

450T PREAMPLIFIED BASE STATION MICROPHONE



GENERAL

The Shure 450T Base Station Microphone is a rugged, omnidirectional dynamic microphone with a built-in preamplifier. It provides radio communications and dispatch systems with clear, high output voice transmission, even in noisy environments.

The 450T has extremely low sensitivity to hum pickup and low susceptibility to RF interference. A built-in preamplifier makes the 450T compatible with biased-audio (powered audio) radio communications systems. An externally accessible microphone sensitivity control, located under the base, allows the operator to adjust the output level. If desired, the preamplifier can be bypassed and the microphone can be operated in the direct output (non-amplified) mode.

An especially useful feature for shared-channel radio systems using the Continuous Tone Coded Squelch System (CTCSS) is the split-bar Press-to-Talk (PTT) switch. The Transmit side of the switch can only be actuated when the Monitor side of the switch is depressed, so the operator is forced to verify that the channel is clear before transmitting. The Monitor switch can also be locked into the "on" position, if desired, by sliding it forward.

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)

Jumper X1	Jumper X2	Jumper X3
Out	In	In
WHITE WIRE: No connection		
GREEN WIRE: Connected to biased audio input of transceiver		

For External DC Power

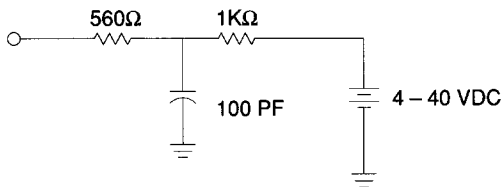
Jumper X1	Jumper X2	Jumper X3
Out	Out	In
WHITE WIRE: Connected to non-biased audio input of transceiver		
GREEN WIRE: Connected to DC voltage supply		

For Direct Dynamic Output (Non-Amplified)

Jumper X1	Jumper X2	Jumper X3
In	In	Out
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
FIGURE 1

Cartridge Type

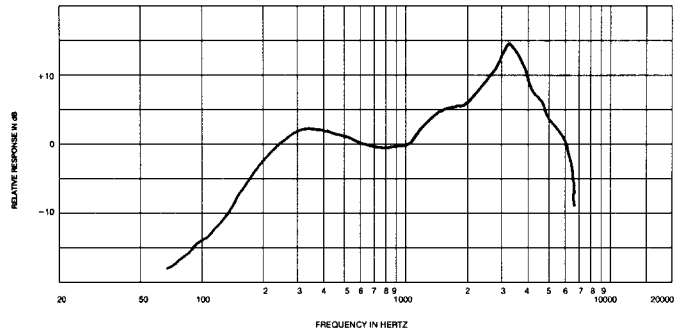
Dynamic (with preamplifier)

Polar Pattern

Omnidirectional

Frequency Response

200 to 4,500 Hz (See Figure 2)



TYPICAL FREQUENCY RESPONSE

FIGURE 2

Sensitivity (at 1 kHz)

Cartridge Direct Output:

-71.5 dBV (0.27 mV) / μ bar

-31.5 dBV (27 mV) / 100 μ bar

Amplified Output:*

-6 dBV (500 mV) / 100 μ bar

*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

200 Ω 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 1.56K Ω load)

