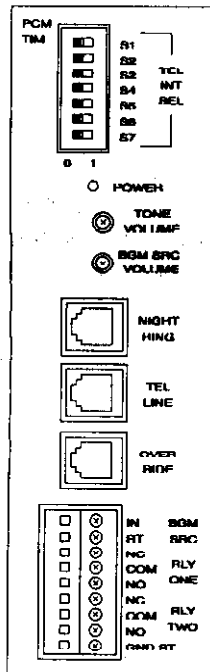

Bogen Model PCM-TIM

Telephone Interface Module for Bogen's
PCM-2000 Zone Paging System



FCC Required Statements

Warning:

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC Requirements

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:

1. The Federal Communications Commission (FCC) has established Rules which permit this device to be directly connected to the telephone network. Standardized jacks are used for these connections. This equipment should not be used on party lines or coin lines.
2. If this device is malfunctioning, it may also be causing harm to the telephone network; this device should be disconnected until the source of the problem can be determined and until repair has been made. If this is not done, the telephone company may temporarily disconnect service.
3. The telephone company may make changes in its technical operations and procedures; if such changes affect the compatibility or use of this device, the telephone company is required to give adequate notice of the changes.
4. If the telephone company requests information on what equipment is connected to their lines, inform them of:
 - (a) The telephone number that this unit is connected to,
 - (b) The ringer equivalence number [1.0B]
 - (c) The USOC jack required [RJ11C], and
 - (d) The FCC Registration Number

Items (b) and (d) are indicated on a label affixed to the unit. The ringer equivalence number (REN) is used to determine how many devices can be connected to your telephone line. In most areas, the sum of the RENs of all devices on any one line should not exceed five (5.0). If too many devices are attached, they may not ring properly.

Service Requirements

5. In the event of equipment malfunction, all repairs should be performed by our Company or an authorized agent. It is the responsibility of users requiring service to report the need for service to our company or to one of our authorized agents. Service can be facilitated through our office at:

Bogen Communications, Inc.
50 Spring Street, Ramsey, NJ 07446
Tel: (201) 934-8500

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Section 1

Description

The Bogen Model PCM-TIM is the telephone interface module for the Bogen PCM Zone Paging System. Only one module is required per system. The PCM-TIM provides the telephone interface (including talk battery), night ringer input, emergency over ride input, background music source input, and auxiliary relay contacts for the system. The module is also responsible for all tone signalling features. Controls are included for background music volume and tone volume.

The first section of this document provides information relative to connecting the system to the telephone interface. Section 2 contains user instructions for accessing a paging zone or zone group. Section 3 describes the system's background music, tone, zone and zone group features. This is followed by programming instructions in Section 4, which describe how to use DTMF input to set system parameters.

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

Interface

The PCM connects to virtually any telephone system:

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 DIP switches and connecting with modular (RJ-11) telephone plugs.

Refer to the appropriate procedure on the following pages to connect the PCM-2000 to the telephone system. **In all cases, make sure that power is off before performing the installation.**

PBX Station Access/CO line

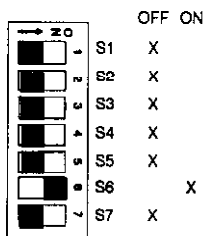
In this configuration, the unit answers after the first full ring. As soon as it answers, the default timer is started. The default timer determines the maximum length of any page. When a paging zone is selected, the Vox timer is started (if enabled). This timer repeatedly resets as long as audio is 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 (short losses of loop current). When a CPC pulse is detected, the unit will immediately drop the line.

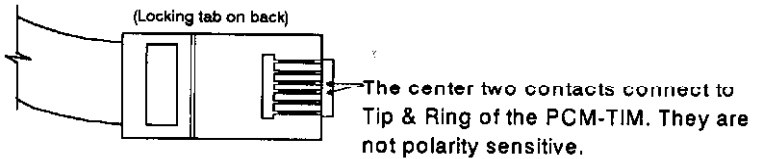
1. Make sure that power is off and all connections completed before proceeding.

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.

2. Move the TEL INT SEL (dip) switches on the module to the position shown in the illustration below. Use the tip of a pen or other pointed instrument to move the switches.



