

SHURE®



GENERAL

The Shure FP32A is a three input, two output portable stereo mixer designed for professional electronic news gathering (ENG), electronic field production (EFP), and on-location film production. The FP32A mixer sets a new standard for portable mixer performance and features. An exceptionally low noise design makes the FP32A ideal for use with digital transmission links or digital video/audio recording media, including DAT and recordable CD. Lightweight, compact, and rugged, the FP32A is designed to withstand the most demanding field production conditions.

All types of dynamic or condenser microphones may be used with the FP32A. To operate condenser microphones, the mixer provides 48 V phantom, 12 V phantom, and 12 V T (A-B) power. The FP32A will operate for at least 8 hours from two 9 V alkaline batteries. An external 12–30 Vdc power source, such as a Shure PS20 or PS20E AC adapter, may also be used to power the FP32A.

Features

- Exceptionally quiet design, suitable for use with DAT, recordable CD, and other digital formats
- Extended frequency response of 20 – 20 kHz
- Dynamic range greater than 100 dB
- Transformer balanced inputs and outputs for superior rejection of RFI and electromagnetic hum
- Three selectable mic/line inputs
- Two selectable mic/line outputs
- Wide range input gain controls handle hot signal levels without attenuators
- 48 V phantom, 12 V phantom, and 12 V T (A-B) microphone power
- Pop-up pan pots
- Switchable low-cut filters on each input
- Link switch gangs inputs 2 and 3 together to control a stereo microphone

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Model FP32 User Guide

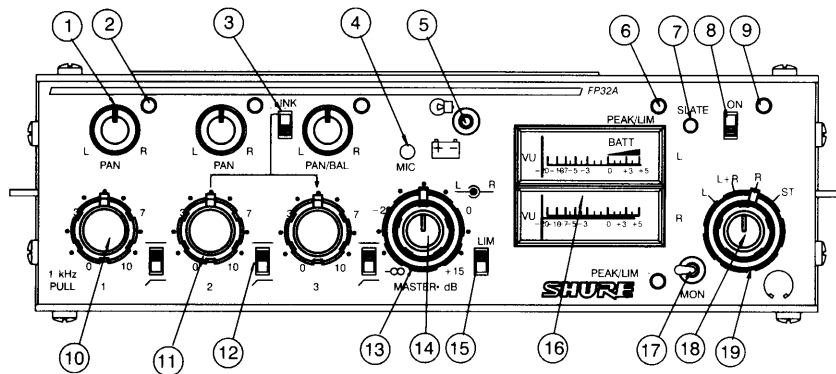
- Bi-color LED signal presence and peak indicator for each input
- Professional VU meters with selectable timed or toggled backlighting
- Dual clutched Master gain control for simultaneous or separate adjustment of output levels
- Bi-color LED limiter and peak indicator for each output
- Two linkable output peak limiters with adjustable thresholds and release times
- Slate microphone and slate tone with selectable functions
- Isolated two way talk-back using Monitor In and modified Slate Mic/Tape Out jack
- 1 kHz tone oscillator
- Mix bus jack and cable to link FP32A mixers together
- Headphone monitor mode switch to select L, L+R (Mono), R, or Stereo
- Selectable M/S decoding circuit for headphone monitor
- Mixer/Monitor In switch (locking and momentary)
- Internal Monitor defeat switch for split-feed headphone operation
- Headphone volume control
- 1/4" and 3.5 mm jacks for stereo headphone outputs
- 3.5 mm jacks for stereo Tape Out and Monitor In
- Customized operation via internal DIP switches, trim pots, slide switches, and optional jumpers
- Regulated voltage rails (± 15 Vdc) provide exceptional headroom
- Bi-color power on/off LED
- Battery check switch and low battery warning LED
- Non-polarized external power jack
- External power operating range of 12 to 30 Vdc
- Soft-touch, color coded control knobs with raised position indicators
- Metal XLR input and output connectors
- Rugged metal chassis plated with durable black chrome
- 8 hours of operation on two 9 V alkaline batteries under typical conditions
- Carrying case, shoulder strap, and mix bus cable included
- Legendary Shure reliability and performance
- Designed and manufactured in U.S.A.

FOR EXPERIENCED FP32 USERS

There are numerous new features and improvements in your new FP32A mixer over the FP32 model. If you do not have the time or inclination to completely read this infor-

mative data sheet, you should at least read the sections identified in the box below, which describe the major changes. You will then be familiar with the most important new capabilities offered on your FP32A.

