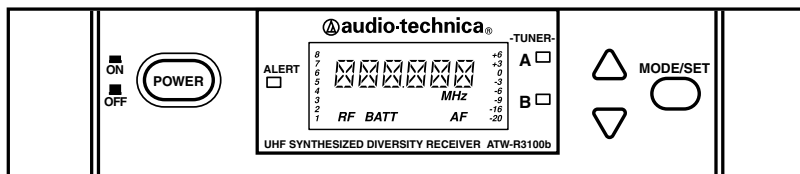


# 3000 Series

Frequency-agile True Diversity UHF Wireless System  
*Installation and Operation*



## 3000 Series Installation and Operation

(english)

This device complies with part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

This device complies with INDUSTRY CANADA R.S.S. 210, en conformité avec IC: RSS-210/CNR210. Operation is subject to the following conditions: 1) This device may not cause harmful interference and 2) this device must accept any interference received, including interference which may cause undesired operation.

**CAUTION!** Electrical shock can result from removal of the receiver cover. Refer servicing to qualified service personnel. No user-serviceable parts inside.

- Do not expose batteries to excessive heat such as fire, near heating units or in direct sunlight.
- To prevent fire or shock hazard, do not expose this product to rain or moisture.
- To prevent fire, do not place any naked flame sources (such as lighted candles) on the apparatus.
- To prevent fire, do not cover the ventilation of the apparatus with newspaper, tablecloths, curtains etc.
- Do not expose this apparatus to drips or splashes.
- Do not place any objects filled with liquids, such as vases, on the apparatus.
- Do not install this apparatus in a confined space such as a bookcase or similar unit.
- The apparatus should be located close enough to the AC outlet so that you can easily grasp the AC adapter at any time. In case of emergency, disconnect the AC adapter quickly.
- Always consider environmental issues and follow your local regulations when disposing of batteries. Do not expose batteries to excessive heat.

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.

### 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. However, since a "body-pack" mic transmitter typically is placed against the body, we suggest attaching it at the belt, rather than in a shirt pocket where it may be immediately adjacent to the medical device. 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.

### 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 Audio-Technica.

Thank you for choosing this Audio-Technica 3000 Series Frequency-agile True Diversity UHF Wireless System.

The 3000 Series wireless system is available in six UHF frequency bands to provide flexible performance in a wide variety of regions worldwide:

	<i>Frequency Range</i>	<i>Number of frequencies</i>
Band C	541.500 – 566.375 MHz	996
Band D	655.500 – 680.375 MHz	996
Band E	795.500 – 820.000 MHz	981
Band F	840.125 – 864.900 MHz	953
Band G	721.500 – 746.375 MHz	996
Band I	482.000 – 507.000 MHz	1001

The band letter reference at the end of 3000 Series Stock Numbers indicates what band the system/component operates in. For simplicity, model numbers used throughout this manual will reference only the basic model number without the band indications.

Each wireless system includes a receiver and either a body-pack or handheld transmitter. UniPak® body-pack transmitter systems may include an accessory microphone for a particular application. All A-T Wireless Essentials® microphones and cables, available separately, are pre-terminated for use with any Audio-Technica 3000 Series wireless system.

All 3000 Series components feature soft-touch controls for quick, easy access to a formidable range of functions; an LCD information display in each unit provides convenient visual indication of unit settings and operation.

The ATW-R3100b receiver is equipped with automatic frequency scanning for easy setup. It also features true diversity reception. Two antennas feed two completely independent RF sections on the same frequency; automatic logic circuitry continuously compares and selects the superior received signal, providing better sound quality and reducing the possibility of interference and dropouts. Soft-touch controls provide convenient access to a variety of functions, while a backlit LCD information display provides constant monitoring of system operation, including indication of the transmitter's battery status. The receiver is half-width for a standard 1U 19" rack mount; rack-mount adapters are included. Two receivers can be mounted side by side, using an optional AT8630 joining-plate kit.

The versatile ATW-T310b UniPak® body-pack transmitter has both low- and high-impedance inputs plus a bias connection, for use with dynamic and electret condenser microphones, as well as Hi-Z instrument pickups. In addition to its programmable functions, the transmitter features a three-position sliding cover to limit access, if desired, to just the Power/Mute button, or to cover all the controls, as appropriate for the application and user. The ATW-T341b handheld dynamic microphone/transmitter features the same element used in the Artist Elite® AE4100 dynamic handheld microphone created for professional livesound venues. The ATW-T371b handheld condenser microphone/transmitter features the same element used in the Artist Series ATM710 cardioid condenser vocal microphone.

Transmitters in the 3000 Series use two 1.5V AA batteries for economical operation and wide availability. The receiver and both transmitters have "fuel gauge" battery condition indicators with low-battery warnings.

An advanced Digital Tone Lock™ tone squelch system in the ATW-R3100b receiver opens only when a 3000 Series transmitter

is detected, reducing the possibility of interference. As a result, 3000 Series 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. Exception: 3000 Series components are compatible with Audio-Technica 1800 Series wireless system components.

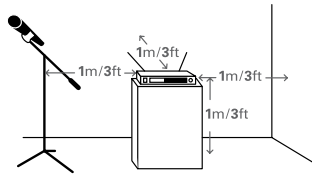
Please note that in multiple-system applications there must be a transmitter-receiver combination set to a separate frequency for each input desired (only one transmitter for each receiver). Because the wireless frequencies are within UHF TV frequency bands, only certain operating frequencies may be useable in a particular geographic area.

## Receiver Installation

### Location

For best operation the receiver should be at least 3 ft. (1 m) above the ground and at least 3 ft. away from a wall or metal surface to minimize reflections. The transmitter should be at least 3 ft. from the receiver, as shown in **Figure A**. Keep antennas away from noise sources such as digital equipment, motors, automobiles and neon lights, as well as away from large metal objects.

Fig. A



### Output Connections

There are two audio outputs on the back panel: balanced and unbalanced. Use shielded audio cable for the connection between the receiver and the mixer. If the input of the mixer is a 1/4" jack, connect a cable from the 1/4" unbalanced audio output on the back of the receiver housing to the mixer. If the input of the mixer is an XLR-type input, connect a cable from the balanced XLR-type audio output on the back panel to the mixer. The two isolated audio outputs permit simultaneous feeds to both unbalanced and balanced inputs. For example, both a guitar amp and a mixer can be driven by the receiver.

### Antennas

Attach the included pair of UHF antennas to the antenna input jacks. The antennas are normally positioned in the shape of a "V" (both 45° from vertical) for best reception.

Antennas can be remotely located from the receiver. However, due to signal loss in cables at UHF frequencies, use the lowest-loss RF cables practical for any cable runs over 8 m/25 feet. RG8-type is a good choice. Use only copper-shielded cable, not CATV-type foil-shielded wire. Audio-Technica offers quality RF cables in four lengths, as well as remote antennas.

Either passive or active antennas may be used. Both input jacks offer switchable +12 V DC output on their center pins to operate Audio-Technica powered antennas or other in-line RF devices if desired. Up to 60 mA can be drawn from each antenna input jack.

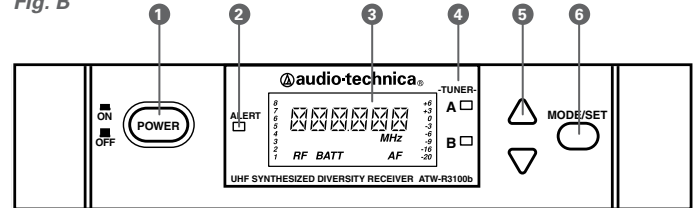
### Power Connections

Connect the included AC adapter to the DC power input on the back of the receiver. Loop the small cord from the DC plug over the cord hook above the jack, to keep the plug from being detached by an accidental tug on the cord. Then plug the AC adapter into an AC power outlet. Operation of the receiver is controlled by the front-panel Power switch.

