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# SeaView

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## User's Manual



**Chetco Digital Instruments**

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SeaGauge™ is a trademark of Chetco Digital Instruments, Inc.

SeaSwitch™ is a trademark of Chetco Digital Instruments, Inc.

## **WARNING!**

**USE THIS UNIT ONLY AS AN AID TO MONITORING ENGINE PERFORMANCE INFORMATION.**

## **CAUTION**

When showing sensor data, this unit will only show information based on the sender used and its installed position.

The operating and storage temperature for your unit is from -4 degrees to +167 degrees Fahrenheit (-20 to +75 degrees Celsius). Extended storage temperatures higher or lower than specified will cause the liquid crystal display to fail. Neither this type of failure nor its consequences are covered by the warranty. For more information, consult the factory customer service department.

All features and specifications subject to change without notice.

Chetco Digital Instruments may find it necessary to change or end our policies, regulations, and special offers at any time. We reserve the right to do so without notice.

All screens in this manual are simulated.

## **NOTICE!**

Free software upgrades will be available on our website at [http:// www.seagauge.com](http://www.seagauge.com) as they are released. Please check our website periodically for these and other information as they become available.

Thank you for choosing Chetco Digital Instruments

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**Note:**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the factory customer service department for help.

## **SPECIFICATIONS**

Operating System: .....Windows XP and PocketPC 2003

Maximum Update Rate: ..... 2 per second

NMEA 2.0 Instrumentation Sentences \$IIXDR,A \$IIXDR,C \$IIXDR,D \$IIXDR,F  
\$IIXDR,G \$IIXDR,I \$IIXDR,P \$IIXDR,R \$IIXDR,S \$IIXDR,T \$IIXDR,U \$IIXDR,V,  
\$GPGLL, \$SDMTW, \$SDDBT, \$SDVLW, \$SDVHW

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# SeaView User's Manual

## **Introduction**

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### ***Welcome***

Thank you for purchasing a Chetco Digital Instruments product. SeaView™ is a software application utility that provides real-time display of NMEA 0183 instrumentation data on a Windows PC/Laptop to PocketPC 2003 PDA.. SeaView™ works with SeaGauge™ and SeaSwitch™ to provide a complete digital instrumentation solution.

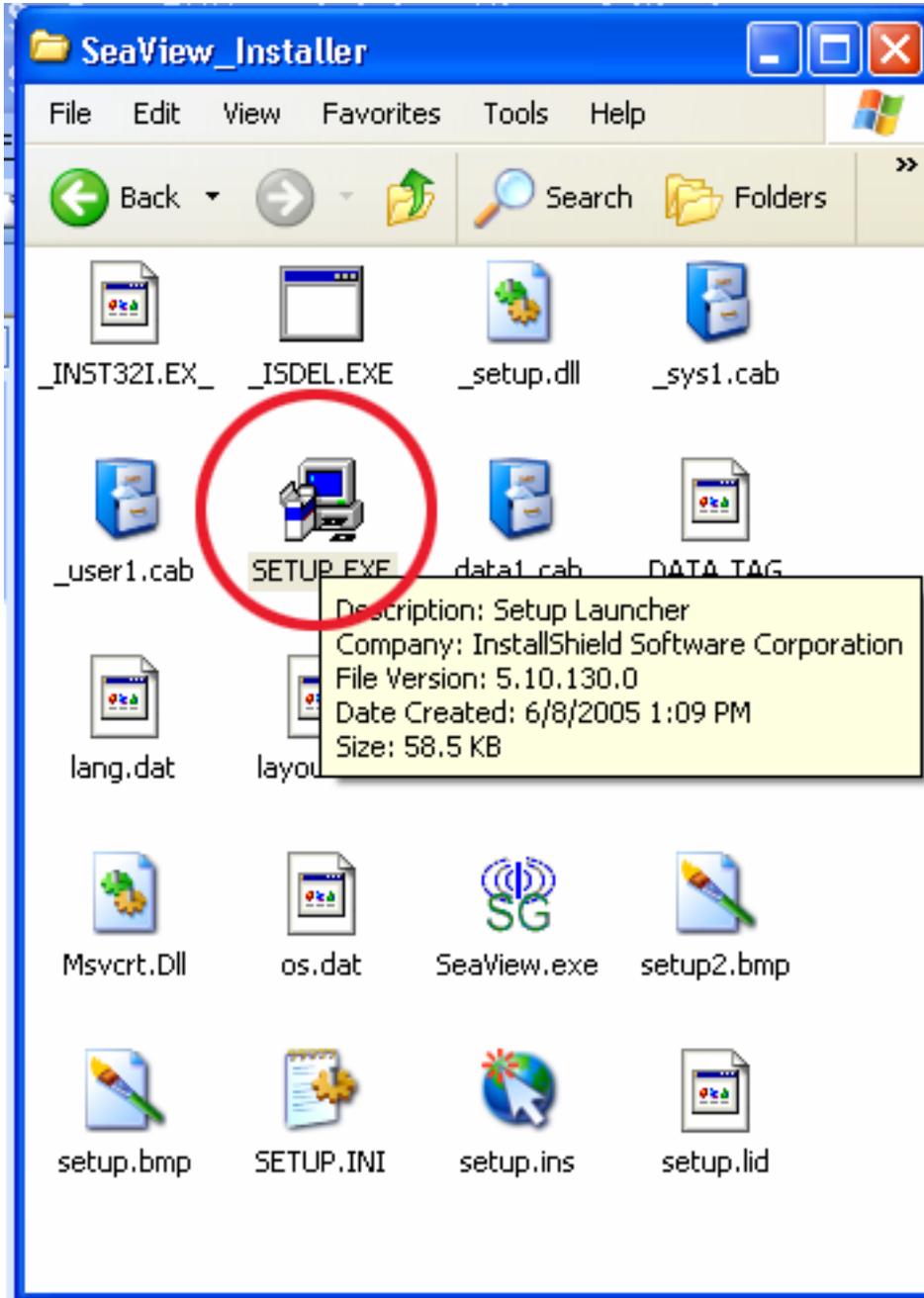
Once installed on your PC/Laptop or PDA, SeaView™ accepts NMEA 0183 data from built-in serial ports, parses the recognized sentences and displays the data in a real-time viewer window. Up to nine NMEA 0183 instrumentation sentences can be displayed at one time.

