FSR

INTRODUCTORY NOTES on the

ML-116

THE NEW ROOM COMBINING SYSTEM

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INTRODUCTION

Designed for hotels and conference centers with divisible, multi-use meeting rooms, the ML-116 Ballroom Combining System unifies the audio system of each room being joined together with a simple touch of a button.

The ML-116 is the latest, enhanced version of the popular ML-112A . A microprocessor-based system, the ML-116 is capable of combining up to sixteen rooms in multiple configurations.Contractors appreciate the flexibility of the ML-116 which can be operated with a variety of mixers, equalizers and power amps.

Hotel and meeting-center operators give high marks to the system's dependability and operation. Staff require little training to competently use the equipment.

Flexible and dependable sound systems are increasingly important for conference planners looking for ways to make their events stand out. The ML-116 fulfills the hotel and meeting-centers needs and clients' wishes and have been designed so, if desired, even the guests can play an active part in its operation.

FEATURES

• Provides for 4 background music sources.

• Capable of combining up to 16 rooms of audio with the touch of a button.

• Can combine up to 4 ML-116's to control 64 rooms with full functionality.

• Optional Facility Manager panel permits operation of the system from a standard computer in any location within the facility.

• Facility Manager Panel allows the mixing of non-adjacent rooms.

• Can interface with lighting systems.

• Continuously adjustable ramping bargraph volume control on each wallplate for both microphone and background music.

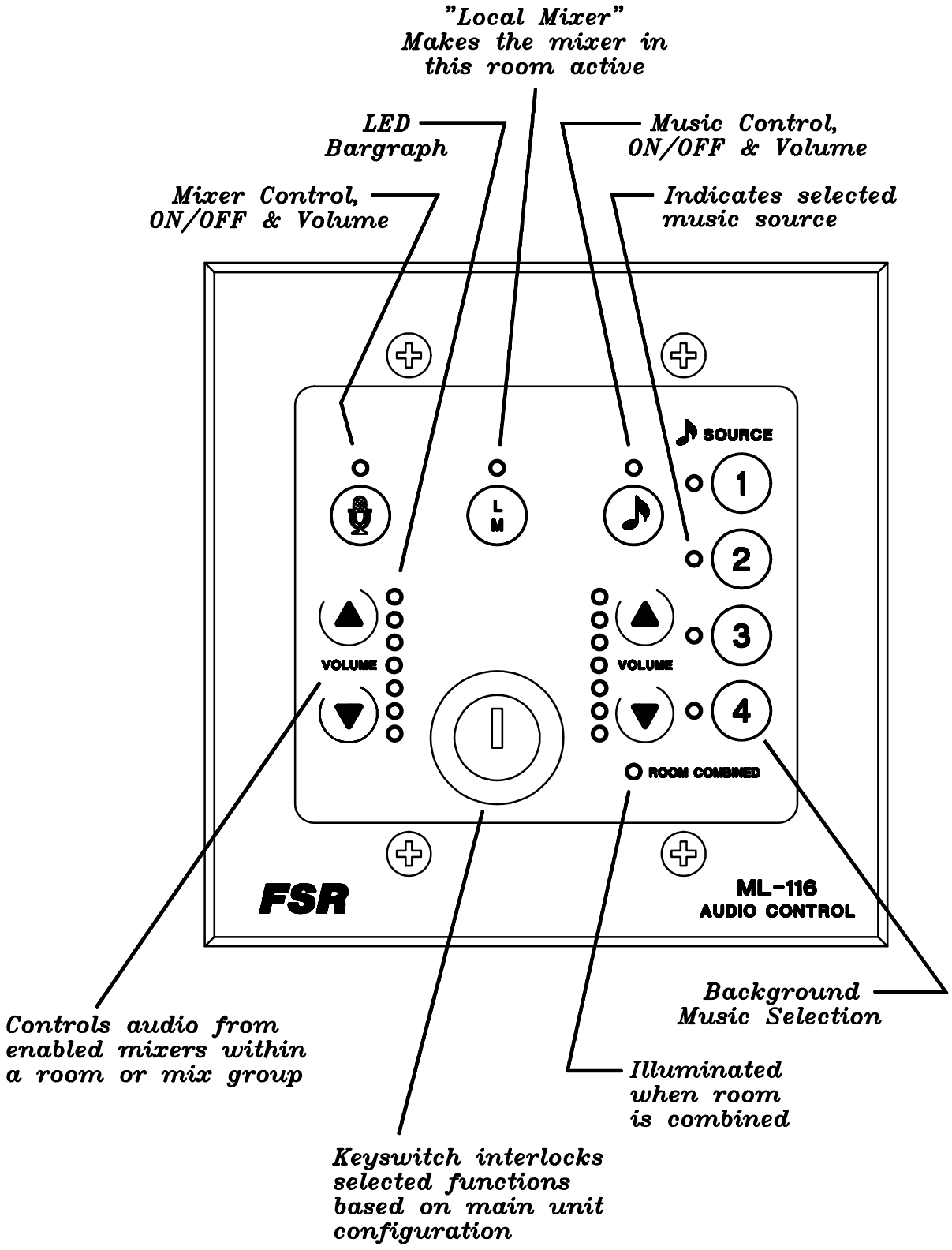
• Membrane type wallplates enhance room's decor.

