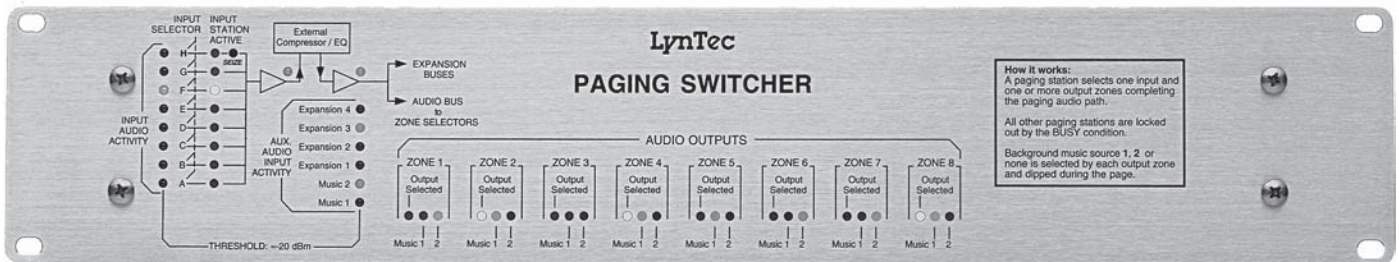


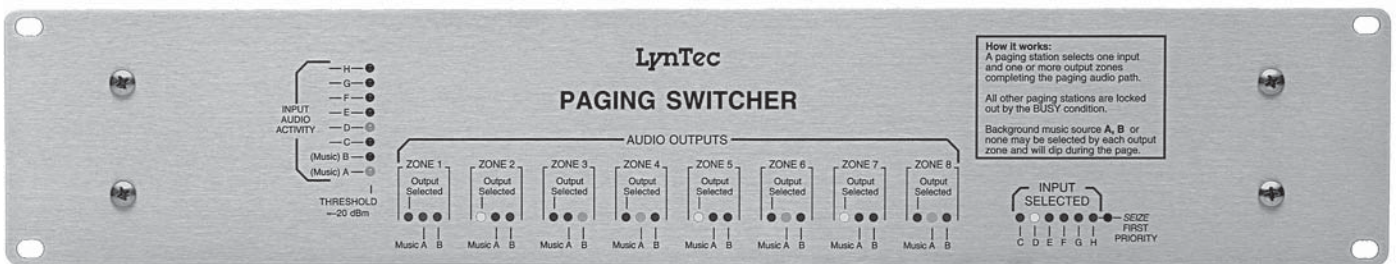
# LynTec PAGING SWITCHERS

A line level switching system for routing and control of paging and music in:

- Small airports
- Convention facilities
- Cruise ships
- Retail stores
- Restaurants
- Malls
- Warehouses
- Country clubs
- Theatres
- Offices
- Arenas
- Casinos



EXPANSION INPUT model with compressor/EQ sharing. PS10TE-8



Basic 8 input non-expandable model. PS8TC-8 M2

## BENEFITS

- ✓ Superior paging and music audio quality... far exceeds phone based paging.
- ✓ Provides wide flexibility for the sound system designer.
- ✓ Reduced system and wiring troubleshooting time. Many LEDs for instant visual diagnosis.
- ✓ *Designed-in* reliability and consistency cuts one-of-a-kind design and documentation costs.

