

ACOUSTIC RELEASE SYSTEM SPECIFICATIONS:

AR-60-E:

Acoustic release using fast electrolytic erosion of stainless steel for the release.

Multi-path 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 (one detector for each of the three):

Main signal band 35714 Hz +/- 3% (center 1/28 us) FM.

Lower inhibit band 33333 Hz +/- 3% (lower 1/30 us) FS.

Upper inhibit band 38462 Hz +/- 3% (upper 1/26 us) FR.

Reception sensitivity: 0.5 micro volt rms with a 3000 ohm driving impedance for a logic level solid transition. (-37 dB relative to one micro bar.)

Reply frequency for pinging mode, transponder mode, and all other replies:

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

Acoustic output: 1 watt (171.5 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.

Depth rating: 1000 ft maximum (1500 ft design)

Load: 260 lb. max. rated release load capability limited further by the specific release link used.

Housing material: Made from 2 inch nominal schedule 80 PVC pipe (2.375 inch OD).

Total length: 31 inches (79 cm).

Weight: 4.8 pounds (2.2 kg) in air; near neutral in water.

Links: Accepts link LKH-162, link LKH-262, link LKH-172-NI, or link LKH-202-NI.

Batteries: Are held inside the unit with a special holder, BH-60L. See below.

Battery drain in listening mode: 200 micro amps typical, 220 micro amps maximum.

Battery drain in release mode: up to 1.5 amp during link erosion.

Battery life: At least 1.5 year plus one release. See specific release link (LKH-xxx) for more information.

Battery reverse polarity: Unit is reverse polarity protected via a series diode.

Electro static discharge: Each of the four unit external contacts are electrostatic discharge resistant and have passed a test during design checkout of 30 kV from a 25 pF capacitor.

ARI-60:

Acoustic release interrogator (topside box) for use with AR-60-E.

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): 35714 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): 33333 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).

Reception frequency bands (one detector for each of the three):

Reply signal band 38462 Hz +/- 3% (center 1/26 us) FR.

Lower inhibit band 35714 Hz +/- 3% (lower 1/28 us) FM.

Upper inhibit band 41667 Hz +/- 3% (upper 1/24 us) FI.

Reception sensitivity: 0.5 micro volt rms with a 3000 ohm driving impedance for a logic level solid transition. (-37 dB relative to one micro bar.)

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-60:

Transducer for the ARI-60 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.

BH-60L:

Battery holder for AR-60-E acoustic release. Uses plastic battery holders with a 2 amp diode wired across each 'AA' battery to permit continued battery pack function in the event of a one, two, three, or even four cell or cell contact failure. Holds 12 'AA' size cells. Either alkaline or lithium (Energizer L91) 'AA' cells can be used. With lithium batteries cold water operation is superior and can expect about three times the useful energy to be supplied. With alkaline's the release erosion time can be much longer. Note that if the user happens to insert any one cell backwards the respective diode (plus a resistor in series with it) will get hot and the backwards battery will discharge fast. Accordingly, after battery insertion check for any hot components on the battery holder before insertion back into the housing.

LKH-xxx:

Release links for AR-60-E. One use only. On-axis load. Eroding strength members are four pieces of stainless steel 316L wire configured as two hoops. These stainless steel links are not recommended for long deployments where calcareous critter induced crevice corrosion is a possibility. See data sheet attached below or on web site.

LKH-xxx-NI:

Release links for AR-60-E. One use only. On-axis load. Eroding strength members are four pieces of high nickel content metal wire configured as two hoops. Note: If erosion takes longer than 15 minutes it will be necessary to send the release command a second time to finish the erosion. (The AR-60-E applies the erosion voltage for 15 to 16 minutes upon receipt of the release command). These high Ni content links are recommended for long deployments where calcareous critter induced crevice corrosion is a possibility. See data sheet attached below or on web site.