• Operates with any mixer.

• Complete paging capability.

• Total reliability; the ML-116 builds on the 7 year reputation of its predecessor, the ML-112A, in its engineering design, proven components, quality workmanship, and responsible operation.

OVERALL VIEW OF SYSTEM COMPONENTS



2 GANG ML-116 WALLPLATE

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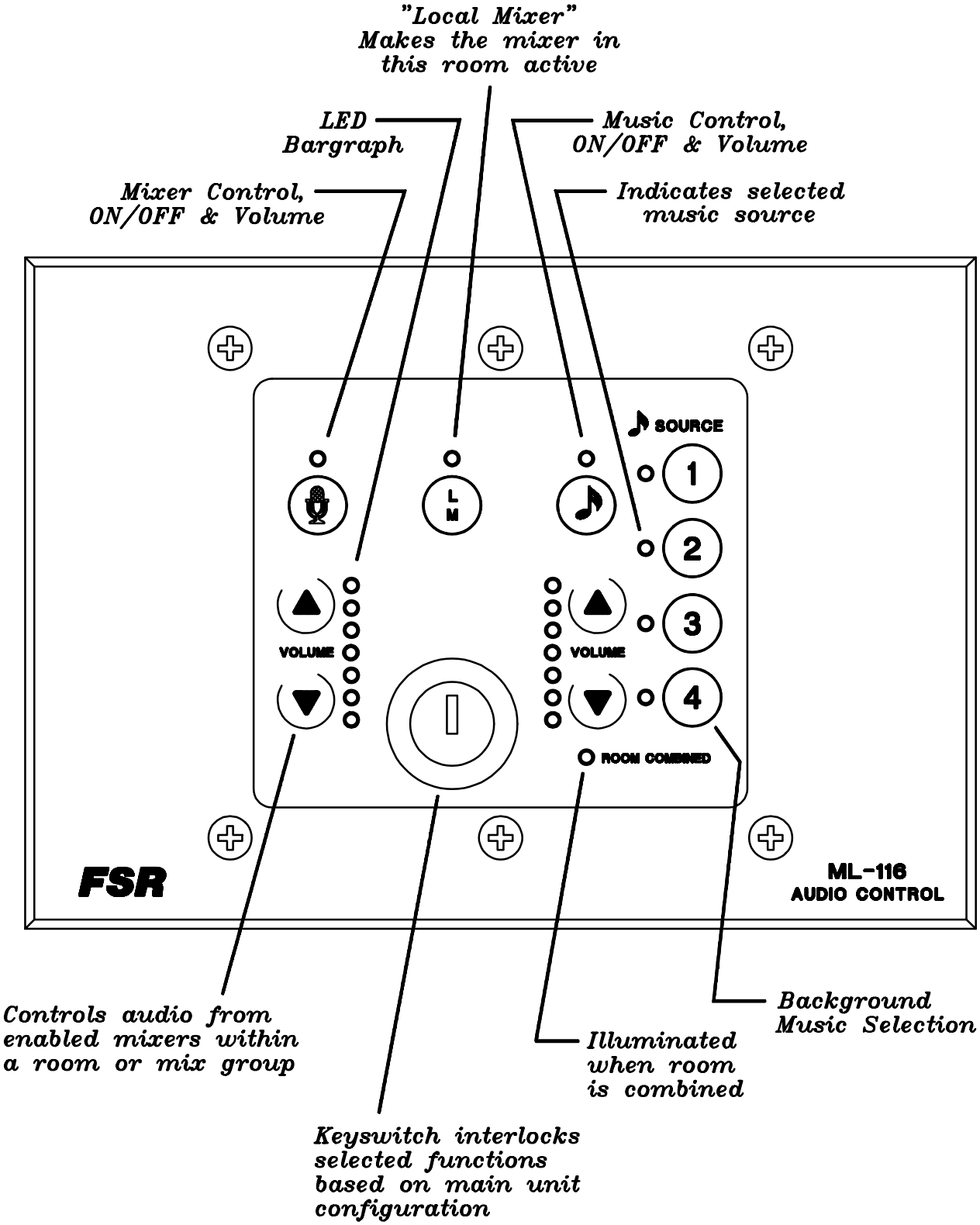
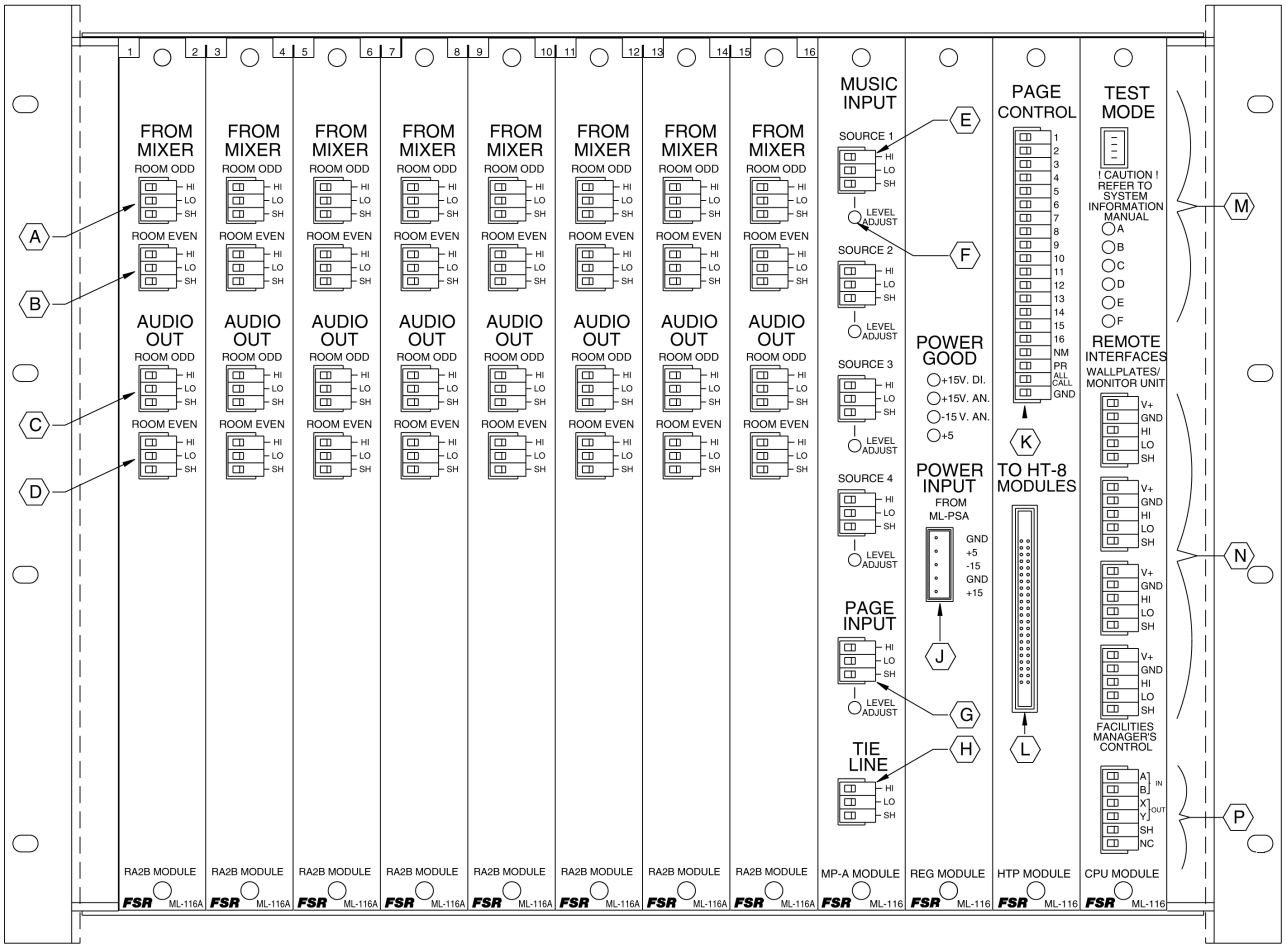


