

# Professional UHF Wireless Systems

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**ATW-A54P** UHF Powered Dipole Antennas, 541-567 MHz

**ATW-A64P** UHF Powered Dipole Antennas, 655-681 MHz

## *Installation and Operation*

# UHF Powered Dipole Antennas

## Installation and Operation



**Warning:** To prevent fire or shock hazard, do not expose this appliance to rain or moisture.  
**Attention:** Pour prévenir feu ou choc électrique, ne pas exposer l'appareil à la pluie ou à l'humidité.

**CAUTION!** The circuits and wiring inside the antennas are adjusted for optimum performance. Do not attempt to alter circuitry or wiring to affect output. To do so will void the warranty and may cause improper operation or system degradation.

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!** To prevent electrical shock and possible damage to the antenna, use caution when connecting 12V power from the receiver or antenna distribution system.

### Introduction

Audio-Technica ATW-A54P and ATW-A64P powered dipole antennas provide effective and reliable signal pickup for UHF wireless systems. Supplied in pairs, these antennas are intended to improve performance of diversity wireless receiving systems with dual antenna inputs.

Designed for temporary or permanent installation, these antennas are powered by 12 volts DC provided on the antenna cable by the associated receiver or antenna distribution system. Power is required for antenna operation; an indicator on each housing lights when power is applied. An internal gain-setting switch permits selection of +10 or +4 dB operation, to compensate for cable losses or other operating conditions.

The ATW-A54P and ATW-A64P are designed for particular UHF frequency bands:

ATW-A54P: 541-567 MHz (TV channels 25-30)

ATW-A64P: 655-681 MHz (TV channels 44-49)

The ATW-A54P and ATW-A64P are designed for interior use. Do not install them outdoors, or where condensation or extremely high humidity is present. Both models permit several means of mounting for temporary use or permanent installation. Included AT8667 brackets with BNC connectors and  $\frac{5}{8}$ "-27 threaded mounts permit convenient use with conventional microphone stands or other  $\frac{5}{8}$ "-27 threaded fixtures. The antennas may also be permanently secured directly to walls or other vertical structures, or they may be attached to single-gang electrical boxes. The RF cables may be totally hidden by exiting behind the antenna housings, or they may exit through an opening at the bottom of each housing to be routed along the wall or mounting structure.

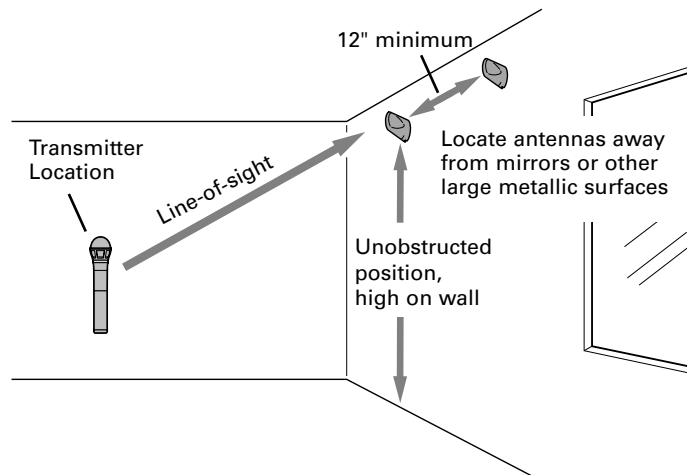
Audio-Technica offers several optional RF extension cables: A 12' (3.6 m) RG58-type, plus 25', 50' and 100' (7.6, 15.2 and 30.5 m) RG8-type cables. All have BNC-to-BNC connectors.

### Antenna Location & Orientation

For best operation, the antennas should be mounted on a line-of-sight to the most likely location(s) of the transmitter, while also considering the shortest length of cable required to reach the receiver. Usually this means placing the antennas well up on a wall, above head height, and above the level at which they might be hit or obstructed. The two antenna housings should be mounted at the same height, oriented vertically, and with at least 12" (30 cm) between them (Fig. A). As much as possible, keep the antennas away from noise sources such as digital equipment, motors and neon lights, as well as away from large metal objects.

When determining a location for a permanent installation, it is often a good idea to try the selected location temporarily with the wireless system (and any other RF or computer equipment) in full operation to confirm optimum system performance.

Fig. A



## Antenna Mounting

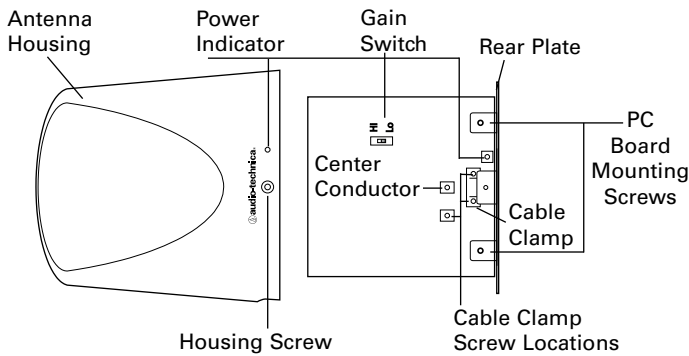
The attractive molded housings are easily removable for installation or adjustment. Simply remove the two silver-color screws located at the rear of each housing and gently pull the housing forward, away from the black metal rear plate (Fig. B).

