Six Channel Monaural Powered Mixer

PPM 406M

■ The PPM™ Series mixers are comprised of three compact powered mixers, designed for portable live sound applications. Each powered mixer in the PPM Series has two graphic equalizers, built-in stereo digital effects with 16 presets, and two FR Series High-Current power amplifiers.

■ Like all of Mackie Designs' mixers, the PPM Series mixers are designed for rugged, day-in and day-out road use. Their sturdy composite-molded case houses rugged, double-sided SMT-plated fiberglass circuit boards. Impact-resistant knobs are mounted so they "ride" just above the steel front panel.

■ The 406M has six mono mic/line input channels, with XLR mic inputs and 1/4" TRS line inputs. All mono channels have TRS insert jacks (tip = send, ring = return). Each channel strip has one monitor and one internal/external effects send, plus 3-band EQ and input trim with individual level-set LEDs. A rotary volume control provides output gain for each channel.

■ The inputs include Mackie's high-headroom, low-noise mic preamps. Trim controls provide 40 dB of microphone gain, 20 dB of line-level gain, and a full 20 dB of attenuation to "pad" hot signals. Each channel also includes a level-set LED for easy level setting.

■ Channel EQs are as follows: 12 kHz shelving high-frequency EQ (±15 dB), 2.5 kHz peaking mid-frequency EQ (±12 dB), and 80 Hz shelving low-frequency EQ (±15 dB).

■ A global phantom power switch applies +15 Vdc to pins 2 and 3 of the XLR inputs, and a break switch mutes channels 1-6 while break music is playing. Left and right RCA tape inputs are provided with an adjacent input level control for connecting a tape deck or CD player.

■ Both the Monitor Master and Main Master rotary controls have corresponding EFX controls to mix the effects signal with the monitor and main outputs. Eight LEDs indicate the output signal level for each main and monitor output. Outputs include a 1/4" TRS mixer line output, a 1/4" TRS monitor line output, and left and right RCA tape line outputs.

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Features

- **Six microphone/line inputs**
- **250 W main output power amplifier**
- **250 W monitor output power amplifier**
- **9-band graphic EQ on Main and Monitor outputs**
- **EMAC™ custom 32-bit precision digital stereo effects processor**
- **Two auxiliary sends (EFX and MON)**
- **3-band EQ on each channel**
- **1/4" and XLR connectors on each input**
- **1/4" Insert jacks on channels 1-6**
- **Two 1/4" Speaker outputs per side**
- **RCA stereo Tape In and Tape Out**
- **Compressors (switchable) on both outputs**
- **15 V phantom power**
- **Three-year warranty**

Applications

- Restaurants and Bars
- Meeting Rooms
- Churches/Sanctuaries
- Outdoor Gatherings

Related Products

PPM 808M and PPM 808S

PPM 406M Powered Mixer

PPM 406M Technical Specifications

Mixer Section

Frequency Response

Mic Input to Main Mixer Output (Trim at 0 dB):
+0, –1 dB, 32 Hz to 20 kHz
+0, –3 dB, 16 Hz to 80 kHz

Mic Input to Power Amp Output @ rated power output:
+0, –1 dB, 32 Hz to 20 kHz
+0, –3 dB, 16 Hz to 55 kHz

Distortion

THD and SMPTE IMD; 20 Hz to 20 kHz

Mic Input to Main Mixer Output:
‹ 0.005% @ +4 dBu output

Mic Input to Power Amp Output:
‹ 0.15%, 250 mW to rated power

Common Mode Rejection Ration (CMRR)

60 dB @ 1 kHz, Trim @ 0 dB

Noise

20 Hz to 20 kHz BW (150 Ω source impedance)

Equivalent Input Noise (EIN):	–127 dBu
Residual Output Noise: Main Mixer, Monitor, & Effects outputs Channel & Master levels off	–95 dBu
Main Mixer Output Noise: Master @ nominal (–10 dB), all channels off	–92 dBu
Master & 1 input channel @ nominal (–10 dB & –20 dB), Trim @ 0 dB	–85 dBu