3 GANG ML-116 WALLPLATE



ACU Description

The Audio Control Unit is the main unit of the system. It routes the selected music, adjusts levels, combines rooms, handles communication (between wallplates, map, and monitor panels), and can route audio to other ML-116s. It also controls the paging function.

Refer to Figure 1 for the following discussion.

The ACU RA2 module provides the audio interface for two rooms. All RA2 modules are fully interchangeable. The module identifies the two rooms by an ODD and EVEN nomenclature. The numbers that appear on the top of the ACU module slot refer to the room's number in the system. These numbers also correspond to the numbers in each room drawn on the map panel.

A...This 3 pin connector receives the audio signal from the ODD room's mixer.

B...This 3 pin connector receives the audio signal from the EVEN room's mixer.

C...This 3 pin connector provides the audio output to the ODD room's amplfier or EQ.

D...This 3 pin connector provides the audio output to the EVEN room's amplfier or EQ.

E...These four 3 pin connectors receive the background music signals from the facility supplied sources. The source number over each connector corresponds to the identification called out on the room wallplates.

F...This trim control provides limited volume adjustment for each background music source.

G...This 3 pin connector accepts the page audio signal from the facilities page audio feed. A level adjust is provided for this input.

H...This 3 pin connector may be used to provide limited combining capability among multiple ML-116 systems.

J...The ML-116 regulator module accepts unregulated DC voltages from the ML-116 PSA, power supply. A plugable connection is provided to connect to the power supply. LED indicators are provided to monitor the power within the unit.

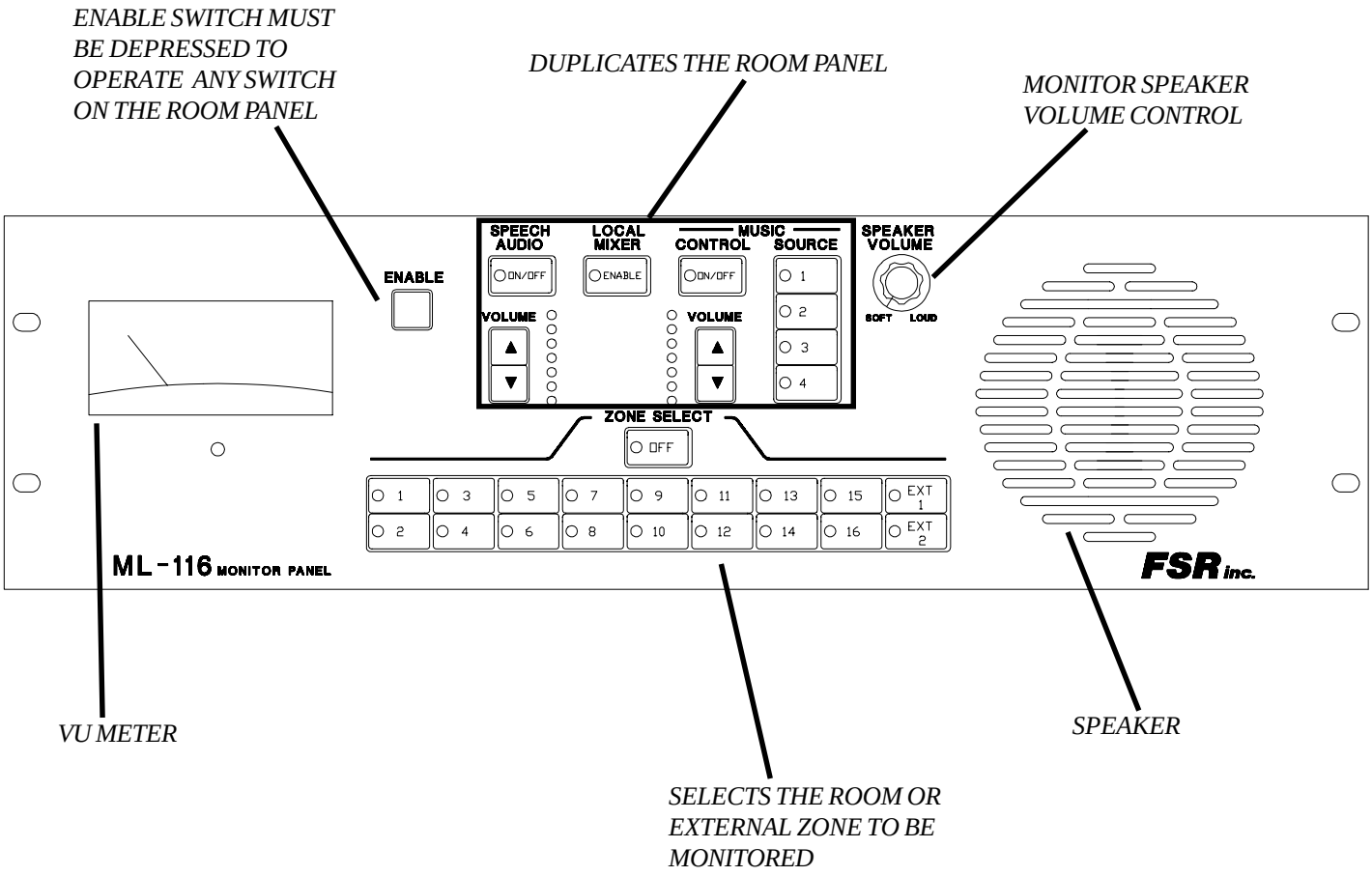
K - L...The HTP module provides control interface to support paging capabilities. It also provides the control interface for the head table speaker switching. Refer to sections titled Paging and Head Table operation for additional details

