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>LOW IMP. MIC.</th>
<th>HIGH IMP. MIC.</th>
<th>HIGH IMP. AUX.</th>
</tr>
</thead>
<tbody>
<tr>
<td>.5 mV produces +6 dB</td>
<td>1.0 mV</td>
<td>15.5 mV</td>
<td>355 mV</td>
</tr>
<tr>
<td>HIGH IMP. MIC.</td>
<td>-16 dB</td>
<td>+8 dB</td>
<td>+35 dB</td>
</tr>
<tr>
<td>5 mV produces .78 mV</td>
<td>12.7 mV</td>
<td>285 mV</td>
<td></td>
</tr>
<tr>
<td>AUX.</td>
<td>-36 dB</td>
<td>-14 dB</td>
<td>+13 dB</td>
</tr>
<tr>
<td>50 mV produces .64 mV</td>
<td>10 mV</td>
<td>227 mV</td>
<td></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 microphones</td>
<td>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>100 ohm to 10 kilohm unbalanced high-level sources</td>
<td>40-70 kilohms*</td>
</tr>
</tbody>
</table>

**Output**

<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 microphone-level circuits</td>
<td>30-40 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>

*Depending upon control settings

**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>OUTPUT</td>
<td>CLIPPING LEVEL</td>
</tr>
<tr>
<td>LOW IMP. MIC.</td>
<td>60 mV</td>
</tr>
<tr>
<td>HIGH IMP. MIC.</td>
<td>850 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.

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 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.

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).

*Designed to mate with Cannon XL series, Switchcraft A3 (Q.G.) series or equivalent connector.

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.

PARTS LIST

<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></td>
<td>1</td>
<td>KNOB (BLACK)</td>
</tr>
<tr>
<td>RKC67</td>
<td></td>
<td>1</td>
<td>KNOB (GRAY)</td>
</tr>
</tbody>
</table>

PARTS PLACEMENT
MODELS M68 AND M68FC
MICROPHONE MIXERS CIRCUIT DIAGRAM

NOTES:
1. ALL CAPACITORS IN mF AND 100 VOLTS OR MORE UNLESS OTHERWISE SHOWN. ELECTROLYTIC CAPACITORS SHOWN IN mF X VOLTS.
2. ALL RESISTORS 1%, 1/4WATT UNLESS OTHERWISE SHOWN.
3. THE FOLLOWING SYMBOLS DENOTE:
   - CHASSIS
   - WIRING
   - PC BOARD
   - GROUND
   - COMMON GROUND BUS
4. DENOTES AC VOLTAGES
   - DENOTES DC VOLTAGES
   - ALL VOLTAGES MEASURED WITH A C LINE + 120V. ALL IMPEDANCE SWITCHES SET TO LO, MIC AND MASTER CONTROLS MIN.
5. ALL COMPONENTS AND CONNECTIONS ENCLOSED BY DASHED LINES ARE PARTS OF PRINTED CIRCUIT BOARD ASSEMBLY.

M68 AND M68FC POWER SUPPLY