Engineered Sound

ESW-T214UHF Handheld Microphone/Transmitter

Installation and Operation



Notice to individuals <u>with implanted cardiac</u> <u>pacemakers or AICD devices</u>:

Any source of RF (radio frequency) energy *may* interfere with normal functioning of the implanted device. All wireless microphones have low-power transmitters (less than 0.05 watts output) which are unlikely to cause difficulty, especially if they are at least a few inches away. Note also that *any medical-device disruption will cease when the RF transmitting source is turned off.* Please contact your physician or medical-device provider if you have any questions, or experience any problems with the use of this or any other RF equipment.

CAUTION! The circuits inside the receiver and transmitter have been precisely adjusted for optimum performance and compliance with federal regulations. Do not attempt to open the receiver or transmitter. To do so will void the warranty, and may cause improper operation.

Introduction

Audio-Technica Engineered Sound® wireless systems are offered as separate receiver and transmitter units, rather than in predetermined combinations, for greatest system flexibility. Operating details for Engineered Sound receivers and overall system operation are included with each receiver.

Engineered Sound receivers feature a sophisticated Tone Lock™ tone squelch system that opens only when an Engineered Sound transmitter is detected, reducing the possibility of interference. As a result, Engineered Sound transmitters and receivers must be used together and should not be used with components from other Audio-Technica wireless systems, or with those of other manufacturers.

Please note that in multiple-system applications there must be a transmitter-receiver pair set to a separate frequency for each input desired (only one transmitter at a time for each receiver). Because the wireless frequencies are on UHF TV frequencies, only certain wireless frequencies may be useable in a particular geographic area. Also, only certain of the available operating frequencies may be used together. (Suggestions for multiple-system frequency grouping will be found on pages 10-11.)

Transmitter Setup

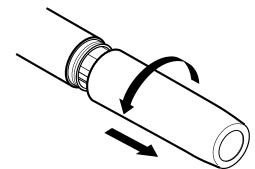
Battery Selection and Installation

The transmitter uses two 1.5V AA batteries, not included. Alkaline type is recommended. Always replace both batteries. *Make certain the transmitter power switch is turned Off before replacing batteries.*

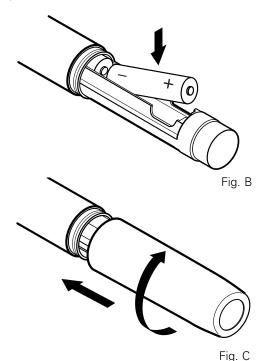
Battery Installation

1. While holding the transmitter body at the on-off switch, unscrew the lower body cover and slide it off to expose the battery compartment (Fig. A).



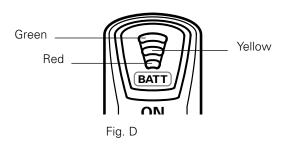


2. Observe correct polarity as marked inside the battery compartment and carefully insert two fresh 1.5V AA alkaline batteries (Fig. B). Because there is some variation in actual battery dimensions, make certain the batteries are *fully* seated in the battery compartment.



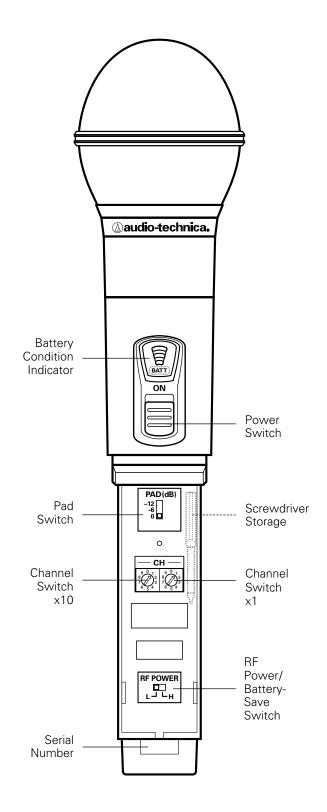
3. Replace the lower body cover (Fig. C). *Do not overtighten.*

Battery Condition Indicator



After the batteries are installed, turn the power on. The red battery condition indicator LED (Fig. D) should flash momentarily and the green indicator should come on. If this does not happen, the batteries are installed incorrectly or they are dead. If the yellow or red indicator stays on, the battery voltage is low and the batteries should be replaced. If this happens during use, replace the batteries immediately to ensure continued operation.

Fig. E Transmitter Controls



Control explanations on page 6.

4 5

Transmitter Controls

(Refer to Figure E on page 5.)

POWER SWITCH: The Power switch controls the entire transmitter. There is about a half-second delay after transmitter turn-on before the receiver's Tone Lock squelch un-mutes.

Remove the lower body cover to access the following controls.

PAD SWITCH: The ESW-T214 offers a Pad switch with 0/–6/–12 dB positions which increases the maximum SPL (sound pressure level) capability of the microphone. Use the "0" (no pad) position unless very high SPLs are encountered.

CHANNEL SWITCHES: The left channel selector switch corresponds to the receiver's left-column channel display number (tens); the right switch corresponds to the receiver's right-column channel display number (units). Always turn the transmitter off when changing frequencies.