M...Test mode dip switches and test mode indicators. These are used at the factory and are not to be operated in the field.

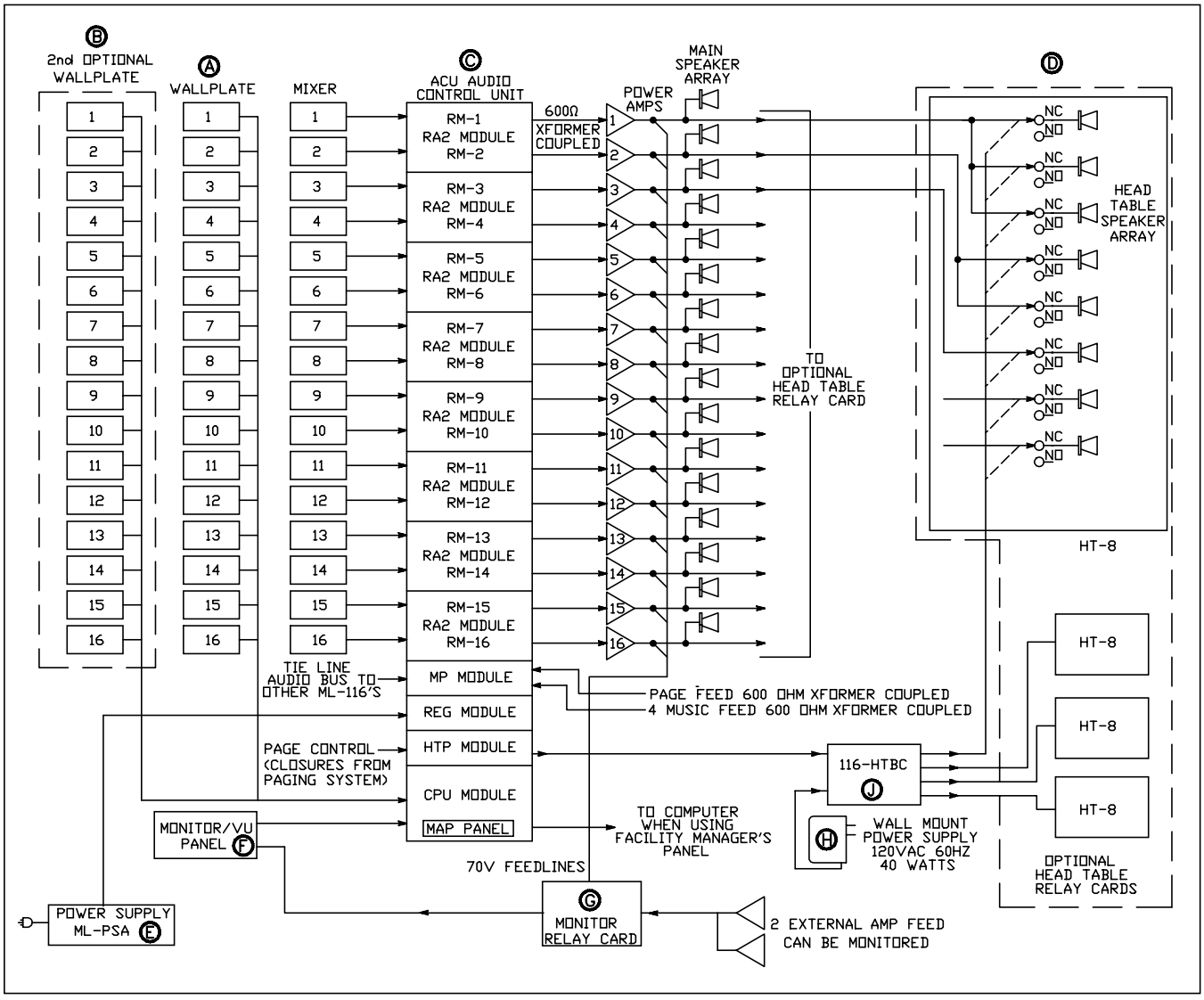
N...Wallplate/monitor interface connectors. These four points are where all room wallplates are connected. The monitor panel, the remote map/monitor and the ML-116-INT interface unit are connected to one of these points. Four points are provided to ease system installation.