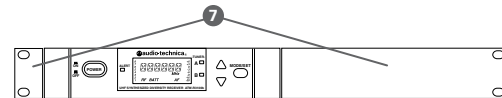
## Receiver Controls and Functions

### Front Panel Controls and Functions

Fig. B



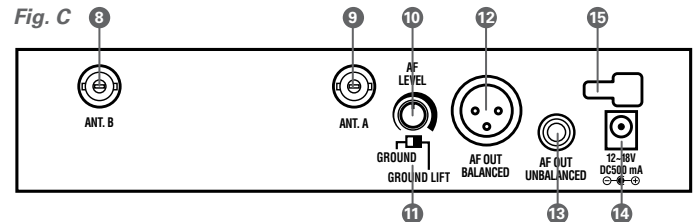
1. **POWER SWITCH:** Press Power switch in and the receiver readouts will light.
2. **ALERT INDICATOR:** The Alert Indicator lights:
  - (a) When the receiver is in the Function Edit mode,
  - (b) When no RF signal is received from transmitter,
  - (c) When only one or two RF signal-strength bars are on,
  - (d) When the transmitter is in the Mute mode,
  - (e) When audio modulation level from the transmitter is close to the clipping point (AF +3/+6 bars),
  - (f) When only one bar of the Battery "fuel gauge" is on (transmitter battery is weak).
3. **LCD WINDOW:** Backlit screen indicates control settings and operational readings. See **Figure D** for examples.
4. **TUNER OPERATION INDICATOR:** Indicates which Tuner (A or B) has the better reception and is in operation. The "B" indicator also lights to serve as confirmation of Mode/Set button entries.
5. **UP/DOWN BUTTONS:** Press Up or Down arrow buttons, in conjunction with the Mode/Set button, to step through menus, select operating frequency and edit receiver function choices.
6. **MODE/SET BUTTON:** Use in conjunction with the Up/Down arrow buttons to step through menus, choose operating frequency, initiate automatic scanning and select receiver function options.



7. **MOUNTING ADAPTERS:** For mounting the receiver in any standard 19" rack. Attach adapters to the receiver with the screws supplied and remove the four receiver feet. (Use optional AT8630 joining-plate kit to mount two ATW-R3100b receivers side-by-side.)

### Rear Panel Controls and Functions

Fig. C



8. **ANTENNA INPUT JACK:** BNC-type antenna connector for Tuner "B." Attach the antenna directly, or extend it with a low-loss antenna cable.
9. **ANTENNA INPUT JACK:** Input for Tuner "A." Attach the antenna directly, or extend it with a low-loss antenna cable.
10. **AF LEVEL CONTROL:** Adjusts audio output level of both AF Output jacks; maximum output is fully clockwise.
11. **GROUND LIFT SWITCH:** Disconnects the ground pin of the balanced output jack (12) from ground. Normally, the switch should

be to the left (ground connected). If hum caused by a ground loop occurs, slide switch to the right (ground lifted).

12. BALANCED AUDIO OUTPUT JACK: XLRM-type connector. A standard 2-conductor shielded cable can be used to connect the receiver output to a balanced microphone-level input on a mixer or integrated amplifier.
13. UNBALANCED AUDIO OUTPUT JACK: 1/4" phone jack. Can be connected to an unbalanced aux-level input of a mixer, guitar amp or tape recorder.
14. POWER INPUT JACK: Connect the DC plug from the included in-line AC adapter.
15. CORD HOOK: Loop the small DC cord around the cord hook to keep the DC plug from pulling out accidentally.

### Power On/Off

To turn the receiver on, press in the Power switch. The Alert light and the LCD window will come on (about 1-2 seconds). The operating frequency will be displayed in the window after the power-up sequence. To turn the receiver off, press the Power switch again.

### LCD Window

The LCD (Liquid Crystal Display) presents a great deal of setup and operating information clearly and conveniently. (See **Figure D** for examples.)

Fig. D



D1. Normal Receiver Operation  
(Transmitter off)

D2. Menu Mode (Frequency)

D3. Edit Mode (Frequency)

### Up/Down Arrow Buttons

In conjunction with the Mode/Set button, the arrow buttons permit moving through the menu of functions, and they offer a choice of settings within each function.

### Mode/Set Button

The Mode/Set button shifts the receiver from normal operation into Menu mode and, in conjunction with the Up/Down arrow buttons, permits selection of different features and changing of their stored values in the Edit mode.

### How to Make Setting Changes

1. From the normal operating mode, press the Mode/Set button *once* to enter the Function Menu mode. (Only the frequency will remain in the LCD window, and the receiver's audio output will be cut off.)
2. Use the Up/Down arrow buttons to reach the desired function. The value in the LCD window is the current setting for that function.
3. Press the Mode/Set button once again to open the list of available choices for that function. The value will flash, indicating that it can be changed (Edit mode).
4. Use the arrow buttons to go through the available choices, stopping on the desired new choice.
5. (a) To accept and enter the new choice, press and hold the Mode/Set button until "STORED" appears in the LCD. This changes the value and puts the function of the buttons back at Menu level (step 2 above). (The "B" tuner light will come on while the Mode/Set button is depressed, to confirm its action.)  
(b) To "back out" of the Edit mode without making a new choice, simply press the Mode/Set button *once*. The word "ESCAPE" will appear in the window and the function of the buttons will revert to the Menu level (step 2 above), without making any changes.
6. Repeat this selection process for any other function changes desired. When finished with any changes, use the arrow buttons to

move to "QUIT." Press the Mode/Set button once to exit the menu and return the receiver to normal operation. ("RF" and "AF" will reappear in the window, indicating the return to "normal receiver operation, with the receiver's audio output again enabled.)

### Frequency Group Selection

To select a frequency scan group, press the Mode/Set button, then use the arrow button until the desired group appears in the display. To store the selected frequency scan group, press the Mode/Set button to enter the desired group; then use the arrow button to start the scan. When a flashing number is displayed, press and hold Mode/Set button to select the frequency. See detailed instructions in System Operation.

### How to Restore Default Settings

To return *all* the receiver functions to their original factory default settings, first turn the receiver off. Then *hold* in the Mode/Set button while pressing and releasing the Power switch. The LCD will briefly show "RESET," followed by "WAIT" (release the Mode/Set button), before commencing normal-mode operation at the default settings.

When the receiver is in the Menu or Edit mode, its audio output is silenced. Once control-setting operations are completed (or Escape is used), normal receiver operation will resume with its audio output restored.

While in the Edit mode, if no action is taken for approximately 30 seconds (no buttons pressed), the receiver will "back out" to the Menu mode. Similarly, after about 30 seconds of inaction in the Menu mode, the receiver will "back out" to normal receiver operation with audio output restored.

### High-pass Filter

Internal high-pass filter circuitry may be set to four positions: High-pass Off, or a 6 dB, 12 dB or 18 dB slope at 150 Hz. The default setting is Off ("HP OFF"). Increasing the slope of the high-pass filter further suppresses unwanted low frequencies, while maintaining the frequency response in the desired audio range.

### Meter Hold Setting

When activated ("MH ON"), this function permits the bar-meters in the LCD window to capture and display the *highest*-level "AF" audio modulation (a solid bar) and the *lowest*-level "RF" signal (a flashing bar) received from the transmitter. This is particularly useful when setting up the system initially, during a sound-check, or when diagnosing operating problems. The default setting is Off ("MH OFF").

When the Meter Hold is On, it is possible to reset it – to obtain a new set of RF and AF readings – without turning it off-and-on using the Menu/Edit functions. Simply press the transmitter's Power/Mute button once (to mute the transmitter) and **wait until the receiver's Alert light comes on**, indicating the Mute condition. Then press the transmitter's Power/Mute button once again, to un-mute the transmitter. **After the Alert light goes out**, a new set of min/max RF/AF readings will be indicated on the bar-meters. (Note that, depending upon the digital updating-and-confirming sequence of the Mute condition data from the transmitter, it may take several seconds for the Alert light condition to change. **The Meter Hold function is not reset until the Alert light has turned on, then turned off.**)

### Digital Tone Lock™ Squelch

The 3000 Series employs a unique Digital Tone Lock squelch system that provides enhanced rejection of interference. In addition to providing highly effective control of unwanted noise, the Tone Lock signal from the transmitter also conveys data on the transmitter's battery condition and mute status back to the receiver for display.