RF POWER / BATTERY-SAVE SWITCH: As supplied, the switch is set in the "H" (high) position for maximum range. Switching to the "L" (low) position increases battery life somewhat by reducing power. (Note: Effective range may decrease when the switch is set at the "L" position.)

System Operation

Turn down the mixer/amplifier level before starting up the wireless system.

Switch on the receiver. Do *not* switch on the transmitter yet.

Receiver On...

The Channel Designator Display will light. If any of the RF LEDs light up at this point, there may be RF interference in the area. If this occurs, select another frequency using the front-panel channel selectors. While holding in the "Set" button, press the "Up" or "Down" button to access the desired frequency; then release the Set button to select the channel.

Transmitter On...

Before turning on the transmitter, use the provided screwdriver to set the transmitter channel selector switches (Fig. F) to the same numbers as those displayed on the receiver. Always turn the transmitter off when changing frequencies. When the transmitter is switched on and in normal operation, the receiver's RF signal level indicators will light up from left to right. For optimum performance at least four, and preferably five, of the signal strength indicators should light up when the transmitter is switched on. One of the Tuner LEDs (A or B) also will light up when the transmitter is on, indicating that its signal has been received and the receiver's Tone Lock squelch circuit has opened.



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Setting Levels

Although Engineered Sound receivers require no level adjustment, correct adjustment of transmitter audio input and mixer/amplifier input and output levels is important for optimum system performance.

The ESW-T214 handheld transmitter has a 0/–6/–12 dB audio input Pad switch under the lower body cover. It is factory pre-set at "0" for maximum audio input gain. If four or five AF Level LEDs on the receiver illuminate with maximum audio input, first try using the –6 dB position. Extremely high audio input may require use of the –12 dB setting. (Use the Pad switch only when needed; excessive use will affect the maximum signal-to-noise ratio of the system.)

- 1. Turn the transmitter on and power up the system.
- 2. Turn down the mixer's input trim control (if provided) on the selected channel; make an initial adjustment of the mixer channel and output level controls that will allow audio through the system.
- 3. While speaking/singing into the microphone at typically-loud levels, adjust the mixer's input trim control so the highest sound pressure level going into the microphone causes no input overload in the mixer, and yet permits the mixer's level controls to operate in their "normal" range (not set too high or too low).

RF Interference

Please note that wireless frequencies are shared with other radio services. According to Federal Communications Commission regulations, "Wireless microphone operations are unprotected from interference from other licensed operations in the band. If any interference is received by any Government or non-Government operation, the wireless microphone must cease operation..."

If you need assistance with operation or frequency selection, please contact your dealer or the Audio-Technica professional division. Extensive wireless information also is available on the Audio-Technica Web site at www.audio-technica.com.

7

Specifications [†]						
OVERALL SYSTEM						
Operating Frequency	UHF band, 728.125 to 740.500 MHz					
Number of Channels	100 total					
Frequency Stability	±0.005%, Phase Lock Loop frequency control					
Modulation Mode	FM					
Normal Deviation	±5 kHz					
Tone Squelch Frequency	32.768 kHz					
Operating Range	300' typical					
Operating Temperature Range	41° F (5° C) to 113° F (45° C)					
Frequency Response	100 Hz to 15 kHz					

ESW-T214 HANDHELD TRANSMITTER

RF Power Output	50 mW Max (H: 10 mW; L: 5 mW, typical)
Spurious Emissions	Under federal regulations
Microphone Element	A-T Hi-ENERGY® dynamic, unidirectional
Batteries	Two 1.5V AA type alkaline, not included
Current Consumption	H: 105 mA; L: 95 mA, typical
Battery Life	H: 16 hours; L: 18 hours, typical (depending on battery type and use pattern)
Dimensions	2.11" (53.5 mm) dia. x 9.41" (239.0 mm) long
Net Weight (without batteries)	10.4 oz (295 grams)
Accessory Included	AT8456 stand clamp

[†] In the interest of standards development, A.T.U.S. offers full details on its test methods to other industry professionals on request.

Transmitter Accessories				
AT8114	Foam windscreen for handheld transmitter.			
AT8456	Stand clamp for handheld transmitter, ⁵ / ₈ "-27 threads.			

Tips To Obtain The Best Results

- Use only fresh alkaline batteries. Do not use "general purpose" (carbon-zinc) batteries.
- The transmitter and the receiver should be as close together as conveniently possible, but no closer together than three feet. Maintain line-of-sight between them whenever possible.
- Each transmitter/receiver pair must be set to the same channel number.
- A single receiver cannot receive signals from two transmitters at the same time.
- You need to change channels 1) when a strong interference signal is received,
 2) when the channel breaks down, or
 3) during multiple-system operation in order to select an interference-free channel.
- Turn the transmitter off when not in use. Remove the batteries if the transmitter is not to be used for a period of time.

