sec. tone	155		
6 sec. tone	156		
7 sec. tone	157		
8 sec. tone	158		
Chime	159		
<b><i>Time Trigger 6</i></b>			
Zone Group	*86	Zone Numbers	No Zones
Inhibit	160		Inhibit
Enable	161	HHMM	See Note 3
2 sec. tone	162		
3 sec. tone	163		3 sec. tone
4 sec. tone	164		
5 sec. tone	165		
6 sec. tone	166		
7 sec. tone	167		
8 sec. tone	168		
Chime	169		



Feature	Feature Code	Additional Required Data	Factory Default
<b>Time Trigger 7</b>			
Zone Group	*87	Zone Numbers	No Zones
Inhibit	170		Inhibit
Enable	171	HHMM	See Note 3
2 sec. tone	172		
3 sec. tone	173		3 sec. tone
4 sec. tone	174		
5 sec. tone	175		
6 sec. tone	176		
7 sec. tone	177		
8 sec. tone	178		
Chime	179		
<b>Time Trigger 8</b>			
Zone Group	*88	Zone Numbers	No Zones
Inhibit	180		Inhibit
Enable	181	HHMM	See Note 3
2 sec. tone	182		
3 sec. tone	183		3 sec. tone
4 sec. tone	184		
5 sec. tone	185		
6 sec. tone	186		
7 sec. tone	187		
8 sec. tone	188		
Chime	189		
<b>Reset Default</b>	999		
<b>Setup Tone</b> (in program mode only)			
Turn On	000		
Turn Off	Hang Up		

## Notes To Feature Codes

Note 1- These 2 digits represent time in 10's of seconds, i.e., "01" = 10 sec., "03" = 30 sec., "09" = 90 sec., etc. Entering "00" will inhibit timer operation.

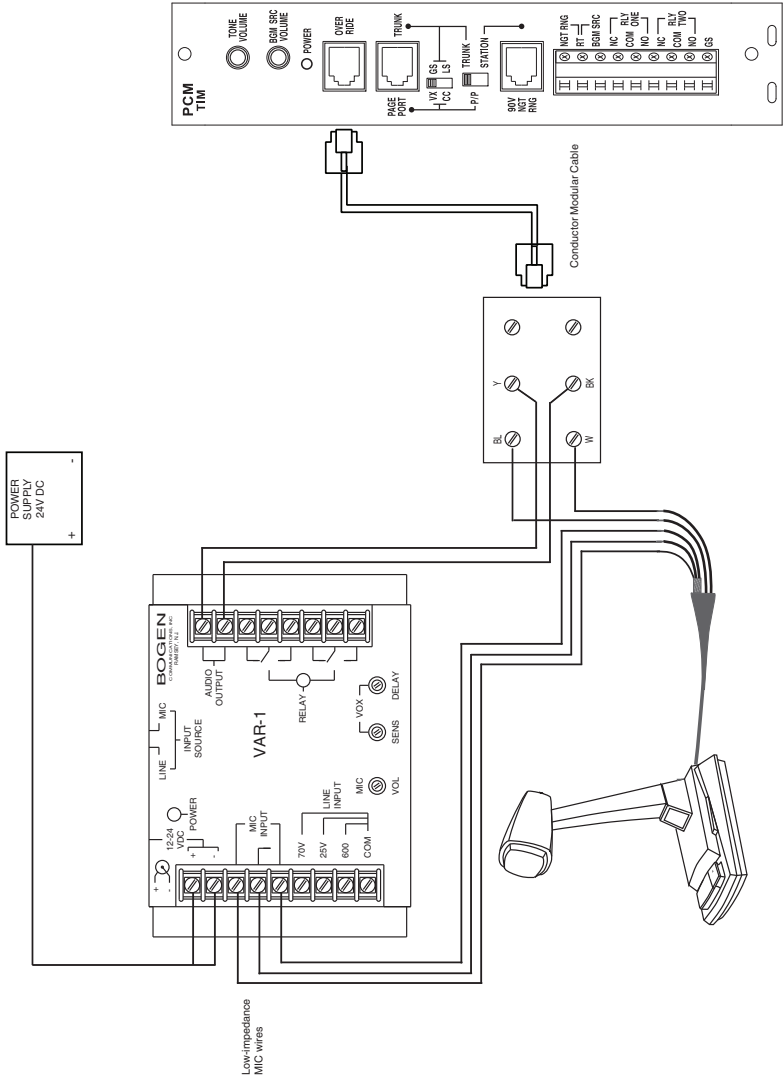
Note 2 - This single digit indicates VOX delay time in seconds. Entering "0" will inhibit VOX timer operation.