The squelch level is adjustable from 15 dB (the default value) to 39 dB in 6 dB steps. Increasing the squelch level – also called “tightening the squelch” – can cause a reduction in useable range of the wireless transmitter, so use the lowest value that reliably mutes the unwanted RF signals. (If interference is a problem, first consider trying a different frequency.)

#### Antenna Power

The antenna input jacks also can provide +12V DC output on their center pins to power inline RF devices. A maximum of 60 mA can be drawn from each of the jacks. While an accidental short-circuit will not harm the internal 12V supply, make certain that an antenna cable shield does not contact the center conductor. Antenna Power (“ANT.PWR”) is selected (switched on or off) from the LCD menu.

#### Pre-coordinated Frequency Scan Groups 1-9

The nine scan groups provided on the 3000 Series receivers simplify the selection of usable frequencies in a multi-channel wireless system. If you are using multiple systems, stay within one of the nine frequency groups for all of your systems. The available frequencies within each group have been selected for simultaneous use, eliminating the frustration encountered when trying to select compatible frequencies in a multi-channel system.

Scan Groups 8 and 9 have been designed to allow for use on adjoining stages. Use Group 8 on one stage and Group 9 on a second nearby stage. Or use these two groups in two different rooms, with one room using Group 8, and the second using Group 9.

#### Receiver Functions

Function Menu	Default Setting*	Choices (Edit)▲▼	Wrap-around**
(Receiver powers-up at Frequency)			
▲▼ Frequency	Lowest in band†	All frequencies in band	Yes
▲▼ High-pass Filter	HP OFF	HP OFF, HP-6, HP-12, HP-18	No
▲▼ Meter Hold	MH OFF	MH OFF MH ON	Yes
▲▼ Squelch	SQ 15 dB	SQ 15 dB to SQ 39 dB in 6 dB steps	No
▲▼ Antenna Power	OFF	PWR OFF PWR ON	Yes
▲▼ Group 1	Lowest in frequency group	All frequencies in Group 1	No
▲▼ Group 2	Lowest in frequency group	All frequencies in Group 2	No
▲▼ Group 3	Lowest in frequency group	All frequencies in Group 3	No
▲▼ Group 4	Lowest in frequency group	All frequencies in Group 4	No
▲▼ Group 5	Lowest in frequency group	All frequencies in Group 5	No

#### Receiver Functions (continued)

Function Menu	Default Setting*	Choices (Edit)▲▼	Wrap-around**
▲▼ Group 6	Lowest in frequency group	All frequencies in Group 6	No
▲▼ Group 7	Lowest in frequency group	All frequencies in Group 7	No
▲▼ Group 8	Lowest in frequency group	All frequencies in Group 8	No
▲▼ Group 9	Lowest in frequency group	All frequencies in Group 9	No
▲▼ Quit (exit Menu)	QUIT	Press Mode/ Set to exit	–

\* To reset to Default values, hold in the Mode/Set button while pressing the Power button to turn on the unit.

\*\* Continue in the same Up/Down direction and choices “wrap around” to the other end of the range.

† Band I: 482.000 – 507.000 MHz; Band C: 541.500 – 566.375 MHz; Band D: 655.500 – 680.375 MHz; Band G: 721.500 – 746.375 MHz; Band E: 795.500 – 820.000 MHz; Band F: 840.125 – 864.900 MHz

#### Transmitter Controls And Functions

Refer to **Figures E, F, G and H** for an overview of transmitter features and controls.

#### LCD Window

The backlit Liquid Crystal Display presents a great deal of setup and operating information clearly and conveniently (See examples in **Fig. J**). The LCD in the transmitters is designed for greatest contrast and best viewing with the window rotated somewhat away from the viewer (about 30 degrees), not straight-on, for a more convenient holding/viewing position. The display is illuminated with a backlight when you power on the device and when you press Set to access transmitter functions. The backlight remains on during the Set process, only turning off if no action is taken within 30 seconds or if Quit is pressed; otherwise, it automatically turns off in ten seconds.

#### Power/Mute Button

The transmitters have a combination Power and Mute switch. When used in combination with the programmed choices explained below, the various functions available to the transmitter user may be tailored to fit personal preferences or particular situations of use.

#### Power On/Off

To turn the transmitter on, *press and hold* the Power/Mute button until the green power indicator and the LCD window come on (about 1-2 seconds). The operating frequency will show in the window after the power-up sequence.

To turn the transmitter off, *press and hold* the Power/Mute button again, until the green power indicator and the LCD window are extinguished (about 1-2 seconds). The LCD window will show “PWR.OFF” before shutdown.

#### Mute Off/On

When the transmitter is muted, it produces RF with no audio signal

## 3000 Series Installation and Operation

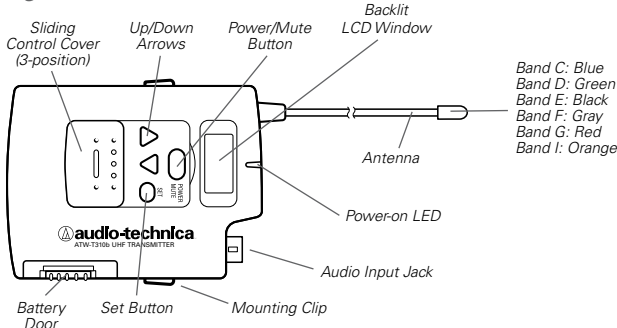
(english)

modulation. When the transmitter is un-muted, it produces both RF and audio.

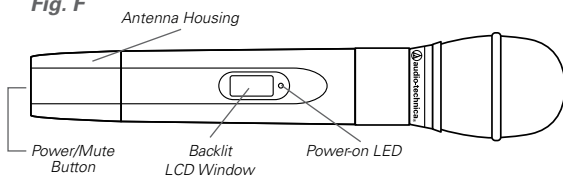
To mute the transmitter (cut off the audio, but continue the RF output), *press and release* the Power/Mute button *once*. A small "MUTE" will appear in the LCD window, just below the frequency (**Fig. M-2**) and the power/mute LED will change from green to red.

To un-mute the transmitter (restore the audio), press and release the Power/Mute button once again. The "MUTE" will disappear from the LCD window and the power/mute LED will change from red to green.

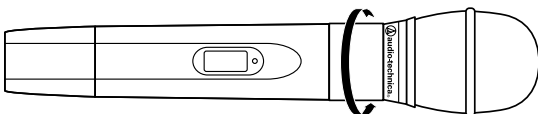
**Fig. E**



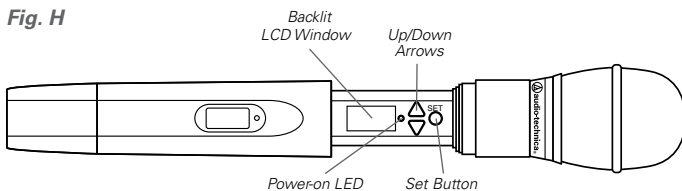
**Fig. F**



**Fig. G**



**Fig. H**



### Power/Mute Locks

Programmable Power/Mute Locks limit the functioning of the Power/Mute button as desired for particular users and/or applications. Power can be locked On; Mute can be locked Off. Selection of the desired locks, if any, is made through the function menu:

Setting	Description
NO.LOC	The normal Power and Mute functions are fully operational.
ALL.LOC	Both the Power and Mute functions are locked into their status as of the time "ALL.LOC" is applied. (Power On, and Mute either On or Off.) Note: ALL.LOC must be re-accessed and the setting changed to turn the transmitter off.
MUT.LOC	In this mode, the audio cannot be muted. The Power functioning is unaffected. (If MUT.LOC is applied while the transmitter is muted, pressing the Power/Mute button once will return to un-muted operation; thereafter the Mute function is disabled until the setting is changed again.)
PWR.LOC	Power is locked On as of the time "PWR.LOC" is applied. The Mute functioning is unaffected. Note: When in the PWR.LOC mode, the transmitter may be turned off by: (1) Re-accessing the .LOC Menu and changing the setting, or (2) Removing and re-installing the batteries. When the transmitter is turned on again, it will power-up in the NO.LOC mode. (Only the PWR.LOC function will change when batteries are removed; all other settings remain stored in memory.)

