

BL-700 User Manual

The BL700 is a 700 khz Survey Grade Single beam Echo sounder and is the best choice for shallow water bathymetric surveys up to 50 meters (165 ft) deep. We specifically designed this echo sounder as a low cost addition to our BathyCat survey catamaran.

Equipment Supplied

- bl700 Transducer in Stainless housing with 5/8-11 thread
- Data output Cable
- Li-ion Battery with Charger
- USB flash drive with software & manuals
- Hard Case



Switching the System On Simply plug in the power leads and the transducer will start to ping, it must be in water to give a depth. Testing in a small bucket is fine but realize the depths will be incorrect from the shallowness and noise.

Note: The transducer comes with a Cap for protection remove this before use.

Data Collection The BathyLogger outputs the Universal NMEA DBT format. Most data collection software made today recognize this format. Hypack, Field Magnet, SurvCE, Access, Survey Controller, Terra Sync, Leica, Hydro Magic Etc. Please visit the support page on the bathylogger.com website to find the specific setup guide for your application.

Baud Rate: 9800, 8, none, 1, none

Example of NMEA output data format

\$SDDBT,1.38,f,0.42,M,0.23,F*3B

\$SDDBT NMEA designation

1.38,f depth in feet

0.42,M depth in meters

.23,F depth in Fathoms

USB Only version BL700. Very simple to use, insert the USB into any windows based PC the driver should load. You can check in Device Manager > Com Ports. " FTDI" . You are ready to Transfer Data.

DB9 version BL700 gives you three ways to connect. RS232, USB and the optional Bluetooth module. If you are using a Windows PC platform use the RS232 or the USB adaptor included. Data collectors will benefit from the Bluetooth Module.

Bluetooth The optional Bluetooth module for the DB9 output model is simple plug and play. No need to add external power. Use Codes 1234 or 0000 to Pair to your device.

Battery Charging

1. Charge the battery fully before each use and on long remote surveys bring a spare
2. The battery must be in "**ON**" position during charging. After its full you can turn it off until you are ready to survey. 4 hours of charge is all that is needed.
3. Some Chargers won't turn green when charged. Do not leave the battery on charge for days or weeks, this will result in fried Cells.

Transducer Maintenance Avoid scratching the bottom of the transducer and also don't use chemical cleaners. Always rinse Boat mount kit , transducer and cable after use especially when used in salt water environment. Avoid getting the USB and Charge ends wet.

Always support the front of the bathycat while its out of the water, This will keep the transducer from contacting the surface.



BathyLogger Software From our USB Flash drive, load our bl700 Kogger App software onto your PC.

1. insert USB into PC, open Device manager and determine what port was given.
2. Open the bl700 Kogger software choose baud rate 9600 , hit play. The 2D Enhanced settings screen below will open.

