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INSTALLATION INSTRUCTIONS MODEL FZC-3 FIXED ZONE CONTROL (3 ZONES)

Use this product according to this instruction manual. Please keep this instruction manual for future reference.

1. APPLICATION INFORMATION:

The FZC-3 is a Fixed Zone Control that performs the central control, switching and signaling required to provide selective Zone Paging, All Call, Background Music Mute, Page Alert Tone Signaling and Night Ringer. The FZC-3 provides 3 separate zones of One Way paging.

The FZC-3 can also be optioned to be used with a wide variety of system amplifier configurations which can include various combinations of 25V/70V central or zone amplifiers or amplified One Way paging speakers.

The FZC-3 is compatible with most EKSU, KSU (1A2), and PBX telephone systems. It connects to either an unused loop start CO port or a 600 ohm low power audio page port. When connected to an unused CO port, DTMF telephones may be used to operate the FZC-3. When connected to a page port, the page port must provide a dry contact closure and transmit DTMF tones. The FZC-3 can also be used in "Ring Start" applications (Centrex, Station Level) by using a (TPI-100) telephone paging interface.

Paging is accessed from any telephone by pressing the CO line button (EKSU & KSU), or dialing the number assigned to paging. Three (3) individual zones are selected by dialing 1,2 or 3. All Call is selected by dialing 0.

When any Zone or All Call selection is made, a page alert tone will be heard at all the speakers in the selected zone. The tone will also be heard by the paging telephone to provide verification of connection to the selected speakers.

2. INTERFACE INFORMATION:

The FZC-3 can be connected directly to:

- 1. A telephone for stand alone paging.
- 2. A telephone system's unused CO line/trunk port.
- 3. A telephone system's 600 ohm audio page port (See Figure 11, page 8).

Using a TPI-100 connected to the FZC-3 then can be connected to:

(The FZC-3 should not be hooked directly to the Public Switched Telephone Network, as this can result in improper operation of the unit and or the Public Switched Telephone Network)

- 1. An analog station level line.
- 2. A Centrex line.

3. **CONFIGURATION DESCRIPTIONS:**

The amplifier type (central or zone) is configured as described in Chart 1.

Chart 1: Amplifier Type Configuration Function		
Function	Choices	
Amplifier Type	Central Amplifier: 25V or 70V audio output switched to speakers with line matching transformers.	
	2. Zone Amplifier: 600 ohm audio input switched to separate zone amplifiers connected to paging speakers with 25V/70V line matching transformers; or switched to PRM-150 line preamplifiers or connected to amplified One Way paging speakers.	

If central amplification is used, then the choice of one or two central amplifiers is configured, as described in Chart 2.

Chart 2: 1 or 2 Central Amplifiers Configuration Function		
Function	Choices	
1 or 2 Central Amplifiers	(1CA) One central amplifier for both paging and background music. Paging in any zone will mute music in all zones.	
	(2CA) Two central amplifiers, one for paging and one for background music. Music is muted only in the activated zone.	

The FZC-3 Talk Battery output or TPI-100 interface function can be selected depending upon the paging access source, as shown in Chart 3.

Chart 3: Talk Battery Output System Configuration Function		
Function	Choices for System	
	For stand alone telephone, unused CO line/trunk	
Talk Battery Output	port, and 600 ohm audio page port.	
or TPI-100 Interface	Interface to a TPI-100.	

Depending upon system amplifier configuration, the amplifier functions and background music mute operation will vary, as shown in Chart 4.

	Chart 4: Amplifier Configurations, Functions, and Music Mute Operation				
	Amplifier Configuration Function Music Mute Operation				
(A)	One (1) Central Amplifier	Paging & Music	Paging any zone will mute music in all zones.		
(B)	Two (2) Central Amplifiers	One for Paging and One for Music	Music is muted only in the paged zone(s).		
(C)	Zone Amplifiers, Line Preamplifiers Speaker Amplifiers	Paging & Music	Music is muted only in the paged zone(s)		

4. APPLICATION DIAGRAMS:

The following application diagrams show the seven basic system configurations of the FZC-3. All of these configurations are possible with the appropriate configured switch selections. Figures 1, 2 and 3 are typical configurations using central amplifiers. Figure 4 is a typical configuration using amplified speakers. Figures 5 and 6 are typical configurations using zone amplifiers.

