BL-230 User Manual

The BathyLogger BL230 Dual Frequency single beam echo sounder and was designed to be the most portable survey grade dual freq. echo sounder in the world and also the easiest to use. What is a Dual Frequency Single Beam Echo sounder? Its like have 2 separate single beams in one package. The High Frequency 200kHz transducer is best for up to 100m depth and the Low Frequency (more powerful) 30kHz transducer is best for the deeper 100m-200m of water depth. Another application is using a Dual Freq. echo sounder to determine a hard or soft bottom, by monitoring the depth spread between the 2 frequencies. High 200 kHz will give top layer, the Low 30 kHz will penetrate soft bottom. Dredgers like to know this.

Equipment Supplied

- BL230 - 200 kHz / 30 kHz Transducer with Power/ DB9 Data cable
- Li-ion Battery and Charger
- Transducer Mounting Bracket
- 5x - 12" Heavy Duty Survey poles
- Waterproof rugged Case
- flash usb manual
- 1 year Limited Warranty on Parts and Labor

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. The Dual Frequency unit may have trouble getting bottom track.

DB9 A RS232 9 pin connector is attached to the Data cable. You use this when attaching to the PC to calibrate the Sound Velocity and also ping rate. also this is used to output data to your data

collector. Why only hardwire and no bluetooth? Over many years of support and use, I feel to cut out any latency issues customers had from time to time, was to go hard wired. For this reason I made the BL-200-30 a hard cable setup. The GPS would go bluetooth as usual.

Data Collection The BathyLogger outputs the Universal Dual Frequency NMEA SDXDR format some data collection software made today recognize this format. Leica and Trimble have a driver for Dual frequency and of course Hypack, , Hydro Magic , Quinsy etc all would have a driver.

Use the setup guides for your collection software. You will find these on your flash drive or from the website under the Support Tab.

Example of NMEA output data format

$SDXDR,D,0.80,M,XDHI,D,0.93,M,XDLO,C,19.01,C,WTHI*7C

$SDXDR	NMEA designation
0.80,M,	Hi Freq. depth in meters
0.93,M,	Low Freq. depth in meters

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.

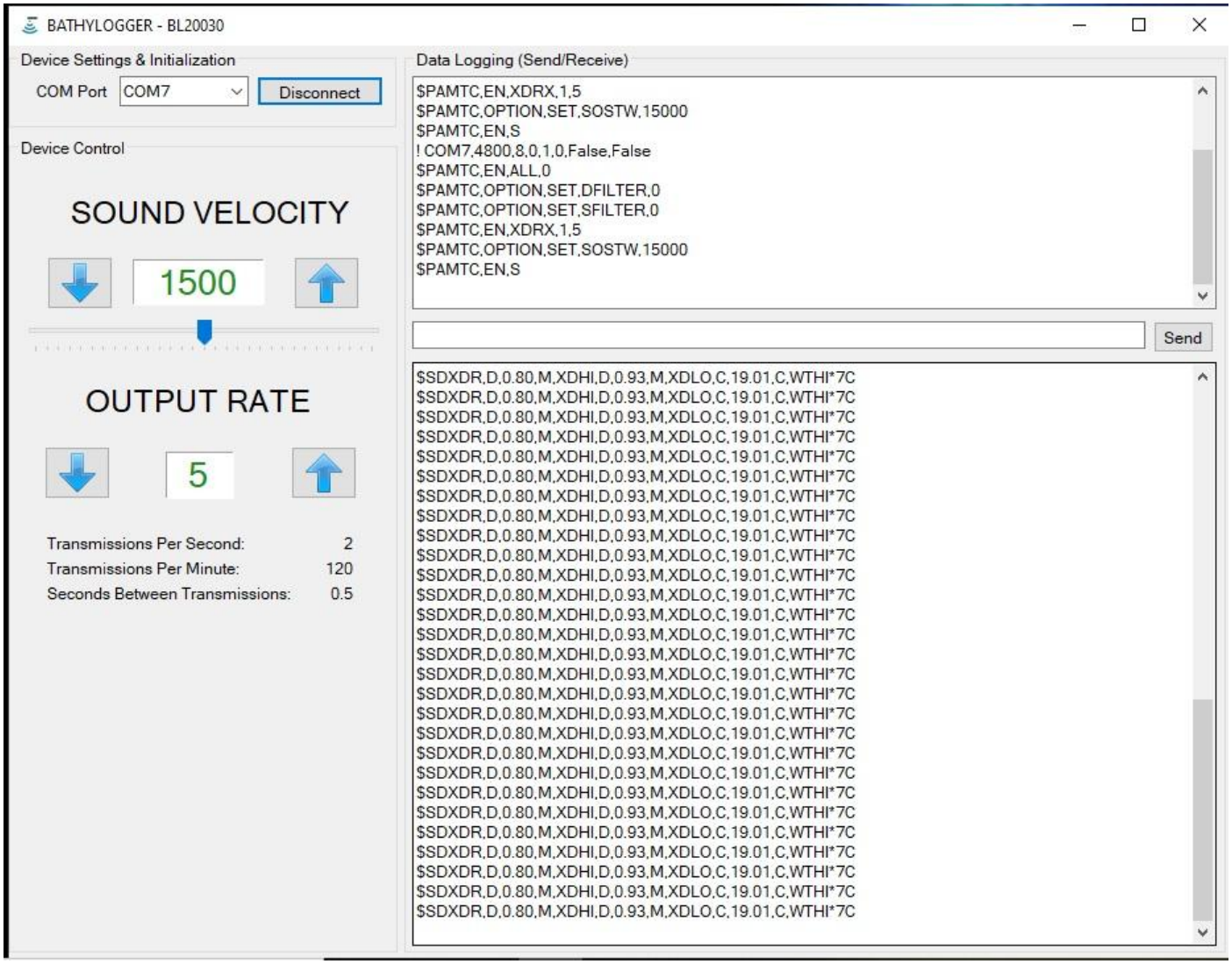
3. For shallow water print out the sound velocity tables on the flash drive included to set your BathyLogger to the desired setting. To do this you would get a water temperature from mid water column and refer to proper sound velocity table for fresh or salt water. Please call if you have further questions. 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.