Crosstalk

Adjacent Inputs or Input to Output:	–90 dB @ 1 kHz
Fader Off	–90 dB @ 1 kHz
Break Switch Mute	–80 dB @ 1 kHz

Input Level Trim Control Range

0 to –40 dB

Phantom Power

+15 Vdc

Equalization

Rumble Reduction:	75 Hz, –18 dB/octave
Channel EQ:	
High	±15 dB @ 12 kHz
Mid	±12 dB @ 2.5 kHz
Low	±15 dB @ 80 Hz

Graphic EQ (9 bands):
Q = 1.414, ISO octave centers
±15 dB @ 63, 125, 250, 500 1 k, 2 k, 4 k, 8 k, 16 kHz

Main Mixer Section Rated Output

Main Mixer, Monitor, & Effects:	+4 dBu
Maximum Main Mixer Section Output:	+20 dBu

Maximum Input Levels

Mic Input:	–20 dBu, Trim @ 0 dB (HI) +20 dBu, Trim @ 40 dB (LOW)
Line Input:	0 dBu, Trim @ 0 dB (HI) +40 dBu, Trim @ 40 dB (LOW)
Insert Input:	+20 dBu
Tape Input:	+20 dBu
Effects Return:	+20 dBu
Power Amp In:	+22 dBu

Input Sensitivity

Minimum Input Level to produce +4 dBu @ Main Mixer Output

Mic Input:	–68 dBu
Insert Input:	–28 dBu
Line Input:	–48 dBu
Tape Input:	–18 dBu
Effects Return:	–18 dBu

Maximum Voltage Gain

Mic Input to	
Insert Output:	40 dB
Tape Output:	60 dB
Main Mixer Output:	72 dB
Line Input to	
Insert Output:	20 dB
Tape Output:	20 dB
Main Mixer Output:	52 dB
Tape Input to	
Tape Output:	10 dB
Main Mixer Output:	22 dB
Effects Return to	
Main Mixer Output:	22 dB
Monitor Output:	22 dB

Input Impedance

Mic Input:	3 kΩ, balanced
Insert Input:	10 kΩ, unbalanced
Line Input:	40 kΩ, balanced
Tape Input:	10 kΩ, unbalanced
Effect Return:	10 kΩ, unbalanced
Power Amp In:	10 kΩ, unbalanced

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Output Impedance	
Main Mixer Output:	150 Ω
Insert Output:	150 Ω
Tape Output:	150 Ω
Monitor Output:	150 Ω
Effects Send:	150 Ω
Power Amp Out:	0.032 Ω @ 1 kHz

Digital Effects	
Resolution:	16-bit, 2-channel
Sample Rate:	31.25 kHz
Bandwidth:	15.6 kHz

VU Meters

Main and Monitor
8 segments: Clip, +5, 0, –5, –10, –15, –20, –30

Power Amplifier Section

Maximum Power at 1% THD, midband, both channels driven

250 watts per channel into 2 Ω
200 watts per channel into 4 Ω
125 watts per channel into 8 Ω

Continuous Sine Wave Average Output Power, both channels driven (rated power)

180 watts per channel into 4 Ω from 40 Hz to 20 kHz, with no more than 0.15% THD
110 watts per channel into 8 Ω from 40 Hz to 20 kHz, with no more than 0.10% THD

Power Bandwidth

‹ 10 Hz to 30 kHz (+0, –1 dB) @ rated power into 4 Ω

Frequency Response

‹ 10 Hz to 30 kHz (+0, –1 dB)
‹ 10 Hz to 55 kHz (+0, –3 dB)