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



4. Set Default and Vox timers. See Programming section for procedure.

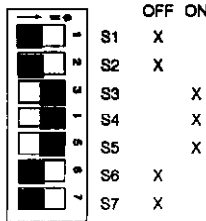
Note:

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.

PBX Loop Start Trunk Port

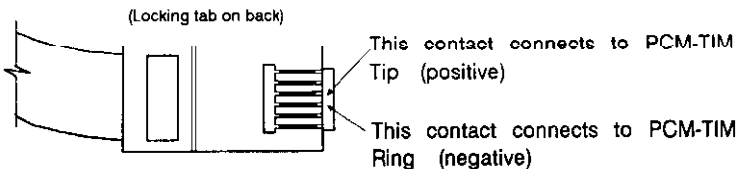
In this configuration, the unit supplies a 48V talk battery and loop current detection. When the unit detects a loop resistance between Tip and Ring, it activates. When the loop opens, the page ends. The unit follows the status of the trunk port; default and vox timers are not used in this mode.

1. Make sure that power is off and all connections completed before proceeding.
2. Move the DIP switches on the module to the position shown in the illustration below. Use the tip of a pen or other pointed instrument to move the switches.



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 TEL LINE jack on the module.

The center 2 conductors are tip and ring @ 48VDC 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.



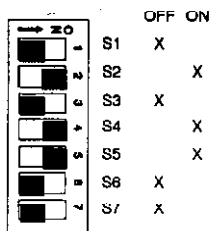
Caution:

The polarity of the Tip & Ring contacts of the RJ11 jack for the Tel Line 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).

PBX Ground Start Trunk Port

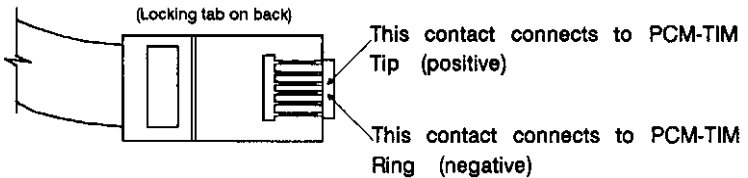
In this configuration, the unit supplies 48V talk battery and loop current detector. When the ground start trunk grounds Ring, the unit responds by closing the connection to Tip, which completes the access procedure. When the loop is opened, the page ends. The unit follows the status of the trunk; default and vox timers are not used in this mode.

1. Make sure that power is off and all connection completed before proceeding.
2. Move the DIP switches on the module to the position shown in the illustration below. Use the tip of a pen or other pointed instrument to move the switches.



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 TEL LINE jack on the module.

The center 2 conductors are tip and ring @ 48 VDC 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 on the next page for more information.



4. Use 24 gauge solid wire to connect the GND ST terminal on the module to the PBX ground. This is typically the AC ground for the PBX system.

Important 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 PCM-2000 system cannot be connected to AC ground. If the system is not working and no PCM terminals (except the GNDST 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 WMT-1A transformer before connecting the equipment to the PCM.

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

Page Port – Contact Closure

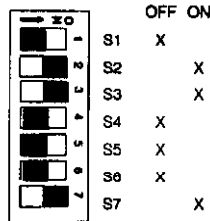
In this configuration, the unit responds to a contact shorting the +5 source to its return. When the short is removed, the page ends. Audio is provided to the system through a separate pair of leads.

1. **Make sure that power is off and all connections completed before proceeding.**

Note:

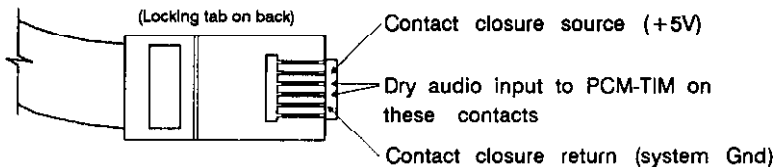
Make sure that the page port produces DTMF tones. The page port must also be bidirectional in order to use talk back.

2. Move the DIP switches on the module to the position shown in the illustration below. Use the tip of a pen or other pointed instrument to move the switches.



