

## **DESCRIPTION**

Thank you for purchasing the Professional Sound Corporation M4 A+ portable stereo audio mixer. PSC is confident that the M4 A+ has set new standards in portable mixing boards. Please feel free to contact us if you have any comments or questions about your mixer or have any suggestions about new products you would like to see developed.

PSC extends a two year limited warranty on parts and labor to all M4 A+ owners who return their warranty cards at the time of purchase. The warranty gives you specific rights which are stated on the card and enables us to keep you informed of product updates.

The PSC M4 A+ provides all the features necessary to produce studio quality recordings in the field. Its true sonic excellence and portable, rugged design make it the perfect choice for electronic news gathering (ENG), electronic field production (EFP), and feature film production.

*Please be sure you have read, understand, and agree to all terms stated in the **LICENSE AGREEMENT** on page 9 of this manual and on your warranty registration card.*

## **APPLICATIONS**

- Location Recording (Dialogue and Music)
- Digital Recording and Playback
- M/S Stereo Recording and Monitoring
- Broadcast Remotes
- Desktop Mixing for Video Post Production



## INPUTS

### A. Input Mode (MIC/LINE)

1. The PSC M4 A+ can accommodate microphone level inputs as well as line level inputs (-10 to +4dBu). The M4 is compatible with all forms of consumer and professional audio equipment. The MIC/LINE switches are located on the bottom panel of the M4.

### B. Balanced Inputs

1. The PSC M4 A+ provides four input channels utilizing female XLR connectors. The studio grade input circuitry is electronically balanced. The XLR connectors are wired as follows: pin 1 shielded ground, pin 2 audio high, and pin 3 audio low. Balanced wiring enables longer cable runs without the worry of excessive noise due to nearby electromagnetic and radio frequency interference. Either pin 2 or 3 may be tied to ground to unbalance the inputs of the M4 A+. Note: The AES standard for unbalancing an XLR connector is to tie pin 3 to ground.

### C. Dynamic, 48V PH and 12V "T" Microphone Powering

Channel microphone powering switches are located on the bottom panel of the M4 A+. Each channel is individually switchable between dynamic, 48V phantom and 12V "T" powering.

1. In the dynamic position (DYN), the mixer provides no form of microphone powering. Inputs set to dynamic on the M4 A+ may be used with dynamic microphones or line level outputs from wireless receivers or tape recorders.

2. In the 48V phantom position (48PH) the mixer provides 48 volts DC to power 48PH microphones or simplex powered microphones with a range of 9 to 52 volts or 12 to 52 volts. Pin 1 is shielded to ground while pins 2 and 3 carry 48 volts dc. The term "phantom" is derived from the fact that there is no voltage potential developed across a dynamic microphone transducer that would interfere with its operation. However, most portable wireless receivers will not operate with 48PH turned on. We strongly recommend setting inputs to dynamic for use with wireless systems.

3. In the 12V Tonador position (12T), the mixer provides 12 volts DC to power "T" or "AB" microphones. With standard 12 "T" powering, pin 1 is shielded to ground while pin 2 is connected to the positive supply voltage and pin 3 to the negative supply voltage. *12T must not be used when operating anything other than "T" or "AB" microphones.*

D. Pre-Amplifier Attenuation

1. Each channel has switchable gain (0dB, -10dB, -20dB) to assist in preventing pre-amplifier overload. The -10dB and -20dB settings can be used to record high level sounds or when using very sensitive microphones. The pre-amplifier attenuator switches are located on the bottom panel of the M4 A+. The -10dB setting is normally used when operating condenser (powered) microphones.

E. Low Cut Filter

1. Each channel has a low cut (high pass) filter. This filter will attenuate all frequencies below a preset frequency at a rate of 12dB per octave. When set at 20Hz, frequencies below 20Hz are effectively rolled off with the mixer operating at full frequency response. Optional low cut filter settings of 100Hz and 140Hz will roll off the frequencies below those figures at rate of 12db per octave (-3db level at 100Hz and 140Hz respectively). Low cut filtering is important in location recording where wind noise can cause pre-amplifier overload. This effect can be minimized by switching the low cut filter setting to either a 100Hz or 140Hz cutoff. The low cut filter switches are located on the front of the M4 A+.

