

# Model 4810

## Mini-Sweep Transceiver

The Ross Dolphin Mini-Sweep System is a complete, turnkey, Hydrographic survey system. It includes the Model 8810 Processor, which integrates a data logging, and processing computer with a DGPS receiver in one unit and the Model 4810 multi-channel Depth Sounder. The Model 4810 can also be connected via a serial port to a standard PC running hydrographic survey software (Hysweep) and GPS. Following are specifications for the Model 4810 Transceiver.



- **Simple Remote Key Pad control.**
- **Digital storage of sounding chart - 40GB Hard Drive**
- **SVGA Output** (Monitor optional)
- **Data logging software. (optional)**
- 12v DC or 115v AC.
- Interior use – multiple mounting options
- NMEA-0183 output.

Size – Varies

Weight - 17 lbs.

Temperature - operating 0° to 50° C  
- storage -25° to 75° C

Humidity - 0 to 95% RH

200 kHz Standard Configuration

Additional Frequency choices:

100 kHz      50 Khz

28 kHz      12 kHz

Custom frequencies are also available.

GENERAL. The depth sounder subsystem will be a PC compatible computer with the following minimum specifications:

1. A 850MHz Intel™ processor or better.
2. 512mb SDRAM.
3. One 16 channel (500 Ksamples/second) Analog to Digital converter(s). (Depends on number of channels)
4. A 40.0 Gbyte Hard drive or larger.
5. 2 USB ports
6. A rewritable CD-ROM drive.
7. External Video port.
8. External bi-directional Printer port.
9. PCI 10Base-T/100Base-TX Ethernet port.
10. Windows XP Pro.
11. The depth sounder subsystem is able to display a color sonogram on the system's display when the keyboard, mouse and display are switched to the sounder. It also has adjustable tracking gates for each depth channel that can continuously track a changing seabed without user input.

TRANSDUCER REQUIREMENTS. The Depth sounder subsystem operates at a frequency of 200kHz with up to 12 individual transducers. (Up to 16 transducers can be attached with the addition of an expander module) Transducer beam widths is 11 degrees at the -6db level.

INTERFACING. The Depth sounder subsystem outputs a custom NMEA 0183 string to Coastal Oceanographics "Hypack" software that is installed on the data logging computer. It is also capable of accepting annotation information from the software package. The depth sounder also outputs raw depths to the logging software in the computer subsystem. In addition it is capable of logging digital depths to its own drive(s).

DATA STORAGE AND DISPLAY. The depths are stored on media for future playback and printing. The depth sounder subsystem has one disk drive with removable media and a front panel USB connector for the storage and transfer of the data. The data storage devices are a CD/RW Drive and a USB memory stick. The CD/RW is used as an archive drive and the memory stick is used to transfer the depth data.

TIMING ACCURACY. The depth sounder subsystem is based on a crystal-controlled clock that is stable and accurate. The overall System depth accuracy is better than 1% of a depth range +/- 0.1. Absolute accuracy is a function of bottom type, bottom slope and transducer beam angle. A "Smart" echo detection algorithm is used to first determine that an echo has adequate echo strength to be digitized and then calculates the digitized depth from the leading edge of that same echo signal. This algorithm should reduce the type of errors, which are related to echo signal rise time.

SOUNDER SOFTWARE. The main task of the Smart Sweep software is to sample up to 12 channels of analog information at a rate of 50,000 samples per second for each channel. It then calculates the depth for each channel using the same algorithm used by the Ross SmartSounder, 875 and Ross Surveyor. The SmartSweep software is also responsible for recording the raw sounding data to the internal hard drive, displaying the data to the screen and responding to user commands.

The user can display the data in one of two ways. One is a scrolling window that displays each of depth channels in a different color, similar to a paper chart. The digitized depth of the reference channel is displayed in an information window to the right of the main data window. Because the Ross SmartSweep Software is a 32-bit windows program the user interacts with it by using pull down menus, dialog boxes and a toolbar. The following is a list of controls or features of the software:

- Controls to allow the user to playback recorded data.
- Controls to allow the user to manually record data files.
- Controls to allow the printing of recorded data files or print in real time.

- Dialog boxes to enter or change the following parameters: Tide or gauge, Draft, Speed of Sound, Blanking and sounder Units.
- Controls to change the sounder's depth range.
- Dialog box to enter different drafts or offsets for each depth channel.
- A bottom following gates and controls to change its parameters.
- A dialog box that aids in a bar check.
- Controls to display the toolbar and status bar.
- On line help.

ANNOTATION. The Depth sounder subsystem is capable of processing events and annotation generated by the data collection software.

HARDCOPY PRINT OUT. The Depth sounder subsystem has the ability to generate a hardcopy printout of the digitized echoes graphically in color or gray scale, in real time or post-survey. An external printer can be connected to the parallel port to accomplish this task.

## ***Physical***

Display:	Standard SVGA color monitor or optional 12" active TFT flat panel Hi Bright (not less than 900 Nits)
Operating Temperature:	32°F to 122°F (0°C to 50°C)
Storage Temperature:	-13°F to 167°F (-25°C to 75°C)
Humidity:	0% to 95% RH

### **Transceiver**

Transmitter output power:	750 watts (RMS)
Resolution:	0.06' (1.8cm) - Auto ranging on hardcopy output
Pulse length:	0.1msec or .5msec
Minimum Depth	200kHz - 1.5' (46cm) below transducer face.

### **Interfacing and Annotation**

Serial Ports	Two ports, 110 to 19,200 baud.
Digital Depth output:	Continuous, user selected interval or requested output using a custom NMEA-0183 sentence.
Compatibility:	HYPACK.
Printer port:	One standard parallel printer port.
Printer	Any HP/PCL-5 compatible color or laser printer.
Annotation:	Internally generated event marks at 1 minute to 10-minute intervals. Externally generated marks and 8 different annotation fields can be recorded and printed.
USB ports	Two type 2 USB
Data logging:	Logs digitized depth to text file, raw and heave corrected.

### **Controls**

Sound Velocity:	4800 ft/sec $\pm$ 25% (1463 m/sec $\pm$ 25%).
Draft:	1' (0.30m) to 100' (30m).
Gauge, Tide:	$\pm$ 100' ( $\pm$ 30m).
Auto range:	Bottom following 25' (8m) range window.
Additional Features:	Blanking and Bottom Following Gate. AGC and TVG functions.

For additional information, email contract [info@rosslaboratories.com](mailto:info@rosslaboratories.com) or phone (206) 324-3950.

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