## FEATURES (both models)

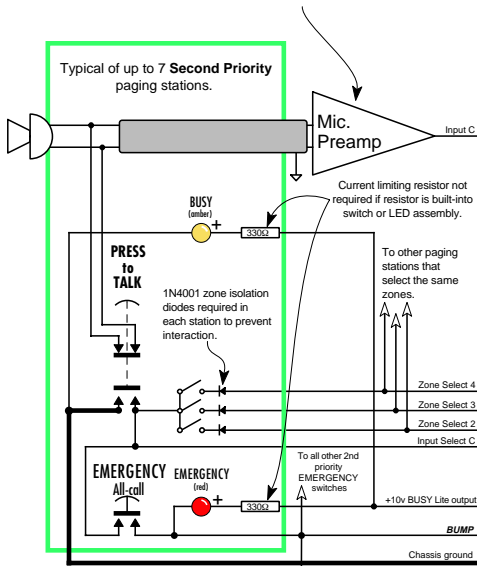
- ❑ Full flexibility... any input may page any combination of output zones.
- ❑ Up to 8 inputs. Up to 10 output zones.
- ❑ Two levels of priority override for emergency paging.
- ❑ Two channels of zone selectable background music are dipped by paging with a smooth slo-restore.
- ❑ High fidelity signal path. Broadcast quality transformers provide wideband response.
- ❑ Built-in control for wall-mounted priority attenuators.
- ❑ Up to 69 diagnostic LEDs per chassis provide constant readout of paging system status.
- ❑ Busy lite output drives paging station **BUSY** LEDs.
- ❑ Status LEDs on all control lines simplify system troubleshooting.
- ❑ Time limit timer prevents system monopolizing and ignores held-down-buttons or control line shorts.
- ❑ All solid state switching eliminates troublesome relays.

## Additional EXPANSION INPUT FEATURES

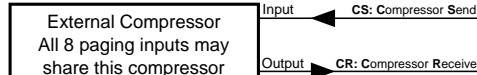
- ❑ Compressor/EQ sharing. One compressor or EQ serves 8 paging inputs.
- ❑ Expandable up to 32 inputs and 32 output zones.

# Typical Paging System Block Diagram

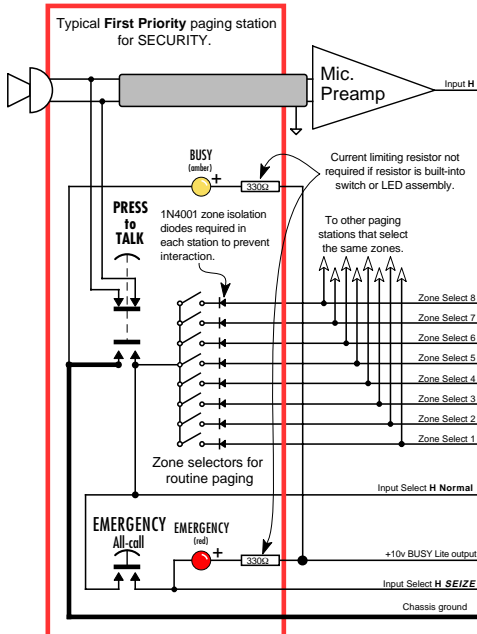
Microphone to line level preamps provided by others.  
(Paging Switcher has 0 dB voltage gain).



Parallel all **BUMP** lines together between Paging Switchers



Remove factory installed **CS** to **CR** jumpers on rear for shared compressor or EQ use.



Background Music Source 1

Background Music Source 2

020-0016-07.6.eps / 139-0078-03.2.eps

## LynTec EXPANSION INPUT series PAGING SWITCHER

Model PS 10TE-4

10 line level inputs.  
8 for paging, 2 for music

TE = 5KΩ bridging input

Transformers

&

Expansion handshaking

-4 output zones.

Field expandable to 8 zones maximum with additional output boards & new 34 conductor internal cable)

All PS 10's have 4 bus handshaking, providing up to 32 in / 32 out in 4 chassis'.

ALTERNATE LOWER COST MODELS  
Basic 8 input non-expandable model without compressor/EQ sharing:

Model PS8TC-?-M?

### GROUND WIRE SIZING

The ground wire from the paging station carries varying amounts of current depending on the number of zones selected plus the LED current for both the **BUSY** & **EMERGENCY** LEDs.

The voltage drop in any line between the paging station and the chassis of the Paging Switcher should never exceed 1 volt.

