

## SOUND PALETTE® Series

- The SP2400 is a dual-channel music controller and amplifier designed for installations requiring high performance, flexible features and ease of use.
- Four independent stereo, line level inputs are provided for connection of standard music sources, such as CD, Tape, Satellite Receiver, etc. Each input is terminated to dual RCA connectors. An integral AGC circuit automatically compensates for level differences between input sources. A three band EQ, with sweepable mid-range control is provided for equalization of the music sources. In addition, an internal option slot accepts specific EQ modules designed to enhance the response of various speaker systems. A dynamic loudness circuit boosts bass response at low volume levels, to ensure proper tonal balance. Music Input 1 is buffered to a stereo RCA output that may be used for music-on-hold or other external applications.
- One input is provided for a paging microphone, and is terminated to both removable Phoenix-type and XLR connectors. Two band EQ, variable gain and switchable phantom power are provided. A variable VOX sensitivity control allows precise setting of trigger threshold points. Page Mic activation and music ducking can also be activated by using the supplied contact terminals. An optional noise-sensing microphone can be used.
- A second microphone input, per channel, is provided for voice reinforcement. This input is terminated to a Phoenix-type connector and offers two band EQ, variable gain and switchable phantom power. The gain of this input is independent of the master levels set for the music sources, and is adjustable by the master volume control when all music sources are off. Settings of the microphone and music levels are retained in memory, allowing adjustment of one source without affecting the other.
- Operator controls provide four music source selector buttons and one OFF button for each channel. LED ladder display indicates relative level setting. Push buttons are provided for volume UP and DOWN. All control setting changes can be made from

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## Two Channel Controller/Amplifier



### Features

- Two channel controller/amplifier
  - 4 stereo, line-level program inputs
  - 1 Mic input per channel
  - 1 Paging Mic input
  - Digital cross-fade between Input sources
  - 200 watts/channel at 70V/100V or 8Ω
  - Transformerless amplifier outputs
  - Ambient noise sensing for page mic
  - AGC for music sources
  - 3-band sweepable EQ for music sources
  - 2-band EQ on each mic input
  - Expandable to 16 zones
  - Dual-zone or stereo operation
  - RS485 port for third-party control systems
- 
- Zoned Music Distribution
  - Multi-Zone Paging with Program Distribution
  - Automated Noise-Compensating Gain Systems
  - Music/Speech Reinforcement Systems

# SP2400 Two Channel Controller/Amplifier

## Specifications

### Inputs

Program Inputs:	4 Stereo RCA, -10dB to +10dB
	Mic 1: Balanced, 100Ω, -52 to +4 dB, variable, switchable phantom power, XLR and Phoenix-type terminals
	Mic 2: Balanced, 100Ω, -52 to +4 dB, variable, switchable phantom power, Phoenix-type terminals
Amp In:	-10dB, Unbalanced, RCA

### Outputs

Amplifier Channels:	Dual Mono, or Stereo operation
Output Power, per channel:	200 Watts, 20Hz-20KHz
Auxiliary Output:	Unbalanced, RCA stereo or dual mono
Pre-Out:	-10 dB, Unbalanced, RCA

### Controls

Program Select:	4 Momentary Pushbuttons with LED indicators
Volume UP/DN:	2 Momentary Pushbuttons
Music OFF/Mic 2 Select:	1 Momentary Pushbutton with LED Indicator
Mic 1 EQ:	Low/High Potentiometers (100 to 12kHz ±12dB)
Mic 2 EQ:	Low/High Potentiometers (100 to 12kHz ±12dB)
Program EQ:	Low/Mid/High Sweep/High Potentiometers (80-12kHz ±12dB)
Phantom Power Select:	4 DIP switches (+24 VDC)
Mic Input Pad:	-20 dB, on 4 DIP Switches
Page Mic Activation:	2-pole contact on Phoenix-type connector
VOX Sensitivity:	Potentiometer

### Indicators

Program Select:	4 Indicator LEDs per Channel, Plus OFF
Volume Setting:	8-segment LED Bar Graph
Status:	Power, Overload, Protection

### Performance

Frequency Response:	20Hz - 20 kHz, +/-0.5 dB
Total Harmonic Distortion:	Less than 0.01% at 200W
Signal to Noise Ratio:	Greater than 90dB