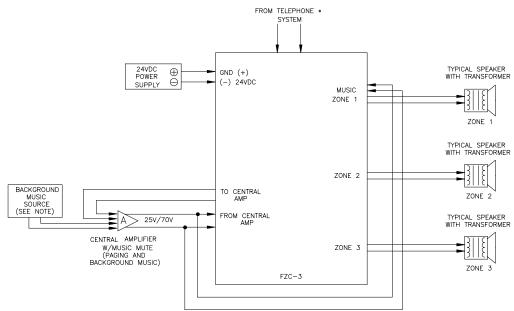


Figure 1.
One Central Amplifier which has music mute, page input and music input.

In this application, one central amplifier is used for both paging and background music. The central amplifier has music muting and separate inputs (volume controls) for paging and music. The system uses speakers with built-in line matching transformers for paging.

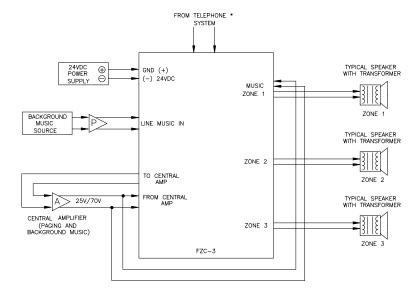
NOTES:

- 1. If a stand alone telephone, unused Co Line/truckport, or 600 ohm audio page port is use connections are made directly to the FZC-3. If Station Level or Centrex Line a TPI-100 is required.
- 2. If the central amplifier does not provide music mute, then the background music source is connected as shown in Figure 2.

Figure 2.

One Central Amplifier which does not have music mute, and which has only one input.

In this application, the one central amplifier for both paging and background music. The central amplifier does not provide music muting, and has only one input (one, or no volume control). The system uses speakers with built-in line matching transformers for paging.

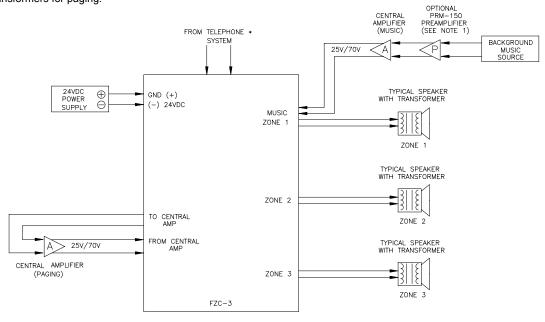


NOTES:

- 1. If a stand alone telephone, unused Co Line/truckport, or 600 ohm audio page port is use connections are made directly to the FZC-1 If Station Level or Centrex Line a TPI-100 is required.
- 2. If the background music source has no volume control, then the optional PRM-150 must be connected between the background music source and the FZC-3 music input, as shown.

Figure 3.
Two Central Amplifiers, one for paging and one for background music.

In this application, two central amplifiers are used, one for paging and one for background music. The system uses speakers with built-in line matching transformers for paging.

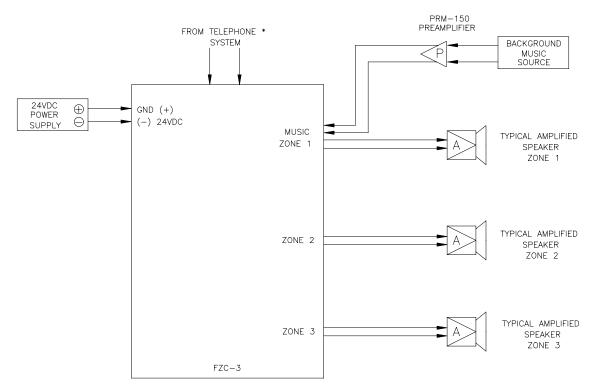


NOTES:

- 1. If a stand alone telephone, unused Co Line/truckport, or 600 ohm audio page port is use connections are made directly to the FZC-3. If Station Level or Centrex Line a TPI-100 is required.
- 2. If both the music central amplifier and the background music source have no volume controls, then a PRM-150 must be connected between the background music source output and the music central amplifiers input.

Figure 4. Amplified Speakers

In this application, amplified speakers are used for paging and for background music. A PRM-150 preamplifier is used with the background music source.

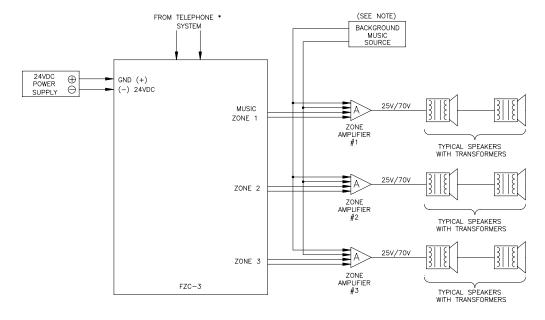


<u>NOTE</u>: If a stand alone telephone, unused Co Line/truckport, or 600 ohm audio page port is use connections are made directly to the FZC-3. If Station Level or Centrex Line a TPI-100 is required.