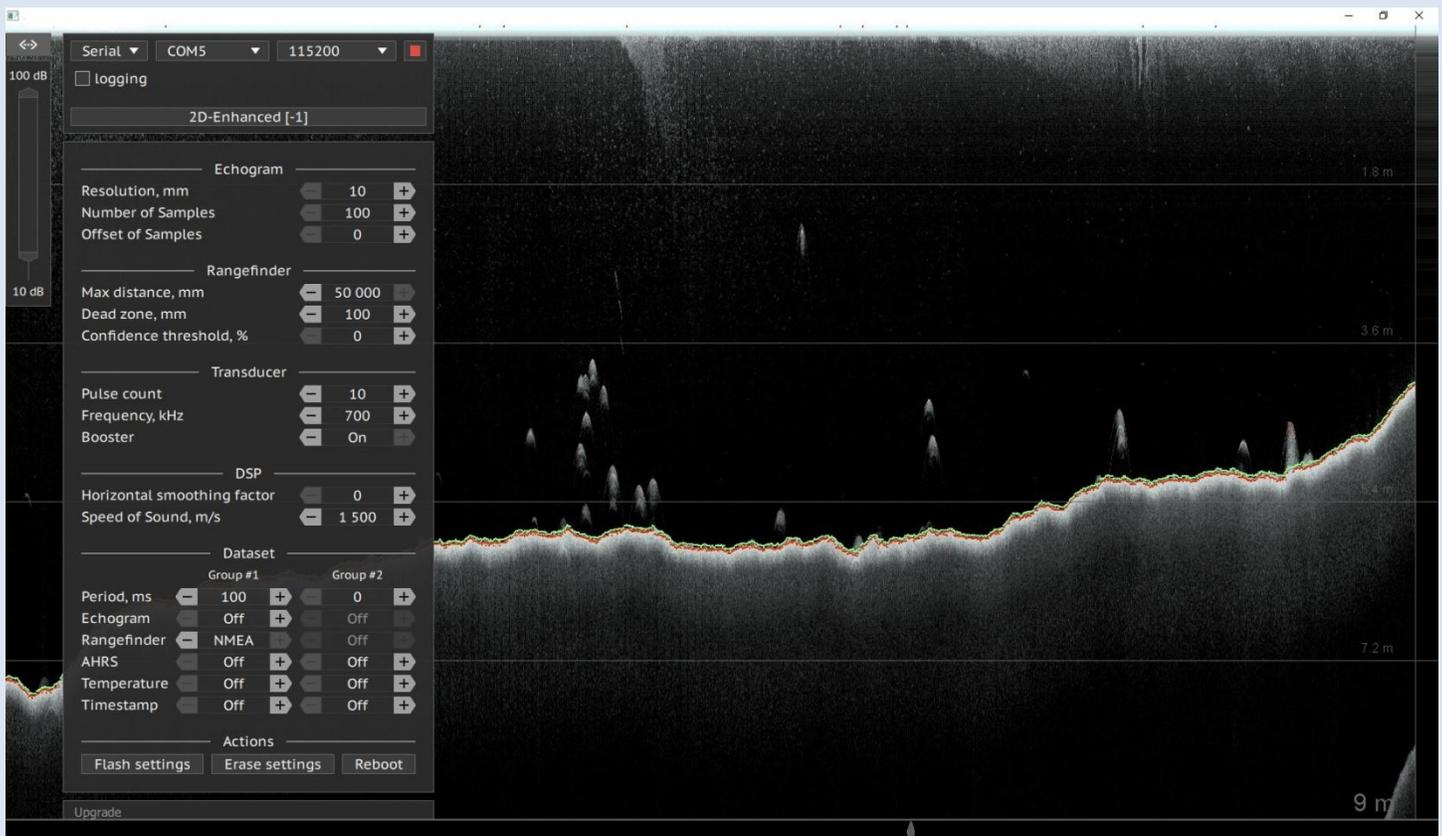
You can adjust many parameters on this screen. The parameters in the figure below are the standard settings. You will typically ONLY change the Sound Velocity and the Pulse Count.

If you make any changes you must hit Flash settings to save them. Close the program and reopen to ensure the changes were made.

Hypack or Hydromagic on a PC: 5 to 10 pulse count is standard

Survey Data Collectors: 2 to 5 pulse count is standard (TSC3,TSC7, Carson etc)

IMPORTANT: *Disconnect from this software after you make your changes.*



Bar checking Bar checking is calibrating the system for the sound velocity of the water you will survey in. There are normally three methods of doing this but we have found that in shallow water (100m or less) using the third option, Thermometer and a Sound Velocity Table is plenty accurate.

1. A digital bar check (example Odom Digibar Pro).
2. Building a bar check consisting of a flat, large base at a fixed distance from the transducer.
3. For shallow water print out the sound velocity tables on the flash drive included to set your BathyLogger to the desired setting. To do this you would get a water temperature from mid water column and refer to proper sound velocity table for fresh or salt water. Please call if you have further questions. Using the sea bed distance for calibration is not acceptable; this should only be used for rough check.

Note: Certain Jobs will spec a SVP is used.

Hydromagic > Preferences > devices

Note: the bl700 is set to 9600 Baud rate - NOT 4800 shown

The image shows two screenshots of software configuration windows. The left window is titled "Select Device" and contains a table with three columns: Driver, Filename, and Version. The right window is titled "Configure NMEA0183 Channel" and contains several configuration sections.