SeaView™ is available for both PC/Laptop and PocketPC 2003 PDA. While both platforms are similar, there are small differences in screen layout. This manual will describe both applications and explain the differences where necessary.

# Installation

## PC/Laptop

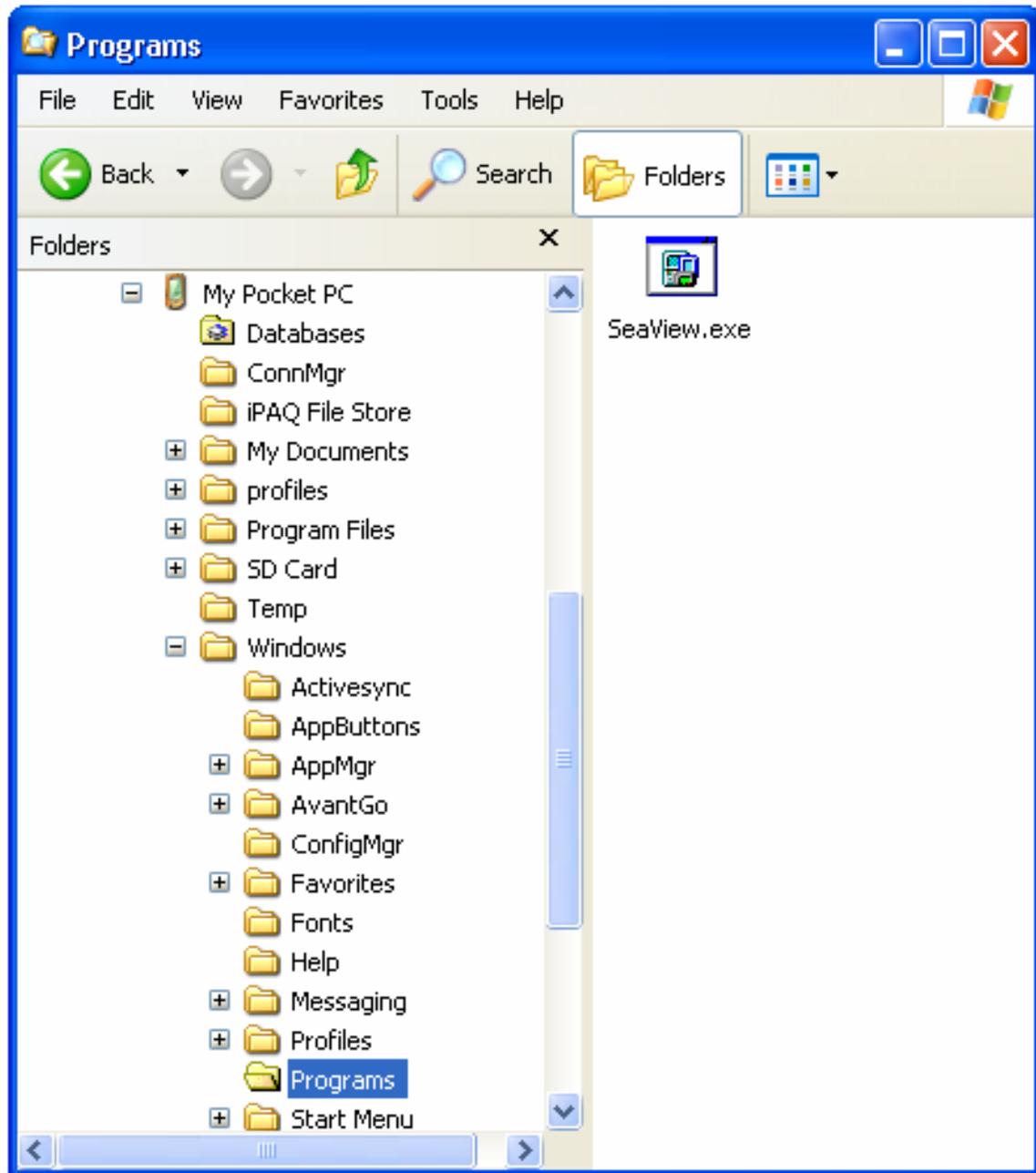
The PC/Laptop version of SeaView is a complete installation script. Just uncompress the folder and start the "SETUP.EXE" program to install in the default program directory.



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### PDA

The PDA version of SeaView is a single application file. All that is needed is to copy to a appropriate directory on the PDA..



## PC/Laptop Layout

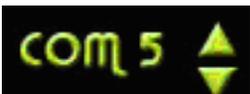
The PC/Laptop version of the SeaView utility is a single screen with a data display area on the left and a toolbar on the right column. The bottom of the screen contains controls for setting up the com ports, Baud rates, and capture intervals.