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 TEL LINE jack on the module.

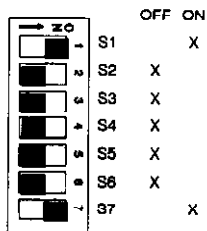
The center 2 conductors are used for dry audio and the connectors on either side are connected to the page port contact closure. The maximum resistance of the page port contact closure is 1000 ohms. Refer to the illustration below for more information.



Page Port – VOX

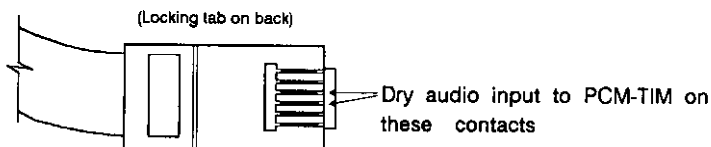
In this configuration, a dry audio pair is used to detect audio and activate the system. Paging ends when the Vox timer or default timer times out.

1. Make sure that power is off and all connections completed before proceeding.
2. Move the DIP switches on the module to the position shown in the illustration below. Use the tip of a pen or other pointed instrument to move the switches.



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 TEL LINE 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. 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.
5. If the dialing timeout feature was inhibited (it is enabled as a factory default), it must be enabled. 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 PCM-2000 will return a busy signal for approximately 5 seconds. When the busy tone stops, the system will be ready to accept another zone selection.

Section 2

Zone Accessing

The PCM system supports from 3 to 99 (in groups of 3) different paging zones. It also supports up to 32 paging zone groups for voice paging application, and 11 zone groups for signalling 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. Signalling 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 PCM-TBM module and is operable only in centrally-amplified zones). Talk back is not available to zone groups. Refer to the instructions furnished with the PCM-ZPM module or PCM-TBM 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

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] and make an All-Call page.

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.

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).

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.

Code Calling

Code calling is the ability to activate a series of chime tones over a signalling 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 key pad selection.
- **Echo** code calling sounds chime tones that correspond to the actual 2-digit key pad numbers entered.

The code calling feature is deactivated 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 feature and to select the type of code call, and/or activate the auto repeat feature. (As 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 activate the feature and to select the type of code call, and/or activate 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 tone bursts followed by a single tone burst.

You must always enter two digits. If the auto repeat feature is activated, 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.
- Code call feature can be inhibited. See Programming section.

Section 3

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 is not heard during a page. See instructions in the ZPM-CPU module 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 PCM-TIM module terminals marked IN & RT of BGM SRC. See the instructions included with the PCM-CPU module for connections to the amplifier.

Night Ring

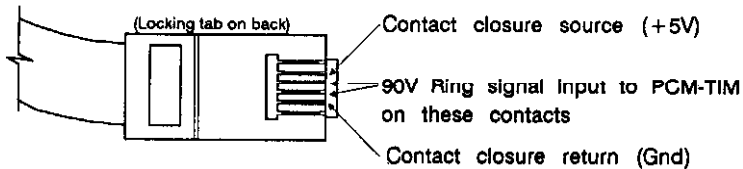
The PCM Night Ringer signalling feature is designed to alert personnel to incoming calls after normal business hours. The feature can be activated either by a 90V ring signal or by a contact closure. In the factory default configuration, the night ringer sounds over all zones, however, a zone group can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

Follow the instructions on the next page to physically connect the night ringer wiring. Refer to the Programming section to set up a night ringer zone group or to change to ringer tone.

1. Make sure that power is off.

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.