Distortion	
THD, SMPTE IMD:	‹ 0.10% @ 8 Ω ‹ 0.15% @ 4 Ω

Signal-to-Noise Ratio

› 105 dB below rated power into 8 Ω

Channel Separation

› 75 dB @ 1 kHz

Damping Factor

› 250 @ 1 kHz

Amp Input Impedance

10 kΩ unbalanced, 20 kΩ balanced

Input Sensitivity

1.35 volts (+4.8 dBu) for rated power into 4 ohms

Gain (Amp In to Speaker Out)

26.4 dB (21 V/V)

Maximum Input Level

9.75 volts (+22 dBu)

Rise Time

‹ 5 µs

Slew Rate

› 40 V/µs

High Frequency Overload and Latching:

No latch up at any frequency or level.

High Frequency Stability:

Unconditionally stable, driving any reactive or capacitive load

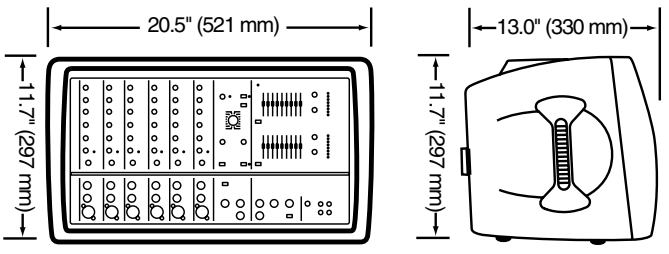
Turn On Delay:

3 seconds

AC Power Requirements	
United States:	120 Vac, 60 Hz
Europe:	240 Vac, 50 Hz
Japan:	100 Vac, 50/60 Hz
Korea:	220 Vac, 60 Hz

(Capable of operation from 75% to 110% of rated line voltage)

Physical	
Height:	11.7 inches (297 mm)
Width:	20.5 inches (521 mm)
Overall Depth:	13.0 inches (330 mm)
Weight:	32 pounds (14.5 kg)



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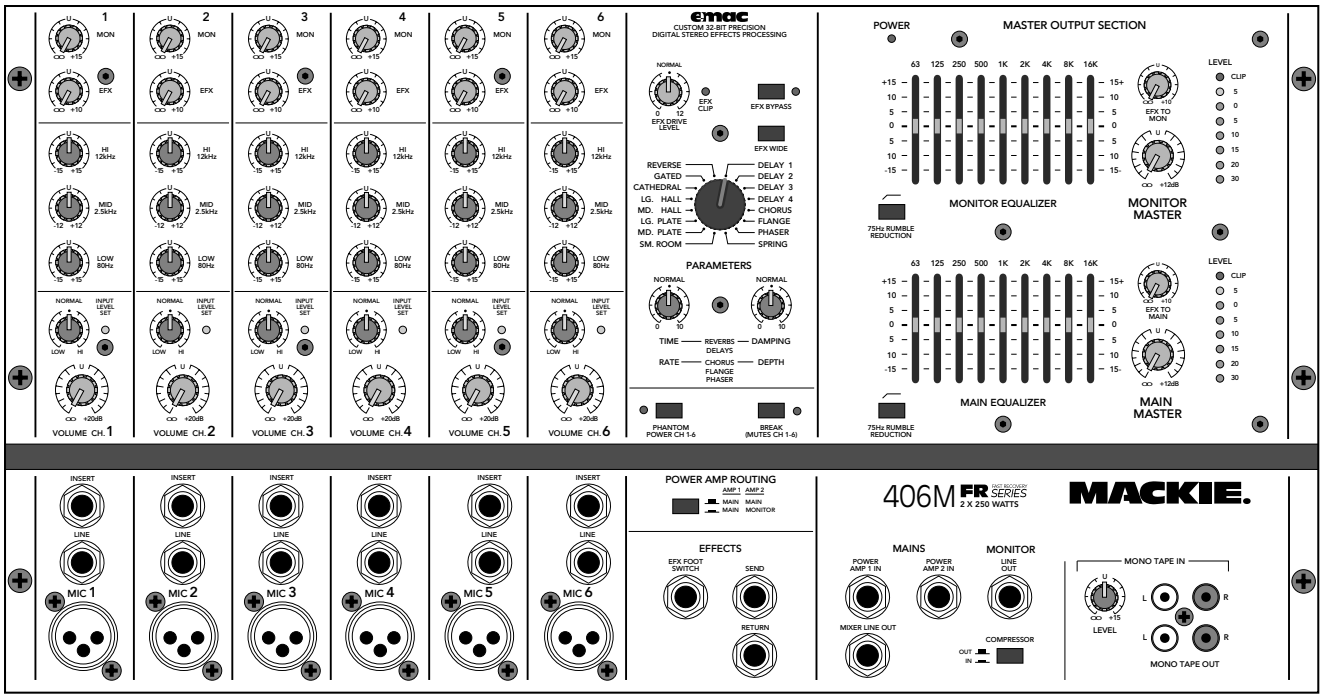