### Physical

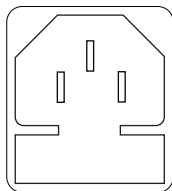
Construction:	Black painted aluminum and steel chassis, White nomenclature
Enclosure:	19" Rack Mountable, 3.5" panel space
Dimensions (HxWxD):	3.5" x 19" x 16.63" (88.8mm x 482.6mm x 422.3mm)
Net Weight:	34 lbs. (15.42kg)

### Accessories

SP-NSM:	Ambient Noise Sensing Microphone
SP-SW4:	Remote program selection
SP-RVC:	Remote volume control

# SP2400 Two Channel Controller/Amplifier

~ 230/115V 50/60 Hz FUSE 115/T8A



**MACKIE INDUSTRIAL**

**SP2400 MUSIC CONTROLLER**

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EXPANSION IN EXPANSION OUT

CE

SERIAL NUMBER

LOCAL 1 2 3 4 STEREO 1 2 3 4

REMOTE 1 2 3 4 MONO 1 2 3 4

CAUTION: TO REDUCE THE RISK OF FIRE REPLACE WITH SAME TYPE FUSE AND RATING

**ZONE B**

OUTPUT 100/70V/8Ω

A G B 1 2 3 G + -

AMP ADDRESS RS485 REMOTE AMBIENT MIC

CONCEIVED, DESIGNED, AND MANUFACTURED BY MACKIE DESIGNS INC. • WOODINVILLE • WA • MADE IN USA • FABRIQUE AU USA

**MIC/LINE INPUT B**

PHANTOM GAIN +20dB

GAIN LOW HIGH

PAGING MIC VOX PRE OUT AMP IN

**PROGRAM EQ**

LOW 80Hz MID FREQ HIGH 12k

12 +12 12 +12 250 8k 3k 12 +12

**ZONE A**

OUTPUT 100/70V/8Ω

AMP ADDRESS

**ZONE A**

MASTER VOLUME

3 0 3 6 9 15 30 55

INPUTS

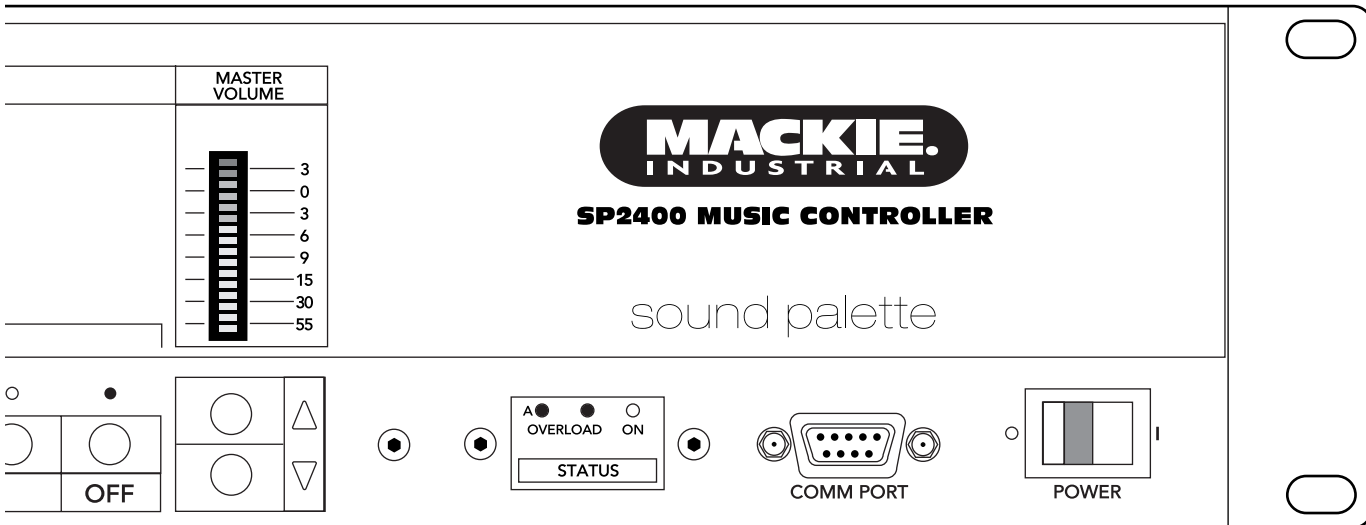
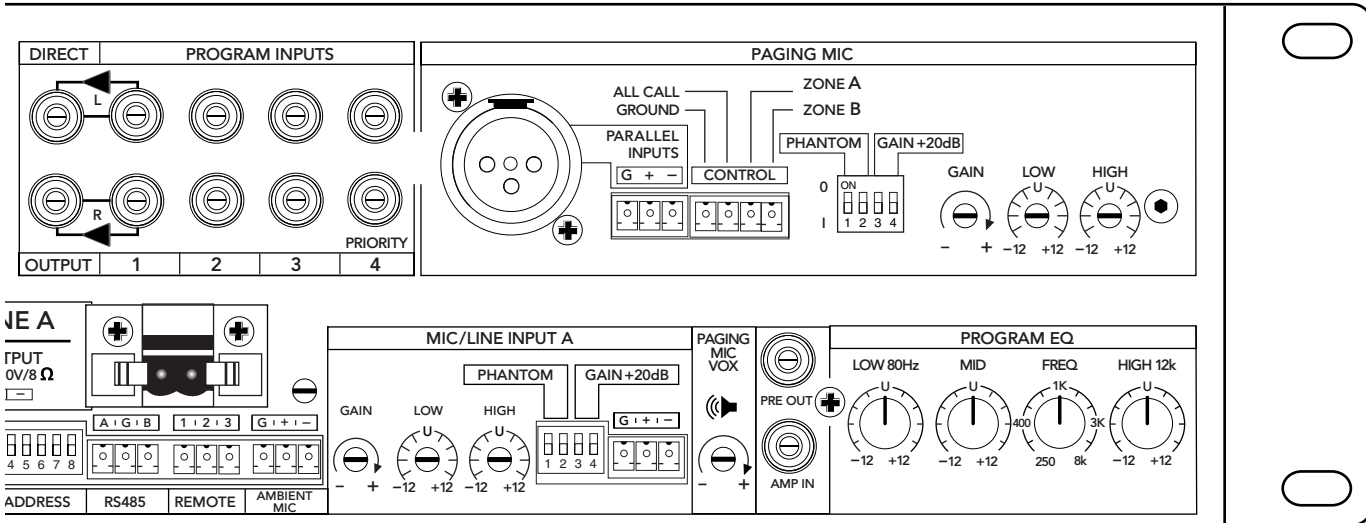
1 2 3 4 OFF

