

ACOUSTIC RELEASE SYSTEM SPECIFICATIONS:

AR-50-AA:

Acoustic release using fast electrolytic erosion of metal for the release.

Multipath interference resistant by use of:

- Single frequency sent at any one time.
- Pulses spaced at least 1.0 seconds to permit echo die out before the next pulse.
- Suppression frequency spectrum transmitted to block echoes, noise, and interference.
- Long pulses used (20 ms or greater) for ample energy integration time.

Reception frequency bands:

Detection frequency set in phase locked loop 35714 Hz +/- 3%, FM.

Reception sensitivity: 1.5 micro volt rms with a 3000 ohm driving impedance for a logic level solid transition. (-27 dB relative to one micro bar.)

Reply frequency for very low power pings:

Single reply frequency 38462 Hz +/- 1%, FR.

Acoustic output: 10 milliwatt (151.5 dB relative to 1 micro Pascal at 1 meter).

Command reception: Seven pulses accurately time spaced preceded by a wake-up/synchronization 2.5 sec steady signal all on frequency FM and each pulse preceded by suppression frequency FS.

600 foot maximum depth

100 lb. max. rated release load capability

Main housing made from 1.25 inch nominal schedule 40 and schedule 80 PVC pipe (1.667 inch OD), an end cap, a coupling and a battery access solid PVC end plug using a double O-ring seal.

Total length 22.5 inches. Weight 2.5 pounds, approx. one pound in water.

Accepts link LK-xx. (See web site or below for more information).

Powered by a single 13.5 VDC internal battery pack made from 9 lithium Energizer L91 size AA cells (BAT-50-AA-L91). As an alternate alkaline AA cells can be used but with significantly less performance (about one third the life and number of releases and poor

low temperature operation and much shorter shelf life).

Battery current in listening mode is less than 220 micro amps.

Accepts BAT-50-AA-L91 battery pack and requires soldering two wires for replacement.

Unit is reverse battery protected.

Unit output is short circuit proof.

All unit external contacts are electrostatic discharge resistant and have passed a test during design checkout of 30 kV from a 25 pF capacitor..

ARI-50:

Acoustic release interrogator (for use with AR-50-AA).

Command transmission: Seven pulses accurately time spaced preceded by a wake-up/synchronization 2.5 sec steady signal all on frequency FM and each pulse preceded by suppression transmission on frequency FS.

Main frequency (FM): 35,714 Hz +/- 0.1% used for one 2.5 sec transmission followed by seven precisely timed 20 ms pulses used to convey the ID and action.

Suppress frequency spectrum (FS): 31,250 Hz +/- 0.1% 20 ms rapid pulse used to generate the suppress frequency spectrum.

Acoustic output: 10 watt (181.5 dB relative to 1 micro Pascal at 1 meter).

Power requirements: 12 volt 5 amp DC supply (user supplied gel cell or equivalent).

Interrogator typical operation steps:

Step 1: Unit identification number selected using Increase/Decrease keys.

Step 2: Action selected from sub menu using Next/Accept keys.

Step 3: Start transmission of command picked from main menu using Next/Accept keys.

TD-50:

Transducer for the ARI-50 interrogator. Made from a piezoelectric cylinder 1.0 inch OD by 0.5 inch high by 0.115 inch thick walls. Full electrostatic shield. Normally supplied on a 50 foot cable with a BNC connector. It can be modeled with a 4.7 nF capacitor and a 3000 ohm resistor in parallel. Its in circuit electrical 'Q' is about four making the tuning of the resonant transformer that drives it not critical.

BAT-50-AA-L91:

Battery pack for use with the AR-50-AA acoustic release. This battery pack is made by wiring nine Energizer L91 lithium AA size cells in series using welded contacts or a special factory verified soldering technique. Battery pack includes a spine, internal rubber spacers and shrink tubing to hold all the cells in place. Battery pack characteristics include 13.0 volts sustained under load, 3000 mA-Hr, 15 year shelf life (90% of rated capacity, 21 deg C), excellent low temperature operation, high current handling capability, superior to alkaline in most every way. Meets transportation requirements of 49CFR 173.185 (b) and IATA special provisions A45. Red wire = positive, black wire = negative.

The battery pack can be tested before connection into the acoustic release by using a 270 ohm 1 watt temporary test load and measuring the voltage with an accurate voltmeter. A new battery pack should measure > 13.5 volts. A pack at mid life nominally measures 13.0 volts. A near expired pack nominally measures < 12.2 volts. This test does not absolutely guarantee that the battery pack is good but it is a worth while test that might catch a bad battery pack at this pre-installation stage.

For more information on these lithium batteries see <http://data.energizer.com> and type in L91 for product number.

BTL-50-AA:

Battery test load used for system checkout. This is installed in place of a release link. It has a black wire with 'coil' contact clip that must be connected to the 'coil' water contact. It both turns the AR-50-AA underwater acoustic release unit on, puts a 270 ohm battery test load on the unit, has a red LED that indicates release voltage present but doesn't turn on if the batteries are below 7 volts (very low batteries). Its brightness increases for batteries above 7 volts. It has an exposed stainless steel wire used for connecting to the positive lead of a voltmeter. The negative voltmeter lead goes to the 'coil' water contact. With this voltmeter connection the battery voltage under this load can be measured during system checkout in air.

LK-xx:

Release link for AR-50-AA. One use only. Load to be on-axis. Eroding strength members are two pieces metal wire configured as a hoop. See web site or below for more information on the various links.