*If an attempt is made to take an action that currently is locked out, the LCD will display "LOCKED" briefly, then return to its previously-displayed contents.*

### Audio Input Selector

The UniPak® body-pack transmitter provides input connections for both low-impedance (Lo-Z) microphones and high-impedance (Hi-Z) instruments. A wide range of Audio-Technica Wireless Essentials® microphones and cables is available pre-terminated with the appropriate professional latching connector. Selection of the desired input – microphone or instrument – is made through the function menu. Depending upon the input selected, a small "MIC" or "INST" will show in the LCD window, just below the frequency. (In the handheld transmitter, only "MIC" will show in the LCD window.)

### Frequency Group Selection

To select a frequency scan group, press the Set button, then use the up or down arrow until the desired group appears in the display. To store the selected frequency scan group, press the Set button to enter the desired group; then use the arrow button to find desired frequency. Press and hold Set button to select the frequency. See detailed instructions in System Operation.

### Restore Default Settings

A "PRESET" selection in the menu permits resetting of all transmitter functions to their factory-default values.

1. Press the Set button once to move to Menu mode.
2. Press the Up arrow twice to move to "PRESET" in the LCD window.
3. Press the Set button once and "LOAD" will appear in the LCD.
4. Press and hold the Set button until "DEF" appears in the LCD.
5. Press and hold the Set button until "LOADED" appears briefly in the LCD. The window will then revert to "PRESET".
6. Press the Down arrow once to move to "QUIT".
7. Press the Set button once to exit the Menu mode and return to normal operation, with all factory-default settings restored.

**UniPak® Transmitter Functions**

Function Menu	Default Setting*	Choices (Edit)▲▼	Wrap-around
(Transmitter powers-up at Frequency)			
▲▼ Frequency	Lowest in band†	All frequencies in band	Yes
▲▼ RF Power	RF LOW	RF LOW, RF HI	Yes
▲▼ Audio Input Level	+6 dB	-6 dB, 0 dB, +6 dB, +12 dB	No
▲▼ Power/Mute Locks	NO.LOC	NO.LOC, ALL.LOC, MUT.LOC, PWR.LOC	Yes
▲▼ Input Select	MIC	MIC, INST	Yes
▲▼ Group 1	Lowest in frequency group	All frequencies in Group 1	Yes
▲▼ Group 2	Lowest in frequency group	All frequencies in Group 2	Yes
▲▼ Group 3	Lowest in frequency group	All frequencies in Group 3	Yes
▲▼ Group 4	Lowest in frequency group	All frequencies in Group 4	Yes
▲▼ Group 5	Lowest in frequency group	All frequencies in Group 5	Yes
▲▼ Group 6	Lowest in frequency group	All frequencies in Group 6	Yes
▲▼ Group 7	Lowest in frequency group	All frequencies in Group 7	Yes
▲▼ Group 8	Lowest in frequency group	All frequencies in Group 8	Yes
▲▼ Group 9	Lowest in frequency group	All frequencies in Group 9	Yes
▲▼ Reset to Defaults	PRESET	LOAD (b) hold until: DEF (c) hold until: LOADED	-
▲▼ Quit (exit Menu)	QUIT	Press Set to exit	-

**Handheld Transmitter Functions**

Function Menu	Default Setting*	Choices (Edit)▲▼	Wrap-around**
(Transmitter powers-up at Frequency)			
▲▼ Frequency	Lowest in band†	All frequencies in band	Yes
▲▼ RF Power	RF LOW	RF LOW, RF HI	Yes
▲▼ Audio Input Level			
Dynamic	+6 dB	-6 dB, 0 dB, +6 dB, +12 dB,	No
Condenser**	+6 dB	0 dB, +6 dB, +12 dB	No
▲▼ Power/Mute Locks	NO.LOC	NO.LOC, ALL.LOC, MUT.LOC, PWR.LOC	Yes
▲▼ Group 1	Lowest in frequency group	All frequencies in Group 1	Yes
▲▼ Group 2	Lowest in frequency group	All frequencies in Group 2	Yes
▲▼ Group 3	Lowest in frequency group	All frequencies in Group 3	Yes
▲▼ Group 4	Lowest in frequency group	All frequencies in Group 4	Yes
▲▼ Group 5	Lowest in frequency group	All frequencies in Group 5	Yes
▲▼ Group 6	Lowest in frequency group	All frequencies in Group 6	Yes
▲▼ Group 7	Lowest in frequency group	All frequencies in Group 7	Yes
▲▼ Group 8	Lowest in frequency group	All frequencies in Group 8	Yes
▲▼ Group 9	Lowest in frequency group	All frequencies in Group 9	Yes
▲▼ Reset to Defaults	PRESET	LOAD (b) hold until: DEF (c) hold until: LOADED	-
▲▼ Quit (exit Menu)	QUIT	Press Set to exit	-

\* Continue in the same Up/Down direction and choices "wrap around" to the other end of the range.

\*\* Additional 6 dB pad switch on capsule.

† Band I: 482.000 – 507.000 MHz; Band C: 541.500 – 566.375 MHz; Band D: 655.500 – 680.375 MHz; Band G: 721.500 – 746.375 MHz; Band E: 795.500 – 820.000 MHz; Band F: 840.125 – 864.900 MHz

## Transmitter Setup

### Battery Selection and Installation

Each transmitter uses two 1.5V AA batteries, not included. Alkaline type is recommended; other types of 1.5V AA batteries (including rechargeable) may be used, however performance may vary. Always replace both batteries. Make certain the transmitter power is *Off* before replacing batteries.

### UniPak® Transmitter Battery Installation

1. Open the battery compartment door as follows:  
Slide door lock down to the unlocked position. Pinch the release arrows together to open the compartment. (Fig. J)
2. Observe correct polarity as marked on the metal contacts on the door and carefully insert two fresh 1.5V AA alkaline batteries (Fig. K).
3. Close the door, making certain the latch clicks securely in place.
4. Slide the door lock up to the locked position.

Fig. J

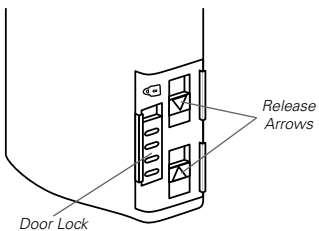


Fig. K

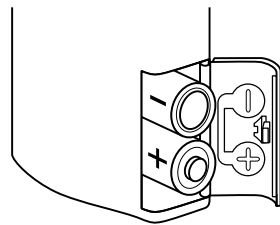
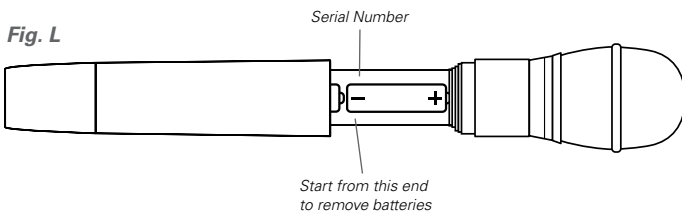


Fig. L



### Handheld Transmitter Battery Installation

1. While holding the lower body cover (near the LCD window), grasp the upper part of the transmitter body just *below* the grille and unscrew it at least four complete turns (Fig. G); then slide the lower body cover down until it stops (Fig. H). Once the cover has been lowered, turn the transmitter over to reveal the battery compartment on the side opposite the LCD window.
2. Observe correct polarity as marked inside the battery compartment and carefully insert two fresh 1.5V AA batteries (Fig. L). Insert the first battery and slide it down. Then insert the second battery, bottom first, into the space remaining. Make certain the batteries are fully seated in the battery compartment.
3. Slide the lower body cover back up the body, then screw the housing together. *Do not overtighten.*

**Note:** Remove batteries from the handheld transmitter starting at the *bottom* (- end) of the top battery (Fig. L). The top (+ end) of the top battery is captured in a recess and will not come straight out.