For portable or temporary use, install the included AT8667 brackets with BNC connectors and  $\frac{5}{8}$ "-27 threaded mounts. Attach each bracket to an antenna using two small, black machine screws (included). Direct the screws from **inside** the antenna's rear plate through the inner pair of small holes, and screw them into the tapped holes in the bracket. Prepare the free ends of the short cables as shown in Figure C.

For permanent installation, the antennas may be attached to a wall or other vertical support with appropriate fasteners. They also may be mounted to a single-gang electrical box, via the outer pair of small holes on the rear plate (using #6-32 screws, not included). When installing, position the units so the gain switches and screw terminals face to the **right**.

The PC board may be removed for safety or convenience while installing the metal rear plate, if desired. Simply remove the two screws indicated in Figure B. When re-mounting the PC board, note that the board goes on the "outside" of the rear plate's mounting ears.

**Fig. B**



## Internal Connections

### Cable Selection

Screw-terminal connections in the antennas are designed for use with RG58-type or RG8-type RF transmission cables, or with Asian RF cable types 3D or 5D. Make certain the cable selected is intended for UHF operation and has a full braided copper shield, not just a metalized foil shield. For runs of 25' (8 m) or more, a low-loss cable such as RG8 should be used.

### Cable Stripping

**RG58:** Observing the dimensions in Figure C, remove a section of the outer jacket and a portion of the inner coax insulation, being careful not to cut or nick the shield or center wires (C1).

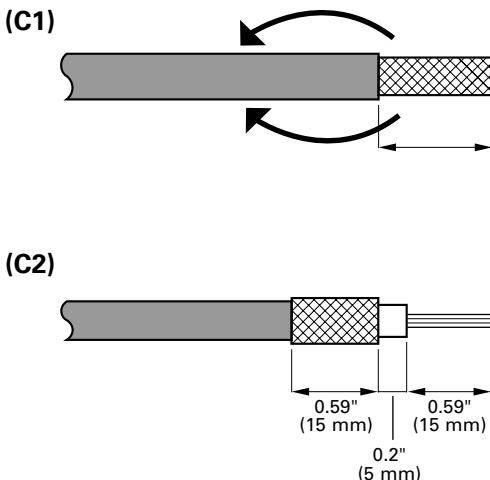
Note: If the cable jacket's outer diameter is less than  $\frac{7}{32}$ " (0.21", 5.3 mm), wrap the jacket with electrical tape to build up its diameter before folding back the braid over the jacket (C2). Trim the shield wires to  $\frac{9}{16}$ " (15 mm).

**RG8:** When using RG8-type cable, more jacket material needs to be removed and partially replaced with shrink tubing. When installing the tubing, heat the tubing and cable only enough to shrink the tubing. Allow the cable to cool fully before manipulating it further. The drawings in Figures D and E are actual-size; the shrink-tubing indications show the actual length of pieces to be cut, and their correct placement on the cable. Cut the required pieces from the included shrink tubing.

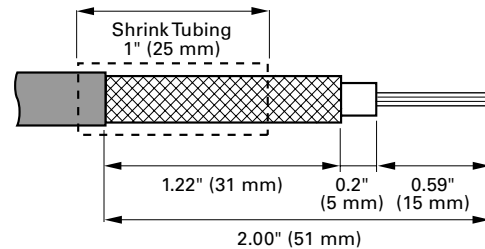
**RG8 / Rear exit:** When connecting antennas from the rear, follow the cable-stripping dimensions in Figure D. Then install a 1"-long (25 mm) piece of shrink tubing as indicated. Remove the cable clamp and carefully insert the cable end into position through the rear plate.

**RG8 / Bottom exit:** When connecting antennas through the opening in the antenna housing, follow the cable-stripping dimensions in Figure E. Then install a 2.5"-long (63 mm) piece of shrink tubing as indicated. Remove the cable clamp and carefully position the cable to exit at the bottom edge of the rear plate. The end of the cable's jacket must be located about  $\frac{1}{4}$ " (6 mm) beyond the end of the rear plate to clear the bottom of the housing. Then secure the clamp and center conductor.

