The Shure Models M68 and M68FC are five-channel, portable microphone mixers for use with sound reinforcement, tape recording and audio-visual systems.

**Features:**
- Four microphone inputs with individual slide switches for selection of low impedance (balanced or unbalanced) or high impedance (unbalanced)
- High-level auxiliary input suitable for tape, tuner, and accessories
- Individual volume control to balance each input
- Master volume control to simultaneously control level of all inputs
- High- (unbalanced) or low-impedance (balanced or unbalanced) microphone level output. Impedance selected to match microphone input of associated amplifier
- High-impedance auxiliary output
- DC power supply jack supplies 28 volts dc for use with accessories or may be used as power input in connection with Model A67B Battery Power Supply
- Facility for connecting two or more mixers together to obtain additional microphone inputs (two mixers connected together give a total of eight microphone inputs and one auxiliary input)
- Listed by Underwriters’ Laboratories, Inc., and by Canadian Standards Association as Certified

**SPECIFICATIONS**

### Gain (at 1,000 Hz)

<table>
<thead>
<tr>
<th>INPUT</th>
<th>OUTPUTS</th>
<th>ACTUAL IMPEDANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Imp. Mic.</td>
<td>Balanced or unbalanced 25 to 600 ohm microphones</td>
<td>300 ohms</td>
</tr>
<tr>
<td>.5 mV produces</td>
<td>1.0 mV</td>
<td>355 mV</td>
</tr>
<tr>
<td>High Imp. Mic.</td>
<td>15.5 mV</td>
<td>285 mV</td>
</tr>
<tr>
<td>5 mV produces</td>
<td>16.6 dB</td>
<td>8.6 dB</td>
</tr>
<tr>
<td>Aux.</td>
<td>.78 mV</td>
<td>12.7 mV</td>
</tr>
<tr>
<td>50 mV produces</td>
<td>.38 mV</td>
<td>14.0 mV</td>
</tr>
</tbody>
</table>

**Impedance**

<table>
<thead>
<tr>
<th>INPUT</th>
<th>DESIGNED FOR USE WITH</th>
<th>ACTUAL IMPEDANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Imp. Mic.</td>
<td>Balanced or unbalanced 25 to 600 ohm microphone-level circuits</td>
<td>150-300 ohms*</td>
</tr>
<tr>
<td>High Imp. Mic.</td>
<td>Unbalanced 10 to 50 kilohm microphones</td>
<td>60 kilohms*</td>
</tr>
<tr>
<td>Auxiliary</td>
<td>Unbalanced high-impedance (10 kilohms or greater) auxiliary circuits</td>
<td>2.5-3 kilohms*</td>
</tr>
</tbody>
</table>

**Frequency Response**

Flat ±3 dB, 40 Hz to 20,000 Hz

**Hum-Noise**

70 dB below rated output (Aux. Output)

**Equivalent Input Noise**

150 ohm source, 123 dB below 1 volt

**Clipping Levels (minimum)**

<table>
<thead>
<tr>
<th>INPUT</th>
<th>CLIPPING LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Imp. Mic.</td>
<td>30 mV</td>
</tr>
<tr>
<td>High Imp. Mic.</td>
<td>450 mV</td>
</tr>
<tr>
<td>Auxiliary</td>
<td>4 volts</td>
</tr>
</tbody>
</table>

**Distortion**

Less than 1% total harmonic distortion when low-impedance microphone output is at 20 mV level, high-impedance microphone output is at 200 mV level, and auxiliary output is at 2.0 volt level

**Phase**

All microphone inputs and outputs are in phase. Auxiliary input and output are in phase with each other but out of phase with pin 3 of microphone connectors

**Operating Voltage**

AC Operation: 108-132 volts, 50/60 Hz, 3W
DC Operation: 28 volts dc ±20%, 5 mA

**Dimensions**

See Figure 1

**Net Weight**

1.8 kg (4 lb)

**WARNING**

To reduce the risk of fire or electric shock, do not expose this appliance to rain or extreme moisture.

**Connection Between Components**

For balanced-line connection use two-conductor, shielded, low-capacity cable. For unbalanced (high-impedance) connection, use single-conductor, shielded, low-capacity cable.
Grounding
If there should be objectionable hum, connect the metal chassis of the mixer to a good ground such as the metal frame of a wall outlet, or a water or steam pipe. This is normally accomplished automatically through the ground wire of the power cord.

INPUT CONNECTIONS
Microphones
Up to four low- or high-impedance dynamic, ribbon, or condenser microphones can be connected to receptacles marked Mic 1, Mic 2, Mic 3, Mic 4. The inputs are designed for low-impedance microphones with 25 to 250 ohms impedance or high-impedance microphones. Both low-impedance or high-impedance microphones can be used simultaneously. The unit is not recommended for use with crystal or ceramic microphones. The impedance is selected by a slide switch above the input receptacle. The input receptacles are professional audio connectors (three-pin on the M68 and three-socket on the M68FC). See Figure 2 for low- and high-impedance connections to receptacle.

**NOTE:** Some condenser microphones produce very high output signals which may overload the mixer input. A Shure Model A15AS Microphone Attenuator placed between the microphone and the mixer input will eliminate this problem.