Figure 5.

Zone Amplifiers which have music mute, page inputs and music inputs.

In this application, the zone amplifiers for both paging and background music have music muting, and separate inputs (volume controls) for paging and music. The system uses speakers with line matching transformers.



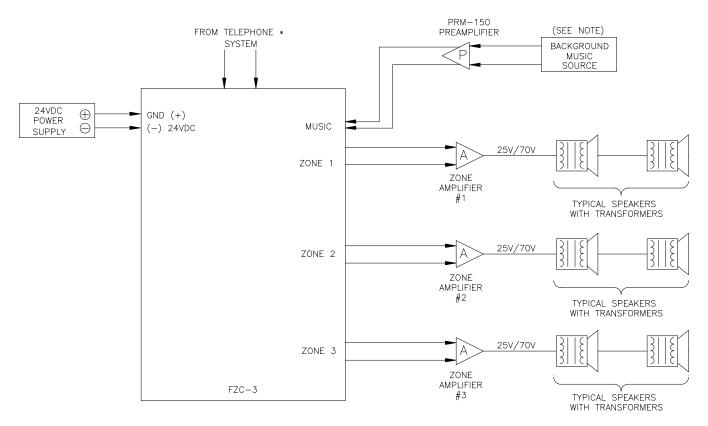
NOTES:

- If a stand alone telephone, unused Co Line/truckport, or 600 ohm audio page port is use connections are made directly to the FZC-3. If Station Level or Centrex Line a TPI-100 is required.
- 2. One music source may be used for all zones, or different music sources can be used for different sources.

Figure 6.

Zone Amplifiers which do not have music mute, and which have one input.

In this application, the zone amplifiers for both paging and background music do not provide music muting, and have only one input (with or without volume control). The system uses speakers with line matching transformers.



NOTE: If a stand alone telephone, unused Co Line/truckport, or 600 ohm audio page port is use connections are made directly to the FZC-3. If Station Level or Centrex Line a TPI-100 is required.

5. AMPLIFIER AND SPEAKER CAPACITY

Maximum amplifier and speaker capacity for each zone group and the total system is shown in Chart 5.

Chart : Maximum Amplifier and	· -
Amplifier Configuration	Total System
Central Amplifier(s)	100W @ 70V 25W @ 25V
Zone Amplifiers or	150 Amplifier
Speaker-Amplifiers	Inputs

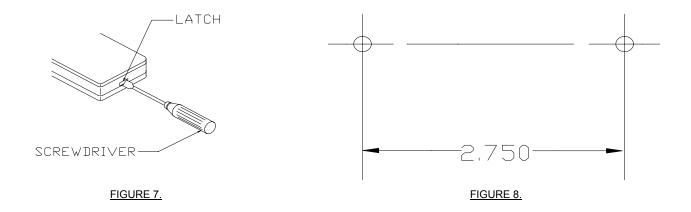
NOTE: The Fixed Zone Control can switch its preamplifier audio output to the 600 ohm inputs of up to 150 zone amplifiers or speaker. This TOTAL SYSTEM audio output can be distributed to the three (3) zones, provided no SINGLE ZONE exceeds 25 amplifier inputs, which would leave 125 amplifier inputs for the remaining zones.

6. MOUNTING INSTRUCTIONS:

The FZC-3 is designed for surface wall mounting near the telephone system. Remove the top cover by pushing on the latch at the bottom of the housing base with a small screw driver. See Figure 7.

Figure 8 is the mounting template. To mount the base (containing the PC Board Assembly) to the wall space the 2 mounting screws provided horizontally on 2.750" centers.

<u>Aution:</u> These devices are not intended for use in hazardous locations as defined by the National Electrical Code (NEC) and by the National Fire Protection Association (NFPA).