When the application is started you must select the desired com port that NMEA data will be arriving on. Once selected, the com port setting is saved until changed. After the com port is configured, use the connect button to establish communications and start display of incoming NMEA data. The utility will decode the appropriate sentences and place the data on the display. If no NMEA data is received on the selected com port the display will remain blank and no updates will occur.



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The following table describes the basic functions of the SeaView Utility.

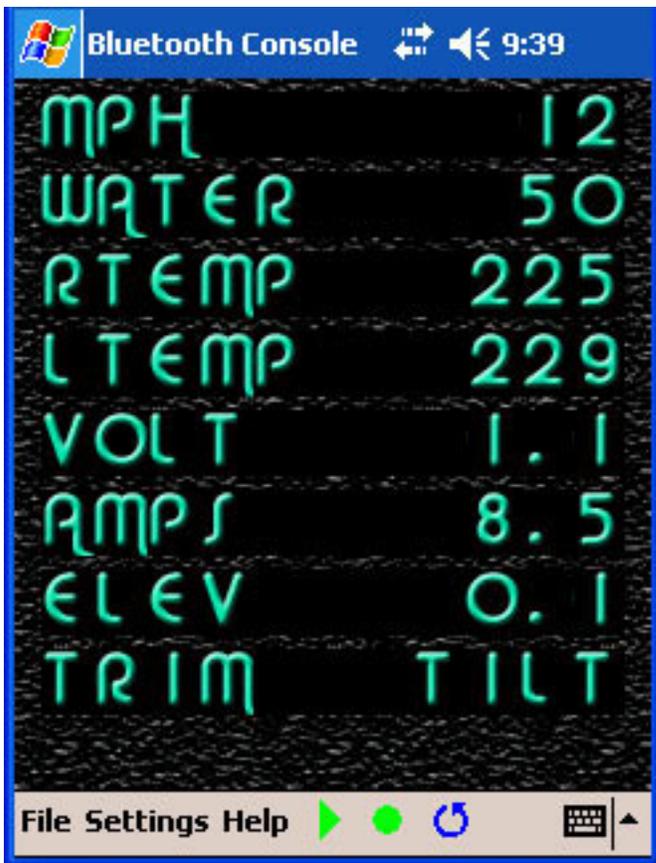
Symbol	Function
	<b>Data logging start/stop.</b> A toggle button that turns on data logging of received NMEA sentences to memory. If enabled. Clicking again will disable.
	<b>Set function.</b> Command the SeaGauge or SeaSwitch to set the current menu item. Performs same function as bottom button on SeaGauge or SeaSwitch
	<b>Save file location.</b> Sets the file name and folder location to save logged data or FLASH MEMORY image.
	<b>Connect.</b> Establishes a connection to SeaGauge or SeaSwitch through the currently select serial port. If the serial port is via Bluetooth module, it will prompt which visible module to use
	<b>Update tables and firmware.</b> Used to send new tables or firmware to connected SeaGauge or SeaSwitch unit. Used to upload new Calibration and Display Label table. User will be prompted for name and location of file to upload
	<b>Select function.</b> Used to scroll through menus on SeaGauge or SeaSwitch. Performs same function as top button on units
	<b>NMEA Pages.</b> Used to select different NMEA display pages. Default page is nine NMEA \$IIXDR sentences. Toggle of button will cycle through different compatible NMEA sentence.
	<b>Com Port Select.</b> Used to select one of 8 comports (1-8) to listen on for NMEA data. Physical com ports are 1-4 and virtual comports are 5-8. Most Bluetooth devices will be assigned to a virtual comport. Check your system properties to determine which one to use. Use the Up/Down arrows to increase or decrease the Com port number
	<b>Data Logging interval.</b> Used to select the time interval between data capture events. Options are 1 sec up to 1 hour. Use the Up/Down arrows to increase or decrease the interval
	<b>Baud Rate.</b> Used to select the baud rate for the selected com port. Must match the specified rated for the selected unit.

## PocketPC PDA Layout

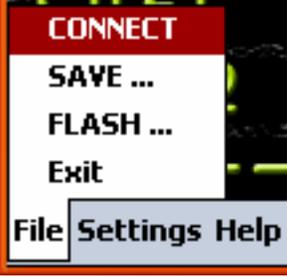
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The PocketPC version of the SeaView utility is a application with data display area for viewing real-time decoded NMEA instrumentation data. The bottom of the screen contains a menu bar for setting up various parameters and configurations

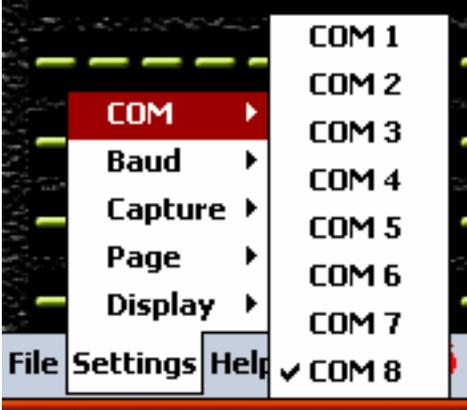
When the application is started you must select the desired com port that NMEA data will be arriving on. Once selected the com port setting is saved until changed. After the com port is configured, use the connect button to establish communications and start display of incoming NMEA data. The utility will decode the appropriate sentences and place the data on the display. If no NMEA is received on the selected com port the display will remain blank and no updates will occur.