P...Facility manager panel interface connector. Refer to section on this topic for additional details.

MONITOR/VU PANEL



ML-116 SYSTEM BLOCK DIAGRAM



A..... There are two types of wallplates available for use in the ML-116 system , membrane and LCD. Both control all wallplate functions. These functions include Music Selection, Room Mixer Enable, Music Enable and Volume, and Local Input On/Off and Volume.

B..... Each room in the system can have two wallplates if desired.

C..... The ACU (audio control unit) is the main unit of the system. It routes the selected music, adjusts levels, combines rooms, handles communications (between wallplates, map, and monitor panels), and can talk to other Ml-116s. It also controls the paging function.

D..... The HT-8 is a PC board assembly with 8 relays to control the speaker feeds to the head table locations. These cards are driven by the HTBC board.

E..... The PSA Power Supply for the ML-116 system.

F..... The Monitor/VU Panel permits an operator to monitor the audio from any selected room. It also permits the operation of any wallplate function from this same panel.

G..... The Monitor Relay Card is a PC board assembly of relays that mounts close to the power amps and provides the audio feed for the monitor panel.

H..... This wall plug-in transformer powers the HTBC and HT-8 cards.

J..... The HTBC Board is essentially a break-out that accepts power and signal input and drives the HT-8 cards.

SYSTEM SPECIFICATIONS

Audio Control Unit (ACU)

Audio Connections: RA2 Module (one per two rooms)
Inputs: electronically balanced 20K Impedance (unbalanced 10K), 3 pin screw terminals
Outputs: 600 ohm transformer coupled (balanced) 3 pin screw terminals

Audio Connections: MP Module (music/page module)
Inputs: 600 ohm transformer coupled (balanced) 3 pin screw terminals

System Level adjust range: +7 dB to -20 dB

Input Trim Level Adjust Range: (Page and Music input level adjust trim pots) +2.5 to -7.5 dB.

