AT100

Ultrasonic Transmitter

Hardware Manual
Version 1.1

How to contact us

Binary Acoustic Technology is a web-based business.

Web: www.binaryacoustictech.com
E-Mail : info@binaryacoustictech.com

Before proceeding, please read this:

WARNING: Binary Acoustic Technologies ultrasonic transmitters use transducer technology that has low efficiency in the audible frequency range. Even though these transmitters appear to be operating at low volume levels, they are actually transmitting high level ultrasonic signals at up to 110dB SPL. Do not put the transmitter near your ears. Prolonged exposure to high-level ultrasonic emissions may cause permanent damage or hearing loss.

Chapter 1 : Installation

1.1 : What you should have received

The AT100 package includes one AT100 Ultrasonic Transmitter, one Device Driver CD-ROM, one GTools$_{tm}$ Software CD and this manual. The Driver CD-ROM contains the device driver software distribution for all of Binary Acoustic Technologies ultrasonic receiver and transmitter products, and the GTools CD contains the GTools software distribution (see the GTools Manual for further information).

1.2 : Minimum system requirements

The AT100 is not a stand-alone device. It functions as a high performance computer peripheral. To operate the AT100 you will need a handtop, laptop, or desktop computer that meets the following minimum requirements:

1.2GHz Pentium M processor or equivalent
256Mbytes RAM
High-speed USB 2.0 port
Windows XP/Vista/7
GTools$_{tm}$ software

Please note that GTools$_{tm}$ software is required to operate the AT100. A GTools software license is granted to each original person or organization to purchase an AT100 directly from Binary Acoustic Technology.

Chapter 2 : Installing Device Drivers

2.1 : Plug and Play Installation

All Binary Acoustic Technologies acoustic and ultrasonic receiver and transmitter products are shipped with a device driver CD-ROM. Please retain these even after installation.

The drivers are based on the "Plug and Play" model. To install a device driver you must first connect the product to the computer using the high-speed USB 2.0 port. If an existing device driver can be found, no action will occur and the product is ready to use. Otherwise, an installation wizard will appear instructing you to place the Driver CD-ROM into the CD drive. When you have finished loading the CD-ROM. Enable the wizard to search the CD-ROM and it will automatically install the correct device driver.

If the device drivers do not load automatically, follow the steps outlined in the next section, Updating Device Drivers.
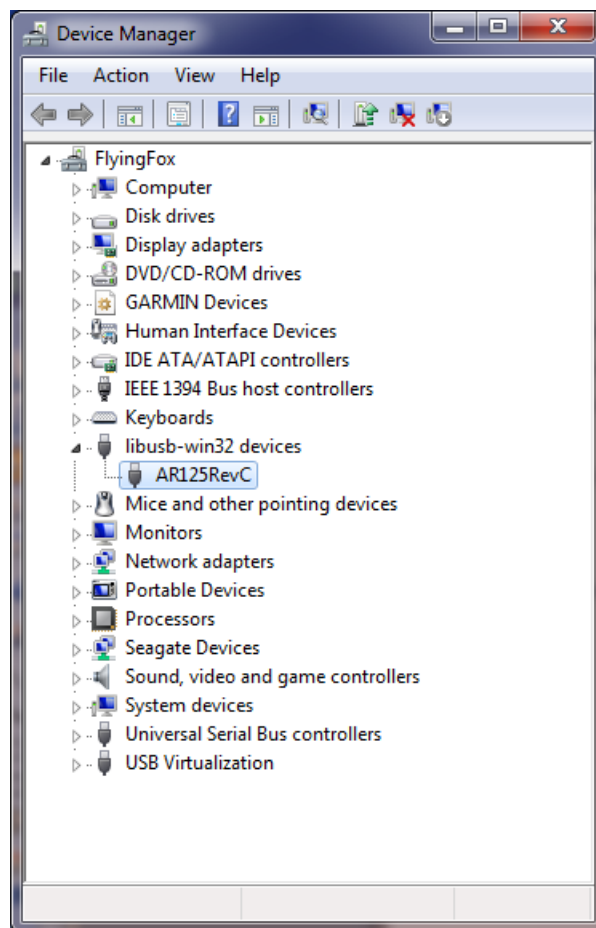
2.2 : Updating Device Drivers

GTools version 1.7 supports new Windows 64-bit operating system drivers. Use the Windows device manager to update the device drivers:

1) Click on Start=>Control Panel=>System and Security.
2) Find and click on "Device Manager".

This will bring up the device manager as shown on the next page.

Plug the AT100 into the computer and then find the AT125 entry on the Device Manager window. There are three places that it can appear. First, if no drivers are currently loaded on the computer then it will appear under "Other Devices". Second, if the original drivers are installed then it will appear under "Universal Serial Bus Controllers". Third, if 64-bit drivers are installed then it will appear under libusb-win32 devices.