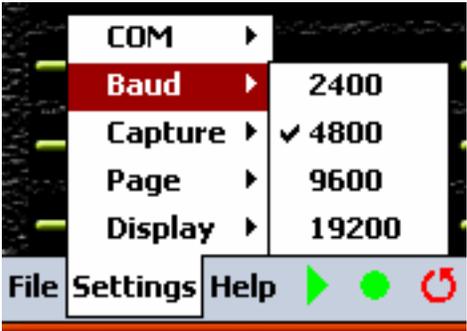


Toolbar Menu	Function
	<p><b>File:</b> Used to start a connection, select log file locations, select new calibration tables, Select FLASH MEMORY image file, and exit application</p> <p><b>Settings:</b> Used to set up various configuration parameters such as COM ports and displays.</p> <p><b>Help:</b> On-line explanation of various functions</p> <hr/> <p> <b>Select function.</b> Used to scroll through menus on SeaGauge or SeaSwitch. Performs same function as top button on units</p> <hr/> <p> <b>Set function.</b> Command the SeaGauge or SeaSwitch to set the current menu item. Performs same function as bottom button on SeaGauge or SeaSwitch</p> <hr/> <p> <b>Data logging start/stop.</b> A toggle button that turns on data logging of received NMEA sentences to memory. If enabled. Clicking again will disable.</p>

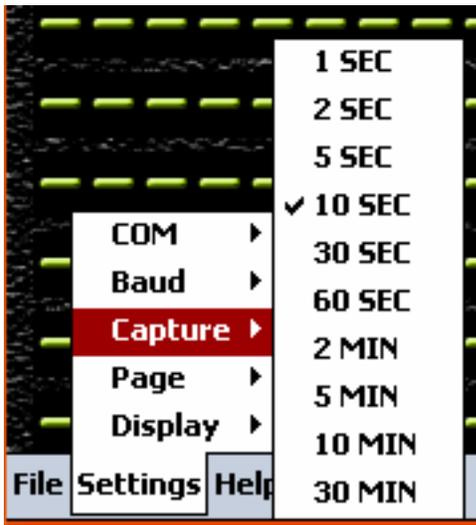
File Menu	Function
	<p><b>Connect Submenu:</b> Used to connect with selected serial port. If serial port is a virtual port, you will be asked to select a Bluetooth device in range</p> <p><b>Save Submenu:</b> Used to specify the file name and path for logging received NMEA data or file name for FLASH MEMORY load.</p> <p><b>FLASH Submenu:</b> Used to specify the configuration table or firmware to download to the connected unit. You will be prompted for a file name and location. If the file is valid, the utility will start a reprogramming sequence starting at the address contained in the file</p> <p><b>EXIT Submenu:</b> Used to stop the program and remove from memory. Note that opening any other program will not terminate the SeaView utility.</p>

Settings Menu	Function
	<p><b>COM Submenu:</b> Used to select desired Com Port</p> <hr/> <p><b>Baud Submenu:</b> Used to select desired Baud Rate</p> <p><b>Capture Submenu:</b> Used to set capture interval</p> <p><b>Page Submenu:</b> Used to select desired NMEA sentences</p> <p><b>Display Submenu:</b> Used to select display skins</p>

Com Port Menu	Function
	<b>Com Port Submenu:</b> Used to select the desired COM port to listen to for incoming NMEA 0183 data sentences

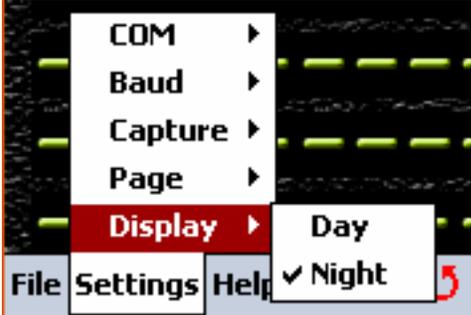
Baud Rate Menu	Function
	<b>Baud Rate Submenu:</b> Used to select the desired Baud rate to listen for incoming NMEA 0183 data sentences. Must match the sending device.

Capture Menu	Function
--------------	----------



**Capture Interval Submenu:** Used to select the desired capture interval when logging received to memory.

Page Menu	Function
	<p><b>IIXDR Submenu:</b> Selects display of up to nine NMEA 0183 IIXDR instrumentation sentences</p> <p><b>MTW Submenu:</b> Used to display water temperature and depth NMEA 0183 sentences if present.</p> <p><b>VLW Submenu:</b> Used to display speed and heading NMEA 0183 sentences if present.</p> <p><b>GPGLL Submenu:</b> Used to position (LONG/LAT) NMEA 0183 sentences if present.</p>

Display Menu	Function
	<p><b>Day Submenu:</b> Used to configure light background and dark blue numbers for easier viewing in daylight</p> <p><b>Night Submenu:</b> Used to configure black background and light green numbers for easier viewing in low-light conditions</p>