Pan Control	Input Level LED
Link Switch	Output Peak/Limiter LED
Power On LED	1 kHz Tone Oscillator
Master Gain	Monitor Input Switch
Headphone Monitor Mode Switch	Mix Bus Jack
12–30 VDC External Power Jack	Battery Compartment
Microphone Power Selection Switch	Internal DIP Switches



FRONT PANEL CONTROLS AND INDICATORS
FIGURE 1

FRONT PANEL CONTROLS AND INDICATORS (Figure 1)

- Pan Control:** Adjusts the amount of input signal sent to the Left and Right outputs. Each Pan knob has a center detent position. To avoid accidental movement once set, the Pan knob may be pushed down flush with the front panel.
Note: Pan Control 3 becomes a Left/Right Balance Control when Link Switch is activated (see Link Switch description for details).
- Input Level Bi-Color LED:** Glows green to indicate the presence and relative level of an input signal. Also glows red if input signal reaches 6dB below clipping (distortion) level. To program this LED so that it functions only as a clipping level indicator, open the battery compartment and move DIP Switch 10 to the OFF position.
- Link Switch:** In the LINK position (up), this switch ties together the gain controls of Inputs 2 and 3, which now act as a stereo pair. Input 2 is Left and Input 3 is Right. Input 3 Gain knob adjusts the level of the stereo pair. Input 3 Pan knob adjusts the Left/Right balance of the stereo pair.
Note: Channel 2 Gain and Pan are disabled when the LINK switch is activated. Low cut filters for Input 2 and Input 3 are not linked.
- Slate Microphone:** The built-in condenser microphone is activated when the Slate button is pressed. See Slate Button section for more information.
Note: To disable both the slate microphone and slate tone, set internal DIP Switches 5, 6, and 7 to Off. Slate

microphone may also be modified to act as a talk-back mic for communications. See the Internal Modifiable Functions section for details.

- Battery Check Switch:** The status of the two 9V batteries is indicated on the VU meter. When using an external DC supply and no batteries, the Battery Check indicates the status of the external operating voltage. If 9V batteries *and* an external DC supply are used, the Battery Check indicates the status of the higher voltage source. A low battery condition also is indicated when the Power On LED changes to red and flashes at a slower rate.
Note: The audio signal is not interrupted when the Battery Check Switch is activated.
- Output Peak/Limiter Bi-Color LED:** Illuminates red for individual Left and Right Channels when output signal reaches a factory pre-set peak level of +17 dBm. This peak level is user-adjustable from 0 dBm to +17dBm. (See the Peak LED Adjustment instructions.) If the Limiter is switched on, each LED illuminates green to indicate Limiter operation. LED will still illuminate red if the pre-set peak level is reached before the Limiter activation point is reached.
- Slate Button:** Activates a 400 Hz Slate Tone for one second and also activates the Slate Microphone. The Slate Microphone remains on while the button is depressed. The Slate signal (Tone and Mic) appears at the FP32A Left and Right outputs to identify the beginning of a take. If desired, the Slate features can be modified as follows: disable the Slate Tone; insert the Slate signal pre-Master control; or insert the Slate

signal post–Master control. See the Internal DIP Switches table for instructions.

Note: To disable both the slate microphone *and* slate tone, set internal DIP Switches 5, 6, and 7 to Off.

8. **Power On/Off Switch:** Turns the mixer on and off.
9. **Power On LED:** Flashes green to indicate power is on. Flashes red and slower to indicate low batteries, typically when 30 minutes of power remains. The LED flashes to attract attention if the FP32A is accidentally left on, to use less battery current than a continuously illuminated LED, and to provide visibility in daylight.
10. **1 kHz Tone Oscillator (Channel 1):** Activated by pulling out Input Channel 1 Gain knob.

Note: Tone level is adjusted using the Input 1 control and the Master control. Use this tone to send a reference signal level to any device connected to an FP32A output.

11. **Input Gain Control:** Adjusts the gain level of each input channel. Rotating the knob counter–clockwise reduces gain and raises the input clipping point. Use a low control setting to handle “hotter” input signals without distortion. With the new FP32A input circuit, microphones with a “hot” output may be used without an in–line pad (attenuator).

For best performance, adjust each Input Gain Control so the associated Input Level LED illuminates red only on the loudest signal peaks.

12. **Input Low–Cut Filter Switch:** Provides low–frequency roll–off to reduce wind noise and rumble. When using filter, the frequency response is down 6 dB at 150 Hz. Roll–off slope is 6 dB per octave.
13. **Master Gain–Right Channel Output:** Outer ring controls Right channel output gain. Dual–clutched control lets Right and Left outputs be adjusted individually. Set to “0 dB” for unity gain.
14. **Master Gain–Left Channel Output:** Inner knob controls Left channel output gain. Dual–clutched control lets Right and Left outputs be adjusted individually. Set to “0 dB” for unity gain.
15. **Output Peak Limiter Switch:** Activates two fast–acting, peak–responding limiters, one for each output channel. Limiters help prevent overload distortion from unexpected loud input signals. Limiter activation is indicated by the Output Peak/Limiter LEDs, which will illuminate green.

The limiters may be changed to: operate independently; be linked as a stereo pair; activate at thresholds from 0 dBm to +15 dBm; and to have release time constants of 0.1 second or 1 second. See Internal DIP Switches and Limiter Threshold Adjustment for instructions.

16. **Left/Right Channel Output Level Meters:** 0 VU is preset at a +4 dBm output level. This may be recalibrated for each meter by an internal trim potentiome-

ter. See VU Meter Adjustment paragraph for instructions.

