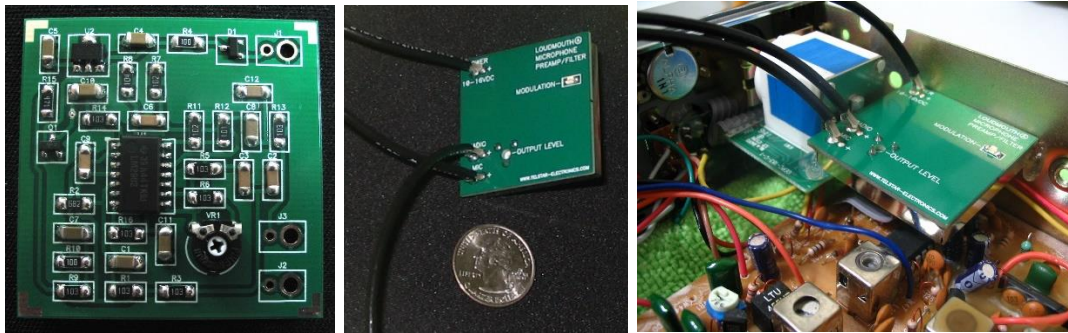


# "LoudMouth"



www.telstar-electronics.com

## Transceiver Microphone Preamp/Filter



Two-way radios have historically used dynamic type microphone elements. While dynamic elements work to some level, their high frequency response is quite poor. That's why many dynamic microphones often sound quite muffled. "LoudMouth" was designed to take advantage of the wide and flat frequency response of condenser microphones. Since condenser microphones require a small amount of power to operate, "LoudMouth" supplies that needed power to the microphone without the need for additional wires in the microphone cord. No microphone battery is required. "LoudMouth" uses operational amplifier technology to give you the highest quality audio. High gain and extremely low distortion combined with a single-pole filter gives your radio a power-packed audio punch with exceptional clarity.

### Features

- Complete Audio Processing for Condenser or Dynamic Microphones\*
- Extremely Low Harmonic Distortion
- Adjustable Gain
- Single Pole Audio Filter
- Modulation Indicator LED
- Tiny Surface Mount Technology Module Mounts Inside Transceiver
- Completely Shielded for High RF Immunity
- Reverse Polarity Protected
- No Batteries Needed
- Premium Electronic Components & Circuit Board
- 100% Production Tested
- 90 Day Limited Warranty

\* Optimum results obtained with Uniden BC645 condenser microphone or equivalent.

The "LoudMouth" module has an implied warranty to be free of defects in materials and workmanship for a period of 90 days from purchase. This warranty covers workmanship, parts, and labor. If it's determined that the module has been used for a purpose other than intended, abused, or altered in any way, the warranty shall be void. Telstar Electronics cannot be held liable for damages to equipment caused by improper installation. Specifications subject to change without notice. All Telstar products are designed and manufactured in the United States.

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## Transceiver Microphone Preamp/Filter

### Specifications

PARAMETER	VALUE	NOTES / CONDITIONS
DC Voltage	8 ~ 16V <sub>DC</sub>	-
Current	25mA	Maximum
Amplifier Biasing	Class AB	-
Gain	0 ~ 15.6dB	Adjustable
Bandwidth	200 <sub>HZ</sub> ~ 20K <sub>HZ</sub>	F <sub>C</sub> =1.6KHz, Single-Pole High Pass
Power Consumption	225mW	Maximum
Input Voltage	3V Peak-to-Peak	Maximum
Input Impedance	5K Ohms	-
Output Impedance	100 Ohms	-
Output Voltage	5V Peak-to-Peak	Maximum
Load Impedance	1K Ohms	Minimum
Total Harmonic Distortion	0.01%	Typical @ 1KHz
Operating Temperature Range	-20°C ~ +70°C	85% Non-Condensing Humidity
Weight	50 Grams	-
Dimensions	1.6" x 1.6" x 0.32"	Length x Width x Height
Input / Output / Power Cables	RG-174/U Coaxial	-
PCB Material	Premium Grade FR4	0.062" Thickness

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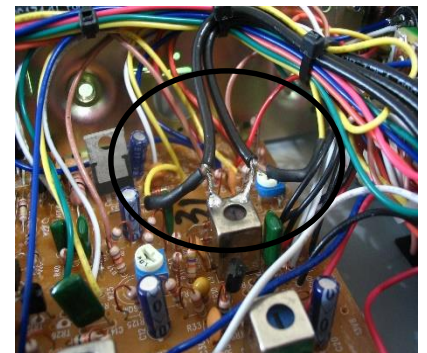
### Installation

#### EQUIPMENT REQUIRED

- Transceiver Schematic (Optional)
- Soldering Equipment
- Wire or Coax Stripper
- Double-Sided Foam Tape (provided)
- Screwdriver

**IMPORTANT** - The "LoudMouth" module requires a minor modification to the audio section of the transceiver before installation. This modification involves tapping into the audio path from the microphone connector to the first audio amplifier in the transceiver. Telstar Electronics highly recommends that a schematic diagram of the transceiver be consulted before this operation is performed.