To update the drivers, right-click on the AT125 entry and select "update driver software…". Insert the GTools CD and browse for the "AT Installer" directory. Click Next to update the drivers.

2.3 : Using USB extender cables

USB extender cables can be used to increase the cable length up to eighty feet. All binary acoustic technology receivers require USB 2.0 compliant active extender cables.

The recommended procedure for connecting extended cabling is to add only one extender cable at a time starting at the computer and only connect the receiver after all the extenders have been connected. Note: in certain circumstances the driver may need to be reloaded when using extension cables. In this case, an installation wizard will appear. Follow the directions as per section 2.1.

Chapter 3 : AT100 Operation

3.1 : Connecting to computer

Connecting the AT100 to a computer requires a standard
USB peripheral cable. This is usually specified as a USB
2.0 A to B cable. These cables come in standard lengths of
6, 10 and 16 feet.

To connect the AT100, insert the A end of the cable into one
of the computers USB 2.0 ports and then insert the B end of
the cable into the USB 2.0 port on the AT100. The first
time you plug an AT100 into a computer, the Window's
plug and play system will ask you to install the device driv-
ers. See section 2.1 for more details.

Figure 1 : AT100 Rear Panel

3.2 : Powering the AT100

The AT100 is primarily designed to be powered from the USB 2.0 cable. It draws the maximum power that the USB specification allows (2.5 Watts). Thus, only one AT100 can be connected per hub, unless a special externally powered hub is used.

The AT100 draws 2.5 Watts of power and can operated, drawing power directly from a handtop or laptop computer, with a slight reduction in computer battery life. This alleviates the need to carry around additional batteries or power sources to run the device.

In some cases an external power source is desired. The AT100 provides an power connector to accept a 9 Volt external power source. See figure 1. However, please make note of the marked polarity requirements of the external source and the potential to damage the device.

CAUTION: powering the AT100 through the external power jack with the wrong polarity and/or wrong voltage WILL damage the unit.

If unsure, please contact the factory for assistance. We will be glad to help.

3.3 : AT100 camera mount thread

The AT100 includes a 1/4-20 mounting thread that is built into the bottom of the enclosure. This allows the transmitter to mount directly on a camera tripod or similar device.

Chapter 4 : Transducer

4.1 : Transducer care

The transducer is robust and intended for outdoor use. Proper care will insure longer life.

Transducer cleaning: Do NOT spray solvents or cleaners directly into the transducer. To clean the outside, spray cleaner (alcohol recommended) on a clean cloth and then gently swipe over the outside of the element. To clean the inside of the element we recommending using "Dust-off" or similar aerosol spray. Do NOT spray directly into the sensor. Instead, spray across the element and NOT at full force.

AT100 transducers can be replaced by installing a new front panel. We recommend sending damaged AT100 units back to the factory for all repairs.
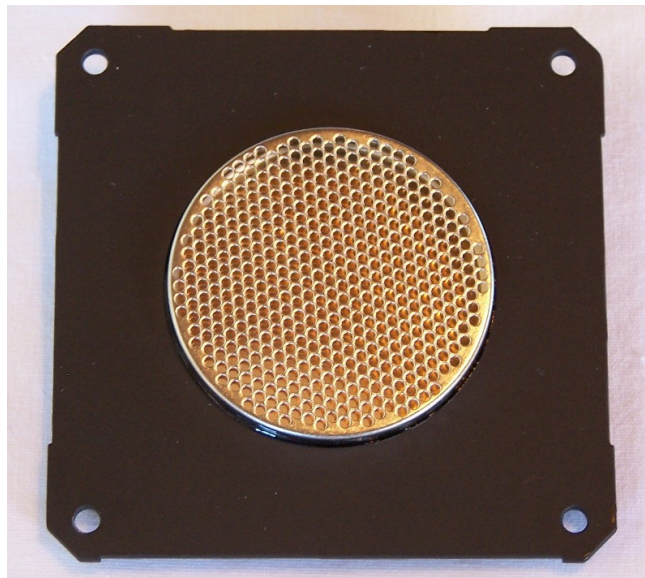
Figure 2 : AT100 Front Panel

Chapter 5 : Accessories

5.1 : Rain Guard

The AT100 is weather tolerant but not weather proof. The Rain Guard is a weather protection enclosure that enables unattended operation in light to moderate rain conditions. The rain guard is light weight ABS plastic and it can be mounted on a standard camera tripod.

The AT100 transmitter is mounted inside the rain guard and it is pointed down at a 45 degree angle to protect the transducer. The transducer is aimed down at a Plexiglas acoustic reflector. This effectively operates as if the transmitter were actually pointed up at a 45 degree angle (with respect to the reflector) and it allows the AT100 to transmit upwards even in bad weather conditions.

Figure 3 : Rain Guard