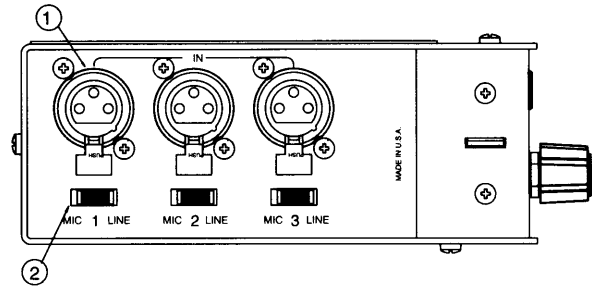
Note: Mechanical meters were chosen for the FP32A because LCD meters do not operate properly in cold weather; fluorescent meters drain batteries too quickly; and LED meters are difficult to see in sunlight.

17. **Monitor Input Switch:** In the center position, the FP32A post–master audio is sent to the headphone output. In the left (locking) or right (momentary) position, the audio signal from the Monitor In jack is sent to the headphone output.
18. **Headphone Gain Control (Inner Knob):** Adjusts headphone volume level.

WARNING: The headphone circuit is capable of producing high volume levels that can damage the user’s hearing. Make sure the headphone volume setting is low (full CCW) before putting the headphones on.

19. **Headphone Monitor Mode Switch (Outer Ring):** User can monitor FP32A output as: Stereo; Right channel only; Mono (Left + Right); or Left channel only.
Note: This switch also affects Monitor In signal. When using a stereo MS microphone, such as the Shure VP88, the user may wish to pass the mic signal through the FP32A as separate Mid and Side signals, yet hear decoded stereo in the headphones. Using the Headphone MS Matrix, the user can monitor the FP32A output as: Discrete (Mid and Side); Side only, Stereo (decoded MS), or Mono (Mid only). Refer to the Internal DIP Switch table for instructions on activating the Headphone MS Matrix.

INPUT PANEL CONNECTORS AND CONTROLS (Figure 2)

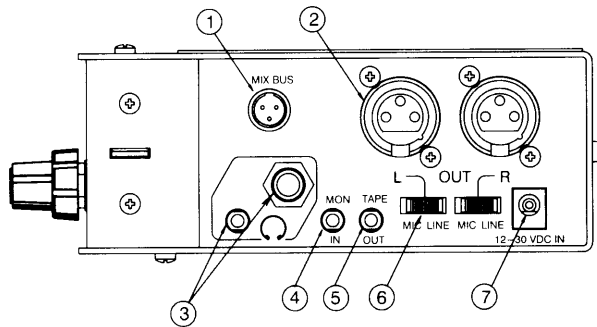


INPUT PANEL CONNECTORS AND CONTROLS
FIGURE 2

1. **Channel Inputs:** Three female XLR inputs are transformer balanced to provide superior rejection of hum, RFI, and other interference. Each input can be switched to provide 48 V or 12V phantom power (for condenser mics); 12 V T(A–B) power (for condenser mics); or no power (for dynamic mics). See the Internal Switches and Controls section for instructions.
2. **Mic/Line Level Input Switch:** Selects Mic or Line to match the incoming signal level. Mic signal level is typically .0001 – .003 V and Line signal level is typically

0.1 – 3.0 V. In the Line level position, phantom and T power are disconnected from the input.

OUTPUT PANEL CONNECTORS AND CONTROLS (Figure 3)



OUTPUT PANEL CONNECTORS AND CONTROLS
FIGURE 3

1. **Mix Bus Jack:** Allows two FP32A mixers to be connected together. A mix bus cable is supplied with every FP32A. The Mix Bus connection is "two-way" and pre-Master. When two FP32A mixers are connected via the Mix Bus, all six inputs appear at both mixers' outputs. The Master Gain control of either FP32A can be adjusted without affecting the other mixer's output. This provides the equivalent of a six input stereo mixer with two separate Master output sections.

Note: The output level of both FP32A mixers will drop by 6 dB when they are connected via the Mix Bus. Increase the Master Gain to compensate.

2. **Main Output:** Two male XLR outputs are transformer balanced and may be switched to Mic or Line level. Line level output can be modified to a true 600 Ω if desired. See Internal Modifiable Functions section.