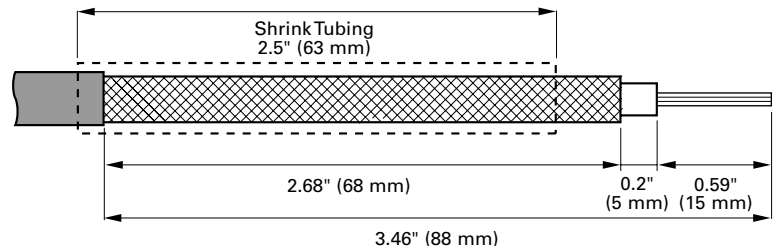
**Fig. C RG58, 3D, 5D Cables**



**Fig. D RG8 Cable - Rear Exit**



**Fig. E RG8 Cable - Bottom Exit**



## Cable Connections

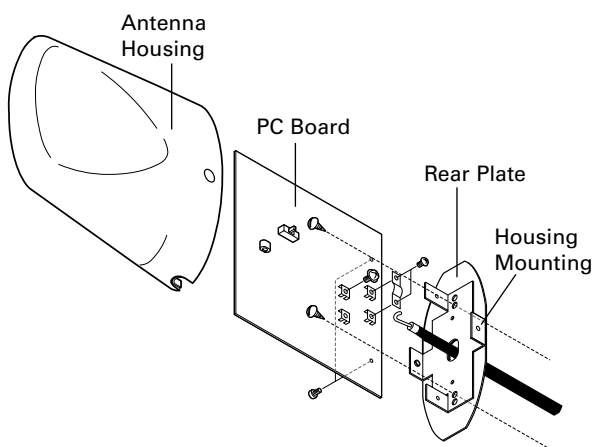
Refer to Figure F (cable rear exit) or Figure G (bottom exit) for connecting positions. When using a screwdriver on the antenna terminals, always support the PC board.

**Center Conductor:** Wrap the center conductor(s) clockwise around its screw and tighten snugly. (If using RG8, it is good practice to bend its center conductors using pliers, not force them around the screw terminal.)

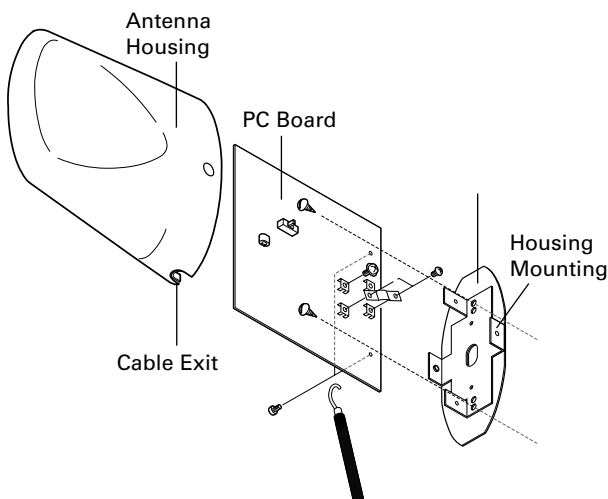
**Shield:** It's most effective to remove the cable clamp entirely, properly position the shield portion of the cable, and then carefully reinstall the cable clamp over the shield. Make certain that the shield (and cable) are firmly clamped, and that no shield wires are loose or touching the center conductor.

Especially when using RG8 or other large, stiff cable, it's a good idea to provide some form of clamping of the cable near the antenna's cable entrance for strain relief.

**Fig. F Rear Cable Exit**



**Fig. G Bottom Cable Exit**



## Setting Gain

The gain switch on the PC board is intended only to compensate for signal lost in the antenna cable. Using "extra" gain is not necessarily better! Observe the following chart for proper gain switch setting:

Gain Setting	RG58-Type Cable	RG8-Type Cable
Hi (+10 dB)	20-50' (6-15 m)	50-150' (15-50 m)
Lo (+4 dB)	Up to 20' (6 m)	Up to 50' (15 m)

Both antennas in a diversity system should be set to the same gain position. Other than setting the gain switches, do not make any adjustments to the circuitry.

After stripping the cables, making cable connections and setting gain, replace the antenna housings. When re-installing the housing, be careful to avoid hitting the clear plastic "light pipe" for the LED power indicator. Once the housings are secured with the silver screws, connect the antenna cables to the diversity receiver or antenna distribution system and turn on the system. Then check for power indications at the antennas and proper operation of the overall wireless system.

## Specifications

Antenna Type	Half-wavelength dipole with RF amplifier
Operating Frequencies	ATW-A54P 541-567 MHz ATW-A64P 655-681 MHz
Output Impedance	50 ohms
Nominal Amplifier Gain	+10 dB (Hi), +4 dB (Lo), switch selected
Power Required	+12V DC on RF cable center conductor, 14 mA per antenna
Dimensions	2.44" (62 mm) W x 5.51" (140 mm) H x 5.91" (150 mm) D
Weight	9.7 oz (275 g) each
Accessories Furnished	2 AT8667 mounting brackets; shrink tubing (for use with RG8-type cable); 4 each of wood screws, 3.0 mm and 3.5 mm machine screws

