



GENERAL

The FP12 is an in-line, battery-powered amplifier designed to accept a microphone- or line-level signal, bridge it, and produce a signal sufficient to drive headphones at very loud levels. The FP12 is ideal for anyone in the broadcasting, sound reinforcement or audio recording fields who has a need for headphone monitoring or checking microphone- or line-level cable runs. In addition, the FP12 can be used to provide multiple headphone feeds, a two-station intercom, extra power for existing headphone circuits, or a means of practicing electronic instruments through headphones.

FEATURES

- Wide-range frequency response
- Low input noise and harmonic distortion
- High-impedance bridging input does not load signal source
- Switchable microphone- and line-level inputs
- Switchable low- and high-impedance headphone outputs
- Parallel 3-circuit phone and miniature (3.5 mm) headphone jacks
Balanced loop-through locking XLR connectors and phone jacks
- Powered by easily obtainable 9V alkaline battery
- Low current drain for extended battery life
- Rugged construction, with durable belt clip for field use
- Low susceptibility to radio-frequency interference

SPECIFICATIONS

Frequency Response (ref 1 kHz)
40 Hz to 15 kHz, +1, -3 dB

Equivalent Input Noise

-118 dBV (maximum gain; source resistance 150 ohms; 300 Hz to 20 kHz)

Voltage Gain (ref 1 kHz)

| Input | Headphone Impedance | Impedance | Gain |
|-------|---------------------|--|-------|
| Mic | Lo-Z | 4 ohms total (8 ohms per earphone, parallel) | 70 dB |
| Line | | | 20 dB |
| Mic | Hi-Z | 1 k total (2k per earphone driver, parallel) | 96dB |
| Line | | | 46 dB |

Total Harmonic Distortion

Less than 1% (40 Hz to 15 kHz; measured at 10 dB below clipping point)

Input Clipping Levels (at 1 kHz)

Mic Input: 200 mV (-14 dBV)

Line Input: 60V (+35 dBV)

Output Clipping Levels

Lo-Z: 750 mV (-2.5 dBV) (load resistance 4 ohms total; 8 ohms per earphone driver, parallel)

Hi-Z: 15V (+23 dBV) (load resistance 1 k total; 2k per earphone driver, parallel)

Input Impedance (ref 1 kHz)

Mic: 7.5 kilohms $\pm 10\%$

Line: 66 kilohms $\pm 10\%$

Output Impedance (ref 1 kHz)

Lo-Z: 16 ohms $\pm 10\%$

Hi-Z: 440 ohms $\pm 10\%$

Phase

Input in phase with output. Pin 2 of Mic Input in phase with Phones (both phone jacks and mini jacks) tip and ring

Protection

Protected against damage from shorted outputs, (up to 5V [+14 dBV] input signals)

Power

Type: 9V alkaline battery

Battery Life: Approximately 10 hours under normal operating conditions

Current Drain (typical): 6 mAdc (idle); 72 mAdc (clipping)

Temperature Range

Operating: 0° to 49°C (32° to 120°F)

Storage: -29° to 74°C (-20° to 165° F)

Connectors

Input/Output

Locking 3-socket XLR, Locking 3-pin XLR, phone jacks (2)

Headphones Output: Phone jack (2)
Mini Jack (2)

Battery Test
Insulated tip jacks; red (positive) and black
(negative)

Case

Die-cast zinc; matte black enamel

Overall Dimensions

80.9 mm x 150 mm x 55.5 mm (3-3/16 x 5-11/16 x 2-3/16
in.)

Net Weight

501 grams (1 lb 2-1/2 oz)

CONTROLS, CONNECTORS, INDICATOR

Level Control: applies power to FP12 circuitry and sets headphone output level. Knob position also indicates when power is applied.

Mic-Line Switch: selects microphone- or line-level signal source.

Hi-Z/Lo-Z Switch: selects operation with high-impedance (greater than 600 ohms) or low-impedance (less than 600 ohms) headphones.

In/Out XLR and Phone Jacks: provide loop-through input and output connections for balanced microphone-or line-level signal sources.

Phones A, B Jacks: provide for connection to high- or low-impedance headphones. Note that A and B headphone jacks can be used simultaneously. Each output can accept a headphone phone plug **or** mini plug.

Batt Test Jacks: can be used to check condition of 9V battery.

OPERATION

Battery Replacement

Use a coin or screwdriver, turning one-quarter turn in either direction, to open the battery compartment door. Insert a fresh 9V alkaline battery (NEDA 1604A, Duracell MN1604, Eveready 522, or equivalent) in the compartment. Note that the battery contacts are polarized, and the battery cannot be inserted improperly. The compartment door can be closed by pressing shut with the fastener properly aligned.

Connections

Connect the signal source (microphone- or line-level) to the appropriate **In/Out** connector (XLR or phone jack), and set the **Mic-Line** switch. Connect the parallel signal **In/Out** connector (XLR or phone jack) to the input of mixer, tape recorder or amplifier. Connect the headphones (one or two units) to the **Phones A, B** jacks, and set the **Hi-Z/Lo-Z** switch to the proper position for or low-impedance headphones.