**2. Plug a modular cord into the NIGHT RING (RJ-11) jack.**

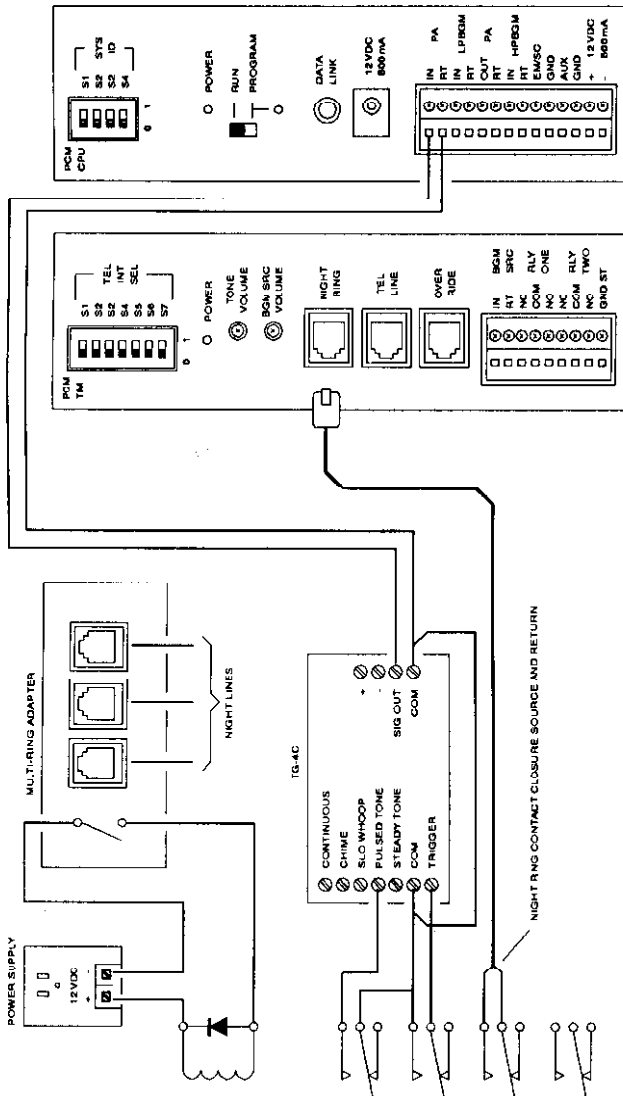
The center conductors of the plug are used for the 90V ring signal. The flanking conductors are used for contact closure activation. Maximum contact resistance for contact closure activation is 1000 ohms.

Note:

The Night Ring feature has priority just above background music. There is a 5 second delay after the night ring stops before background music is restored (bridges interring pause).

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 use the external device.



Over Ride

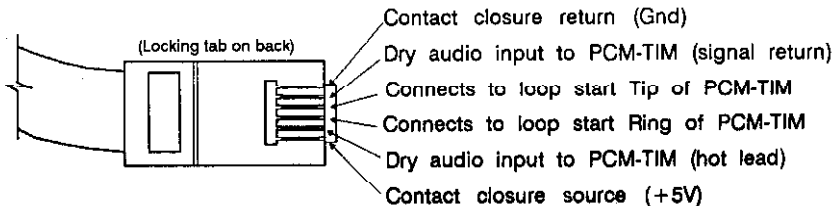
The Over Ride is a non-programmable feature that lets the caller take priority over all paging functions and make a system-wide page to all speakers. The feature can be activated using a loop start trunk or dedicated telephone. Provisions are also included to interface with other signalling equipment.

The Over Ride feature includes a quad beep preannounce tone which can be enabled or inhibited. (The default is inhibited. See Programming section to enable the tone.)

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

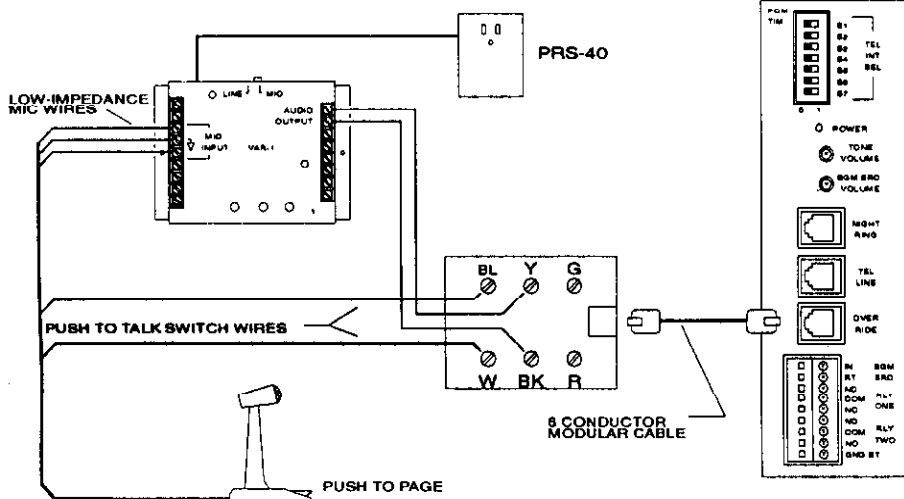
2. Plug modular cord into OVER RIDE (RJ-11) jack.