## Functions

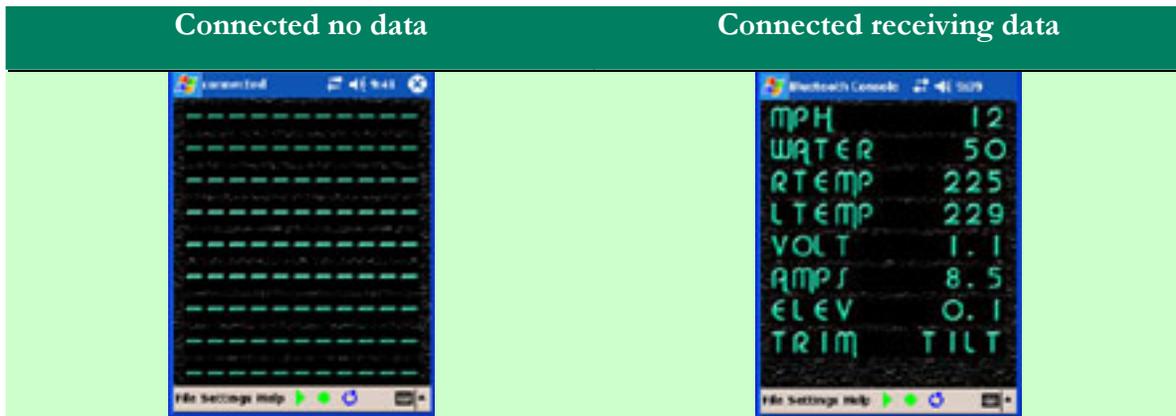
### Connect

Before any data can be displayed, the SeaView utility must connect to a device that transmits a compatible NMEA 0183 data stream. SeaView uses built-in com ports to listen for NMEA data.

SeaView can use both physical com ports and virtual com ports. Physical com ports are usually 1-2 and are wired with standard RS232 cables. Virtual com ports are 5-8 and are used by wireless Bluetooth modules. Bluetooth support can be built-in as may the case with PDAs or add-ons which is common for PC/Laptops. In either case – determine which virtual serial port the Bluetooth is using before trying to connect.

Once a proper com port is selected, choosing the CONNECT option will try to open the port and initialize listening for a proper data stream. If connection is through a physical port, data updates should start occurring if the device is transmitting a proper NMEA data stream. In the case of connecting through a virtual port (Bluetooth), a device selection dialog will appear asking to choose the appropriate Bluetooth device in range. If more then one device is in range - choose the correct device.

When making a connection if any other application is using the same com port, the connection attempt will fail. If this occurs – close the application and retry the connection attempt.



After successful connection the TITLE BAR will display “Connected”. When NMEA data starts arriving the TITLE BAR will display the name of the device sending data SeaView will decode compatible NMEA data and display the device labels on the left and sensor data on the right. SeaView will display the first 7 characters of device labels and the first 4 characters of sensor data.

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If after connecting, no data is received – verify that NMEA data is arriving at the selected com port. This can be done by using a serial port application such as HyperTerminal to listen on the selected port. The default settings are 9600 BAUD 8-N-1.

The Connect function is a toggle operation. Selecting Connect again after a successful connection will break the connection and stop data display.

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### Data Logging

SeaView is capable of logging received NMEA 0183 data to memory or drive storage. The log file contains the received NMEA 0183 sentences appended with a date stamp and record number. The log file is in simple TEXT format with each field separated by commas. It is easily imported to other applications.

An example of a short log file follows:

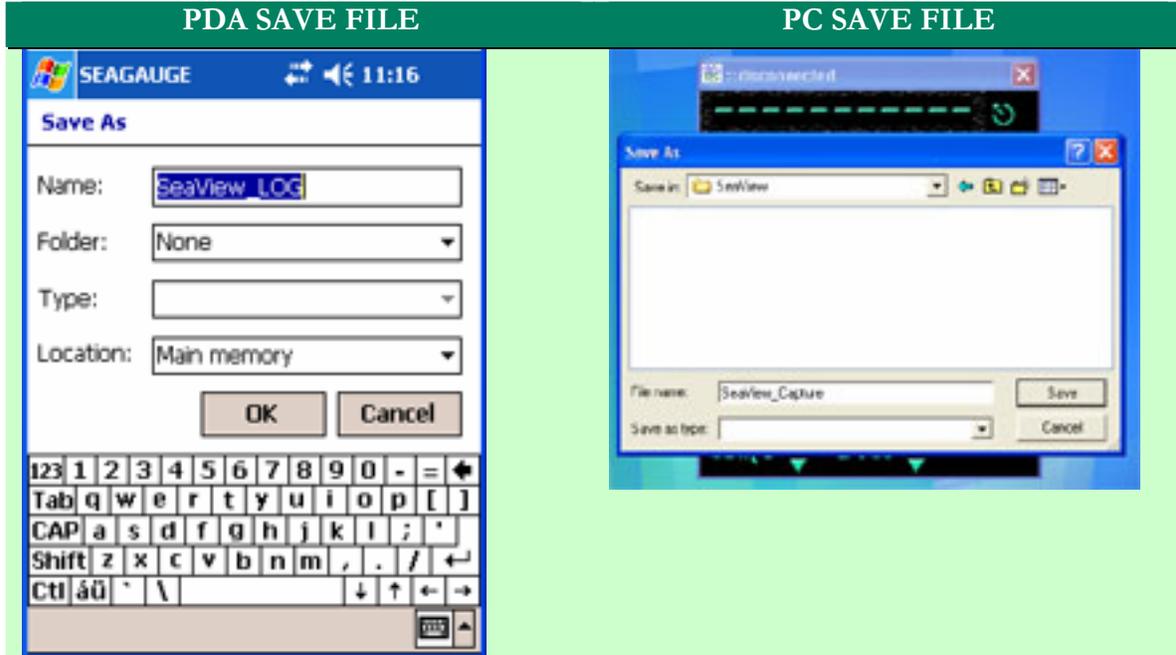
```
20050520105141,00000000,$IIXDR,G, 00 ,P,RPM ****0,*26,$IIXDR,G,  
85B,A,TEMP1 **1,*B6$IIXDR,G, 107B,B,TEMP2 **2,*AE$IIXDR,G,  
SHOR,C,TEMP3 **3,*40$IIXDR,G, 8.,D,VOLT1***4,*55$IIXDR,G,  
3.,E,VOLT2***5,*5D$IIXDR,G, 12.,F,VOLT3***6,*4C$IIXDR,G, 0 ,G,PSI1  
**7,*32$IIXDR,G, 45 ,H,PSI2 **8,*2
```

```
20050520105146,00000001,$IIXDR,G, 00 ,P,RPM ****0,*26,$IIXDR,G,  
85B,A,TEMP1 **1,*B6$IIXDR,G, 107B,B,TEMP2 **2,*AE$IIXDR,G,  
SHOR,C,TEMP3 **3,*40$IIXDR,G, 8.,D,VOLT1***4,*55$IIXDR,G,  
3.,E,VOLT2***5,*5D$IIXDR,G, 12.,F,VOLT3***6,*4C$IIXDR,G, 0 ,G,PSI1  
**7,*32$IIXDR,G, 45 ,H,PSI2 **8,*23
```