Operation

Position the FP12 for operation. Note that the belt clip can be used to secure the unit to a belt, trousertops, or D-rings on other equipment. The belt clip can easily be removed if desired.

Rotate the **Level** control from the Off position to the desired listening level. Note that the exposed color dot on the **Level** control knob serves as a reminder that the unit is on.

Battery voltage can be checked at any time without removing the battery or turning the unit on. Inserting voltmeter leads in the **Batt Test** jacks (observe proper polarity) will indicate battery condition.

GUARANTEE

This Shure product is guaranteed in normal use to be free from electrical and mechanical defects for a period of one year from date of purchase. Please retain proof of purchase date. This guarantee includes all parts and labor. This guarantee is in lieu of any and all other guarantees or warranties, express or implied, and there shall be no recovery for any consequential or incidental damages.

SHIPPING INSTRUCTIONS

Carefully repack the unit, have it insured, and return it prepaid to:

Shure Brothers Incorporated
Attention: Service Department
222 Hartrey Avenue
Evanston, Illinois 60202-3696

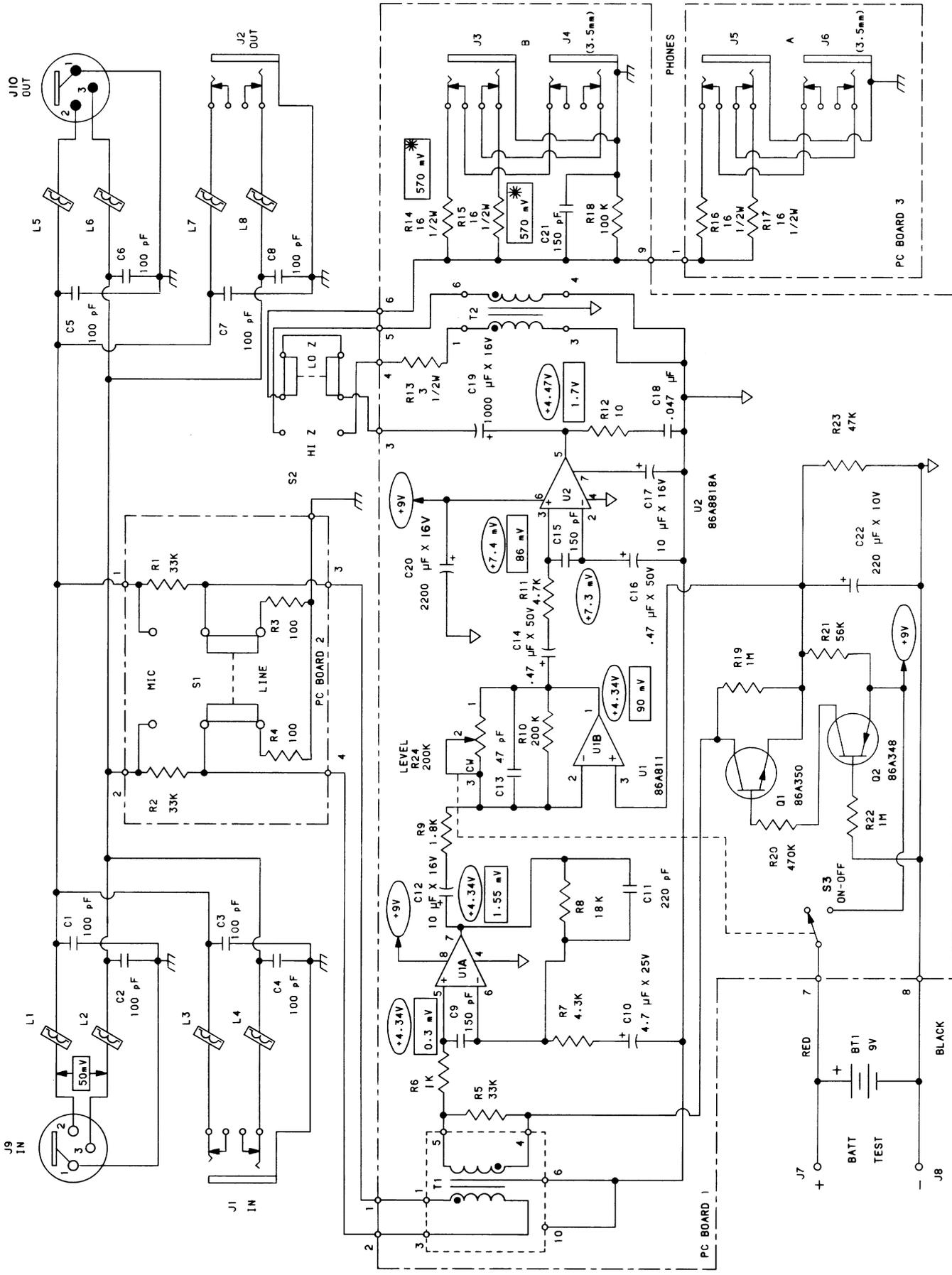
If outside the United States, return the unit to your dealer or Authorized Shure Service Center for repair. The unit will be returned to you prepaid.