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

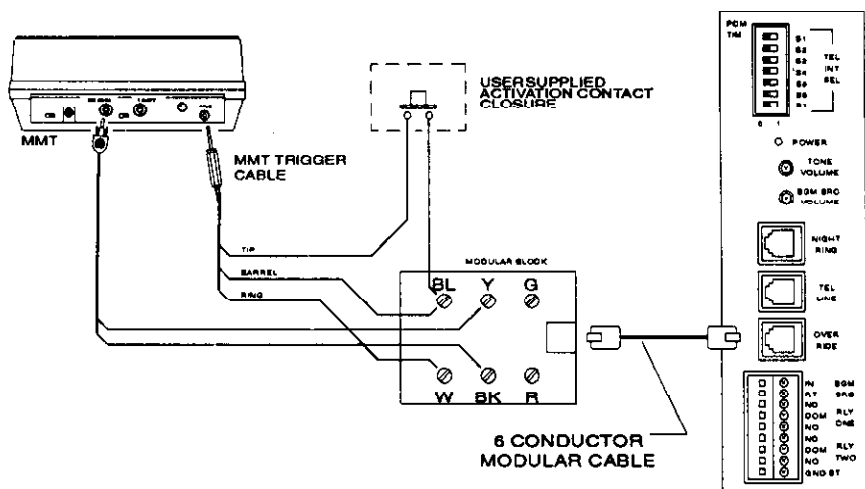


A contact closure and dry audio source can also be used for the Over Ride input. The two conductors flanking the talk battery conductors provide a dry audio gateway into the system wide Over Ride. Over Ride is activated by shorting outermost conductors. Maximum contact closure resistance is 1000 ohms.

3. The illustrations on the next page show connection of the PCM to a microphone, and to the Bogen MMT Series digital message player.
4. Refer to the Programming section to enable or inhibit the preannounce tone.



Connections to MIC using VAR-1



Connections for MMT.

Tones

In addition to the Over Ride 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.

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

Privacy Beep. This short (100msec.) 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 Over Ride. Tone options available are: no tone, a 2 - 7 second tone blast (3 sec. is default), a tone that follows the contact closure, a chime tone, or a quad beep. See Programming section to change the tone.

Time-Triggered Tone. The PCM-TBM module contains a real-time clock and a time-trigger feature that provides up to eight (8) time-triggered tones over separate signalling zone groups. The tone choices are: no tone, a 1 - 8 second tone blast (3 sec. blast 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 above tones are controlled by the **TONE VOLUME** control on the PCM-TIM module. All tones are 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 labelled 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 PCM-2000

- | | |
|-------------|--------------------------------|
| 1 (Highest) | Over Ride |
| 2 | Emergency/Shift Change (EM/SC) |
| 3 | Time Triggers |
| 4 | Voice page/Code call |
| 5 | Night Ring |
| 6 (Lowest) | 1 Amp BGM |

Section 4

System Programming

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

Note:

Paging and signalling functions are not allowed during programming.

Recommended Initial Programming Procedure

All programming is accomplished through the TEL LINE 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 TEL LINE jack. Once initial programming is completed, re-select the proper interface type and reconnect the access line.

To Program the PCM-2000 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 PCM-2000 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 a chart later in this section.

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.

Note:

The system uses a 1 minute timer to determine a hang up in station access mode. If more than 1 minute elapses between DTMF tones, the system will assume that the caller has hung up. This also means that if you make a mistake and have to hang up, you will have to wait 1 minute before retrying. One way to shorten this is to remove the plug from the TEL LINE jack and replace it. This forces an immediate system hang up (of course, this only works if you are close to the system).