### Battery Condition Indicator

After the batteries are installed, turn the power on by *pressing and holding* the Power/Mute button. The small power-on LED (Fig. E/F) should light green and the LCD window should come on. If this does not happen, the batteries are installed incorrectly or they are dead.

The transmitter's "fuel gauge" battery indicator displays a maximum of four bar segments. When it flashes "LOW.BAT," the batteries should be replaced immediately to ensure continued operation. (The receiver also displays transmitter battery condition in the LCD window with bar segments; the Alert indicator comes on to warn of a low-battery condition.)

### UniPak® Transmitter Input Connection

Connect an audio input device (microphone or guitar cable) to the audio input jack on the transmitter. A number of Audio-Technica professional microphones and cables are available separately, pre-terminated with a UniPak input connector. The cable connector latches automatically when inserted into the transmitter jack. To unlatch and remove the connector, simply pull up on the connector's knurled metal collar.

### UniPak® Transmitter Antenna

The UniPak transmitter includes a field-replaceable flexible antenna. For best results, allow the antenna to extend to its full length from the transmitter. If the received signal is marginal, experiment with different transmitter positions on your body or instrument; or try repositioning the receiver or using remote receiver antennas. Since the transmitter antenna simply screws in, check it occasionally to make certain it is snugly attached (finger-tight). *Do not change the length of the transmitting antenna.*

### Handheld Transmitter Antenna

The antenna for the handheld mic/transmitter is in the black, non-metallic section at the bottom of the unit (Fig. F). For best results, hold the mic/transmitter naturally, around its painted metal case; holding or otherwise covering the antenna housing may reduce the operating range.

### UniPak® Transmitter Mounting Clip

The UniPak transmitter's mounting clip may be installed with the case positioned either "up" or "down," depending upon which is preferred for the application. To turn the clip around, pull the ends of the clip out of the two holes on the sides of the transmitter case (Fig. E) and reinstall it facing in the opposite direction.

## System Operation

Turn the receiver on by pressing in the Power switch. Do *not* switch on the transmitter yet.

The Alert indicator and the LCD window will light up; the normal-operation LCD display will appear after 1-2 seconds (**Fig. D-1**). If any of the bars show in the "RF" bar-graph meter, there may be RF interference in the area. If this occurs, select another frequency as explained below. (If the Meter Hold function has been selected, one of the RF bars will be flashing, indicating the lowest RF level received.)

### Selecting/Setting Frequency

Selection of the desired operating frequency is made through the function menus. It's usually best to start by setting the receiver's frequency, to determine there is no local interference on that frequency. Then, always make certain to set the transmitter to the receiver's exact frequency. The receiver's unique Digital Tone Lock system squelches the audio only, permitting any RF energy on the frequency to show on the "RF" bar-meter.

**Note:** It is often convenient to start with the factory-default frequency, if there is no RF energy showing on the RF bar meter.

### Using the Automatic Scan Function to Set Receiver Frequency

1. Press the Mode/Set button once; then the "RF" and "AF" scales will disappear from the window and only the frequency will appear in the LCD window. (The receiver is now in the Menu mode.) See **Figure D-2**.
2. Use the Up arrow button to reach Group 1 through Group 9. Press the Mode/Set button once to select one of these nine scan groups. The lowest frequency in the selected scan group will appear in the LCD window.
3. Press the Up arrow button to begin the scan. "G SCAN" will flash in the LCD window.
4. The first available frequency will flash in the LCD window. To activate this frequency selection, press and hold the Mode/Set button until the word "STORED" appears in the LCD window. (If you do not wish to complete this particular selection, just press the Mode/Set button once. The word "ESCAPE" will appear briefly in the window and the receiver will return to the Menu mode.)
5. After you have activated your frequency selection (step 4), the "RF" and "AF" scales will reappear in the window, indicating the return to normal operation.
6. If you are using multiple systems, all frequencies must be selected from the same group (Group 1 through Group 9). After completing the first receiver's scan and frequency selection, set the transmitter to the same frequency (see *Setting Transmitter Frequency* instructions); leave the transmitter *On*, and run the next receiver's automatic scan function. Always set a receiver-transmitter pair to the same frequency before using the automatic scan function to select a frequency for the next receiver. "End" will show on the receiver display when no further usable frequencies remain in the selected scan plan.

#### NOTES ON USING THE RECEIVER SCAN FEATURE:

- Selecting low power on your transmitter can be helpful for multiple system setup, if you are experiencing problems with radio frequency interference.
- To prevent raised noise floors that a receiver scan might interpret as radio frequency interference: during setup, keep all transmitters at least three feet apart and at least 15 feet from the receivers.

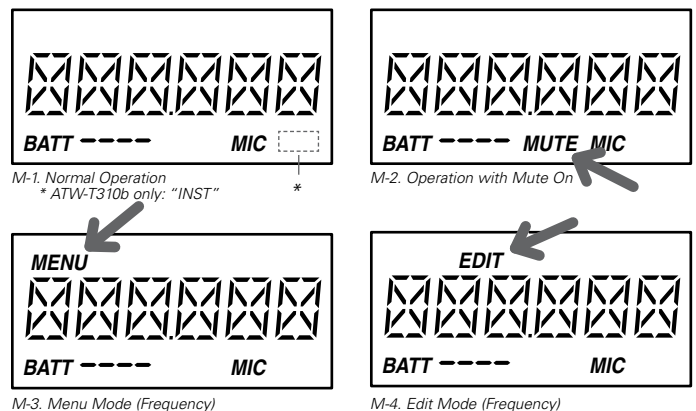
### Setting Receiver Frequency Manually

1. Press the Mode/Set button once; then only the frequency will appear in the LCD window. (The receiver is now in the Menu mode.) See **Figure D-2**.
2. Press the Mode/Set button again; the Alert light will come on and the first three digits of the frequency will flash in the window. (The receiver is now in the Edit mode, **Fig. D-3**.)
3. Use the Up/Down arrow buttons to change the first three digits (MHz) to the desired frequency. Choose a frequency appropriate for your area, avoiding frequencies with active TV channels. Press either arrow for single steps, or hold down either arrow for rapid cycling through the band. Frequencies "wrap around" to the other end of the range when the top or bottom of the band is reached.
4. Press the Mode/Set button once to set the first three digits to the desired frequency.
5. Use the Up/Down arrow buttons to change the second three digits (kHz) to the desired frequency. Again, be certain to choose a frequency appropriate for your area, avoiding frequencies with active TV channels.
6. To activate this frequency selection, press and hold the Mode/Set button until the word "STORED" appears in the receiver's window. (If you do not wish to complete this particular selection, just press the Mode/Set button once. The word "ESCAPE" will appear briefly in the window and the receiver will return to the Menu mode.)
7. When finished entering a frequency, press the Down arrow button once to move to "QUIT." Then press the Mode/Set button *once* to exit the menu. The "RF" and "AF" scales will reappear in the window, indicating the return to normal operation.

### Transmitter On...

Turn on the transmitter by pressing and holding the Power/Mute button (**Fig. E/F**) for a second or two, until the green power indicator and the LCD window have come on.

**Fig. M**



### Setting Transmitter Frequency

1. Press the Set button once and the small word "MENU" will appear above the frequency. Press the Set button again and the small flashing word "EDIT" will appear to the right of "MENU." See **Figures M-3** and **M-4**.
2. Use the Up/Down arrow buttons to change the first three digits of the transmitter frequency. Press either arrow for single steps, or hold down either arrow for rapid cycling through the range. Frequencies "wrap around" when the top or bottom of the band is reached. Select the exact frequency displayed on the receiver.
3. Press the Set button once to set the first three digits to the desired frequency.