F. Channel Amplifier Gain

1. In order to limit noise and increase headroom, the channel fader controls are located in the feedback path of the pre-amplifiers. This allows the operator to decrease pre-amplifier gain rather than just channel output level when an overload situation occurs resulting in increased headroom and lower chance of signal clipping (severe distortion).

G. Channel Assignment

1. Channel assignment enables the assignment of a input channel signal into the left or right mix busses.

Individual channel assignment is accomplished with a three way channel assignment switch to left, center (left and right), or right buss. This switch is located on the right side panel of the mixer.

#### H. Slate Microphone

1. The slate microphone can be activated with the momentary pushbutton switch located in the upper right hand corner of the front panel. The operating level of the slate microphone is adjustable via a screwdriver adjustable trim pot located on the right side of the mixer.

#### I. Protection

1. The PSC M4 A+ inputs, outputs and powering are extensively overload protected to prevent mixer failure in the event that an incompatible signal (voltage) is connected to the M4 A+ (i.e., feeding dc into an audio input).

2. Each input and output on the M4 A+ is EMI (RF) filtered to help eliminate the effects of interference from radio microphones, walkie talkies, business band radios, television and radio transmitters. These filters will remove stray frequencies in the radio band while allowing audio frequencies to pass through. This is an especially important feature for field production.

### STEREO/MS

#### A. Stereo and Mid/Side Recording

1. The PSC M4 A+ mixer can be used to make high quality XY and MS stereo recordings. When used in this mode, **BOTH mixer mode switches must be set to the ganged position.** Channels one and two are ganged together when used in this manner. The channel one fader becomes the master level control for both inputs and the channel two fader is a balance control (+/- 9dB). The balance control affords either level matching of an XY pair or stereo imaging of an MS stereo recording.

### OUTPUTS

#### A. Balanced Outputs

1. The PSC M4 A+ stereo outputs utilize two male XLR connectors. The outputs are low impedance, electronically balanced and capable of driving +4dBm lines with more than 16dB of headroom. The advantages of balanced lines have been stated previously in this operation manual (see Balanced Inputs). The outputs of the M4 A+ may be unbalanced by tying either pin 2 or 3 to ground. The AES standard for unbalancing an XLR connector is to tie pin 3 to ground. Additionally, the outputs may be switched to microphone level if so desired.

2. A stereo microphone level unbalanced output is available via a stereo mini female jack located on the right side of the mixer. This is typically used to feed audio to transcription recorders.

3. Output limiters, located on the right side of the mixer, may be switched on or off. They are factory calibrated to activate at approximately +3 on the V.U. meters. Compression is a reasonable 2.4 to 1.

#### B. Accessory Connector

1. The accessory connector, located on the left side of the M4 A+, is of particular importance to portable video camera operators. A quick-release Hirose(tm) 12 pin connector provides balanced outputs, user-adjustable balanced tape returns and the ability to power the M4 A+ externally. To take full advantage of this feature, optional PSC snake cables are available in many configurations. These snake cables provide a convenient single connector hook up to the PSC M4 A+ and are available in standard or quick disconnect (near the camera) configurations.

### MONITOR

#### A. Headphone Monitor Output

1. The 1/4" stereo headphone amplifier output can accommodate 25-600 ohm headphones. A volume control is located on the right side of the mixer.

2. Monitoring is switchable between left, mono, right, stereo and M/S. Headphone monitor switches are located on the bottom panel and front panel below the master fader. Monitoring is also MixBus/TapeReturn selectable. The Mix/Tape switch is on the right side of the M4 A+.

## TAPE RETURNS

### A. Tape Return Gain

1. The tape return right and left channel gain adjustments are accessible on the bottom panel. The M4 A+ will accept either balanced or unbalanced signals and will operate over a wide range of external device output levels. Input impedance of the tape returns is 100k ohms balanced and 50k ohms unbalanced. This impedance was chosen in order to accommodate any external device without signal loading. Tape returns are accessible via the accessory 12 pin connector on the left side of the mixer.