7. SPECIFICATIONS:

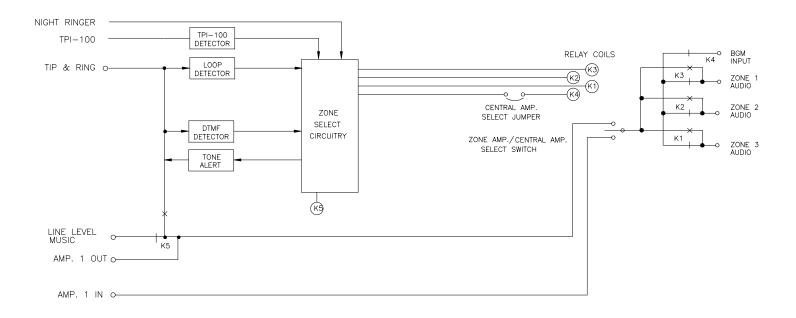
Chart 6.		
Supply Voltage (Nominal)	-24VDC	
Supply Voltage Range	-21.6VDC to -26.4VDC	
Alert Tone Frequency	1100Hz +/-10%	
Alert Tone Duration	500m Sec. +/-10%	
Alert Tone Level (maximum)	-4dBM +/-3dBM	
Tip and Ring Input Level	-15dBM (0.1Vrms) to +10dBM (2.4Vrms)	
Music Input Level	-15dBM (0.1Vrms) to +10dBM (2.4Vrms)	
Tip and Ring Input Impedance	600 Ohms	
Music Input Impedance	600 Ohms	
Max. Output Level to Amplifier 1	0dBM (0.78Vrms)	
Output Impedance to Amplifier 1	4 Ohms	
Max. Input Level from Amplifier 1	25W @ 25V or 100W @ 70V (Central Amplifier Output)	
Audio Output Level (Max Per Zone)		
- Speaker - Amplifier Selected	0dBM (0.78Vrms), 600 Ohms	
Operating Temperature Range	0 to 49 Degrees C	
Operating Humidity Range	0 to 85% RH	
Off-Hook Detection Sensitivity	1850 Ohms DC Resistance (Max.)	
Night Ringer Detector	0 to 100 Ohms DC Resistance (Dry Contact Closure)	

Operating current Max. @-24VDC	
Supply Current (Idle-BGM)	55mA
Supply Current (Nominal-1 Zone Page)	160mA
Supply Current (Maximum-All Call)	200mA

8. ZONE ACCESS AND DIALING CODES:

Chart 7.	
Zone Control Access	Press Co Line Button, Or Dial Number Assigned To Page.
Page Zone 1	Dial 1
Page Zone 2	Dial 2
Page Zone 3	Dial 3
Page All Zones (All Call)	Dial 0

Figure 9. Single Line Block Diagram



9. WIRING INSTRUCTIONS (SEE FIGURE 10):

- Make sure 24VDC power supply is disconnected from the 115VAC power source.
- 2. Connect tip and ring from:
 - A. Stand along telephone, or
 - B. Telephone system's unused CO line/trunk port, or
 - C. Telephone system's 600 ohm, audio page port (See Figure 11), or
 - D. TPI-100, along with connecting the TPISW and GND.
- 3. Connect night ringer if used (see Figure 12).
- 4. Connect the background music source to TB3, terminals 3 and 4, on the FZC-3.
- 5. Connect the 24VDC power supply to the (-)24V and GND(+) terminals on TB1, terminals 6 and 5 respectively.
- Connect the zone amplifier, speaker amplifiers, or speakers with transformers to the audio pair for zones 1 thru 3 on TB2 of the FZC-3.
- 7. If one central amplifier is used for paging and background music:
 - A. Connect the input of central amplifier to "TO CENTRAL AMP", terminals 1 and 2 of TB3 on the FZC-3. Connect the output of central amplifier to "FROM CENTRAL AMP", terminals 5 and 6 of TB2 on the FZC-3.
 - B. Connect the output of central amplifier to BMG Input, terminals 1 and 2 of TB2 on FZC-3.
- 8. If separate central amplifiers are used, one for paging and one or more for background music:
 - A. Connect paging amplifier as described in 6A, above.
 - B. Connect output of background music amplifier(s) as described in 6B, above.
- 9. Connect the 24VDC power supply to the 115VAC source.

NOTE

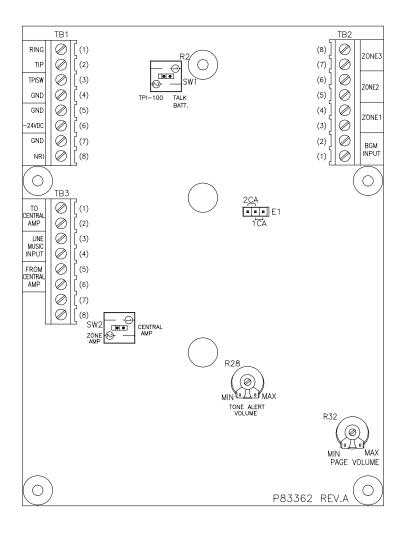
When only one central amplifier is used, background music will be muted in all zones when a page is in progress. When separate central amplifiers are used, background music will be muted in only the paged zone.