The current date and time is appended to each record with the following format "YYYYMMDDHHMMSS". This is followed by an 8 digit record count separated by a comma. This allows for a unique signature for each record collected.

Before data logging begins, a file name and location must be specified. Use the SAVE FILE option to select a storage location and file name.

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The NMEA data will be captured by the interval specified. The interval can be from once per second up once per hour. Set the capture interval before enabling the record function.

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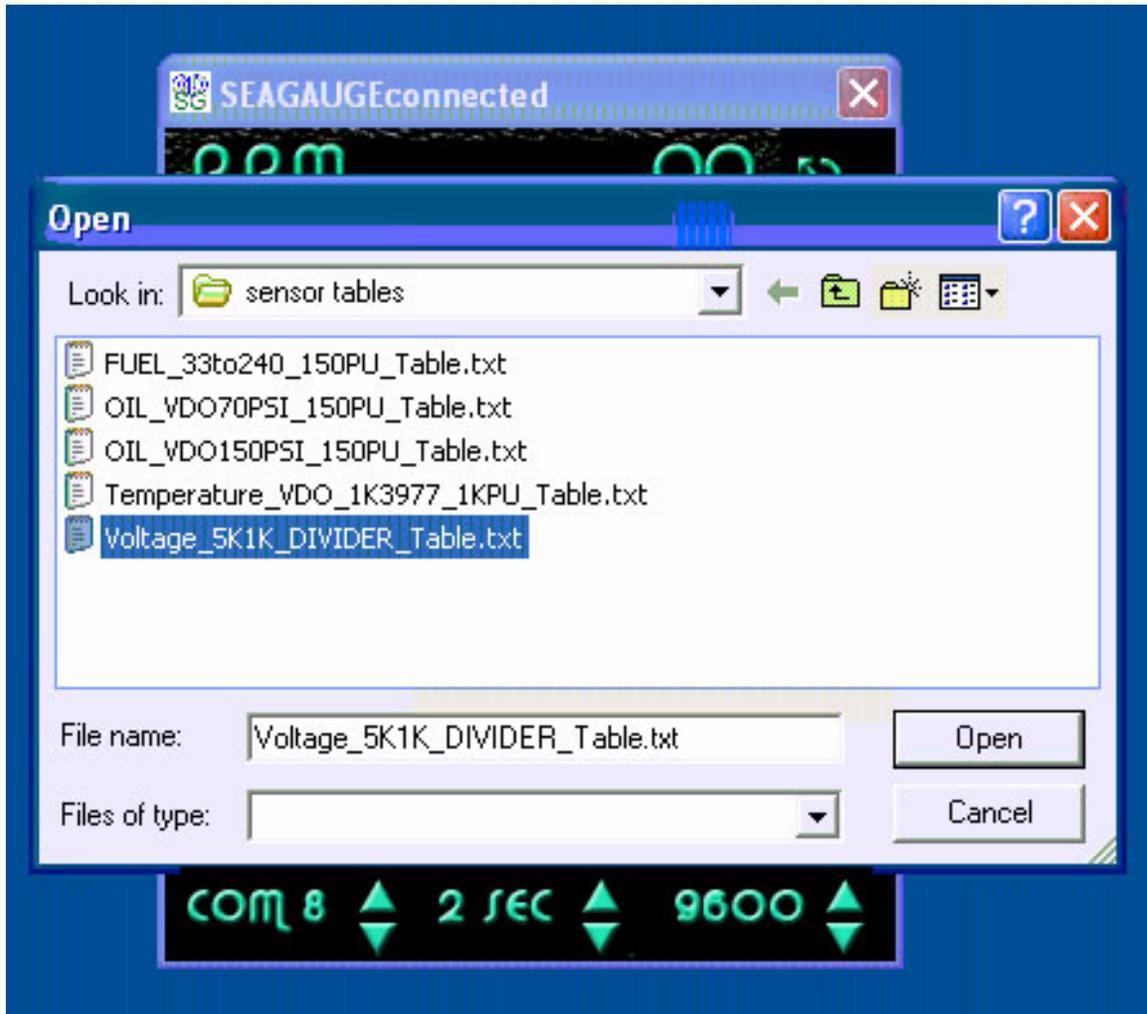
Start recording by selecting the RECORD ICON. It is a toggle function so selecting RECORD while recording to disable recording. Starting a new recording session will overwrite the existing file unless the file name is changed. While recording, the TITLE BAR will add the "recording" status message and indicate the current record number. When recording is finished the TITLE BAR will revert back to normal.



## **Flash Memory**

The SeaView utility can be used to download new calibration tables to SeaGauge or SeaSwitch using the FLASH COMMAND option. The unit must be connected and receiving data before new information can be transferred.