## METERS

### A. V.U. Meters

1. The two V.U. meters are Sifam(tm) taunt band units. These are rear lit via a user operated timed circuit. Illuminating the V.U. meters is accomplished with a momentary lamp switch located on the front panel of the M4 A+ just to the right of the V.U. meters. The lamps are automatically held on for approximately 12 seconds after which they return to off.

2. A momentary battery check switch, located on the left side of the M4 A+, will display a new set of batteries at 100% on the right V.U. meter. Consider alkaline batteries "dead" at 50%.

### B. PPM Meters

The two PPM meters are SIFAM(tm) taunt band units. The muax PPM version also contains an additional circuit board to provide the required PPM ballistics. The electrodes utilized for this function were custom designed by PSC, and meet all applicable BBC and EBU

standards. Additionally, PSC's exclusive circuitry consumes very little power when compared to competing designs.

## POWERING

### A. Internal Battery Powering

1. The M4 A+ mixer is powered internally by eight "AA" batteries. Alkaline type batteries are recommended and will provide 20-30 hours (V.U. Meters) of operation under normal use. The PPM version will normally provide 18-25 hours of operation under normal use. Batteries should be removed when the mixer will not be in operation for extended periods of time.

2. A low battery level LED is located on the front panel of the M4 A+. It "blinks" whenever the mixer is turned on. It blinks once every six seconds in order to conserve power. It illuminates steadily with approximately one hour of battery life remaining.

3. The battery compartment is located on the right side of the mixer. Batteries are replaced via the thumb screw attached door.

*Please note the battery diagram on the bottom of the M4 A+ to ensure proper polarity. If the batteries are inadvertently installed backwards, no damage will result, the mixer will simply not operate.*

### B. External DC Powering

1. The PSC M4 A+ can be powered externally from 6 to 24Vdc. The low voltage indicator will stay lit below 7.5 volts, while the mixer is in operation. Power consumption is less than 0.8 Watts (aprox 65mA @12Vdc) with no microphones powered. External powering is available through the 12 pin accessory jack located on the left side panel of the mixer. An optional PSC M4 A+ wall pack DC power supply is available. Additional Hirose inline connectors (Part # HR10A-10P-12P) are also available.

2. External powering can also be accomplished through the use of the BP-90-type chassis battery connector located on the right side of the mixer. Wiring is

consistent with the common Sony camcorder battery polarity(Outside = + voltage, Center = - voltage).

3. **WARNING!:** DO NOT EXCEED 25V DC! Any voltage above this point will damage the mixer and void the PSC M4 A+ warranty. The mixer is internally equipped with a **warranty-validating** "tell-tale" component to determine extreme operating voltages.

#### M4 CONSTRUCTION

##### A. Chassis

1. The M4 A+'s extremely rugged, yet lightweight chassis is formed from high grade aircraft aluminum. All chassis parts are chem film-plated to resist corrosion. The exterior finish consists of electrostatically applied, baked-on black matte powder coat polymer.

2. The lettering used on the M4 A+ is mil-spec long wearing epoxy based inks that are baked on for a durable finish.

##### B. Environmental Operation

1. The PSC M4 A+ has been engineered so that it will remain functional under the most adverse environmental conditions. The M4 A+ was designed to be operated over the temperature range of -20C to +70C (-4F to +158F). Battery life will be substantially reduced at the lower temperature extremes. We recommend Eveready(tm) AA lithium batteries (model #L91) for extreme low temperature operation.

#### **INTERFACING**

If you plan to transmit the outputs of the M4 A+ mixer via a Lectrosonics™ wireless systems, you should plan to order a pair of M4 output to Lectrosonics input cables from your local dealer (PSC inventory number FPSC1125). These cables are optimized to prevent any RF interference from affecting the audio integrity of the M4 A+ stereo outputs.

#### **WARRANTY AND NON-WARRANTY SERVICE**

Complete details of the PSC M4 A+ warranty are given on the enclosed blue warranty registration card. If you did not receive one please contact your local dealer or call us directly.