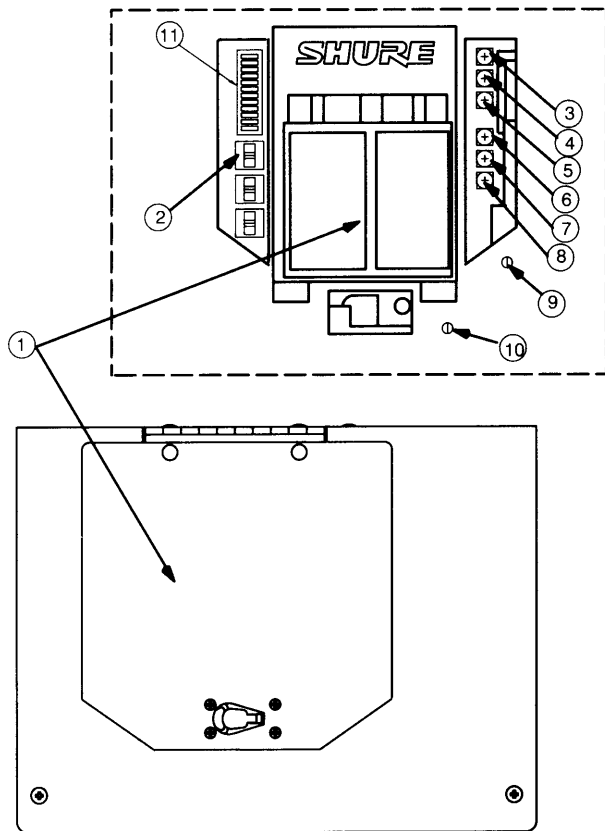
3. **Headphones Outputs:** A stereo 1/4 in. phone jack and a stereo 3.5 mm mini-phone jack may be used separately, simultaneously, or as auxiliary feeds to other equipment.
4. **Monitor In Jack:** Designed to accept stereo line level signals. This 3.5 mm jack provides a "tape return" input or a communications channel input. This signal appears only in FP32A headphone circuit. Activating front panel Monitor In switch routes Monitor In signal to headphones. FP32A audio is *not heard* in headphones when Monitor In switch is activated.

Note: A "split-feed" (FP32A audio in one ear and Monitor In audio in the other) can be accomplished via internal DIP switches 4 and 5. Also, an internal modification will allow attenuated FP32A audio to be heard in the headphones even when the Monitor In switch is activated. See the Internal Modifiable Functions section for instructions.

5. **Tape Output Jack:** A stereo 3.5 mm mini-phone jack (auxiliary level) to feed a cassette recorder, DAT machine, or semi-pro video recorder. This output can be modified to: provide a mono (L+R) signal; provide an unbalanced line level output; provide an isolated output containing only the slate mic and slate tone. See the Internal Modifiable Functions section for instructions.
6. **Mic/Line Level Output Switch:** Selects Mic or Line level to match proper input level of the device connected to the FP32A output. Mic signal level is typically .0001 – .003 V; Line signal level is typically 0.1 – 3.0 V.
7. **12–30 Vdc In External Power Jack:** Non-polarized coaxial plug allows the use of a 12 to 30 Vdc external power supply. The external supply must have a negative ground or a floating ground. A Shure PS20 or PS20E AC adapter, an automotive battery, or a rechargeable belt pack are all suitable power supplies.

INTERNAL SWITCHES AND CONTROLS

(Figure 4)



INTERNAL SWITCHES AND CONTROLS

FIGURE 4

1. **Battery Compartment:** Holds two 9 V alkaline batteries. Two fresh 9 V alkaline batteries will power the unit for at least eight hours under normal conditions.
2. **Microphone Power Selection Switch:** Position this slide switch to match the type of input power desired:
 - Top Position 12V T(A-B): No DC on pin 1, +DC on pin 2, -DC on pin 3. Used with certain Sennheiser and Schoeps microphones.
 - Middle Position (Dynamic): No DC power on pins 1, 2, or 3. Used with dynamic microphones or condenser microphones that use internal batteries.
 - Bottom Position (Phantom): - DC on pin 1, +DC on pin 2, +DC on pin 3. 12 volts or 48 volts selected by inter-

nal DIP switch. 48 V phantom drains batteries quicker than 12 V phantom. Used with all condenser microphones that do not require T power.

Note: Balanced dynamic microphones will not be damaged by phantom power, but could be damaged by T power.

3. **Factory Pre-Set Right THD Potentiometer – DO NOT ADJUST:** Precisely calibrated on each mixer for minimum total harmonic distortion.
4. **Peak LED R Potentiometer:** Adjusts Right Peak LED to illuminate at a preset output level. Factory setting is +17 dBm. User adjustment range is 0 dBm to +17 dBm. See the Peak LED Adjustment paragraph for instructions.
5. **Peak LED L Potentiometer:** Adjusts Left Peak LED to illuminate at a preset output level. Factory setting is +17 dBm. User adjustment range is 0 dBm to +17 dBm. See the Peak LED Adjustment paragraph for instructions.
6. **Lim Adj R Potentiometer:** Adjusts Right limiter to operate at a preset output level. Factory setting is +15 dBm. User adjustment range is 0 dBm to +15 dBm. See the Limiter Threshold Adjustment paragraph for instructions.
7. **Lim Adj L Potentiometer:** Adjusts Left limiter to operate at a preset output level. Factory setting is +15 dBm. User adjustment range is 0 dBm to +15 dBm. See the Limiter Threshold Adjustment paragraph for instructions.
8. **Factory Pre-Set Left THD Potentiometer – DO NOT ADJUST:** Precisely calibrated on each mixer for minimum total harmonic distortion.
9. **Meter Adj R Potentiometer:** Adjusts Right meter to indicate 0 VU at a preset output level. Factory setting is +4 dBm. User adjustment range is 0 dBm to +16 dBm. See the VU Meter Adjustment paragraph for instructions.
10. **Meter Adj L Potentiometer:** Adjusts Left meter to indicate 0 VU at a preset output level. Factory setting is +4 dBm. User adjustment range is 0 dBm to +16 dBm. See the VU Meter Adjustment paragraph for instructions.
11. **Internal DIP Switches:** 12 internal DIP switches allow the user to customize FP32A operation. The function of each DIP switch is listed in the following table.