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 2-digit number of zone group (01 - 32) you want to create. Follow this with the two-digit numbers of the zones you want to be in the zone group.

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] [#].

2. When finished, save the zone group data into memory by pressing [#].
3. Repeat the above procedure to program additional zone groups.

To Erase A Zone Group (Paging or Signalling Groups)

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

Programming Signalling Zone Groups

Use the following procedure to create the signalling 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.

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] [7] [1] [2] [#].

2. When finished, save the zone group data into memory by pressing [#].
3. Repeat the above procedure to program additional zone groups.

Interface Default Timer

If the PCM system is connected to a **PBX station port**, you can set the maximum page duration (default timer). The factory default for this timer is 30 seconds. If you wish to inhibit the default timer, enter the Feature Code followed by "00". 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).

Interface Vox Timer

If the PCM system is connected to a **station port**, you can set the default timer for the Vox time out. The default value is 6 seconds. To inhibit the timer, enter the Feature Code followed by "0". To change the time, enter the Feature Code followed by a single digit from 1 to 9, corresponding to 1 to 9 seconds.

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, the PCM will drop the line after 5 seconds of error tone. This will free the paging system for another page access.

Single Amp BGM Enable

Single amplifier BGM operation lets the PCM-2000 use the paging amplifier 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 PCM-2000 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

A built in real time clock keeps track of time when using the signaling functions of the PCM-TBM module. The manual included with the PCM-TBM module contains more complete information of the clock feature. See the Feature Codes Chart for the code required to set the clock. Refer to the chart on the next page and enter time in 24:00 hour format.

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

24:00 Hour Time Chart

Clock Set

The real time clock in the PCM-TBM module must be set to the current time of day for proper operation. Time must be entered in 24:00 hour format.

Clock Synchronization

An option is available to synchronize the PCM-2000's real time clock to an external reference clock. The reference clock must provide a contact closure at a particular time of day. Using the clock sync. code, the PCM-2000 is programmed for that same time of day. When the reference clock closes the contacts, the real time clock in the PCM-2000 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 Trigger Events

The real time clock in the PCM-TBM 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 previously programmed data.

Set Up Tone

The Set Up tone is available to assist in the adjustment of speaker volume. The Set Up tone is only available in the Programming Mode. To activate the Set Up tone, dial 000. Hang up to deactivate the tone.

Reset Default Values

A Feature Code is available to reset the PCM-2000 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
Privacy Beep			
Inhibit	006		
Enable	007		Enable
Preannounce Tone			
Inhibit	003		
Beep	004		
Chime	005		Chime
Confirmation Tone			
Inhibit	001		
Enable	002		Enable
Emergency O/R Tone			
Inhibit	008		Inhibit
Enable	009		
All Call			
Inhibit	010		
Enable	011		Enable
Dialing Timeout			
Inhibit	012		
Enable	013		Enable
1 Amp BGM			
Inhibit	018		Inhibit
Enable	019		
Default Timer	050	00 - 99	03 - See Note 1
VOX Timer	051	0 - 9	6 - See Note 2

Feature	Feature Code	Additional Required Data	Factory Default
Zone Groups	*01	Zone Numbers	No Zones
	.	" "	
	.	" "	
	*32	" "	
EM/SC			
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		
Night Ring			
Zone Group	*93	Zone Numbers	All Call
No Tone	030		
Simulated Ring	031		Ring
Chime	032		
Code Call			
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		
Clock Set	060	HHMM	00:00
Clock Sync.	067	HHMM	See Note 3
Inhibit	068		Inhibit
Enable	069		

Feature	Feature Code	Additional Required Data	Factory Default
Time Trigger 1			
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		
Time Trigger 2			
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		
Time Trigger 3			
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		

Feature	Feature Code	Additional Required Data	Factory Default
Time Trigger 4			
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		
Time Trigger 5			
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		
Time Trigger 6			
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
Time Trigger 7			
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		
Time Trigger 8			
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		
Reset Default	999		
Set Up Tone (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.

