Engineered Sound®

ESW-T214

UHF Handheld Microphone/Transmitter

Installation and Operation

audio-technica®

Notice to individuals *with implanted cardiac pacemakers or AICD devices:*

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

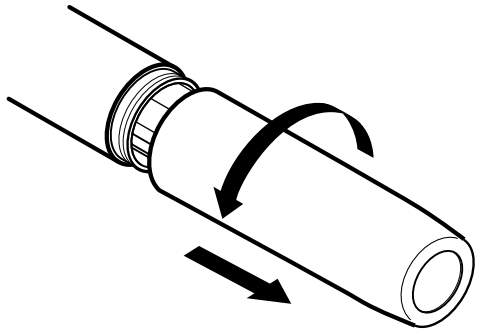
Battery Selection and Installation

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).

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.

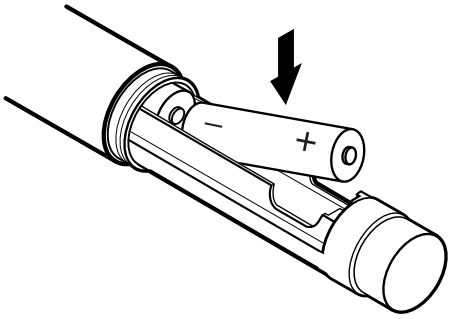


Fig. B

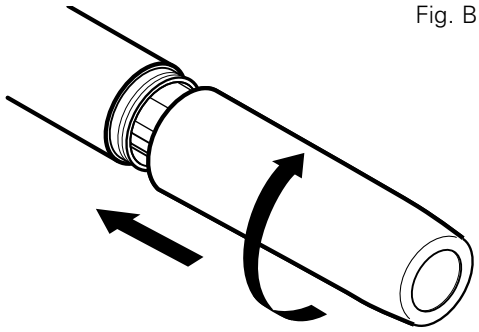


Fig. C

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

Battery Condition Indicator

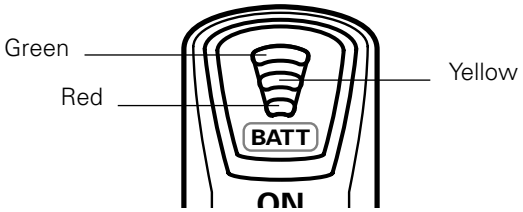
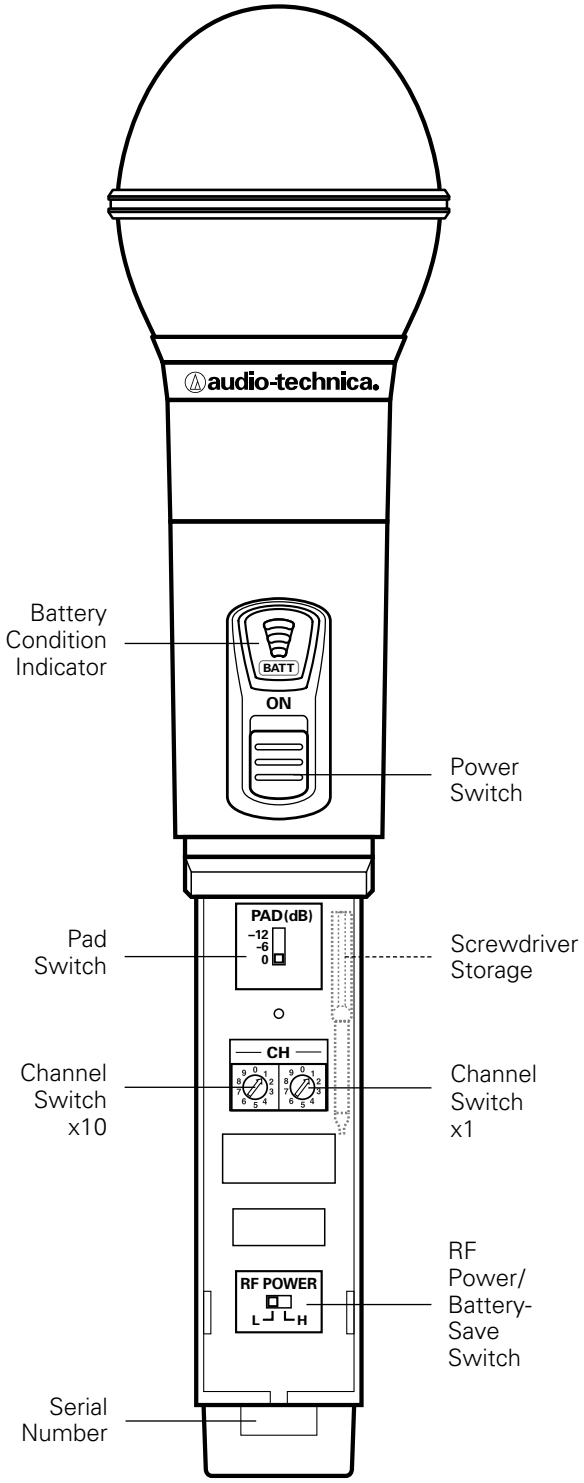


Fig. D

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.

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.

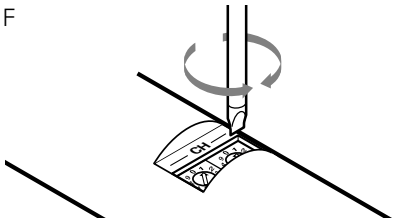
Receiver On…

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.

Fig. F



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.

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.

Engineered Sound® UHF Wireless Operating Frequencies

Frequency and Channel Designator List

Designator	Frequency (MHz)	TV Channel
00	728.125	57
01	728.250	57
02	728.375	57
03	728.500	57
04	728.625	57
05	728.750	57
06	728.875	57
07	729.000	57
08	729.125	57
09	729.250	57
10	729.375	57
11	729.500	57
12	729.625	57
13	729.750	57
14	729.875	57
15	730.000	57
16	730.125	57
17	730.250	57
18	730.375	57
19	730.500	57
20	730.625	57
21	730.750	57
22	730.875	57
23	731.000	57
24	731.125	57
25	731.250	57
26	731.375	57
27	731.500	57
28	731.625	57
29	731.750	57
30	731.875	57
31	732.000	57
32	732.125	57
33	732.250	57
34	732.375	57
35	732.500	57
36	732.625	57
37	732.750	57
38	732.875	57
39	733.000	57
40	733.125	57
41	733.250	57
42	733.375	57
43	733.500	57
44	733.625	57
45	733.750	57
46	733.875	57
47	734.000	58
48	734.125	58
49	734.250	58
50	734.375	58
51	734.500	58
52	734.625	58
53	734.750	58
54	734.875	58
55	735.000	58
56	735.125	58
57	735.250	58
58	735.375	58
59	735.500	58
60	735.625	58
61	735.750	58
62	735.875	58
63	736.000	58
64	736.125	58
65	736.250	58
66	736.375	58
67	736.500	58
68	736.625	58
69	736.750	58
70	736.875	58
71	737.000	58
72	737.125	58
73	737.250	58
74	737.375	58
75	737.500	58
76	737.625	58
77	737.750	58
78	737.875	58
79	738.000	58
80	738.125	58
81	738.250	58
82	738.375	58
83	738.500	58
84	738.625	58
85	738.750	58
86	738.875	58
87	739.000	58
88	739.125	58
89	739.250	58
90	739.375	58
91	739.500	58
92	739.625	58
93	739.750	58
94	739.875	58
95	740.000	59
96	740.125	59
97	740.250	59
98	740.375	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.

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