8 9

Engineered Sound® UHF Wireless Operating Frequencies

Frequency and Channel Designator List

00	Designator	Frequency (MHz)	TV Channel	Designator	Frequency (MHz)	TV Channel
01 728,250 57 51 734,500 58 02 728,375 57 52 734,625 58 03 728,500 57 53 734,750 58 04 728,625 57 54 734,875 58 05 728,750 57 55 735,000 58 06 728,875 57 56 735,125 58 07 729,000 57 57 57 735,250 58 08 729,125 57 58 735,300 58 10 729,375 57 58 735,300 58 11 729,375 57 60 735,250 58 11 729,375 57 60 735,250 58 11 729,500 57 61 735,250 58 11 729,875 57 61 735,250 58 11 729,875 57 62 735,875 58 11 729,875 57 62 735,875 58 11 729,875 57 62 735,875 58 11 729,875 57 63 736,000 58 11 729,875 57 64 736,125 58 13 729,750 57 63 736,000 58 14 729,875 57 64 736,125 58 15 730,000 57 65 736,250 58 16 730,125 57 66 736,257 58 17 730,250 57 67 736,250 58 18 730,375 57 68 736,250 58 18 730,375 57 68 736,250 58 19 730,500 57 67 736,500 58 20 730,625 57 70 736,875 58 21 730,750 57 71 737,000 58 22 730,875 57 72 737,125 58 24 731,125 57 74 737,375 58 24 731,125 57 74 737,375 58 25 731,250 57 76 77 737,375 58 26 731,375 57 78 79 738,200 58 27 731,500 57 79 738,375 58 28 731,625 57 79 73 737,250 58 30 731,875 57 79 73 737,250 58 31 732,200 57 77 77 737,750 58 31 732,000 57 78 77 77 737,750 58 31 732,000 57 78 77 79 738,300 58 32 731,125 57 78 79 738,300 58 33 732,250 57 88 738,375 58 34 732,375 57 88 738,375 58 35 732,500 57 88 738,375 58 36 732,500 57 88 738,375 58 37 732,500 58 38 733,375 57 88 739,325 58 39 733,000 57 88 739,325 58 30 733,875 57 89 739,000 58 31 732,875 57 89 739,000 58 31 732,875 57 89 739,000 58 33 732,250 57 88 739,325 58 34 732,375 57 88 739,325 58 34 732,375 57 88 739,325 58 34 732,375 57 89 739,000 58 34 732,375 57 89 739,000 58 34 732,375 57 89 739,000 58 34 733,375 57 99 739,000 58 34 733,375 57 99 739,000 58 34 733,375 57 99 739,500 58 34 733,375 57 99 739,000 58 34 733,375 57 99 739,000 58 34 733,375 57 99 739,000 58 34 733,375 57 99 739,000 58 34 733,375 57 99 739,000 58 34 733,375 57 99 739,000 58 34 733,375 57 99 739,000 58 34 733,375 57 99 739,000 58 34 733,375 57 99 739,000 58	00	728.125	57	50	734.375	58
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49 734.250 58 99 740.500 59				99	740.500	59

Multi-channel Systems

Following are groupings of frequencies suggested for multi-channel wireless systems.

Group A: Channels 00, 02, 08, 15, 46, 50, 60 (or 62), 71, 76, 80, 93, 99 -*or*-

Group B: Channels 01, 03, 07, 25, 30, 41, 44, 56, 69, 76, 77, 86

For use where TV Channel 57 is operating: Channels 50, 60 (or 62), 71, 76, 80, 93, 99 (from Group A) -*or*-Channels 56, 69, 76, 77, 86 (from Group B) For use where TV Channel 58 is operating: Channels 00, 02, 08, 15, 46, 99 (from Group A) -or-Channels 01, 03, 07, 25, 30, 41, 44 (from Group B)

For use where TV Channel 59 is operating: Channels 00, 02, 08, 15, 46, 50, 60 (or 62), 71, 76, 80, 93 (from Group A) -or-Channels 01, 03, 07, 25, 30, 41, 44, 56, 69, 76, 77, 86 (All of Group B) For future reference, please record your system information here (the serial number appears under the lower body cover):

Transmitter ESW-T214

Serial Number

One-Year Limited Warranty

Audio-Technica professional wireless systems purchased in the U.S.A. are warranted for one year from date of purchase by Audio-Technica U.S., Inc. (A.T.U.S.) to be free of defects in materials and workmanship. In event of such defect, product will be repaired promptly without charge or, at our option, replaced with a new product of equal or superior value if delivered to A.T.U.S. or an Authorized Service Center, prepaid, together with the sales slip or other proof of purchase date. *Prior approval from A.T.U.S. is required for return.* This warranty excludes defects due to normal wear, abuse, shipping damage, or failure to use product in accordance with the instructions. This warranty is void in the event of unauthorized repair or modification, or removal or defacing of the product labeling.

For return approval and shipping information, contact the Service Dept., Audio-Technica U.S., Inc., 1221 Commerce Drive, Stow, Ohio 44224.

Except to the extent precluded by applicable state law, A.T.U.S. will have no liability for any consequential, incidental, or special damages; any warranty of merchantability or fitness for particular purpose expires when this warranty expires.

This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

Outside the U.S.A., please contact your local dealer for warranty details.



Audio-Technica U.S., Inc., 1221 Commerce Drive, Stow, Ohio 44224 330/686-2600 www.audio-technica.com