450T PREAMPLIFIED BASE STATION MICROPHONE

The microphone's height can be adjusted for greater operator comfort, and its rugged ARMO-DUR® case is virtually indestructible.

Features
- Built-in preamplifier
- Dynamic cartridge with omnidirectional pickup pattern
- Frequency response from 200 to 4,500 Hz, tailored for optimum speech intelligibility
- Low sensitivity to RF interference and hum pickup
- Lockable split-bar PTT switch
- Adjustable microphone height
- Rugged ARMO-DUR case

ADJUSTING OUTPUT LEVELS
To adjust the output level, proceed as follows:
1. Insert a screwdriver into the sensitivity control potentiometer, located under the microphone base.
2. Rotate the control to the right (clockwise) to increase sensitivity or to the left (counterclockwise) to decrease sensitivity.

SETUP
The 450T may be used in one of three electrical configurations:

Option 1: (As Shipped) Two wire operation (biased audio line — dc and audio combined)

Option 2: Three wire operation (unbiased audio, separate dc line to microphone)

Option 3: Cartridge direct output (passive operation — no power required)

Options 2 and 3 are implemented by cutting or moving the jumpers as shown in the tables on the following page. To configure the jumpers, refer to the printed circuit board legend in Figure 5, as well as the schematic diagram in Figure 6, and proceed as follows:
1. Remove the base plate by removing the screws securing it to the microphone.
2. Configure the jumpers according to the tables on the following page. Refer to Figure 5 for jumper locations.
3. Reinstall the base plate and the screws.
JUMPER CONFIGURATIONS
As Shipped (Biased Audio Supply)

<table>
<thead>
<tr>
<th>Jumper X1</th>
<th>Jumper X2</th>
<th>Jumper X3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Out</td>
<td>In</td>
<td>In</td>
</tr>
</tbody>
</table>

**WHITE WIRE:** No connection  
**GREEN WIRE:** Connected to biased audio input of transceiver

For External DC Power

<table>
<thead>
<tr>
<th>Jumper X1</th>
<th>Jumper X2</th>
<th>Jumper X3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Out</td>
<td>Out</td>
<td>In</td>
</tr>
</tbody>
</table>

**WHITE WIRE:** Connected to non-biased audio input of transceiver  
**GREEN WIRE:** Connected to DC voltage supply

For Direct Dynamic Output (Non-Amplified)

<table>
<thead>
<tr>
<th>Jumper X1</th>
<th>Jumper X2</th>
<th>Jumper X3</th>
</tr>
</thead>
<tbody>
<tr>
<td>In</td>
<td>In</td>
<td>Out</td>
</tr>
</tbody>
</table>

**WHITE WIRE:** Connected to non-biased audio input of transceiver  
**GREEN WIRE:** No connection

Note: For Black wire (Monitor) and Red wire (PTT) connections, refer to Figure 6 on the back page.

SPECIFICATIONS *(Measured using the standard test circuit shown in Figure 1)*

![Standard Test Circuit](image)

**Cartridge Type**  
Dynamic (with preamplifier)

**Polar Pattern**  
Omnidirectional

Frequency Response

200 to 4,500 Hz (See Figure 2)

![Frequency Response](image)

**TYPICAL FREQUENCY RESPONSE**  
**FIGURE 2**

**Sensitivity** *(at 1 kHz)*

| Cartridge Direct Output:  
| --- | --- |
| -71.5 dBV (0.27 mV) / μbar  
| -31.5 dBV (27 mV) / 100 μbar  

**Amplified Output:**

| -6 dBV (500 mV) / 100 μbar  
| *Using standard test circuit shown in Figure 1, with MIC SENS ADJ trim potentiometer set to Max.

**Electrostatic Hum Pickup Sensitivity**

Direct: -87 dBV  
Amplified: -67 dBV

**Electromagnetic Hum Sensitivity**

Direct: -94 dBV in a 1 oersted, 60 Hz field  
Amplified: -59 dBV in a 1 oersted, 60 Hz field

**Output Impedance**

200Ω nominal

**Power Requirements**

4 - 40 Vdc, externally supplied

**Press-to-Talk Switch**

Split-bar double-pole, double throw, leaf-type switch; push-to-talk function normally open, cartridge shunt normally closed

**Current Drain** *(9.3 Vdc supply voltage into 1.56KΩ load)*

3 mA

**Cable**

2.1 m (7 ft) non-detachable, four-conductor cable (two shielded, two unshielded)

**Net Weight**

736 grams (1 lb 10 oz)
INTERNAL CONNECTIONS

The internal electrical connections are shown in Figure 4 below. The circuit board layout is shown in Figure 5 and a schematic diagram of the circuit is shown in Figure 6 on the following page.
# Circuit Board Components

<table>
<thead>
<tr>
<th>Designator</th>
<th>Shure Part No. (Commercial Alternate)</th>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>—</td>
<td>34A8407B</td>
<td>1</td>
<td>Printed Circuit Board</td>
</tr>
<tr>
<td>R1, R3, R5</td>
<td>45LA104C</td>
<td>3</td>
<td>100KΩ ± 2%, 1/4W</td>
</tr>
<tr>
<td>R8</td>
<td>45LA105C</td>
<td>1</td>
<td>1MΩ ± 2%, 1/4W</td>
</tr>
<tr>
<td>R9</td>
<td>45LA240C</td>
<td>1</td>
<td>24Ω ± 2%, 1/4W</td>
</tr>
<tr>
<td>R2</td>
<td>45LA333C</td>
<td>1</td>
<td>33KΩ ± 2%, 1/4W</td>
</tr>
<tr>
<td>R4, R6, R7</td>
<td>45LA561C</td>
<td>3</td>
<td>560Ω ± 2%, 1/4W</td>
</tr>
<tr>
<td>R10</td>
<td>46D8014</td>
<td>1</td>
<td>Potentiometer, 5KΩ</td>
</tr>
<tr>
<td>Q3</td>
<td>86A335</td>
<td>1</td>
<td>Transistor, PNP</td>
</tr>
<tr>
<td></td>
<td>(Texas Instruments TIS93)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q1, Q2</td>
<td>86A350</td>
<td>2</td>
<td>Transistor, NPN</td>
</tr>
<tr>
<td></td>
<td>(Motorola 2N5210)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C7, C8</td>
<td>86AZ629</td>
<td>2</td>
<td>2.2 μF ± 20%, 50V</td>
</tr>
<tr>
<td>C1, C2, C4, C5</td>
<td>86N652</td>
<td>1</td>
<td>0.01 μF ± 10%, 50V</td>
</tr>
<tr>
<td>C3</td>
<td>86AC652</td>
<td>1</td>
<td>0.001 μF ± 10%, 50V</td>
</tr>
<tr>
<td>SW1</td>
<td>90A946</td>
<td>1</td>
<td>3 Blade Switch Assembly</td>
</tr>
<tr>
<td>SW2</td>
<td>90A3119</td>
<td>1</td>
<td>5 Blade Switch Assembly</td>
</tr>
<tr>
<td>MK1</td>
<td>99A668</td>
<td>1</td>
<td>Microphone Cartridge</td>
</tr>
</tbody>
</table>

## Diagram

450T Microphone Schematic Diagram

**Figure 6**

*NOTE: DO NOT CONNECT JUMPER X1 WITHOUT FIRST DISCONNECTING JUMPER X3.*