The PSC M4 A+ mixer has been designed to provide you with years of trouble free service. However, in the unlikely event that your PSC M4 A+ mixer requires service, please contact your local dealer or Professional Sound Corporation during normal business hours. Please return your PSC M4 A+mixer in its original shipping box, freight prepaid, to:

Professional Sound Corporation  
24932 Avenue Kearny #8  
Valencia, CA 91355  
U.S.A.

We reserve the right to inspect products which may be subject of any warranty claim before repair or replacement is carried out.

PSC M4 A+ mixers repaired under warranty will be returned within 30 days freight paid by Professional Sound Corporation. Repairs that do not meet the terms of the warranty will be repaired and returned within 30 days C.O.D. with billing for labor, materials, freight and insurance.

## **LICENSE AGREEMENT**

The Professional Sound Corporation M4 A+ Audio Mixer is licensed to registered PSC Dealers and to end users who purchase the M4 A+ Mixer. Professional Sound Corporation agrees to license each M4 A+ Mixer sold to a registered PSC Dealer or end user under the protection of the industrial trade secrets laws of the State of California and the United States of America. Under the terms of this agreement the license is for the use of the M4 A+ Mixer for fifty (50) years. Ownership of all technology employed in the PSC M4 A+ remains with Professional Sound Corporation.

Professional Sound Corporation retains proprietary rights to all design documentation, manufacturing processes, and other data developed or created by Professional Sound Corporation in designing the M4 A+ Mixer.

This product is licensed by Professional Sound Corporation for the following registered Dealer and end user purposes:

### PERMITTED USES (YOU MAY):

- Electronic News Gathering (ENG) sound mixing.
- Video and Film production and post production sound mixing.
- Video and film Documentary sound mixing.
- Any other similar sound mixing applications.

### PROHIBITED USES (YOU MAY NOT):

- Copying or reverse engineering all or any portion of the PSC M4 A+ Mixer.
- Alter or Modify the PSC M4 A+ Mixer.

This license and the right to use the Professional Sound Corporation M4 A+ Mixer will automatically terminate by failure to comply with any provision of this license agreement. Professional Sound Corporation retains all rights not expressly granted. Nothing in this agreement constitutes a waiver of Professional Sound Corporation's rights under United States Copyright trade secret laws or any Federal or State laws.

This agreement becomes effective for each Mixer when the License Seal is broken by the registered Dealer or end user.

License may be transferred to subsequent owners if notification in writing is given to Professional Sound Corporation. It is the sole responsibility of the end user

to transfer this license upon transferring the ownership of the Mixer to a third party.



## SPECIFICATIONS

Freq. Response: 20Hz to 20KHz +/-0.5dB.

Distortion: 20Hz to 20KHz <=0.08%.

Crosstalk: 20Hz to 20KHz >= 70dB.

Noise Figure: 20Hz to 20KHz -130dBu.

Microphone Powering: 48 PH per DIN specification.  
12 T per DIN specification.

Low Cut Filter: 20, 100, 140Hz at 12dB/octave.

Oscillator: 400Hz sine wave at 0 V.U. via momentary pushbutton switch located on the right side of the mixer.

Global Gain: 80 dB at "0" detent on the master fader.  
86 db at maximum on the master fader.

Source Input Impedences: 150 ohms rated.

Line Output Load Impedance: 600 ohms rated.

Tape Return Impedance: 100k ohms balanced, 50k ohms unbalanced.

Headphone Load Impedance: 25-600 Ohms.

Voltage Rails: +/-16Vdc.

Internal Power: Eight "AA" alkaline batteries providing 20-30 hours of operation under normal operating conditions.

External Power: 9 to 24Vdc via 12 pin Hirose connector or the BP-90 jack. Power consumption <= 0.8 Watts with no microphones powered. **WARNING:** Do not exceed 25Vdc.

Temperature Range: -20 to +70C (-4 to +158F). Less the effects on batteries.

Dimensions: 285mm H x 180 mm W x 46 mm D (11.25" x 7.125" x 1.875")

Net Weight: 1.59Kg (3.5 lbs.)

Specifications subject to change without notice.