The FLASH COMMAND will start a sequence of steps to copy a valid Calibration Table file to the selected unit. The first step is a File Dialog used to select the desired formatted file. Only properly formatted Calibration Tables or INTEL HEX files can be used to reprogram the unit. If the utility finds an error in the selected file format, it will stop the process..



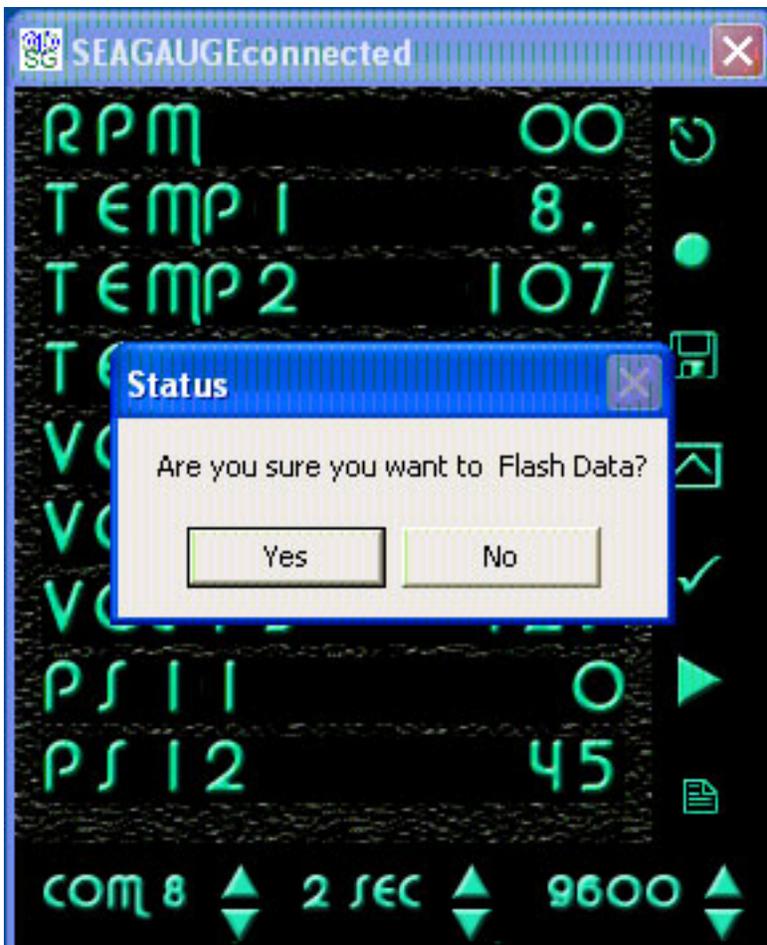
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Calibration files use a \*.txt extension and can be used with a serial port cable. FLASH files use a \*.hex extension and can only be used with a FLASH MEMORY programming cable.

After a proper Calibration Table file or firmware file is selected, the second step is to confirm the operation and verify the SeaGauge or SeaSwitch unit is ready for transfer. After the file is chosen the target unit will enter programming mode indicated by the display:

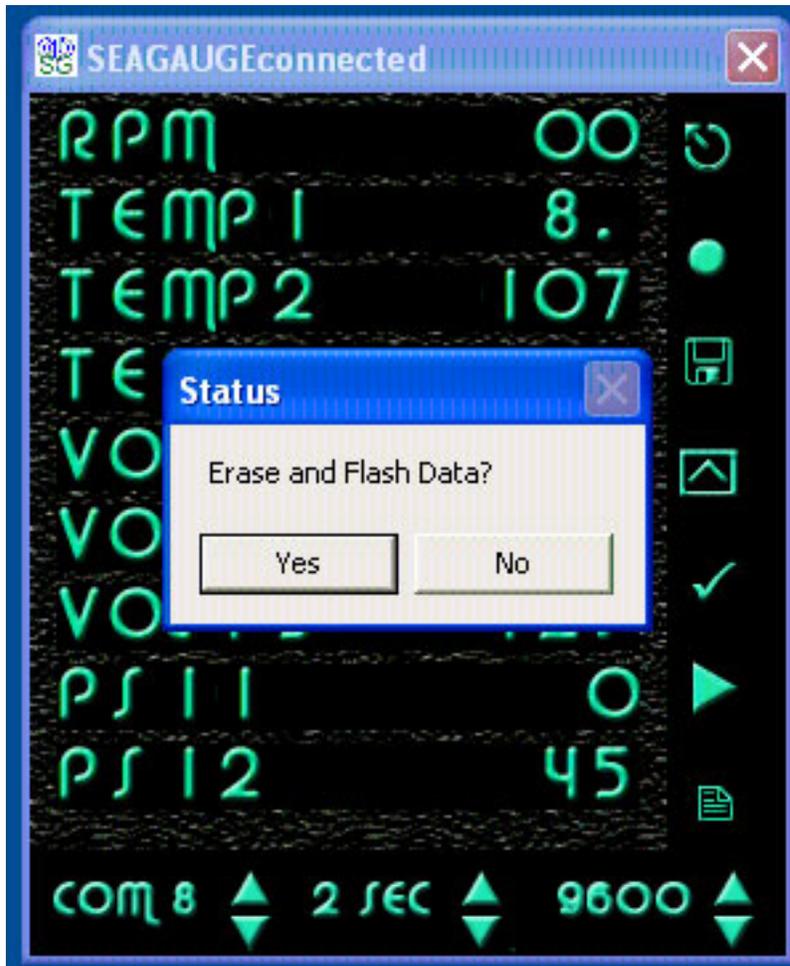
### READY->

If the YES button on the confirmation dialog is not selected within 10 seconds, the target unit will terminate programming mode and reset. You must select the YES option within 10 seconds to continue.