Note 3 - Entering the Feature Code without additional time data will enable feature using previously programmed time data.

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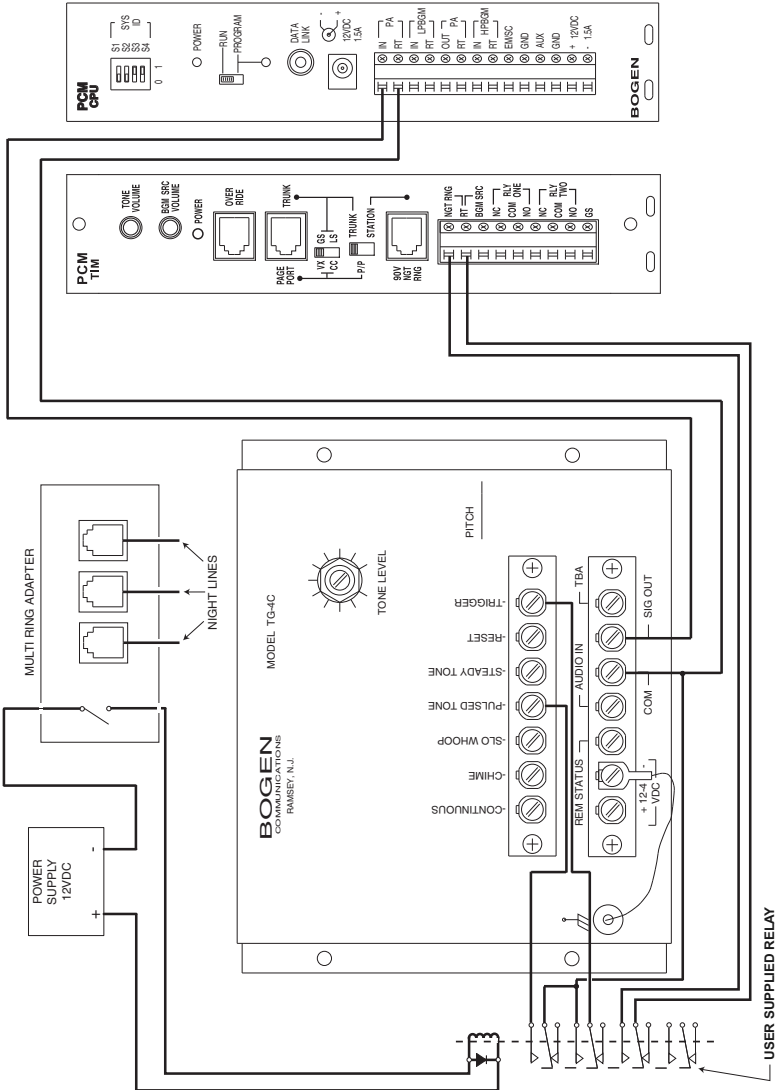
## Connections to MIC using VAR1

In this wiring diagram the VAR1 is used as a microphone preamplifier and provides a dry audio feed at an appropriate level to the dry audio input pins of the Override jack. The contact set of the push-to-talk microphone are connected to the contact closure source and return pins of the Override jack which control the activation of the override feature. See page 15 for RJ11 wiring details.



## Using Night Ring With External Tone Generator

The illustration below shows the use of an external tone generator to supply a tone for the night ring feature. See Programming section and enter the Feature Code for "No Tone" in order to substitute the external device's tone.



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The **Bogen PCMTIM Telephone Interface Module** is warranted to be free from defects in material and workmanship for two (2) years from the date of sale to the original purchaser. Any part of the product covered by this warranty that, with normal installation and use, becomes defective (as confirmed by Bogen upon inspection) during the applicable warranty period, will be repaired or replaced by Bogen, at Bogen's option, provided the product is shipped insured and prepaid to: Bogen Factory Service Department, 50 Spring Street, Ramsey, NJ 07446, USA. Repaired or replacement product will be returned to you freight prepaid. This warranty does not extend to any of our products that have been subjected to abuse, misuse, improper storage, neglect, accident, improper installation or have been modified or repaired or altered in any manner whatsoever, or where the serial number or date code has been removed or defaced.

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