Battery Charging Charge the battery fully before each use and on long, remote surveys bring a spare **IMPORTANT**: *The battery must be in "on" position during charging.* After its full you can turn it off until you are ready to survey. Never leave batteries on charge for more than 8 hours.

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.

BathyLogger Software Load our BathyLogger 20030 setup software onto your PC. You can adjust the sound velocity here as well as the output rate. Depending on the type of survey or software used you can choose between 1 sounding /sec up to 10 soundings /sec. In Hypack or hydromagic most guys would go max 10/sec, but if your logging in a data collector 2hz is most common. The lower windows shows your output data string. Note the output rate is below the setting arrows next to "Transmissions per Second"


BATHYLOGGER - BL20030
Device Settings & Initialization
COM Port
COM7
Disconnect
Device Control
SOUND VELOCITY
1500
OUTPUT RATE
5
Transmissions Per Second: 2
Transmissions Per Minute: 120
Seconds Between Transmissions: 0.5
Data Logging (Send/Receive)
$PAMTC,EN,XDRX,1,5
$PAMTC,OPTION,SET,SOSTW,15000
$PAMTC,EN,S
! COM7,4800,8,0,1,0,False,False
$PAMTC,EN,ALL,0
$PAMTC,OPTION,SET,DFILTER,0
$PAMTC,OPTION,SET,SFILTER,0
$PAMTC,EN,XDRX,1,5
$PAMTC,OPTION,SET,SOSTW,15000
$PAMTC,EN,S
Send
$SDXDR,D,0.80,M,XDHI,D,0.93,M,XDLO,C,19.01,C,WTHI*7C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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 then the boat draft. If it is just a few inches under returning soundings could be reflected off the hull.

- position the transducer to move streamlined through the water not sideways.

-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 Bathylogger 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.