Auxiliary
The phono jack on the rear of the panel marked Aux Input will accept output from a high-impedance, high-level source such as a tape recorder, am-fm tuner, or phono cartridge preamplifier. The Model A68M Microphone Preamplifier can be connected to this jack to provide a fifth microphone input.

OUTPUT CONNECTIONS
Microphone
The receptacle marked Mic Output is a dual-impedance output selected by the switch above the receptacle. This output is the "mixed" output of all the input sources and is designed to work into a 25 to 600-ohm microphone line or into a high-impedance amplifier or tape recorder microphone input. The receptacle is a professional three-pin audio connector. See Figure 2 for output receptacle connections.

Auxiliary
The phono jack marked Aux High Level Output is a high-impedance high-level output designed primarily to feed a power amplifier requiring 0.5 to 2 volts, or the auxiliary or tuner input to an amplifier or tape recorder.

Accessory 28-volt DC
The rear panel jack, marked Accessory 28 V.D.C. provides 28 Vdc open circuit (20 Vdc at 5 mA max.) for accessories such as the Model A68M Microphone Preamplifier. The jack is also used as a power input when using the Model A67B Battery Supply.

CAUTION: The 28 Vdc input circuit of the M68 is not fused. An external 28 Vdc source should be provided with a 0.125A, 250V in-line fuse as a safety precaution.

OPERATION
Power
Connect the mixer power cord to the proper ac power outlet (see Operating Voltage under Specifications).

Volume Controls
The Master gain control and individual gain controls for each of the five channels are identified on the front panel. The individual gain controls should generally be set near maximum (fully clockwise) and the Master gain control adjusted to required output. Individual channel gain controls not being used should be kept at minimum gain (fully counterclockwise).

CONNECTING TWO UNITS
Two M68 mixers may be combined to give a total of eight microphone channels plus an auxiliary input as follows:
1. Connect Aux High Level Output of Unit 1 to Aux Input of Unit 2.
2. Connect microphones to mixers and set each microphone input control to "0".
3. Take output signal for recorder of PA amplifier from appropriate output jack on Unit 2.
4. Set Master control on Unit 1 to 4.
5. Set Aux control on Unit 2 to 10.
6. Master control on Unit 2 is now Master for all inputs.
7. Advance Master control (Unit 2) to about 5 and adjust individual microphone controls for proper level. If overall gain is too low or too high, Master control (Unit 2) can be adjusted.
8. If input to auxiliary channel is needed, such as for tape recorder or tuner, use Aux Input on Unit 1. Use Aux control on Unit 1 for level adjustment of Aux source. Master gain control for entire system is Master control on Unit 2.

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 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 60204
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.

OPTIONAL ACCESSORIES
Battery Power Supply .................. Model A67B
Locking Panel ......................... Model A68L
Rack Panel Kit ....................... Models A68R, -BL
Microphone Preamplifier .......... Model A68M
Microphone Attenuator .......... Model A15AS
**PRINTED CIRCUIT BOARD ASSEMBLY**

**WARNING**
Voltages in this equipment are hazardous to life. Refer servicing to qualified service personnel.

<table>
<thead>
<tr>
<th>PART</th>
<th>PART NUMBER</th>
<th>QTY.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1, D2</td>
<td>RKC21</td>
<td>4</td>
<td>DIODE, SILICON (1N4002 OR EQUIVALENT)</td>
</tr>
<tr>
<td>PL1</td>
<td>RKC45</td>
<td>1</td>
<td>NEON PILOT LIGHT ASSEM. (RESISTOR INTERNAL)</td>
</tr>
<tr>
<td>Q1-Q6</td>
<td>RKC9</td>
<td>4</td>
<td>NPN TRANSISTOR, SILICON, SELECTED HIGH GAIN, LOW NOISE (SIMILAR TO MOTOROLA 2N5088)</td>
</tr>
<tr>
<td>R3, R32</td>
<td>46A011</td>
<td>1</td>
<td>POTENTIOMETER, 50K</td>
</tr>
<tr>
<td>R24, R27</td>
<td>46A010</td>
<td>1</td>
<td>POTENTIOMETER, 20K</td>
</tr>
<tr>
<td>S1-S5</td>
<td>RKC10</td>
<td>4</td>
<td>SWITCH, SLIDE, DPDT</td>
</tr>
<tr>
<td>S6</td>
<td>55B103</td>
<td>1</td>
<td>SWITCH, SLIDE, DPDT, 3A</td>
</tr>
<tr>
<td>S7</td>
<td>55A66</td>
<td>1</td>
<td>SWITCH, SLIDE, DPDT, 3A</td>
</tr>
<tr>
<td>T1-T5</td>
<td>90M2150</td>
<td>1</td>
<td>TRANSFORMER-SHIELD ASSEMBLY</td>
</tr>
<tr>
<td>T6</td>
<td>51A252</td>
<td>1</td>
<td>POWER TRANSFORMER</td>
</tr>
<tr>
<td>RKC6</td>
<td>1</td>
<td></td>
<td>KNOB (BLACK)</td>
</tr>
<tr>
<td>RKC67</td>
<td>1</td>
<td></td>
<td>KNOB (GRAY)</td>
</tr>
</tbody>
</table>

**PARTS PLACEMENT**
MODELS M68 AND M68FC
MICROPHONE MIXERS CIRCUIT DIAGRAM