10. CONFIGURATION SETTING INSTRUCTIONS (SEE FIGURE 10):

- 1. Set the "Talk Battery/TPI-100" selector switch, SW1 (See Chart 3)
 - A. *To the "Talk Battery" position when connected to a telephone systems, unused CO line/trunk port, 600 ohm audio page port, or directly to a telephone.
 - B. To the "TPI-100" position when connected to a TPI-100.
- 2. Set the "Zone Amplifier/Central Amplifier" selector switches for SW2 as required. (See Chart 1)
 - A. *Central Amplifier
 - B. Zone Amplifier
- 3. Set the "1CA/2CA" jumper E1 as Required. (See Chart 2)
 - A. 2CA
 - B. 1CA

Figure 10.
Installation, Programming and Volume Adjustment Diagram

^{*}Denotes shipped configuration.



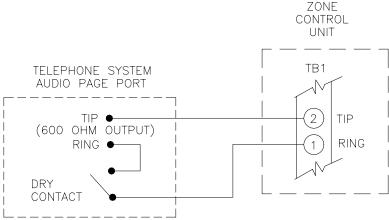
11. AUDIO PAGE PORT INSTALLATION INSTRUCTIONS:

The FZC-3 can be connected to an audio page port only if the audio page port provides:

- (A) A 600 ohm, low power page output, capable of passing DC loop current.
- (B) Transmission of DTMF touch tone.
- (C) A dry contact that is normally open, closes when paging and reopens when the page is completed.

If these conditions are met, then connect Tip and Ring as shown in Figure 11.

Figure 11.
Connecting to a 600 Ohm Audio Page Port

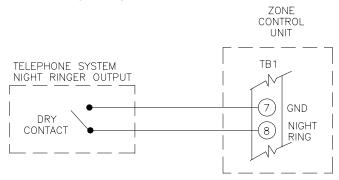


12. NIGHT RINGER INSTALLATION INSTRUCTIONS:

The Night Ringer works from a dry contact closure through which no more than 10mA of current will be drawn. The dry contact closure will result in the Night Ringer function, an All Call will occur and the alert tone sent out. The alert tone will remain until the dry contact closure opens. This

feature will follow the dry contact closure presented between the Night Ring and GND (TB1 Pos. 7 and 8). This feature has a lower priority than paging. Therefore if a page comes in while the Night Ringer is active, the page will take priority.

Figure 12.
Night Ringer Installation Instructions



13. OPERATING INSTRUCTIONS:

- 1. Pick up the telephone handset and press the CO line button (EKSU, KSU), or number assigned to paging (PBX) to access the port assigned to paging. (Port to which the FZC-3 has been connected).
- 2. To initiate:
 - A. Zone Page, dial "1", "2" or "3" to select zones 1 thru 3, respectively.
 - B. For All-Call Page, dial "0".

NOTE: If any other digit is dialed a tone will be heard in the telephone handset and the user must hang up and begin again.

- 3. When paging, background music will be muted. At the conclusion of the page (i.e., phone "hangs-up"), the background music will automatically be restored.
- 4. When any page is initiated, an alert tone is heard both in the telephone receiver, and in all selected zones. Adjust the tone volume control in the FZC-3 to the desired level. Note the minimum setting turns the tone off.
- 5. At the conclusion of the page, simply hang-up the telephone handset.

14. TROUBLE SHOOTING

Con	ndition	Check	
1.	Zone page or all call page cannot be accessed	 Telephone system must have touch tone (DTMF) dialing Check presence and polarity of voltage on (-) 24VDC and GND (+) terminals on TB4. If the unit is in the Talk Battery configuration, check for the access tone at the beginning of a page by using a telephone connected between TB3 1 and TB3 2. 	
2.	No background music.	 Verify unit has released from last page. Check background music source, and adjust its volume control, as desired. Check presence of line level music input (if used) at terminals. If necessary also at speaker amplifier, or central or zone amplifier inputs. 	
3.	No sound or low page volume.	 Check presence and level of audio input at Tip and Ring terminals on TB1 of the FZC-3 and if necessary also at the CO Port. (or the Audio Page Port) Check presence and level of audio at the zone AUDIO output terminals on TB2 of the FZC-3. If necessary also at speaker amplifier inputs, and central or zone amplifier inputs. 	
4.	The page alert tone is too high or too low.	Set the page alert Tone Volume Control in the FZC-3 to the desired level.	
5.	Night Ringer	 Verify the unit has relesed from last page. Check presence of a short between TB1-7 and TB1-8. 	

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