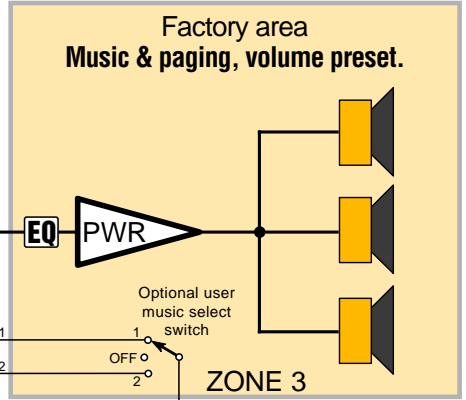
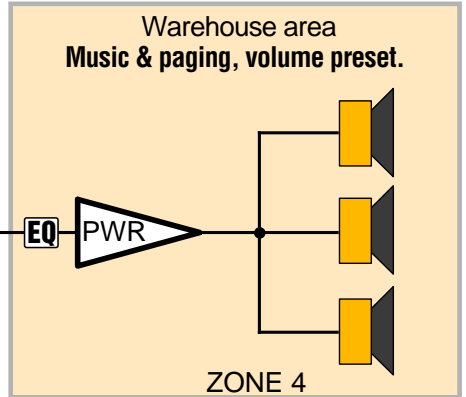
Typical worst case calculation:

**BUSY** LED = 25 mA.  
**EMERGENCY** LED = 25 mA.  
**Input** selected = 10 mA.  
**Music 1** selected = 10 mA.  
**6 zones** selected @ 10 mA. ea. = 60 mA.  
**BUMP** selected = 10 mA.  
Total current in ground line = 140 mA.

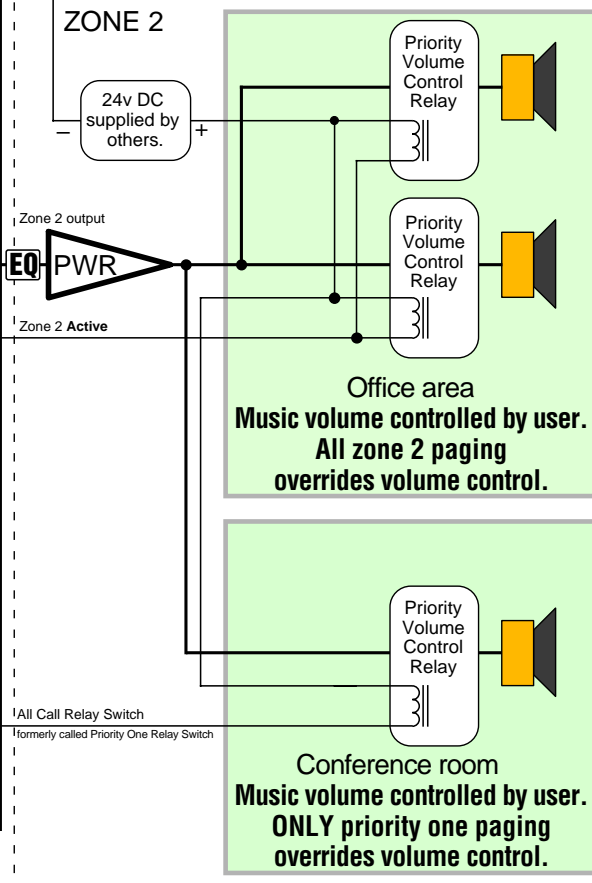
$\frac{1 \text{ volt}}{0.140 \text{ Amp.}} = 7.14 \text{ Ohms}$

Maximum ground wire resistance for this station: 7.14 Ohms.