INTERNAL SWITCHES AND CONTROLS (Cont.)

Note: Bold type indicates Factory setting.

DIP SWITCH	POSITION	FUNCTION
1 LIM LINK	ON	Left and Right limiters act in tandem. If limiter thresholds are set differently, limiter action is determined by the lower threshold setting.
	OFF	Left and Right limiters act independently.
2 LIM RELEASE R	SHORT	Right limiter release time constant is 0.1 second. Use for speech.
	LONG	Right limiter release time constant is 1 second. Use for music.
3 LIM RELEASE L	SHORT	Left limiter release time constant is 0.1 second. Use for speech.
	LONG	Left limiter release time constant is 1 second. Use for music.
4 MON DEFEAT R	OFF	When front panel Monitor switch is activated, Monitor In signal is heard in Right headphone.
	ON	When front panel Monitor switch is activated, Monitor In signal is <u>not</u> heard in Right headphone. Mixer audio remains in Right headphone.
5 MON DEFEAT L	OFF	When front panel Monitor switch is activated, Monitor In signal is heard in Left headphone.
	ON	When front panel Monitor switch is activated, Monitor In signal is <u>not</u> heard in Left headphone. Mixer audio remains in Left headphone.
6 PRE-MAST SLATE	ON	Inserts slate tone and slate microphone into FP32A circuit <u>before</u> the Master gain control (pre-master). Slate level is controlled by Master.
	OFF	Removes slate tone/slate microphone from FP32A pre-master circuit.
7 POST-MAST SLATE	ON	Inserts slate tone and slate microphone into FP32A circuit <u>after</u> the Master gain control (post-master). Slate level not is controlled by Master.
	OFF	Removes slate tone and slate microphone from FP32A post-master circuit.
8 SLATE TONE	ON	Slate tone (400 Hz) sounds for one second when front panel slate button is pushed. Slate microphone also activates.
	OFF	Slate tone does not sound when slate button is pushed. Slate microphone does activate.
9 METER LAMP	TOGGLED	Lamp turns on/off when front panel lamp switch is toggled. Automatic timed turnoff of lamp will <u>not</u> occur.
	TIMED	Lamp turns on/off when front panel lamp switch is activated. If not manually switched off, lamp will automatically turn off after 10 seconds to conserve battery life.
10 PRESENCE LEDS	ON	Input LEDs illuminate green to indicate signal presence and relative level.
	OFF	Input LEDs do <u>not</u> illuminate green. Input LEDs will still illuminate red to indicate 6 dB before clipping.
11 12/48V PHANTOM	12V	Provides 12 VDC phantom power if selected for channel input.
	48V	Provides 48 VDC phantom power if selected for channel input.
12 MS MATRIX FOR HEAD PHONES	ON	Inserts MS decoding matrix into headphone circuit. User can monitor in stereo while allowing separate Mid and Side signals to pass through the FP32A.
	OFF	Removes MS decoding matrix from headphone circuit.

FP32A SETUP

To prepare the FP32A stereo mixer for operation, proceed as follows:

- For internal battery operation, lift the latch on the top panel and open the battery compartment. Install two 9 V alkaline batteries, making sure polarity (+/-) is correct. Select the proper microphone powering for each input via the slide switches. Close the compartment door and secure the latch.

For external power operation, plug a 12 to 30 Vdc source into the External Power jack on the right side panel of the FP32A.

- Connect the microphone, wireless receiver, or other audio source to the desired Input Channel connector on the left side panel.

Note: When using a stereo microphone, such as the Shure VP88, connect it to Channels 2 and 3. Use the front panel Link switch to make Inputs 2 and 3 a stereo

pair. In the Link mode: Channel 2 = Left or Mid; Channel 3 = Right or Side.

- Position each Mic/Line Input switch based on the level of the incoming source.
- Connect the camcorder, DAT machine, wireless transmitter, or other equipment to the Left and Right Output XLR connectors on the right side panel of the FP32A.
- Position each Mic/Line Output switch based on the input level requirements of the equipment connected to the FP32A outputs.
- If a "tape return" or Monitor In feed into the FP32A is required, connect a 3.5 mm stereo male plug into the Mon In connector on the right side panel. The signal on this plug typically comes from the audio output of whatever device is being fed by the FP32A.
- If an unbalanced output feed is desired, connect a 3.5 mm stereo male plug into the Tape Out connector on the right side panel. This would typically feed a cassette recorder or a DAT machine.