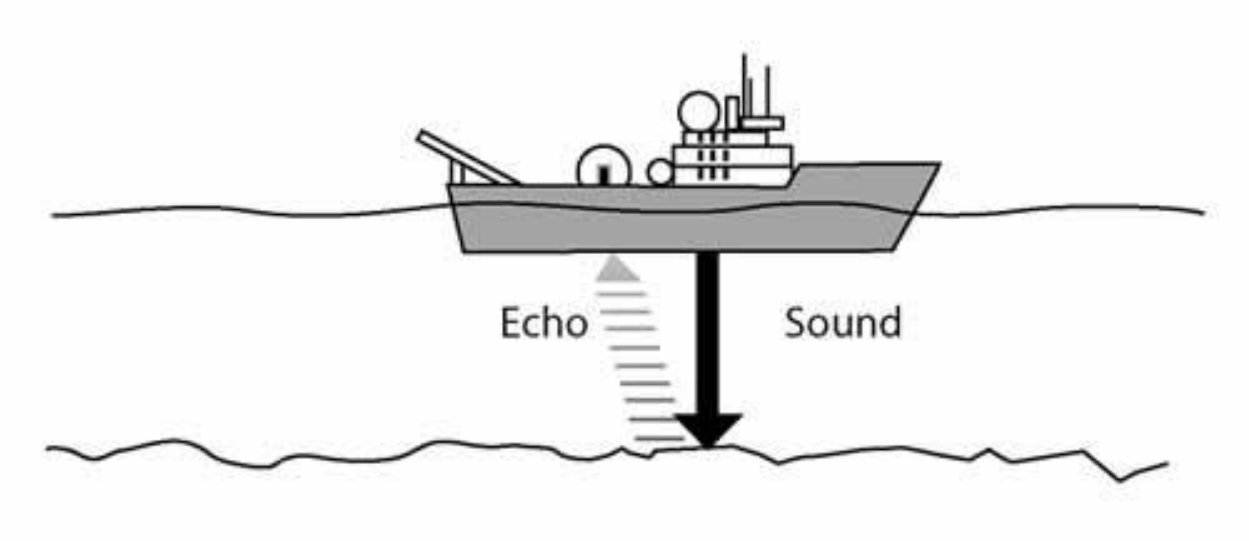
When you get around 1.3 feet (.39m) of water depth you may experience what's called double or triple returns. The sounding will appear deeper. All 200Khz transducers will do this, just keep that in mind. Shorelines should be done with a rod.

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.

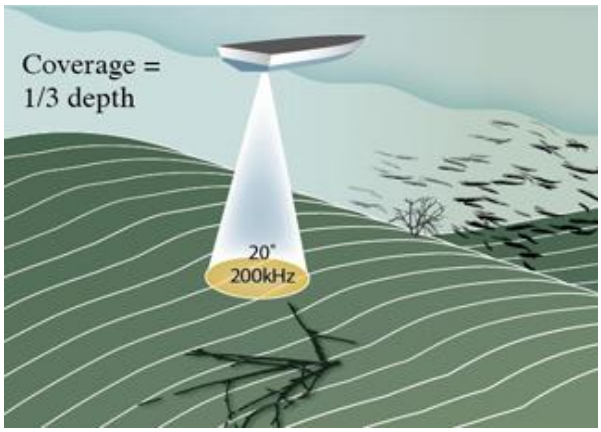
The sonar cone is 9 degrees and would look like a upside down ice cream cone. If the transducer is close to a seawall , piling , dock etc. it will take the first and nearest return which may not be the seafloor.

Sonar FYI

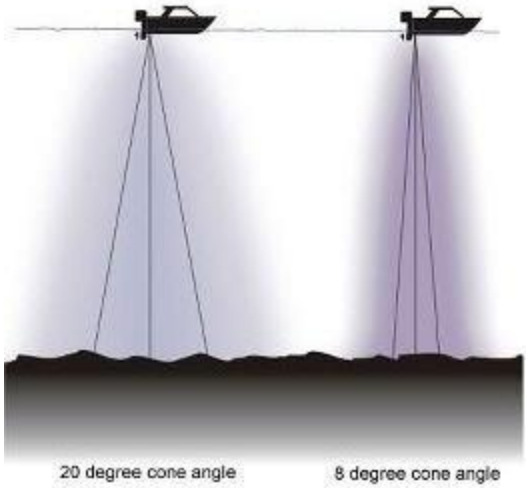
Echo Sounding Sonar uses the time interval between a series of soundings and echos for several purposes like range finding (survey) , fish finding or imaging. The bathy logger is a single beam , single frequency 200 kHz echo sounder made for conducting survey grade bathymetric (Hydrographic) surveys. 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 wont 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