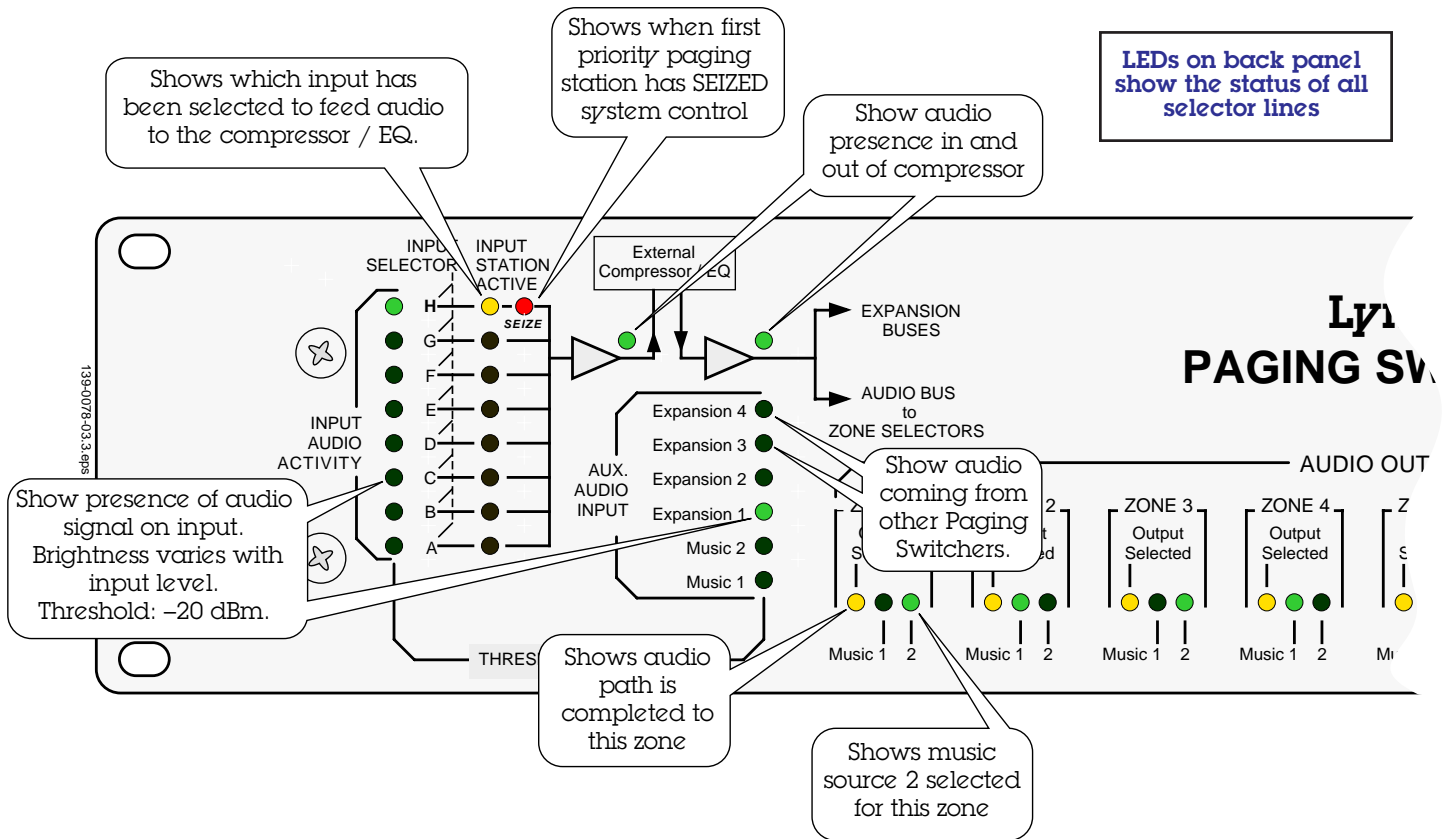
More wire sizing info on pages 10 & 11.



Music selection alternative: Hard-wire music selection for each zone at paging switcher.