Tie line output: 600 ohm transformer coupled (balanced) 3 pin screw terminals
Audio Gain:
Music (with respect to input level)
Volume Reset: 0 dB +/- 1dB
Full Down: -18 dB +/- 1 dB
Full Up: +4 dB +/- 0.5 dB
Local Input (with respect to input level)
Volume Reset: 0 dB +/- 1dB
Full Down: -18 db +/- 1 db
Full Up: +4 db +/- 0.5 db
Page Input: 0 db +/- 1 db
Maximum Output Level: +20 dBm

Noise Floor: -75 dBm typical. Conditions: Full mix, Mixer Enables on, Local Inputs off, input open, outputs 600 ohm terminated
-70 dBm typical. Conditions: Full mix , Mixer Enables on, Local Inputs on, Volume set to 0 dB. inputs open, outputs 600 ohm terminated

Crosstalk: -85 dB typical. Conditions: No mix, Mixer Enables on, Local Inputs on, Volume set to 0 dB. +10 dBm 1KHz. signal into any input, measure any output
-80 dB typical. Conditions: Full mix, Mixer Enables on, Local Inputs on, Volume set to 0 dB. +10 dBm 1KHz. signal into any music or page input.

Size: 19 inches wide, 14 inches high (8RU), 13 inches deep

Mounting: Standard rack mounting, usually located 55 inches above finished floor.

Wall Plates

Size:	6 1/4 inches wide by 4 1/2 inches high, approximately 2.5 inches deep
Mounting:	fits standard 2 or 3 gang electrical wall box with four or 6 screws
Switches:	membrane
Connector:	5 pin connector
Cable:	West Penn #3651 or 3751 (see page 13 for details)

Power Supply (PSA)

Size:	3 1/2 inch high, 6 inches deep, 10 inches long (approximately)
Mounting:	rear rack rail
Input power:	105 to 132 VAC, 50/60 Hz, 100 watts
Output:	+15 volts, +25 volts, -25 volts nominal
Fuse:	2 amp
Switch:	power on/off (lighted rocker switch)
Interconnect:	8 foot cable supplied, 5 conductor stranded
Indicators:	three LED indicators, one for each of the unregulated voltages

MON Monitor/VU Panel Assembly (optional)

Monitor/VU Panel

Input:	70Volt speaker level
Size:	19 inches wide, 5 1/4 inches high(3RU), 4 1/2 inches deep overall
Mounting:	standard rack rails

Monitor Relay Card (supplied with the Monitor/VU card)

Size:	3 1/4 inches wide, 9 1/2 inches long, 1 inch high, comes already mounted in a 19 inch FSR TRAC-BRAC
Mounting:	rear rack rails

MLH Head Table Speaker Assembly (optional)

Head Table Breakout Card (HTBC)

Size:	3 1/4 inches wide, 2 3/4 inches long, 1/2 inch high
Power:	HT-PS supply provided

Head Table Relay Card (HT-8)

Size:	3 1/4 inches wide, 7 1/4 inches long, 1 inch high, can have up to four of these cards per system
Mounting:	rear rack rails, both the HTBC and the HT card come already mounted in a 19 inch FSR TRAC-BRAC

FM Facility Manager Control (optional)

Facility Managers Panel (FM-INT)

Size:	an enclosed box 3 1/2 inches wide, 5 inches long, 1 1/2 inches high
Mounting:	sits on the managers desk
Power:	a wall mounted power supply

AUD Audio Monitor Add-on (optional)

Size:	processor card(MNP); 3 1/4 inches wide, 7inches long, 1 1/2 inches high speaker switching card (MNRL); 3 1/4 inches wide, 9 1/2 inches long, 1 1/2 inches high
Mounting:	both the MNP and the MNRL cards come already mounted in a 19 inch FSR TRAC-BRAC
Speaker:	enclosed in an attractive baffle 7 inches high, 6 1/2 inches wide, 5 inches deep

R-MAP Remote Map Panel (optional)

Size:	20" wide, 14" high, 2 1/8" deep
Mounting:	standard rack rails
Power:	120 VAC, via knockouts in case

R-MON Remote Monitor Panel (optional)

Size:	20" wide, 5 1/4" high, 2 1/8" deep
Mounting:	standard rack rails
Power:	120 VAC, via knockouts in case

CTRL Control System Interface (optional)

Size:	8 1/2", 1 1/2" high, 4 3/4" deep
Mounting:	use supplied rack mounting bracket
Power:	wall wart 9 VAC

INT Map Panel Status Interface (optional) & LU Lighting Interface (optional)

Size:	7 1/2" wide, 7 1/2" high, 2 1/2" deep
Mounting:	panel mount
Power:	wall wart 9 VAC