Driver	Filename	Version
AML Plugin for Hydromagic	AML.dll	8.2.64.81206
CEE HydroSystems CEESCOPE plugin	Ceescope.dll	8.2.64.81206
ELAC Hydrostar LAZ4300 Echosounder Plugin	LAZ4300.dll	8.2.64.81206
ELAC LAZ4100 Echosounder Plugin	LAZ4100.dll	8.2.64.81206
Echologger Plugin for Hydromagic	EchoLogger.dll	8.2.64.81206
Geodimeter Total Station Plugin	Geodimeter.dll	8.2.64.81206
HydroBall Plugin for Hydromagic	HydroBall.dll	8.2.64.81206
Hydromagic AIS plugin	AIS.dll	8.2.64.81206
Hydromagic Generic Echosounder Plugin	GenericSounder.dll	8.2.64.81206
Hydromagic Generic Sound Velocity Probe Plugin	GenericSoundVelocity.dll	8.2.64.81206
Hydromagic Generic Tide Plugin	GenericTide.dll	8.2.64.81206
Hydromagic Manual Tide Plugin	TideMan.dll	8.2.64.81206
Hydromagic NMEA0183 Playback Plugin	Playback.dll	8.2.64.81206
Hydromagic NMEA0183 plugin #1	nmea0001.dll	8.2.64.81206
Hydromagic NMEA0183 plugin #2	nmea0002.dll	8.2.64.81206
Hydromagic NMEA0183 plugin #3	nmea0003.dll	8.2.64.81206
Hydromagic NMEA0183 plugin #4	nmea0004.dll	8.2.64.81206
Hydromagic Simulator Plugin	Simulator.dll	8.2.64.81206
InnerSpace 44R Plugin for Hydromagic	InnerSpace44R.dll	8.2.64.81206

The "Configure NMEA0183 Channel" window has the following settings:

- Connection Type: Serial
- Serial Port: Serial COM4
- Serial Speed: 4800
- Serial Format: N-8-1
- NMEA0183 Settings: TalkerID: (empty), Sentences: Select sentences...
- Advanced: Latency: 0 ms

Read This Section

Mounting and Surveying Tips

- Mount the pole kit straight and adjust once personnel are seated. This will ensure you are getting the depth below the boat.
- The bottom of the transducer should be just lower than the boat draft. If it is just a few inches under returning soundings could be reflected off the hull.
- A motion sensor is not needed unless you are offshore in swells.
- Try and mount over the side to avoid aeration from the motor.
- When using a RTK GPS you may take a rod height offset and enter that into the data collector. Most GPS field software today will apply this depth below transducer to the rod offset and you will log bottom elevation in real time. Most Land Surveyors compare this to doing a continuous topo on a quad
- Others may just measure the draft from the transducer bottom to the water surface. This will depend on the GPS you are using and the software you are collecting data in.

Single beam echo sounder Survey FYI

Typically survey boat speed is 1 m/s and you would work in a back and forth pattern across the shortest distance. (similar to the lines on a football field), line spacing will be determined by how large the area is and how much detail you need. I usually survey some additional lines in the perpendicular direction from the original lines. This ties the lines together and creates a more accurate finished product. Ping rate or soundings /second is also a factor you can adjust that with our Bathylgger software.

As the surveyor you control the amount of points you log. In the Hydrographic community using Hypack or Hydromagic we are used to collecting a lot of points. The Land Surveyors are not typically used to this and space soundings out quite a bit. River crossings may not require a lot of points, but pre and post dredging and bridge scouring surveys it would be beneficial to have dense data to create an accurate map of the bottom.