Handshake flat cable between Expansion Input Paging Switchers  
(All handshaking switchers must be mounted in the same rack)



## Combined SPECIFICATIONS for PS 8 and PS 10TE series PAGING SWITCHERS

### AUDIO INPUT CHARACTERISTICS

Each of the line level audio inputs are identical and have the following characteristics:  
 Input Impedance: 20 K $\Omega$   $\pm$  10%, unbalanced.  
 (Optional Transformer balanced: 5 K $\Omega$  minimum @40 Hz)  
 Typical operating level: 0 dBm (0.775v RMS)  
 Maximum input level: +18 dBv (6.16v RMS)

### AUDIO INPUT ACTIVITY indicators

LEDs show the output of the input amplifiers.  
 Brightness varies with audio input level. Threshold  $\approx$  -20 dBm.

### AUDIO OUTPUT CHARACTERISTICS

Depending on the model, there are 1 to 5 dual output boards installed having the following characteristics:  
 All balanced outputs are transformer coupled and intended to drive a 600 $\Omega$  load.  
 All parameters are measured with a 600 $\Omega$  load at 0 dBm unless stated otherwise.  
 Frequency response:  $\pm$  1 dB, 40 Hz - 15 kHz.  
 $\pm$  2 dB, 20 Hz - 20 kHz.  
 Maximum output level: +18 dBm (6.14v) RMS.  
 Typical output impedance @ 1 kHz: 275 $\Omega$ .  
 Hum, noise & distortion: At 1 kHz @ 0 dBm, less than 0.1% added.  
 20 Hz - 20 kHz bandwidth.

### COMPRESSOR / EQ SHARING (PS10TE series only)

The expansion input paging switchers provide a **CS** Compressor Send output (600 $\Omega$  xfmr) and **CR** Compressor Receive input (5K $\Omega$  xfmr). The active input is routed to this I/O port so one compressor may serve all 8 inputs.

### AUDIO SIGNAL SWITCHING CHARACTERISTICS

In the ON condition, the system has unity voltage gain  $\pm$  0.5 dB, (1 volt in = 1 volt out).  
 In the off or mute condition, the output will be more than 80 dB below full output.

### PAGING SWITCHING TIME

Audio is connected 30-50 milliseconds after ground is applied to the INPUT SELECT and ZONE SELECT terminals.  
 Release time: 30-50 milliseconds after button release.

### INPUT & OUTPUT ZONE SELECTION

Line level audio is routed from any input to any combination of output zones. All selector lines are to be grounded to select. Each selector line is a 10 ma. source [1K $\Omega$  from +10v] and may be used to drive external LEDs as long as the voltage appearing at the Paging Switcher selector terminals drops below 4.5 volts during selection.

There are 3 types of INPUT SELECTORS. LEDs behind each terminal show selection. Normal (green LED), **BUMP** (yellow LED) and **H SEIZE** (red LED). Normal selector (**A** thru **G** and **H Normal** [routine security paging]) have the lowest priority. Selecting a normal input will page only those zones that are simultaneously selected and dip the music.

The **BUMP** selector provides a second priority all-call from any station equipped with a momentary EMERGENCY all-call button. The user must hold down the EMERGENCY button prior to depressing the push-to-talk switch to gain emergency access. Any normal user will be *bumped* from the system. This second level priority is subject to the Time Limit timer.

The **H SEIZE** selector makes **H** a first priority all-call. It will seize control of the system and retain control until released. Any other Input Selection will be overridden or ignored. This top priority level is not subject to the Time Limit timer. It will retain control of the system as long as it is selected. (grounded)

### OUTPUT ZONE SELECTION

Grounding any combination of **ZONE SELECT** terminals completes the audio path from the **INPUT SELECTED**. Note: zones must be selected prior to or simultaneously with the input select. Zone selector switch changes *after* the page is initiated are ignored. (See Time Limit Timer for logic explanation).

### BUSY LITE OUTPUT

Pressing any microphone button initiates Input Selection, locking out all other non-priority inputs with a BUSY signal. The BUSY LITE output provides 10 volts DC to drive yellow **BUSY** LEDs at all of the microphone stations. (A 330 $\Omega$ , 1/4 watt series resistor is required for each **BUSY** led).