4. Use the Up/Down arrow buttons to change the second three digits to the desired frequency.
5. To activate this frequency selection, *press and hold* the Set button until the word "STORED" appears in the transmitter's window. (If you do not wish to complete this selection, just press the Set button once: the word "ESCAPE" will appear briefly in the window and the transmitter will return to the Menu mode.)
6. When finished entering a frequency, press the Up arrow button once to move to "QUIT". Then press the Set button *once* to exit the menu. The word "MENU" in the transmitter window will go off, indicating the return to normal operation.

When the transmitter is switched on and in normal operation, the receiver's "RF" signal-level bars will display from bottom to top, with more bars indicating increased signal reception. For optimum performance at least four, and preferably five or more, of the RF indicators should be displayed.

#### **Setting Transmitter Audio Input Levels**

Correct adjustment of transmitter audio input, receiver audio output, and mixer/amplifier input and output levels is important for optimum system performance.

#### **ATW-T310b and ATW-T341b Transmitters**

A 4-position audio input gain setting, selected through the function menu, serves to match the audio input level to the transmitter for best modulation with minimum distortion. Available choices are +12 dB, +6 dB, 0 dB and -6 dB. The default value is +6 dB. Select the highest setting that does not result in over-modulation with the highest audio/instrument input levels (an AF indication on the receiver no higher than "0").

#### **ATW-T371b Transmitter**

A 3-position audio input gain setting, selected through the function menu, serves to match the audio input level to the transmitter for best modulation with minimum distortion. Available choices are +12 dB, +6 dB, and 0 dB. The default value is +6 dB. In addition, a mechanical pad switch on the condenser capsule (inside the screw-on wire mesh grille) can provide another 6 dB of attenuation. For best performance, adjust the input level using the function menu choices, keeping the capsule's mechanical switch at 0 dB. If more audio attenuation is needed than the menu provides, then set the capsule's pad switch to -6 dB.

#### **RF Power Adjustment**

RF power may be set to "RF HI" (30 mW nominal) or "RF LOW" (10 mW nominal) through the function menu. The default setting is "RF LOW". While the High setting normally provides maximum operating range, the Low setting will help extend battery life. The Low setting may also be preferred in multichannel systems, or when operating very close to the receiver, to reduce the possibility of interference or overload.

#### **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 Audio-Technica.

### **Ten Tips to Obtain the Best Results**

1. Use only fresh alkaline batteries. Do not use "general purpose" (carbon-zinc) batteries.
2. Position the receiver so that it has the fewest possible obstructions between it and the normal location of the transmitter. Line-of-sight is best.
3. The transmitter and the receiver should be as close together as conveniently possible, but no closer than three feet (1 m).
4. Avoid placing the receiver in a low or shielded location where the transmitter and receiver antennas are not within line-of-sight. If necessary, use remotely-located receiver antennas.
5. Avoid placing the receiver near computers or other RF generating equipment.
6. The receiver and transmitter must be set to the same frequency.
7. A receiver cannot receive signals from two transmitters at the same time.
8. Do not obstruct the handheld transmitter's antenna (located at the base) or attached body-pack transmitter's antenna with your hands.
9. You need to change frequencies 1) when a strong interference signal is received, 2) when audio quality is poor due to weak RF, or 3) during multiple-system operation in order to select an interference-free frequency.
10. Turn the transmitter off when not in use. Remove the batteries if the transmitter is not to be used for a period of time.

## Troubleshooting Guide

### **Receiver is not on (LCD window does not light).**

- Receiver Power switch is not pressed in.
- Small DC power cord from included in-line power supply is not plugged into jack on back of receiver. (Use the cord hook to secure it.)
- The in-line power supply is not plugged into AC power outlet.
- AC power is not present at the AC outlet.

### **Receiver is on (LCD window lights).**

- No sound - Alert light is OFF:

- ✓ "RF", "AF" and "BATT" legends do not appear in LCD.
  - Receiver is in the Menu mode.
- ✓ "RF" and "AF" level meters both show good signals.
  - AF Level control on back of receiver not turned up (clockwise).  
Note: If the "AF" level meter shows a good signal on the receiver when the transmitter is receiving audio input, and the AF Level control is turned up, then the problem is in connections to or control settings on the mixer, amplifier, etc.
- ✓ Only "RF" level meter shows good signal; no "AF" signal.
  - No sound input to mic.
  - ATW-T310b body-pack only: Wrong input selected ("INST" or "MIC").

### **Receiver is on (LCD window lights).**

- No sound - Alert light is ON:

- ✓ "RF", "AF" and "BATT" legends do not appear in LCD, and LCD is flashing.
  - Receiver is in the Edit mode.
- ✓ "RF" and "AF" level meters both show good signals.
  - The transmitter audio level is too high (" +3"/" +6" on receiver).
  - Batteries may be weak. (Check "BATT" fuel gauge.)
- ✓ Only "RF" level meter shows good signal; no "AF" signal.
  - Transmitter may be muted. (Note: Normally it takes several seconds for the Alert light to turn off/on after the transmitter mute is switched off/on.)
- ✓ Neither the "RF" nor the "AF" level meter shows any signal.
  - Receiver antennas not connected.
  - Transmitter is turned off.
  - Transmitter batteries are dead or missing.
  - Transmitter is set to a different frequency.
  - Transmitter and receiver not in same Band.

### **Receiver is on (LCD window lights).**

- Distorted sound - Alert light is ON:

- ✓ "RF" and/or "AF" level meters may show good signals.
  - The transmitter audio level is too high (" +3"/" +6" on receiver).
  - Received RF level may be too low (only one or two bars).
  - Batteries may be weak; check "BATT" fuel gauge. (Sound may or may not be distorted.)

### **Momentary loss of sound/noisy sound as transmitter is moved around performing area.**

- Transmitter and receiver antennas not in line-of-sight (or perhaps too far apart). Adjust positions of units so they are visible to each other/closer together; use remote antennas located closer to the transmitter location.

- Signal blockage or interference from large metal objects, other wireless units located too close and/or on incompatible frequencies, computer or lighting equipment.

- Squelch setting may be set "tighter" than it needs to be. (Recommended squelch setting is the minimum/default value, 15 dB.)

Tip: Use the Meter Hold function to help identify and resolve (or at least avoid) RF problem locations.

### **With transmitter on, received signal is noisy or contains extraneous sounds.**

- Batteries may be weak. Check "BATT" fuel gauge and "RF" meter level.
- Local TV transmissions on this frequency.
- Nearby sources of RF interference, such as computers, lighting equipment, etc.
- Two transmitters may be operating on the same frequency. Locate and turn one off or change its frequency.
- In multiple-system use, two (or more) incompatible frequencies may have been selected.

**Please note:** This manual is offered in other languages at [www.audio-technica.com](http://www.audio-technica.com)

## 3000 Series Installation and Operation

(english)

### Specifications†

#### Overall System

UHF Operating Frequencies		
	Frequency Range	Number of Frequencies
Band C:	541.500 to 566.375 MHz	996
Band D:	655.500 to 680.375 MHz	996
Band E:	795.500 to 820.000 MHz	981
Band F:	840.125 to 864.900 MHz	953
Band G:	721.500 to 746.375 MHz	996
Band I:	482.000 to 507.000 MHz	1001

Not all frequencies are available in all areas. Please check with local regulations.

Minimum Frequency Step	25 kHz
Modulation Mode	FM
Maximum Deviation	±35 kHz
Dynamic Range	> 110 dB (A-weighted), typical
Total Harmonic Distortion	< 1% (at 1 kHz, ±17.5 kHz deviation)
Operating Range	100 m (300'), typical
<i>Open range environment with no interfering signals.</i>	
Operating Temperature Range	-5 °C to +45 °C 23 ° F to 113 °F

Battery and LCD performance may be reduced at very low temperatures.