**ZONE B**

INPUTS

1 2 3 4

# SP2400 Two Channel Controller/Amplifier



# SP2400 Two Channel Controller/Amplifier

## Architects' & Engineers' Specifications

The background music/paging processor shall have UL, C-UL and CE safety certifications and be a dual zone unit that is expandable up to a total of 16 zones by adding up to seven additional units (SP1200/SP2400) that can be either single or dual zone processors. It shall consist of the following sub-systems: (1) 4 stereo line level inputs, (2) 3 microphone inputs, one paging, one sound reinforcement and one ambient noise sensing, (3) a 3-band equalizer per zone for the line level inputs, (4) a 2-band equalizer, per zone, for the paging and sound reinforcement microphone inputs, (5) a transformerless 200W power amplifier, per zone, that will accept plug-in loudspeaker equalization modules, 70/100V or 8 $\Omega$  operation, (6) two auxiliary power amplifier inputs, per zone, (7) a signal processing and two line level outputs, per zone, (8) connectors and circuitry for remote control of level, program selection and paging microphone priority, (9) an expansion bus to carry balanced audio and control data to other units in a multi-processor system, (10) an internal RS485 port to re-flash the unit's firmware.

The four line-level stereo inputs shall be unbalanced, terminated to RCA connectors and accept nominal -10dB signals. The stereo input signals shall be internally mixed to mono and remain available to the expansion bus in stereo. Selection of the active input shall be from either a momentary push button on the front panel or remotely from an optional accessory panel provided by the manufacturer. The selected input shall allow cross fading with the current program. When the paging microphone is activated, the current line level program shall attenuate to a level that is preset by a trim control on the rear panel. A dip switch shall be provided to direct the line level input signals to other units in a multi-processor system via the expansion bus.

The paging microphone input, per zone, shall be actively balanced, accept a nominal signal between -52dB and +4dB that is trimmed by means of a dip switch on the rear panel. It shall be terminated in a XLR connector that is parallel to a Phoenix-type

connector. The input shall provide 24VDC phantom powering that is selected by a dip switch on the rear panel. The input shall be activated by either VOX or a contact closure made at a connector on the rear panel. The VOX level shall be set by a potentiometer on the rear panel. A dip switch shall be provided on the rear panel to direct the paging microphone signal to other units in a multi-processor system via the expansion bus.