BUSY LITE output current is 1 ampere maximum per chassis.

The BUSY LITE output rise and fall times are intentionally slowed, to 20 & 4 milliseconds respectively, to reduce the possibility of inducing clicks in long microphone lines run in common conduit.

**Installation tip: ALWAYS** run microphone level circuits in a SEPARATE shielded pair to prevent induced clicks. Multiple pairs within the same sheath should be avoided for any circuit carrying audio. Run in metal conduit for best shielding. Avoid plastic conduit. Zone and Input Selector lines are individually filtered in the Paging Switcher and may be run within the same sheath.

# LynTec PAGING SWITCHER

## SPECIFICATIONS

continued

### TIME LIMIT TIMER

An automatic timer prevents system monopolizing and ignores locked-down buttons or selector line ground faults.

The first Input Select line grounded will hold control until released or until TIME LIMIT time-out occurs.

The timer limit is preset internally by a jumper at 17, 34, 68 or 136 seconds. (Factory set at 68 sec., field changeable by removing cover and moving jumper)

The timer de-selects all non-priority channels at the end of the preset time period and the BUSY lite goes out.

The next person that pushes down a button will take control of the system. The system only acknowledges the *transitions* of the buttons, holding the button down while the system is busy will NOT give you next access.

The first person to activate a press-to-talk switch when the system is not busy will access the system.

### BACKGROUND MUSIC OPTIONS

In the standard **PS8C-x-M2** model, input channels **A & B** are dedicated to background music. The **PS10TE** series contains two dedicated music channels labelled **MUSIC 1** and **MUSIC 2** in addition to the 8 paging inputs. Either channel of background music is available to any output zone not actively paging. Any zone may select music **A/1** or music **B/2** or none.

Music is selected by grounding either Music **A/1** or Music **B/2** terminal for each output zone. A corresponding front panel LED will light when the terminal is grounded.

The Music select lines also source 10 ma. (1.2K $\Omega$  from +12v) A remote indicator LED may be driven in series, provided there is NO series resistor. [A and B may also be selected simultaneously, providing a *mixed* A & B output. Selecting both A & B signals reduces the music output to that zone 6 dB.]

### MUSIC DIP and SLO-RESTORE

During the page, the music level will dip 15 dB. The music level recovers slowly after the page, achieving full volume within 5 seconds. The music is fully muted for priority pages. Music dip may be disabled for masking use or set for 30 dB at the time of manufacture. (Call)

### VOLUME CONTROL OVERRIDE RELAY CONTROL

Two priority levels of switching may be used to control volume control override relays. These zener protected, open collector, NPN transistors will switch up to 200 ma. to ground. Relays must be powered by an external regulated DC supply. Absolute maximum open circuit voltage: +28.5 volts.

### ZONE ACTIVE

Each output zone has a ZONE ACTIVE terminal that switches to ground when the zone is paged. Typical application: Offices want music volume control, overridden by all pages to their zone. (same circuit limits as override relay control)

### PRIORITY ONE RELAY SWITCH

Switches to ground only during a priority-one page. Typical application: Conference room requiring music volume control over-ridden *only* by a priority-one page (from **H SEIZE** [Security]).

### PAGING STATION CONSIDERATIONS

See page 2 for Paging Station schematic.

Each contractor supplied paging station typically consists of a microphone; a two pole momentary push-to-talk switch; a one pole zone selector switch and an optional indicator LED for each zone; and one 10v, 20-30 ma. BUSY led indicator. Isolation diodes are required in the zone select lines if the same zones are accessed by more than one station.

A momentary EMERGENCY page switch may be installed at any station to provide second priority all-call access. All EMERGENCY switches are connected in parallel to the **BUMP** selector line. A high-brightness red LED indicator located adjacent to the emergency switch is recommended to provide all users visual feedback of an emergency page. (Ask about optional illuminated EMERGENCY switch).