PCM2000 ADDENDUM

The PCMCPU, PCMTIM, PCMZPM, and PCMTBM modules that comprise the PCM2000 system have been enhanced to accommodate amplifier powers of up to 250W.

A label on the top marked *PCM2000-B* identifies these modules with 250W capability.

IMPORTANT

Please make the following considerations when installing a new *PCM2000-B* system or replacing an existing module with one marked with the *PCM2000-B* label.

- 1) A power supply upgrade must be made when expanding an existing system with modules that are marked with the *PCM2000-B* label. In this case replace the existing power supply with a Bogen PCMPS2 power supply (system requirements are now 12V DC @ 1.5A).
- 2) When replacing more than one older module with modules marked with the *PCM2000-B* label, the same power supply upgrade should be made to ensure proper system operation.

Note: Replacing an existing PCMCPU module with one marked with the PCM2000-B label does not require any power supply upgrade.

- 3) Do not operate a system with more than a 100W amplifier if any module in the system does not have the *PCM2000-B* label on top.
- 4) When installing a new system, ensure that all modules are marked with the *PCM2000-B* label.
- 5) PCMTBM modules that are marked with the *PCM2000-B* label will only work with PCMCPU modules that are also marked with the *PCM2000-B* label. Expanding an existing system by adding a PCMTBM may require changing the existing PCMCPU.
- 6) A *PCM2000-B* PCMCPU module will operate in an existing PCM2000 system without upgrading the existing power supply.



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PCM2000 ADDENDUM

Please note the following for the PCMTIM, which are not listed in its User's Manual.

Manual Sections Affected:

Section 1 — PBX Loop Start Trunk Port, PBX Ground Start Trunk Port

Feature:

Trunk Disconnect

Purpose:

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. The disconnect signal can allow compatible equipment to clear the paging line should a paging phone be improperly hung up.

New Feature Codes:

FEATURE	FEATURE CODE	ADDITIONAL DATA	DEFAULT CONDITION
Trunk Disconnect	014	Inhibit	Inhibit
	015	Enable	

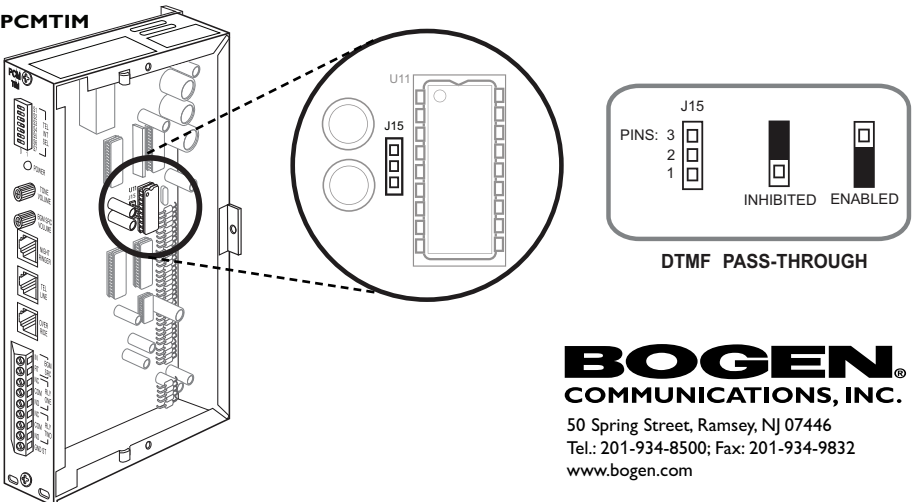
Manual Sections Affected:

Section 1 — PBX Station Access/CO Line, PBX Loop Start Trunk Port, PBX Ground Start Trunk Port, Page Port – Contact Closure

DTMF Pass-Through:

DTMF pass-through can be enabled or inhibited by setting a jumper switch (Position J15). Setting the switch to **enabled** (jumper across pins 1 and 2) allows DTMF to pass through to the zone outputs for signaling downstream equipment. *Note: The factory default condition is pass-through inhibited (jumper across pins 2 and 3).*

PCMTIM



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