3 mA

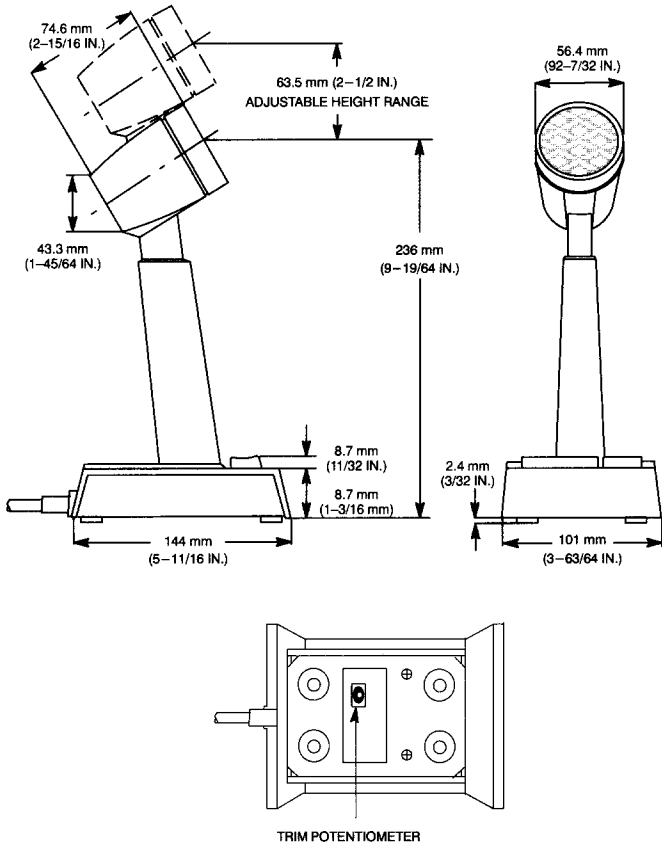
Cable

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

Net Weight

736 grams (1 lb 10 oz)

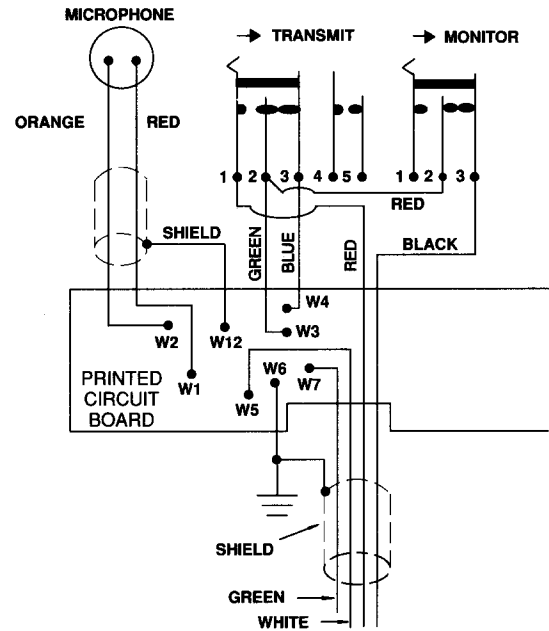
Overall Dimensions (Figure 3)



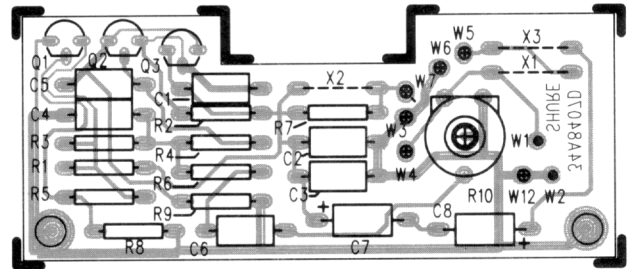
**450T OVERALL DIMENSIONS
FIGURE 3**

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.