1. Remove transceiver cover(s) to gain access to internal circuitry.
2. **IMPORTANT** - Make certain a suitable place exists within transceiver for the "LoudMouth" module before proceeding with installation.
3. Using schematic diagram, locate audio path from the microphone connector to the first audio amplifier in transceiver. Cut the audio wire coming from the microphone connector that leads to the printed circuit board. The audio path has now been separated into two sections. The "LoudMouth" module will be installed electrically between these two points.
4. Locate **MIC** cable on "LoudMouth" module. Solder center conductor of the coaxial cable to wire coming from the microphone connector. Locate nearest ground and solder outer braid to that point.
5. Locate **RADIO** cable on "LoudMouth" module. Solder center conductor of the coaxial cable to the wire that leads to the printed circuit board. Locate nearest ground and solder outer braid to that point.
6. Locate **POWER** cable on "LoudMouth" module. Solder center conductor of the coaxial cable to any constant DC voltage source available between 10-16V<sub>DC</sub>. The power connector of the radio is usually the most convenient location to make this connection. Locate nearest ground and solder outer braid to that point.
7. With the "LoudMouth" module safely insulated from transceiver circuitry, continue to adjustment procedure on page #4.
8. **IMPORTANT** - After adjustment procedure is complete, attach the double-sided foam tape to the metal shield. Mount the "LoudMouth" module in the predetermined mounting location. Keep in mind that the metal shield is at ground potential. **DO NOT LET METAL SHIELD CONTACT ANY METALLIC SURFACE THAT IS NOT AT GROUND POTENTIAL.** Make certain the module placement and cabling doesn't interfere with the transceiver cover(s).
9. Re-install transceiver cover(s).



Typical installation shows yellow audio wire split with "LoudMouth" "Mic" & "Radio" cables inserted in between. Notice the ground braids soldered to the metal can of a tunable inductor.



Typical power cable connection.

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# "LoudMouth"



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## Transceiver Microphone Preamp/Filter

### Adjustment

#### EQUIPMENT REQUIRED

- DC Power Supply
- Oscilloscope (Optional)
- RF Dummy Load
- Small Phillips Screwdriver (blade width 1/16")

1. Connect a suitable RF dummy load to transceiver.

**HINT** - If an oscilloscope is available, connect to transceiver output. This will enable precise adjustment of "LoudMouth" output to avoid over-modulation.

2. Rotate **OUTPUT LEVEL** control fully counter-clockwise.
3. With "LoudMouth" module safely insulated from transceiver circuitry, apply power to transceiver.
4. Key transmitter and speak into microphone in a normal voice.

**HINT** - If an oscilloscope is available, monitor the output of the transceiver. Rotate **OUTPUT LEVEL** control clockwise until oscilloscope shows a modulation envelope that rises to 100% during speech<sup>†</sup>.

5. Have an assistant monitor your voice transmission with another receiver while you rotate **OUTPUT** control clockwise. The optimal position of **OUTPUT LEVEL** control is at a point of maximum modulation without audible distortion<sup>‡</sup>.

6. Continue to step #8 of installation section on page #3.



<sup>†</sup> Transceivers have built-in circuitry that automatically limits modulation to levels accepted by the Federal Communication Commission. If you are unable to adjust "LoudMouth" for the desired modulation level, the transceiver's internal limiter circuitry must be adjusted or disabled.

<sup>‡</sup> Audio distortion is characterized by a fuzzy or unclear sound.

# "LoudMouth"



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## Transceiver Microphone Preamp/Filter

### Troubleshooting

PROBLEM	POSSIBLE CAUSE	SOLUTION
No modulation from transceiver.	Poor connection.	Check all coaxial cable connections from "LoudMouth" module to transceiver.
	"LoudMouth" module has no DC power.	Check power source from transceiver.
Modulation indicator doesn't illuminate during transmission.	"LoudMouth" module has no DC power.	Check power source from transceiver.
	Poor connection.	Check all coaxial cable connections from the "LoudMouth" module to transceiver.
Modulation is distorted. <sup>§</sup>	"LoudMouth" output level too high and modulation from transceiver exceeding 100%.	Refer to adjustment procedure on page #4.
Unable to adjust output for 100% modulation level.	Limiting circuitry inside transceiver.	1.) Adjust or disable transceiver internal modulation limiting.** 2.) Refer to adjustment procedure on page #4.

<sup>§</sup> Audio distortion is characterized by a fuzzy or unclear sound.

\*\* Transceivers have built-in circuitry that automatically limits modulation to levels accepted by the Federal Communication Commission. If you are unable to adjust "LoudMouth" for the desired modulation level, the transceiver's internal limiter circuitry must be adjusted or disabled.