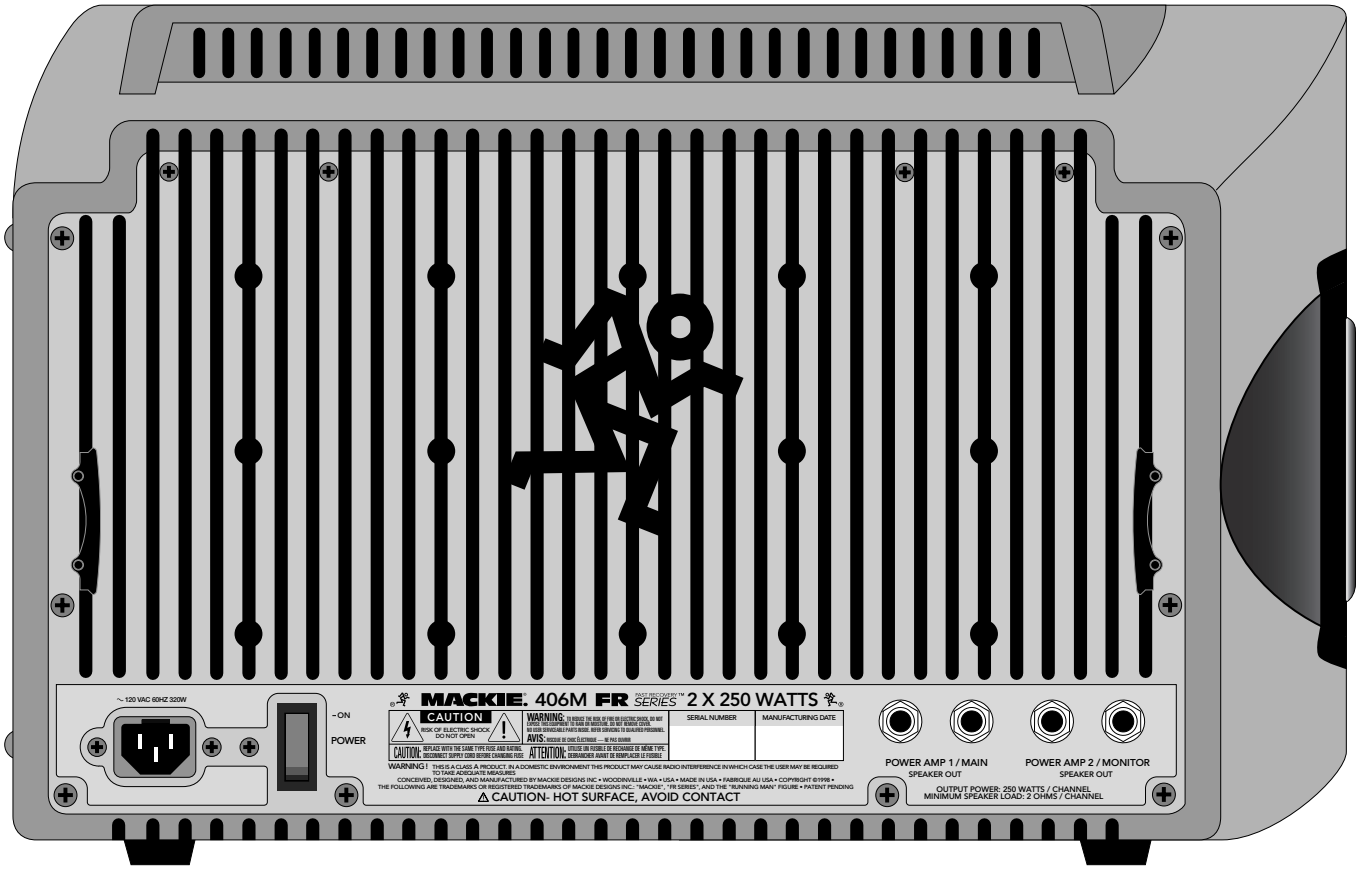