REPLACEMENT PARTS LIST

| REFERENCE DESIGNATION | DESCRIPTION | SHURE PART NO. OR COMMERCIAL ALTERNATE |
|-----------------------|--|---|
| BT1 | Battery, Alkaline, 9V | Duracell MN1604 |
| C10 | Capacitor, Electrolytic, 4.7 μ F, 25V | Nichicon UKB1E4R7KAA |
| C12, C17 | Capacitor, Electrolytic, 10 μ F, 16V | CDE PC10-25 |
| C14, C16 | Capacitor, Electrolytic, 0.47 μ F, 50V | None |
| C19 | Capacitor, Electrolytic, 1000 μ F, 16V | Mallory 1000S16 |
| C20 | Capacitor, Electrolytic, 2200 μ F, 16V | Nichicon 1C222MRA |
| C22 | Capacitor, Electrolytic, 220 μ F, 10V | Nichicon 1A221 MAA |
| J1-J2 | Phone Jack, Stereo Switching | Radio Shack 274-282 |
| J3, J5 | Phone Jack, Stereo Switching | None |
| J4, J6 | Miniature Phone Jack, Stereo Switching, 3.5 mm | None |
| J7 | Terminal, Battery Test, Red | Alco TBA-2 |
| J8 | Terminal, Battery Test, Black | Alco TBA-0 |
| J9 | Connector, 3-Socket XLR, In | Cannon XLR-3-31 -F77 (Shure 95A8060) |
| J10 | Connector, 3-Pin XLR, Out | Cannon XLR-3-32-F77 (Shure 95A8061) |
| L1-L8 | Ferrite Bead Ring | Stackpole 57-0181 (Shure 80A250) |
| MP1 | Belt Clip (without screws) | Shure |
| MP2 | Control Knob, Level | Shure 65B1533 |
| MP3 | Circuit Access Cover (without belt clip) | Shure 32B678 |
| Q1 | Transistor, Silicon, NPN | Motorola 2N5210 (Shure RKC89*) |
| Q2 | Transistor, Silicon, PNP | Motorola 2N5088 (Shure 86A348) |
| R24 | Potentiometer, 200k, Level | None |
| S1 | Switch, SPST, part of R24 | - |
| S2 | Switch, Slide, DPDT, Hi Z/Lo Z | None |
| S3 | Switch, Slide, DPDT, Mic/Line | Shure 55A8020 |
| T1 | Transformer, Input | None |
| T2 | Transformer, Output | None |
| U1 | Integrated Circuit, Dual Operational Amplifier | Raytheon RC4559NB (Shure 86A811) |
| U2 | Integrated Circuit, Audio Power Amplifier | National LM386N-4 (Shure |

Parts listed as "None" should be ordered from Shure Brothers Inc. listing product model number, reference designation, and part description.

*Supplied in multiples of four only.



J9 IN
 J10 OUT
 J1 IN
 J2 OUT
 J3 (3.5mm)
 J4 (3.5mm)
 J5
 J6 (3.5mm)
 J7 +
 BATT
 TEST
 J8 -
 L1 L2 L3 L4 L5 L6 L7 L8
 C1 100 pF C2 100 pF C3 100 pF C4 100 pF C5 100 pF C6 100 pF C7 100 pF C8 100 pF C9 150 pF C10 4.7 μF X 25V C11 220 pF C12 10 μF X 16V C13 47 pF C14 .47 μF X 50V C15 150 pF C16 .47 μF X 50V C17 10 μF X 16V C18 .047 μF C19 1000 μF X 16V C20 2200 μF X 16V C21 150 pF C22 220 μF X 10V
 R1 33K R2 33K R3 100 R4 100 R5 33K R6 1K R7 4.3K R8 18K R9 1.8K R10 200K R11 4.7K R12 10 R13 1/2W R14 1/2W R15 1/2W R16 1/2W R17 1/2W R18 100K R19 1M R20 470K R21 56K R22 1M R23 47K R24 200K
 S1 S2 S3 ON-OFF
 U1 86A811 U2 86A8818A
 Q1 86A350 Q2 86A348
 T1 T2
 HI Z LO Z
 MIC L LINE
 PC BOARD 1 PC BOARD 2 PC BOARD 3
 PHONES
 LEVEL R24 200K
 +9V
 +4.34V
 +4.34V
 +7.3 mV
 +7.4 mV
 +4.47V
 1.7V
 570 mV
 570 mV
 90 mV
 50mV
 570 mV
 570 mV
 9V
 9V TEST
 BLACK

3. FOLLOWING SYMBOLS DENOTE :
 CHASSIS GROUND
 P.C. BOARD GROUND
 D.C. VOLTAGE
 A.C. VOLTAGE
 4. *J3 TERMINATED WITH 8 OHMS FROM TIP TO SLEEVE AND RING TO SLEEVE.

NOTES :
 1. ALL RESISTORS 1/4W 5% UNLESS OTHERWISE SPECIFIED.
 2. ALL CAPACITORS IN μF AND 50V OR MORE UNLESS OTHERWISE SHOWN.
 ELECTROLYTIC CAPACITORS SHOWN IN μF X VOLTS.

CIRCUIT DIAGRAM