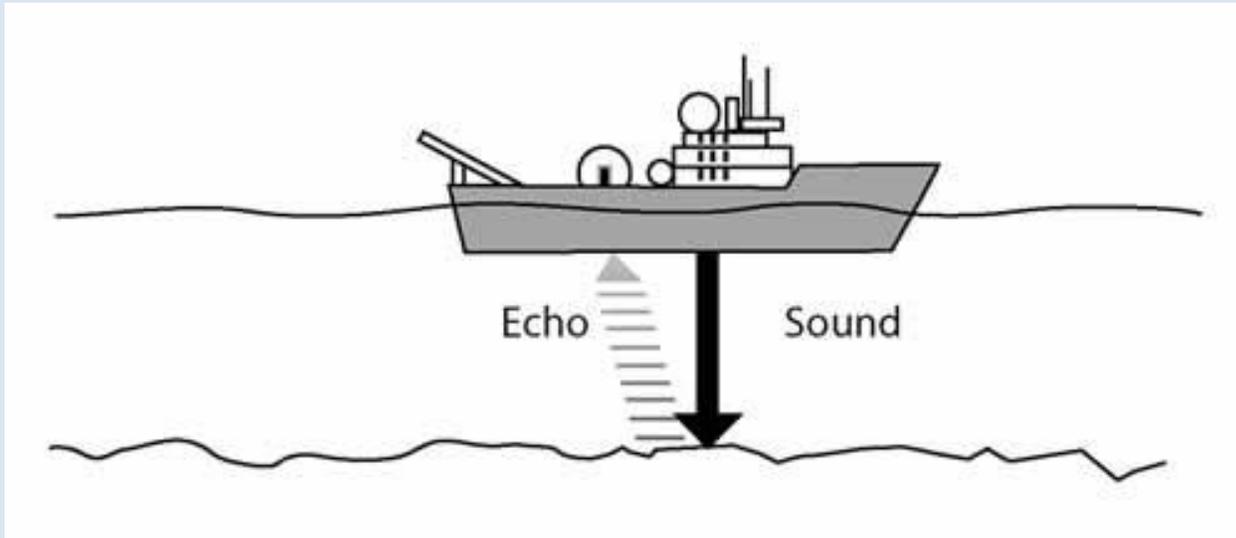
When you get around 1.3 feet (.39m) of water depth you may experience what's called double or triple returns. The sounding will appear deeper. All 200Khz transducers will do this, just keep that in mind. Shorelines should be done with a rod.

Vegetation can give echo sounders problems. If its thick enough it will give false readings or zero depth readings. Despite popular belief, a dual beam is not the answer as you will also get bottom penetration readings and not actual seabed with a low 30Khz transducer. Options are use a rod in these areas or wait until after winter while the vegetation is dead.

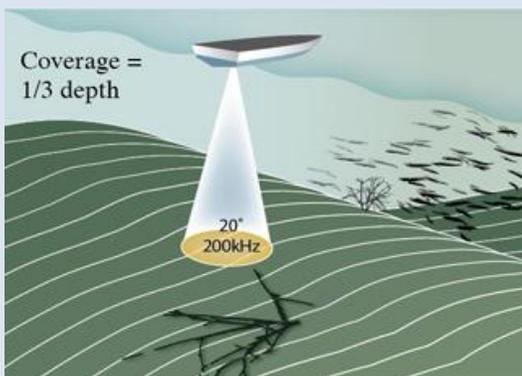
The sonar cone is 9 degrees and would look like a upside down ice cream cone. If the transducer is close to a seawall , piling , dock etc. it will take the first and nearest return which may not be the seafloor.

Sonar FYI

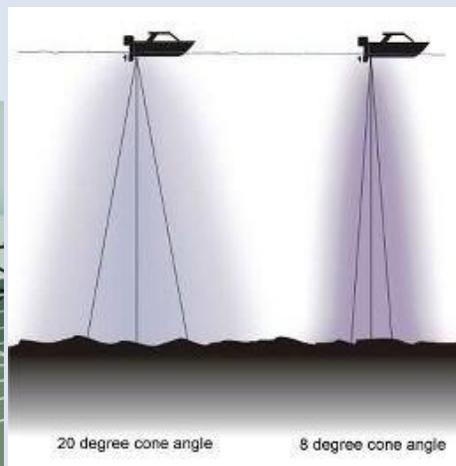
Echo Sounding Sonar uses the time interval between a series of soundings and echos for several purposes like range finding (survey), fish finding or imaging. The bathy logger is a single beam, single frequency 200 kHz echo sounder made for conducting survey grade bathymetric (Hydrographic) surveys. Over 90% of bathymetric surveys in the world are still done with single beam echo sounders. Survey Echo sounders have a narrower beam (cone) and can not see fish in the water column. We just want to track the bottom and interpret the returns for accuracy unlike a fish finder. In pic two you can see the difference of the beam angle.



The sonar cone is similar to a upside down ice cream cone. An echo sounder will take the first return it gets within this cone, so slight movement of the cone won't affect getting the first return directly below the boat. Typically survey's are conducted as slow as possible 2-4 mph and working the survey back and forth similar to the lines on a football field. Also going in the perpendicular direction will form a grid and really tie the survey in nicely.



Example Sonar Cone



Example of beam width