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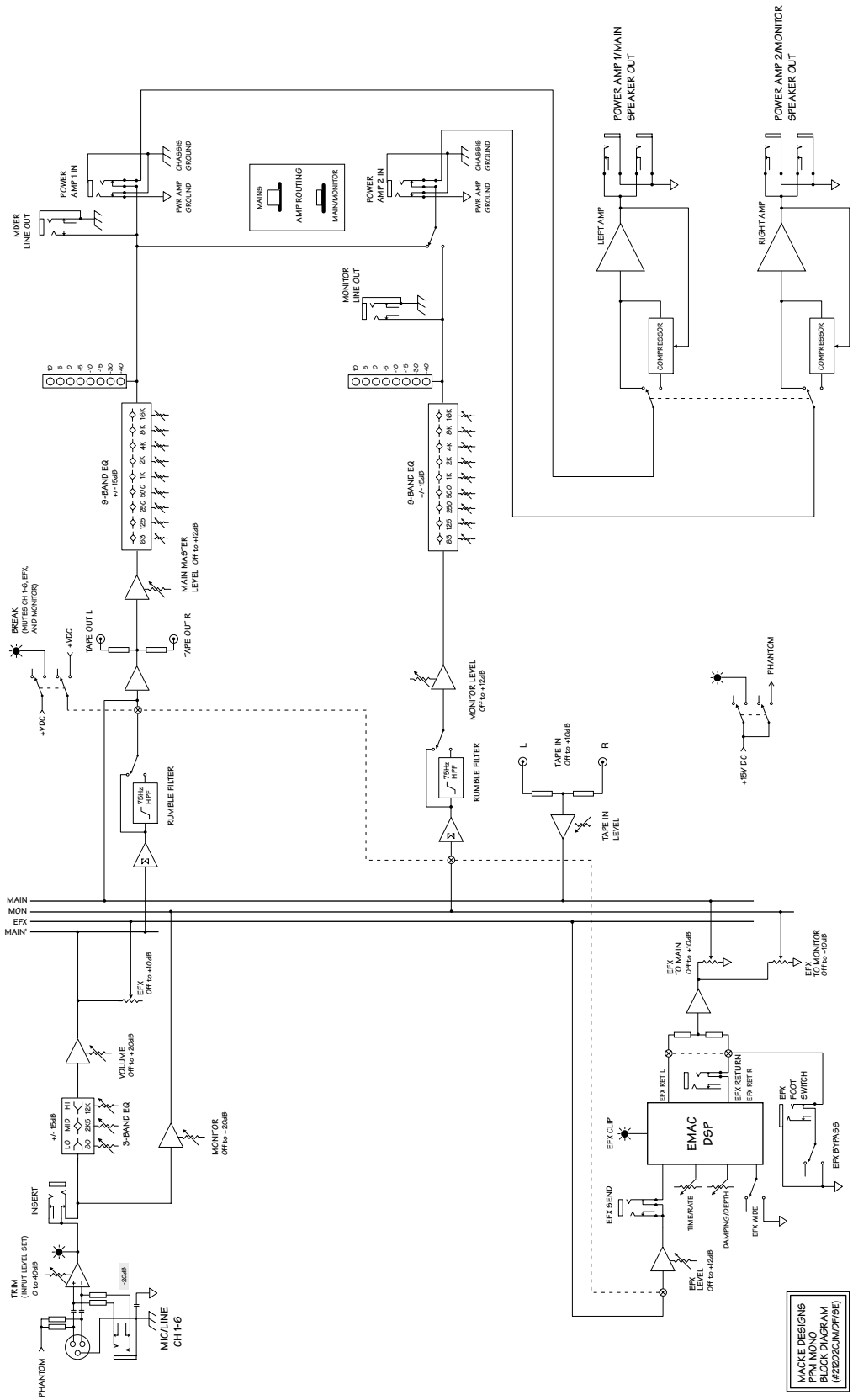