8. Plug headphones into the stereo 1/4 in. phone or 3.5 mm mini-phone jacks on the right side panel.
Note: The two headphone output connectors may be used separately, simultaneously, or as auxiliary feeds to other equipment.
9. To interconnect two FP32A mixers, plug the supplied Mix Bus cable into the Mix Bus connectors of both mixers.
Note: When two FP32A mixers are interconnected via the Mix Bus, the Master Gain on either FP32A can be adjusted without affecting the other mixer's output level. This provides the equivalent of a six input stereo mixer with two separate Master output sections.
10. Set Master Gain, Headphone Volume, and all Input Gains fully counterclockwise (off).

OPERATION

To operate the FP32A stereo mixer, proceed as follows:

1. Apply power to the mixer by sliding the On/Off switch to the ON position. The green Power On LED will flash at a constant rate to indicate that the mixer is turned on.
2. Check the mixer power status by moving the front panel Battery Check switch downward toward the battery icon. The needle on the top VU meter will swing to the sloped red BATT indication. If the needle falls below the red BATT indication, the internal 9V batteries or the external DC supply are not providing adequate power.
3. Move the front panel MON toggle switch to the center position to route FP32A audio to headphones. Setting the MON switch left or right routes Monitor In audio to the headphones. The right position is momentary so Monitor In audio may be checked quickly.
4. Slide the LIM switch to the desired position: UP to turn the output limiters on; DOWN to turn them off. Keep the limiters on to protect against output overload.
5. Position the Low-Cut Filter switches for each Input: UP for low-cut off; DOWN for low-cut on.
6. Set the Master Gain knob to the "0 dB" position (2 o'clock). This provides unity gain for output stages.
7. Activate the 1 kHz tone oscillator by pulling Input 1 Gain knob. Adjust Input 1 Gain until the VU meters read "0". Adjust the input levels on the equipment connected to the FP32A outputs accordingly. Push in the Input 1 knob to turn off the tone.
8. Rotate the Headphone Monitor Mode knob to the ST (STereo) position.
9. Put on headphones and carefully adjust headphone volume control.

WARNING: The headphone circuit is capable of producing high volume levels that can damage the user's hearing. Make sure the headphone volume setting is low (full CCW) before putting the headphones on.

10. Adjust the Input Gain and Pan controls based on the incoming signal levels. The Input LEDs should flicker red only on the loudest input peaks. After settings have been made, the Pan knobs can be pressed flush to the front panel to avoid accidental movement.
11. Observe the output on the VU meters and adjust the Master Gain to obtain the desired levels. Try to keep the average levels around "0 VU".

- Note:** To illuminate the VU meters, move the front panel toggle switch up toward the light bulb symbol.
12. Press the Slate button to insert a momentary 400 Hz slate tone into the FP32A output for "take" identification purposes.
Note: If desired, vocally identify the "take" via the Slate Mic while pressing the slate button.
The FP32A mixer is now ready for use.

CONNECTING FP32A'S TRANSFORMER BALANCED OUTPUTS TO TELEPHONE LINES

In the Line position, the Left and Right XLR outputs can be used to drive DC-biased, "dialed up" telephone lines, although there may be a slight increase in distortion. Use of the FP32A limiter circuit is strongly advised with the limiter threshold set to +4 dBm. Modification of the FP32A output impedance to 600 Ω is recommended for proper fidelity. (See the Internal Modifiable Functions section for instructions.) When connecting the FP32A to a telephone line, use of an FCC-Registered interface adapter between the mixer and telephone line is mandatory.

USER ADJUSTMENTS

VU Meter Adjustment

To set the VU Meters to a value other than the factory setting (0 VU = +4 dBm), proceed as follows:

1. Connect a 600 Ω load to the Left XLR output set for Line.
2. Connect an AC voltmeter (such as the HP 400GL) in parallel with the load.
3. Set Channel 1 pan pot to center detent position, and pull out Channel 1 Gain knob to activate the 1 kHz Tone Oscillator.
4. Adjust the 1 kHz Tone Oscillator level with the Left (inside) Master gain control until the AC voltmeter reading is at the level desired.
5. Open the battery compartment door and adjust the Left VU Level trim pot with a screwdriver until the Left VU Meter reads 0.
6. Repeat the above procedure for Right Output and Right VU Meter.

Limiter Threshold Adjustment

To adjust the Limiter threshold to a value other than the factory setting (+15 dBm), proceed as follows:

1. Connect a 600 Ω load and an AC voltmeter to the Left Line output as described in steps 1 and 2 of the VU Meter Adjustment procedure.
2. Set Channel 1 Pan Pot to the center detent position.
3. Open the battery compartment and move DIP switch 1 to the OFF position (refer to the chart on the inside of the door).
4. Pull out the Channel 1 gain control knob to activate the 1 kHz Tone Oscillator.
5. Slide the Limiter switch to the "Off" (bottom) position.
6. Adjust the Left Master gain control until the AC voltmeter reading is 2 dB above the desired output level.
7. Slide the Limiter switch to the "On" (LIM) position.
8. Open the battery compartment and adjust the Lim Adj L trim pot until the level drops to the desired reading.
9. Repeat the above procedure for the Right output using the Lim Adj R trim pot.