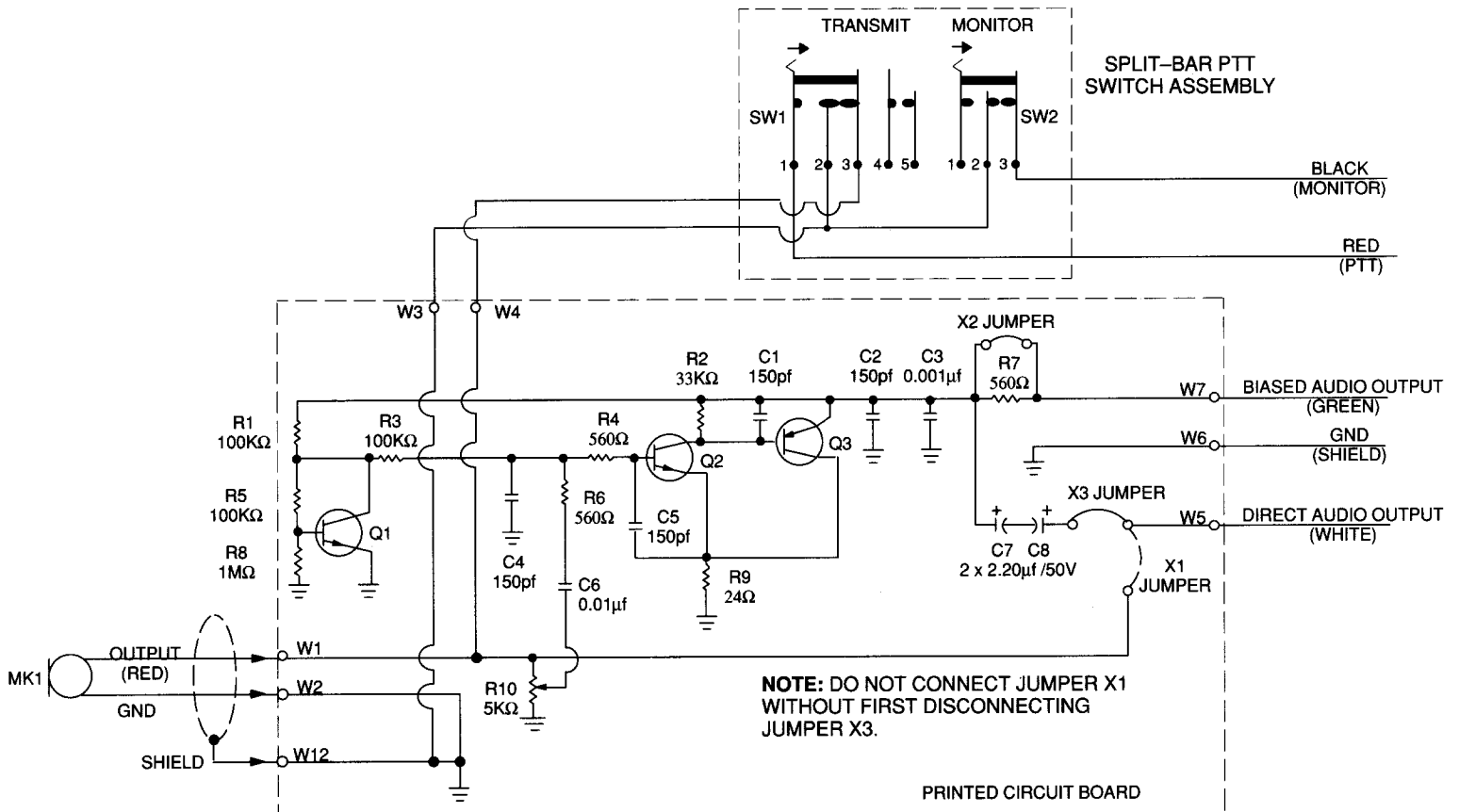
**INTERNAL CONNECTIONS
FIGURE 4**



**PRINTED CIRCUIT BOARD LEGEND
FIGURE 5**

CIRCUIT BOARD COMPONENTS

Designator	Shure Part No. (Commercial Alternate)	Quantity	Description
—	34A8407B	1	Printed Circuit Board
R1, R3, R5	45LA104C	3	100KΩ ± 2%, 1/4W
R8	45LA105C	1	1MΩ ± 2%, 1/4W
R9	45LA240C	1	24Ω ± 2%, 1/4W
R2	45LA333C	1	33KΩ ± 2%, 1/4W
R4, R6, R7	45LA561C	3	560Ω ± 2%, 1/4W
R10	46D8014	1	Potentiometer, 5KΩ
Q3	86A335 (Texas Instruments TIS93)	1	Transistor, PNP
Q1, Q2	86A350 (Motorola 2N5210)	2	Transistor, NPN
C7, C8	86AZ629	2	2.2 μF ± 20%, 50V
C1, C2, C4, C5	86N652	4	150 pF ± 5%, 50V
C6	86X652	1	0.01 μF ± 10%, 50V
C3	86AC652	1	0.001 μF ± 10%, 50V
SW1	90A946	1	3 Blade Switch Assembly
SW2	90A3119	1	5 Blade Switch Assembly
MK1	99A668	1	Microphone Cartridge



450T MICROPHONE SCHEMATIC DIAGRAM
FIGURE 6