Frequency Response	70 Hz to 15 kHz (+1 dB, -3 dB)
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#### ATW-R3100b Receiver

Receiving System	True diversity
Image Rejection	60 dB nominal, 55 dB minimum
RF Sensitivity	20 dBuV at 60 dB S/N ratio (50 ohms termination)

Maximum Output Level	
XLR, balanced:	+9 dBV
¼" (6.3 mm), unbalanced:	+7 dBV

Antenna Input	BNC-type, 50 ohms Bias voltage 12V DC, 60 mA, each
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Power Requirements	12-18V DC, 500 mA
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Dimensions	210.0 mm (8.27") W x 164.4 mm (6.47") D x 44.0 mm (1.73") H
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Not including BNC connectors or feet.

Net Weight	1.1 kg (38.8 oz), without accessories
Accessories Included	Two flexible UHF antennas; AC adapter (country dependent); rack-mount adapters

#### ATW-T310b UniPak® Transmitter

RF Power Output	High: 30 mW, Low: 10 mW (switchable), at 50 ohms
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Spurious Emissions	Following federal and national regulations
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Input Connection	Four-pin Locking Connector Pin 1: GND, Pin 2: INST INPUT, Pin 3: MIC INPUT, Pin 4: DC BIAS +5V
------------------	--



Batteries	Two 1.5V AA, not included
Battery Life	High: 6 hours (alkaline) Low: 8 hours (alkaline)

Depending on battery type and use pattern.

Dimensions	66.0 mm (2.60") W x 24.0 mm (0.94") D x 87.0 mm (3.43") H
------------	---

Net Weight	81 g (2.9 oz), without batteries
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#### Handheld Transmitters

RF Power Output	High: 30 mW; Low: 10 mW, (switchable), at 50 ohms
Spurious Emissions	Following federal and national regulations

Microphone Element	
ATW-T341b	Dynamic cardioid
ATW-T371b	Condenser cardioid

Batteries	Two 1.5V AA, not included
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Battery Life	High: 6 hours (alkaline) Low: 8 hours (alkaline)
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Depending on battery type and use pattern.

Dimensions	
ATW-T341b	237.0 mm (9.33") long, 48.0 mm (1.89") diameter
ATW-T371b	240.0 mm (9.45") long, 50.0 mm (1.97") diameter

Net Weight	
ATW-T341b	284 g (10.0 oz), without batteries
ATW-T371b	277 g (9.8 oz), without batteries

Accessory Included	AT8456a Quiet-Flex™ stand clamp
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† In the interest of standards development, A.T.U.S. offers full details on its test methods to other industry professionals on request. Specifications are subject to change without notice.

### CAUTION: U.S. Public Safety/Security Restrictions (Private Land Mobile Radio Services)

Avoid the frequencies/channels listed below in each of the following U.S. metropolitan areas (as of November 2009). Refer to [www.fcc.gov](http://www.fcc.gov) for updates

Urbanized Area	Geographical Center		Bands (MHz)	TV Channels
	North Latitude	West Longitude		
Boston, MA	42°21'24.4"	71°03'23.2"	470-476, 482-488	14, 16
Chicago, IL <sup>1</sup>	41°52'28.1"	87°38'22.2"	470-476, 476-482	14, 15
Cleveland, OH <sup>2</sup>	41°29'51.2"	81°49'49.5"	470-476, 476-482	14, 15
Dallas/Fort Worth, TX	32°47'09.5"	96°47'38.0"	482-488	16
Detroit, MI <sup>3</sup>	42°19'48.1"	83°02'56.7"	476-482, 482-488	15, 16
Houston, TX	29°45'26.8"	95°21'37.8"	488-494	17
Los Angeles, CA <sup>4</sup>	34°03'15.0"	118°14'31.3"	470-476, 482-488, 506-512	14, 16, 20
Miami, FL	25°46'38.4"	80°11'31.2"	470-476	14
New York, NY/ NE NJ	40°45'06.4"	73°59'37.5"	470-476, 476-482, 482-488	14, 15, 16
Philadelphia, PA	39°56'58.4"	75°09'19.6"	500-506, 506-512	19, 20
Pittsburgh, PA	40°26'19.2"	79°59'59.2"	470-476, 494-500	14, 18
San Francisco/ Oakland, CA	37°46'38.7"	122°24'43.9"	482-488, 488-494	16, 17
Washington, DC/MD/VA	38°53'51.4"	77°00'31.9"	488-494, 494-500	17, 18

<sup>1</sup> In the Chicago, IL, urbanized area, channel 15 frequencies may be used for paging operations in addition to low power base/mobile usages, where applicable protection requirements for ultrahigh frequency television stations are met.

<sup>2</sup> Channels 14 and 15 are not available in Cleveland, OH, until further order from the Commission.

<sup>3</sup> Channels 15 and 16 are not available in Detroit, MI, until further order from the Commission.

<sup>4</sup> Channel 16 is available in Los Angeles, CA, for use by eligibles in the Public Safety Radio Po

**C-Band Scan Plan (541.500 – 566.375 MHz)**

	Scan - 1	Scan - 2	Scan - 3	Scan - 4	Scan - 5	Scan - 6	Scan - 7	Scan - 8	Scan - 9
1	542.750	541.500	541.500	548.125	541.500	541.700	542.750	541.500	541.750
2	545.500	542.750	542.125	548.375	541.900	542.100	543.250	542.000	542.250
3	547.125	544.375	543.500	548.875	543.000	544.775	543.500	543.250	543.500
4	547.375	544.750	544.000	549.125	544.975	546.225	544.500	544.750	545.000
5	549.750	545.750	546.250	550.375	546.025	546.975	545.250	545.250	545.500
6	550.375	547.500	548.250	550.625	548.700	548.900	546.500	546.000	546.250
7	550.625	554.250	549.750	551.125	549.500	550.100	547.500	546.500	546.750
8	557.250	556.125	555.750	551.375	549.900	552.775	548.250	554.300	554.550
9	557.500	557.500	556.625	556.650	560.225	554.975	558.750	559.125	559.375
10	559.250	559.375	558.250	556.900	560.975	557.700	559.500	561.125	561.375
11	559.500	560.000	559.375	557.400	562.025	561.500	560.500	561.625	561.875
12	562.000	561.875	560.125	557.650	564.700	562.225	561.750	562.875	563.125
13	563.375	562.250	561.500	558.900	565.100	564.500	562.500	564.375	564.625
14	563.625	563.250	564.000	559.150	565.900	564.900	563.500	564.875	565.125
15	566.000	565.500	564.250	559.650	566.300	565.700	563.750	565.625	565.875
16	566.250	566.000	566.125	559.900	552.225	566.100	564.250	566.125	566.375

**F-Band Scan Plan (840.125 – 864.900 MHz)\***

	Scan - 1	Scan - 2	Scan - 3	Scan - 4	Scan - 5	Scan - 6	Scan - 7	Scan - 8	Scan - 9
1	840.375	840.500	846.850	846.250	846.100	855.275	863.100	840.125	840.375
2	840.625	840.750	847.400	847.200	846.600	855.900	863.500	840.625	840.875
3	852.875	852.875	848.525	847.900	847.575	856.175	864.300	841.375	841.625
4	853.125	853.125	849.925	850.825	848.050	857.625	864.700	841.875	842.125
5	853.625	853.625	851.050	851.350	850.425	857.950	856.300	843.375	843.625
6	853.875	853.875	851.600	856.900	858.425	860.900	856.800	844.625	844.875
7	855.375	855.500	859.100	857.725	859.250	861.200	857.050	845.125	845.375
8	855.625	855.750	859.725	859.350	859.825	861.750	858.300	848.125	848.375
9	856.125	856.250	861.050	860.100	861.500	863.125	858.550	856.600	856.850
10	856.375	856.500	861.800	860.575	861.900	863.375	859.050	857.100	857.350
11	860.750	860.750	845.750	840.325	841.325	840.875	859.300	857.850	858.100
12	861.000	861.000	861.300	842.825	843.250	841.125	840.375	858.350	858.600
13	861.500	861.500	856.600	848.900	857.325	842.375	840.875	859.850	860.100
14	861.750	861.750	857.950	848.325	843.825	842.625	842.375	860.350	860.600
15	863.875	863.750	849.425	855.200	853.500	843.125	842.625	861.100	861.350
16	864.125	864.000	852.850	863.650	855.575	843.375	843.375	861.600	861.850