The sound reinforcement microphone input, per zone, shall be actively balanced, accept a nominal signal between -52dB and +4dB that is trimmed by means of a dip switch on the rear panel. It shall be terminated in a XLR connector that is parallel to a Phoenix-type connector. The input shall provide 24V phantom powering that is selected by a dip switch on the rear panel. The input shall be activated by a momentary switch on the front panel, an optional remote control panel supplied by the manufacturer, or a contact closure made at a connector on the rear panel. A dip switch shall be provided on the rear panel to direct the sound reinforcement microphone signal to other units in a multi-processor system via the expansion bus.

The ambient noise sensing microphone input, per zone, shall be actively balanced; and accept a nominal signal between -52dB and +4dB that is trimmed by means of a dip switch on the rear panel. It shall be terminated in a Phoenix-type connector. The input shall provide 24V phantom powering that is selected by a dip switch on the rear panel. An optional ambient noise sensing microphone shall be available from the manufacturer as an accessory.

Two-band equalization for the paging and sound reinforcement microphones and three-band equalization for the line level inputs per zone shall be provided. All adjustments shall be made by potentiometers on the rear panel. The two-band equalizers shall have shelving filters at 100Hz and 10kHz that can be adjusted  $\pm 12$ dB. The three-band equalizer, for the stereo line level inputs, shall have shelving filters at 80Hz and 12kHz that can be adjusted  $\pm 12$ dB and a  $\pm 12$ dB mid-band filter that is sweepable between 250Hz and 8kHz.

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# SP2400 Two Channel Controller/Amplifier

## Architects' & Engineers' Specs (continued)

The integrated power amplifier, per zone, shall be capable of accepting equalization modules that will optimize various loudspeakers offered by the unit's manufacturer. It shall produce a minimum of 200W RMS over a range of 20Hz to 20kHz with no more than 0.03% distortion and drive either 70/100V constant voltage lines or a constant impedance load of 8Ω, without having an output transformer. It shall be protected from short circuit, overload conditions and extreme operating temperatures. Two direct, unbalanced line level inputs to the amplifier per zone shall be provided via RCA connectors on the rear panel.

An expansion bus shall be provided to send and receive balanced audio signals and control signals to other units in a multi-processor system over distances up to 2500 ft. on 25 conductor, shielded cable or industry standard computer cables terminated with DB25 male connectors. Complete setup control of a multi-processor system shall be possible through the dip switch settings on the individual units and without an external processor. An internal industry standard RS232 port shall be included to re-flash the unit's firmware using software provided by the manufacturer.

The power supply shall be internal and connected to 50 or 60Hz source current through a detachable IEC power cord. It shall have an on/off switch, fuse holder. The power supply shall draw a maximum of 5A and illuminate an indicator light when on.

The unit shall be self-contained in an aluminum and steel chassis that can be mounted in a standard 19" EIA rack using no more than 3.5" of vertical space. The background music/paging processor shall be a model SP2400 manufactured by Mackie Industrial.

## (continued from page 1)

optional remote controls. A three-wire remote control bus allows connection of up to 10 addressable remotes on one pair of shielded microphone cable. Each remote can be set to control either of the two channels.

■ The output section of the SP2400 offers two discrete amplifiers, each delivering 200 watts of RMS power into either 70/100V line or into 8Ω loads. The transformerless design of the amplifiers allows frequency response to 20Hz, without the distortion and losses typical of conventional designs. The two amplifiers may be operated independently as two zones, or as one stereo amplifier.

■ All of the SP2400's functions are under micro-processor control and management. An RS485 port is provided on the rear panel to allow interconnection with industry-standard control systems. Up to eight SP2400 units may be interconnected, to share four music sources and control data.

■ This Mackie Industrial product is covered by an exclusive, one-time NO FAULT repair policy in addition to a three-year limited warranty.

Electronic files for this product available at:  
[www.mackieindustrial.com](http://www.mackieindustrial.com)

This Specification Sheet	SP2400.PDF
Architects' & Engineers' Specifications	SP2400AE.TXT
Quick-Start Manual	SP2400QS.PDF
Owner/Operator's Manual	SP2400ML.PDF
CADD files	SP2400.DXF
EASE data	SP2400.EAS

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