Peak LED Adjustment

To adjust the Peak LED threshold to a value other than the factory setting (+17 dBm), proceed as follows:

1. Connect a 600 Ω load and an AC voltmeter to the Left Line output as described in steps 1 and 2 of the VU Meter Adjustment procedure.
2. Set the Channel 1 Pan Pot to the center detent position.
3. Pull out the Channel 1 gain control knob to activate the 1 kHz Tone Oscillator.
4. Slide the Limiter switch to the "Off" (bottom) position.
5. Adjust the Left Master gain control until the AC voltmeter reading is at the desired peak output level.
6. Open the battery compartment and turn the Peak LED L trim pot completely clockwise.
7. Slowly adjust the trim pot counter-clockwise until the left Peak/Lim LED first illuminates red.
8. Repeat the above procedure for the right Peak/Lim LED using the Peak LED R trim pot.

INTERNAL MODIFIABLE FUNCTIONS

Selected internal functions of the FP32A can be modified by the user to fit special applications. Procedures for performing these modifications are listed below.

CAUTION: All internal modifications must be performed by qualified service technician.

Disassembly of FP32A

1. Remove six screws which secure the FP32A cover.
2. Slowly slide the cover backwards and unplug ribbon cable P109.
3. Remove three screws (marked with arrows) which secure upper PC board.
4. Remove upper PC board.
5. Perform modification (refer to appropriate procedure below).
6. Reassemble FP32A by performing the above steps in reverse.

Changing Line Level Output Impedance to 600 Ω

1. Locate R674 and R668 on bottom PC board.
2. Remove these two resistors.
3. Locate X503 and X505 on bottom PC board.
4. Solder a 470 Ω 1/2W resistor through the holes at X503.
5. Solder a 470 Ω 1/2W resistor through the holes at X505.

Changing Tape Out Jack from Stereo (tip = L; ring = R) to Mono (tip = L+R; ring = L+R)

1. Locate X504 on bottom PC board.
2. Solder a jumper through the holes at X504.

Increasing Tape Out Level by 10dB

1. Locate R669 and R672 on bottom PC board.
2. Remove these two resistors.
3. Tape Out impedance is now 6.0 k Ω .

Changing Slate Mic and Slate Tone to Feed Only the Tape Out Jack

This modification provides an isolated, unbalanced output for talk-back. For example, the user could talk to a boom operator through the Slate mic. The FP32A Monitor In function could be used to hear the boom operator response.

1. Locate and remove R663, R669, R670, R672, R673, and R765 on bottom PC board.
2. Solder a jumper into X504.
3. Solder a jumper from X504 to X600.
4. Pre-Mast Slate DIP switch (#6) must be ON.
5. Post-Mast Slate DIP switch (#7) must be OFF.
6. Modified Tape Out contains *only* the Slate tone and Slate microphone.
7. Slate tone and Slate mic are removed from FP32A main outputs.
8. Tape Out level is now nominally -10 dBV (aux level).

Providing Mixer Audio in Headphones when Monitor Switch is Activated

1. Locate X501 and X502 on bottom PC board.
2. Solder a 47 k Ω 1/2 W resistor through the holes at X501.
3. Solder a 47 k Ω 1/2 W resistor through the holes at X502.
4. FP32A audio will be heard approximately 15 dB down when Monitor In switch is activated.

Decreasing Low-Cut Filter Corner Frequency (3 dB down point)

1. Calculate new capacitor value for lower low-cut corner frequency. Use the following formula:

$$C \text{ in } \mu\text{F} = (85/\text{frequency}) - .33$$

Example for 200 Hz corner frequency

$$85/200 = .43$$
$$.43 - .33 = .1 \mu\text{F}$$

For 200 Hz corner frequency, use a .1 μF capacitor.

Note: Capacitor must be non-polarized; ceramic or film type; 16V rating or higher.

2. For Input 1, locate X811 and X812. Solder the new capacitor between these points.
3. For Input 2, locate X813 and X814. Solder the new capacitor between these points. Also, locate X815 and X816. Solder another new capacitor between these points.
4. For Input 3, locate X809 and X810. Solder the new capacitor between these points.
5. Holes X809 through X816 are located on the bottom board just behind the input gain controls.
6. To raise the corner frequency higher than the factory pre-set of 260 Hz, contact the Shure FP Mixer Division.

Slowing Down Output Level Meters to Approximate "True VU" Ballistics

1. Locate empty pads C302 and C303 on top PC board. These pads are located behind the power switch.
2. Solder a 150 μ F x 6.3 V electrolytic capacitor in C302. The + lead must face the meters.
3. Solder a 150 μ F x 6.3 V electrolytic capacitor in C303. The + lead must face the meters.
4. To slow the meter response even more, increase the μ F value of the capacitor.