\* When operating in the deregulated frequency range (863.000–864.900 MHz) in countries following the R&TTE directive, transmitter power must be set to "LOW" (10 mW)

**D-Band Scan Plan (655.500 – 680.375 MHz)**

	Scan - 1	Scan - 2	Scan - 3	Scan - 4	Scan - 5	Scan - 6	Scan - 7	Scan - 8	Scan - 9
1	655.500	655.875	655.500	662.125	656.225	656.025	655.500	655.500	655.750
2	658.000	656.250	655.750	662.375	656.975	656.775	655.750	656.000	656.250
3	658.375	658.500	656.625	662.875	658.025	658.225	656.500	657.250	657.500
4	659.250	659.750	658.500	663.125	658.775	660.900	657.750	658.750	659.000
5	659.500	660.000	658.750	664.375	662.300	661.700	659.250	659.250	659.500
6	661.500	660.500	659.500	664.625	663.000	662.100	659.500	660.000	660.250
7	662.375	664.375	662.750	665.125	664.225	664.025	666.500	660.500	660.750
8	662.750	665.500	665.250	665.375	664.975	664.775	672.500	668.300	668.550
9	669.625	671.625	671.250	670.650	674.025	668.900	673.250	673.125	673.375
10	671.750	672.000	672.375	670.900	674.775	669.300	675.750	675.125	675.375
11	674.750	674.000	673.125	671.400	676.000	674.225	676.250	675.625	675.875
12	675.750	674.500	674.125	671.650	676.700	674.975	678.750	676.875	677.125
13	676.125	675.750	674.500	672.900	678.300	677.300	679.500	678.375	678.625
14	678.000	676.750	675.375	673.150	679.000	678.100	679.750	678.875	679.125
15	678.250	678.250	678.625	673.650	680.225	678.500	663.750	679.625	679.875
16	679.500	680.250	679.125	673.900	668.700	680.025	675.500	680.125	680.375

**G-Band Scan Plan (721.500 – 746.375 MHz)**

	Scan - 1	Scan - 2	Scan - 3	Scan - 4	Scan - 5	Scan - 6	Scan - 7	Scan - 8	Scan - 9
1	722.750	721.500	721.500	721.500	722.025	721.500	721.750	721.500	721.750
2	725.500	722.750	722.125	721.750	722.775	722.225	722.500	722.000	722.250
3	727.125	724.375	723.500	722.500	724.000	724.500	723.500	723.250	723.500
4	727.375	724.750	724.000	722.750	724.700	724.900	723.750	724.750	725.000
5	729.750	725.750	726.500	724.250	726.300	725.700	726.750	725.250	725.500
6	730.375	727.500	728.250	726.250	727.000	726.100	727.250	726.000	726.250
7	730.625	734.250	729.750	726.500	728.225	728.025	728.500	726.500	726.750
8	737.250	736.125	735.750	727.500	728.975	728.775	731.250	734.300	734.550
9	737.500	737.500	736.625	740.500	738.025	738.225	737.250	739.125	739.375
10	739.250	739.375	738.250	741.500	738.775	738.975	739.500	741.125	741.375
11	739.500	740.000	739.375	741.250	740.000	740.900	742.750	741.625	741.875
12	742.000	741.875	740.125	742.250	740.700	741.300	743.500	742.875	743.125
13	743.375	742.250	741.500	745.125	742.300	742.100	744.500	744.375	744.625
14	743.625	743.250	744.000	745.375	743.000	744.025	745.250	744.875	745.125
15	746.000	745.500	744.250	746.125	744.225	745.500	745.750	745.625	745.875
16	746.250	746.000	746.125	746.375	744.975	746.225	739.250	746.125	746.375

**E-Band Scan Plan (795.500 – 820.000 MHz)**

	Scan - 1	Scan - 2	Scan - 3	Scan - 4	Scan - 5	Scan - 6	Scan - 7	Scan - 8	Scan - 9
1	798.925	798.900	795.550	798.250	795.825	796.000	796.500	795.500	795.750
2	800.525	799.475	796.775	799.200	796.950	796.700	796.900	796.000	796.250
3	801.475	801.425	797.050	799.900	797.500	797.100	797.700	796.750	797.000
4	803.025	802.025	797.750	802.825	798.600	800.775	797.250	797.500	797.500
5	803.550	803.075	806.850	803.350	802.425	806.300	806.100	798.250	798.500
6	804.825	803.625	807.400	808.900	809.325	807.000	806.500	798.750	799.000
7	805.150	806.925	811.100	809.725	810.425	810.775	810.225	799.500	799.750
8	811.700	809.125	811.725	811.350	811.250	812.700	810.975	800.000	800.250
9	812.825	811.575	813.050	812.100	811.825	813.500	812.500	809.150	809.400
10	813.125	813.300	813.800	812.575	813.500	813.900	813.700	809.650	809.900
11	816.625	815.425	799.400	800.900	813.900	800.975	798.100	810.400	810.650
12	817.175	816.525	808.650	796.100	797.900	802.775	800.025	810.900	811.150
13	817.425	817.100	813.300	801.725	806.600	808.225	813.300	811.900	812.150
14	817.975	817.925	798.875	804.575	807.575	800.225	817.500	812.400	812.650
15	819.050	818.225	804.825	807.200	808.050	808.975	818.225	813.150	813.400
16	819.600	819.025	809.475	807.900	812.950	810.025	816.975	813.650	813.900

**I-Band Scan Plan (482.000 – 507.000 MHz)**

	Scan - 1	Scan - 2	Scan - 3	Scan - 4	Scan - 5	Scan - 6	Scan - 7	Scan - 8	Scan - 9
1	482.100	482.225	482.225	488.125	482.025	482.225	482.500	482.000	482.250
2	482.350	482.475	482.475	488.375	482.775	482.975	483.250	482.500	482.750
3	483.100	483.225	483.225	488.875	484.000	484.500	483.500	483.750	484.000
4	483.350	483.475	483.475	489.125	484.700	485.300	484.250	485.250	485.500
5	484.850	484.975	484.975	490.375	486.300	485.700	486.750	485.750	486.000
6	486.850	486.975	486.975	490.625	487.000	486.500	487.250	486.500	486.750
7	487.100	487.225	487.225	491.125	488.225	488.025	489.750	487.000	487.250
8	488.100	488.225	494.150	491.375	488.975	488.775	495.500	494.800	495.050
9	501.000	500.875	497.275	502.650	498.025	498.225	497.250	499.625	499.875
10	502.000	501.875	497.775	502.900	498.775	500.500	499.750	501.625	501.875
11	502.250	502.125	498.025	503.400	500.000	500.900	500.250	502.125	502.375
12	504.250								

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## Warranty

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### **U.S. Two-Year Limited Warranty**

This product and selected Audio-Technica brand products purchased in the U.S.A. from an authorized Audio-Technica (A.T.U.S.) dealer are warranted for two years from date of purchase by A.T.U.S. to be free of defects in materials and workmanship. To identify those products, go to [www.audio-technica.com/usawarranties](http://www.audio-technica.com/usawarranties). In event of a defect, End-User's exclusive remedy is at A.T.U.S.' election, the cost of repair, refund of the purchase price in the form of credit or cash, or replacement of the product. The product must be delivered to A.T.U.S. or an Authorized Service Center, prepaid, together with the sales slip or other proof of purchase date. This warranty excludes defects due to normal wear, abuse, shipping damage, or failure to use product in accordance with instructions. This warranty is void in the event of unauthorized repair or modification, or removal or defacing of the product labeling.

For U.S. service return instructions and procedure please go to:  
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Outside the U.S.A., please contact your local dealer for warranty details.

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