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■ The Effects Send is a 1/4" TRS jack, which outputs the EFX send signal from the individual channel strips (pre-EMAC). The Effects Return is a 1/4" TRS jack, which accepts a line-level signal from an external processor. Plugging into the Effects Return jack disables the EMAC processor so only the external effects processor is active. An EFX FOOT SWITCH jack allows the effects (internal or external) to be turned on and off with a footswitch.

■ 1/4" TRS Power Amp inputs are provided for each power amplifier. These are switching jacks, which normally route the internal main (or main/monitor) signal to the power amp inputs. If an external line-level signal is plugged into these jacks, it breaks the internal connection and only the external signal is sent to the power amp inputs.

■ Power amp outputs include a pair of 1/4" TS jacks for each output. A POWER AMP ROUTING switch allows the power amps to drive the mains (MAIN/MAIN with the Power Amp Routing switch out), or allows one amp to drive the mains and one amp to drive the monitors (MAIN/MONITOR with the Power Amp Routing switch pushed in).

■ Each Graphic Equalizer has nine bands with +15 dB of gain and centers at 63 Hz, 125 Hz, 250 Hz, 500 Hz, 1 kHz, 2 kHz, 4 kHz, 8 kHz, and 16 kHz. A 75 Hz high-pass filter switch is included in each EQ section to reduce stage rumble or microphone-handling noise.

■ The EMAC™ 32-bit digital effects processor was custom designed by our digital engineers and rivals the sound of many high-quality outboard processors. The EMAC Digital Effects section includes an EFX DRIVE LEVEL control, which regulates the signal level being sent to the EMAC effects processor from the individual channels' EFX sends. The overall level is monitored by the CLIP LED to prevent overload. Below the level control is the preset selector for picking one of the 16 available preset effects. The characteristics of these presets can be changed with the TIME/RATE and DAMPING/DEPTH knobs. The EFX WIDE switch adds psychoacoustic "width" or "depth" to all effects except delay and phaser. The EFX BYPASS switch disables the EMAC effects.

■ The amplifiers feature Mackie's FR (Fast Recovery) design, which eliminates latching that can occur when the signal level approaches clipping. In addition, a built-in compressor can be switched on to protect the amplifiers from input overload. To ensure long-term reliability, the amplifiers are mounted on a massive custom-designed die-cast heat sink, which is convection cooled and dramatically extends the life expectancy of the heat-producing components. The 406M amplifiers deliver 250 watts per channel into 2 ohms.

■ The 406M chassis is constructed of an impact-resistant injection-molded case with an integrated handle on one end for easy transport.

Electronic files for this product available at: www.mackie.com

This Specification Sheet	**PPM406M_SS.PDF**
Architects' and Engineers' Specifications	**PPM406M_AE.TXT**
Owner's Manual	**PPM_OM.PDF**

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