SPECIFICATIONS

Measurement conditions, unless otherwise specified: Operating Voltage: 18 Vdc

Full gain

1 kHz input signal

Output terminations: Line 600 Ω ; Mic 150 Ω ;

Tape Out 50 k Ω , Headphone 200 Ω

Frequency Response

20 to 20,000 Hz \pm 2.0 dB (channel controls centered)

Voltage Gain

Input	Line	Mic	Headphone	Tape
Low-Z Mic (150 Ω)	90 dB	40 dB	101 dB	78 dB
Line	40 dB	-10 dB	51 dB	28 dB
Monitor	—	—	11 dB	—

Inputs

Input	IMPEDANCE		Input Clip Level
	Designed for Use With	Actual (Internal)	
Mic	19 to 600 Ω	1 k Ω	-10 dBV
Line	\leq 10 k Ω	50 k Ω	+36 dBV
Monitor	\leq 1 k Ω	12k Ω	+21 dBV

Outputs

Input	IMPEDANCE		Output Clip Level
	Designed for Use With	Actual (Internal)	
Mic	Low-Z inputs	0.5 Ω	-31 dBV
Line	600 Ω	120 Ω	+18 dBm
Tape	>10 k Ω	2.2 k Ω	+3 dBV
Headphones	8 to 200 Ω	300 Ω	+11 dBV

Total Harmonic Distortion

0.25% THD at +4 dBm output, 50 to 20,000 Hz

Equivalent Input Noise

-127 dBV with 150 Ω source, 20 to 20,000 Hz

Output Noise

Master level fully CCW: \leq -100 dBV, 20 to 20,000 Hz

Master level fully CW: \leq -80 dBV, 20 to 20,000 Hz

Common Mode Rejection Ratio

65 dB at 100 Hz, -20 dBV input

Polarity

Mic/Line In to Mic/Line Out	Non-Inverting
Mic/Line In to Headphones	Non-Inverting
Mic/Line In to Tape Out	Non-Inverting
Mic/Line to Mix Bus	Inverting
Monitor In to Headphones	Inverting

Overload and Shorting

Shorted outputs, even for prolonged periods, cause no damage. Microphone inputs of up to 3 Vrms cause no damage. Line and monitor can withstand signals of up to 30 Vrms.

Input Channel Bi-Color LEDs

Green: Signal presence; visual indication of mix level
Red: 6 dB below clipping level

Output Peak/Limiter Bi-Color LEDs

Green: Output being limited by 1 dB or more

Red: Output peak threshold reached; factory set at +17 dBm; user adjustable from 0 to 17 dBm

Output Clipping Level

\geq +18 dBm at line output into 600 Ω

Low-Cut Filters

6 dB down at 150 Hz; 6 dB/octave slope

Pan Attenuation Level

45 dB

Tone Oscillator

1 kHz \pm 10%

Slate Tone Oscillator

400 Hz \pm 10%

Limiter

Threshold: Adjustable; 0 dBm to +15 dBm

Attack Time: 1 ms

Release Time Constant: Selectable; 100 ms or 1 s

Indicator: Green when limiting by 1 dB or more

Microphone Power

12 V Phantom: 12 V through matched 680 Ω

48 V Phantom : 48 V through matched 6.8 k Ω

12 V T (A-B): 12 V through matched 180 Ω

Mixer Power

Internal: Two 9 V alkaline batteries

External: 12 -30 Vdc to DC in jack; non-polarized

Current Drain: Approximately 40 mA (idle) at 18 V

Battery Life: 8 hours minimum, typical

Temperature Range

Operating: 0° to 60° C (32° to 140° F)

Storage: -40° to 85° C (-40° to 185° F)

Overall Dimensions (H x W x D)

58mm x 184mm x 161mm (7-1/4" x 6-3/8" x 2-1/4")

Net Weight (without batteries)

1.6 kg (3.5 lbs)

FURNISHED ACCESSORIES

Carrying Case 26A19

To wrap the carrying case around the FP32A mixer, refer to the assembly instructions supplied.

Shoulder Strap 90BX2600

Connect the strap's swivel hooks to the metal ears located on the FP32A side panels.

Mix Bus Cable 90A4313

Three conductor, shielded cable 205mm (8 in.) long with female 3-pin "Tini Q.G." connector at each end.

Rubber Feet 66A8010

If desired, these feet may be adhered to the bottom or rear of the FP32A mixer.

STATEMENT OF CONFORMITY: This certifies that the Shure FP32A Stereo Mixer meets the specifications and regulations embodied in Vfg 243/1991, amended 1992. The Bundesamt für Zulassungen in der Telekommunikation has been notified that this device has been marketed and has been provided the right to verify the device or system for compliance with the specifications.

INFORMATION TO USER: Changes or modifications not expressly approved by Shure Brothers, Inc. could void your authority to operate this equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules and as set out in the Radio Interference Regulations of the Canadian Department of Communications. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses,

and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/TV technician for help.

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