



Bathy-2010PC Quick Reference Guide

About This Guide – This guide is a useful tool for the inexperienced operator to be able to power-up and run the system in a manner that will provide good subbottom data and a depth output under most conditions. Users of the Bathy-2010PC should read over the entire Operations Manual to have a better working knowledge of the entire system and all its features.

System Overview - The Bathy-2010PC system consists of a Bathy 2010PC electronics unit containing, two 2kw Transmitters, and Sonar Processor Unit. It is designed to provide the user Deep-water depth Bathymetry and CHIRP Sub-bottom Profiling.

B2010P System Start Up -

- Start the pc containing the host software. The host software runs on Windows XP/Vista/ and Windows 7 (*Note: Please carefully follow the instructions on the installation CD when installing the host software on a Windows 7 platform*). Once the system pc/server is booted, you are now ready to run the Bathy-2010PC application.
- Power up the Bathy 2010PC via the front panel power switch.
- The Bathy 2010PC Sonar Unit power is provided from the C00199 AC adaptor cable provided, or the optional P04412-2 DC power cable.
- Start up the Bathy-2010PC host application by double clicking the Icon on the Windows Desktop. During start up via the Sensor Status window located on the left side of the screen about 1/3 from the bottom. Once the status window indicates a “SENSOR:IDLE” message, you are now ready to start pinging and operate the system.

System Frequency Selection – The Bathy-2010PC can be ordered with single or multiple frequency selections. After purchase any changes would need to be performed at the factory for additional cost. For most applications, the B2010PC operates using a single center frequency. For users with single frequency systems, there is NO frequency selection so this step can be eliminated. For multi frequency systems, users should select the correct frequency for the desired application as shown below.



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There are many B2010PC system variants as required by our customers but most of the applications make use of some combination of the following transducers/frequencies:

- 3.5KHz/TR109 Array – Sub-bottom applications for shallow, mid, and deep water.
- 10KHz/Stratabox Transducer – Sub-bottom applications for shallow water.
- 12KHz/ 12KHz Transducer – Bathymetry for mid and deep ocean applications.
- 33KHz -> 210KHz Transducers – Bathymetry for shallow and mid water applications.

Operation Mode Selection – There are two modes of operation for the B2010 systems: FM CHIRP mode and CW mode. The Operation Mode is selected under “Configure Acquisition Parameters” using the “EDIT” menu.

- **FM CHIRP Mode** - For most applications, the B2010P should operate using only FM CHIRP mode. Sub-bottom profiling application results are almost always best in FM CHIRP mode. The only exception is for shallow water applications at low frequencies where the CHIRP processing is difficult due to Pulse Length limitations. For users with 3.5KHz systems and TR109 transducers, the 20m and 10m ranges will show artifacts due to the limits of the signal processing. For these ranges it may be best to use CW mode even for Sub-bottom profiling.
- **CW Mode** – CW or Energy Detection mode can be used for shallow and mid depth bathymetry applications. It is also best in very shallow water sub-bottom profiling applications due to the limitations of pulse length for FM CHIRP processing.

Data Acquisition – Now the user is ready to start collecting data with the B2010 system. In shallow water applications (< 40 meters), MANUAL mode is best, in deeper water (> 40 meters) either AUTO ALL or MANUAL mode may be used depending on the needs of the user.

- Depress AUTO ALL if Depth > 40 meters. For < 40 meters select the 40 meter **Range**, set the **Power Level** (Configure Acquisition Parameters) to -12dB, set the **ChX Gain** to 9dB and set the **BT Gain** to 0.0 dB/m.
- Start the B2010 system pinging by toggling the GREEN transducer icon located on the toolbar. The RED transducer icon will stop pinging. The system status window will indicate that you are pinging.



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- To verify system operation view the Amplitude display on the right side of the Normal Display window to check for the bottom echo return. It will be a large amplitude spike after the transmit energy (at the top of the display).
- From the “FILE” menu select “Start Recording” to make sure that the data collected is stored in both ODC and SEG Y file formats.
- When an End of Line or appropriate time is reached to end the file recording, select “Stop Recording” from the “FILE” menu.
- To stop the B2010 system from pinging, toggle the RED Transducer icon and verify that the system status window indicates “Idle”.
- If the bottom echo return is in less than 40 meters of water, the AUTO ALL mode may not provide the optimum sub-bottom presentation. In less than 40 meters of water the system should be used in MANUAL mode.