The INPUT SELECT switching may be accomplished with any switch capable of switching from 20 ma. to 115 ma. at 10 volts [10 ma. per zone plus 10 ma. for input select & 25 ma. for EMERGENCY LED]. A typical Input Select (microphone) switch could be a momentarily ON push-button switch with optional auxiliary contacts to short microphone audio in the off position.

[The Switcher operates at line level with no gain. Microphone pre-amps (supplied by others) are required ahead of the Switcher] See page 2 Block Diagram.

**Typical wire requirements:** One separate shielded pair for mic. audio; one pair for BUSY light and INPUT SELECT; one line for **BUMP**, if installed; one line for each output zone addressed by this station and a heavier ground return line. The heavier ground is needed to keep the voltage drop below 1 volt, due to the *combined* current of 10 ma. per line. An additional pair will provide user selection of background music. See page 2 Block Diagram for wire sizing.

Maximum wire run between microphone station and Paging Switcher is 5,000 ft.

### TURN-ON DELAY MUTING

All outputs are muted for 3-5 seconds when AC power is applied.

### INPUT POWER REQUIREMENTS

95-125 volts A.C., 50-60 Hz, 25 watts maximum. 240v model optional.

Input fuse: AGC 1/2 ampere.

5 ft., 3 wire power cord attached. NO A.C. power switch is provided. A red POWER pilot LED on rear indicates when AC power is applied.

### SAFETY AGENCY APPROVALS

All components in the 110v circuit are UR & CSA rated. The Paging Switcher is not agency certified. If UL is required in your application, an external wall-mount transformer can be supplied as an option which bears the UL listed designation.

### MECHANICAL CHARACTERISTICS

RIAA rack panel mounting. 19.00" wide, 3.50" high, 10" behind mounting surface. Weight: 10 lb. max.

### INPUT / OUTPUT CONNECTIONS

Slotted head screw activated wire clamping terminal blocks or spring loaded cage clamp terminal strips at rear of unit.

**DO NOT APPLY VOLTAGE FROM AN EXTERNAL SOURCE TO ANY INPUT SELECT OR ZONE SELECT TERMINAL.**

## MODEL NUMBER EXPLANATION

### PS10TE series EXPANSION INPUT MODELS

All inputs have 5K $\Omega$  bridging input Transformers.  
Compressor /EQ sharing standard

Model No.	Description
PS 10TE-2 .....	8 paging & 2 music inputs, 2 output zones.
PS 10TE-4 .....	8 paging & 2 music inputs, 4 output zones.
PS 10TE-6 .....	8 paging & 2 music inputs, 6 output zones.
PS 10TE-8 .....	8 paging & 2 music inputs, 8 output zones.

### PS 8C series – 8 INPUT MODELS

(NOT expandable, NO Compressor / EQ sharing)

### UNBALANCED INPUT MODELS

20 K $\Omega$  unbalanced inputs, 600 $\Omega$  transformer balanced outputs.

All models have 8 inputs with two levels of priority.

**-M2** is standard. All units will have A & B dedicated as music inputs unless a **-M1** or **-M0** suffix is specified. **-M1** or **-M0** are additional cost options.

**-M1** uses A as a music input with 7 paging inputs

**-M0** has no music inputs. All 8 inputs are paging inputs.

Model No.	Description
PS 8C-2 M? .....	8 inputs, 2 output zones.
PS 8C-4 M? .....	8 inputs, 4 output zones.
PS 8C-6 M? .....	8 inputs, 6 output zones.
PS 8C-8 M? .....	8 inputs, 8 output zones.
PS 8C-10 M? .....	8 inputs, 10 output zones.

### BALANCED INPUT MODELS

Same as PS 8C but with 5K $\Omega$  bridging input Transformers.

Model No.	Description
PS 8TC-2 M? .....	8 inputs, 2 output zones.
PS 8TC-4 M? .....	8 inputs, 4 output zones.
PS 8TC-6 M? .....	8 inputs, 6 output zones.
PS 8TC-8 M? .....	8 inputs, 8 output zones.

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