NOTE: AUTO ALL will work under most conditions, however for many sub-bottom applications MANUAL mode is preferred. See below for more information on Manual Mode operation.

Manual Mode Operation - To operate in Manual Mode you generally need to manipulate the following three parameters in the order they are listed below:

- **RANGE** (available to select on the main sonar screen)
- **TRANSMIT POWER** (access “Configure Acquisition Parameters” under the “EDIT” drop-down menu.
- **Ch1 GAIN** (available to select on the main sonar screen)

The first parameter you should select is RANGE. If you have a general idea what the depth is (from charts etc.) than you can select an appropriate RANGE based on that value. If not then referencing Table 1 below, scroll through the various RANGES and select the appropriate TRANSMIT POWER and GAIN levels.

NOTE: All references to GAIN are ‘Ch 1-Gain’, not ‘BT Gain’. BT Gain is used primarily as a science function. BT Gain can be left in the 0.0dB/m position. Consult the Operation Manual for details.

Tip: In heavy seas higher TRANSMIT POWER levels may be required.

RANGE	3.5khz	
	Transmit Power (dB)	Gain (dB)
40m	-12, -6	3 -21
80m	-12, -6	6 - 24
150m	-6	6 - 24



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300m	0	10 – 30
500m	0	10 – 30
750m	0	10 – 30
1000m	0	15 – 35
2000m	0	15 – 35
5000m	0	18 – 38
12000m	0	21 – 42

Table 1 – Transmit Power/Gain values FM mode in Meters

Shallow Water Issues – Shallow water operation offers the most common and challenging application for use of the B2010 system. Since the B2010 systems are operating at low frequencies and high energy levels to accomplish the purpose of sub-bottom penetration, there are 2 operation considerations that need to be evaluated in shallow water: Transmit Pulse Reverberation and FM mode correlation issues.

- **Transmit Pulse Reverberation** – Transmit reverberation can result in the Depth digitizer effectively locking on the transmit pulse in some instances. To remedy this issue the “Configure Gate Limits” box is available under the “EDIT” menu. It allows the user to select to the minimum and maximum limits on which the Bathy 2010P will look for a valid bottom return. *(Example in 8 meters of water minimum gate limit set to 6m and maximum set to 39m)* * Note the gate limits work in manual mode only.
- **FM Mode Correlation** – In the 20m and 10m ranges there are issues with the FM correlation processing that may produce a “scalloping” effect on the acoustic data due to low frequencies, short pulse lengths, and correlation sampling limits. When this effect is noticeable, the user can select the 40m or 80m range and utilize the BOTTOM ZOOM feature with a 10 or 20m ZOOM RANGE. As an option, the user can also select CW mode of operation with the shallow 10m/20m ranges and possibly achieve better results utilizing the very short pulse lengths that CW mode provides.

Tips for subbottom profiling in shallow water (<40m)

- Manual mode of operation is required if the highest quality data is desired. Before starting, the user should observe that on the system display along the right side just inside of the RANGE SCALE bar is the AMPLITUDE display. The highest quality data is obtained when the initial bottom returns are just to the point of a maximum level when referencing the AMPLITUDE display, however at the point where the bottom return causes a “flattening out” on the peaks shown in the



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AMPLITUDE display then the data is now saturated and data quality is diminished. When this happens system TRANSMIT POWER and/or GAIN needs to be decreased.

- TRANSMIT POWER should be kept in the -18dB to -6dB range where the highest level you can use without data saturation will provide the best penetration. GAIN should be kept as low as possible in shallow water in order to minimize transducer ringing. Start your survey with 0dB GAIN and slowly increment until you just start to get a valid depth then either stop or go a little more. You can then use TVG (or BT GAIN) again in small increments to accentuate the subbottom data. If your valid depths are somewhat intermittent than manual TVG can be used where you choose the starting point. *Note: TVG adjusted data is not stored in the record, it is just a visual aid to let you know that there is strata information there which can be pulled out later during data post-processing. Also note that when using third party software, most programs will easily allow you to add GAIN/TVG/FILTERS etc but if the data is already saturated (i.e. too much GAIN or TRANSMIT POWER), then the record is essentially “washed out”.* In some cases data obtained with the Bathy-2010PC that looks pretty plain will show distinct strata features after some post-processing.

Additional System Features – The system Operations Manual covers all features not included in this guide. The Operations Manual is available in .pdf format on the Bathy-2010P Installation CD. It is also accessible from the B2010P Operator Interface via the “HELP” tab on the tool bar.

END OF GUIDE