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The third step is to confirm erasure of the target memory before loading the new file. Again if the YES option is not chosen within 10 seconds, the target unit will exit programming mode and reset.

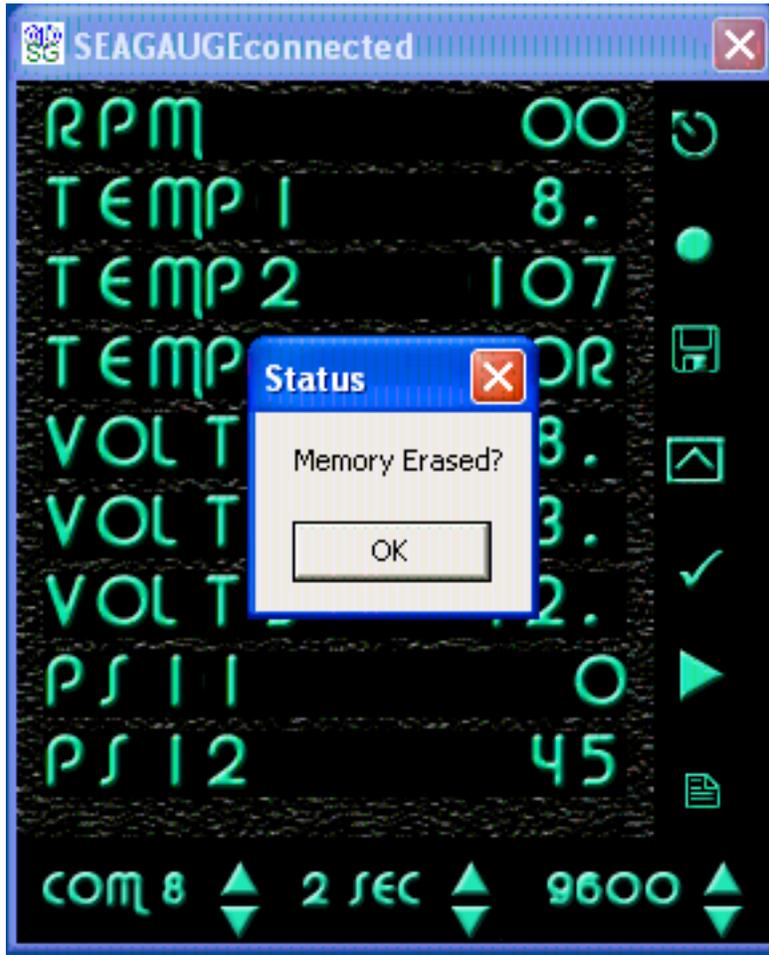


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The forth step is to erase the target memory and wait for confirmation the erase is complete. Once the target memory is erased the unit will display

**ERASED >**

After it is confirmed the target memory is erased proceed by selecting the OK button



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The fifth phase will start transferring file information to the target and display a progress indicator to indicate the memory locations being updated. The top row of the display will display the word "FLASH" and the data area will display the current address in hexadecimal notation. The address will update till all data is transferred.



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The final step will confirm the number of bytes transferred and reset the target. After flashing a new file it is a good idea to restart both the target unit and the SeaView utility to be sure both are back in sync.



### NMEA Pages

SeaView can display multiple NMEA 0183 instrumentation sentences. Up to 9 \$IIXDR sentences can be display on a single page. SeaView also supports display of Sonar Depth (\$SDDBT), water temperature (\$SDMTW), Distance (\$SDVLW), Heading (\$SDVHW), and GPS position (\$GPGLL).

Data is displayed on one for 4 selectable pages.

Page	Function
1 (default)	<b>Instrumentation</b> – up to 9 \$IIXDR sentences. Position is determined by last character of Instrument label field. SeaGauge and SeaSwitch transmit a position number in thus field.
2	<b>Depth and Temp.</b> Display current depth and water temperature. Must be connected to a compatible device capable of outputting NMEA \$SDMTW and \$SDDBT sentences such as sonar displays.
3	<b>Heading and Distance.</b> Displays current heading and distance traveled since last reset. Must be connected to compatible device capable of out putting NMEA \$SDVLW and \$SDVHW sentences such as GPS equipment.
4	<b>Current Lat/Lon.</b> Displays current position. Must be connected to compatible device capable of out putting NMEA \$GPGLL sentences such as GPS equipment.

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### ***Com Ports***

SeaView listens to selected com ports for incoming NMEA data. If no recognized is present, the current page will not update. Be sure to select the correct com port.

If making a connection with the supplied serial cable, most PC's will use COM port 1 or 2.

If making a connection via a Bluetooth device, be sure to get the properties of the Bluetooth interface to determine which virtual COM port it is using and set SeaView to the indicated port (usually 5 – 8).

### ***Baud Rates***

SeaView can be configured to listen at several BAUD rates. Select the Baud rate to match the sending device.

## Calibration Tables

SeaGauge utilizes eight modifiable calibration tables to convert sensor data into user readable display information. The internal Analog-to-Digital converter converts sensor voltages to 10-bit values. The converter can resolve voltages to  $3.3/1024 = 3$  mVolts. These values are averaged and then used to lookup 8 character values form a 256 point lookup table. The use of a lookup table allows for accurate readings from non-linear sensors like temperature senders. The lookup table also allows for easy modification of display values to suit individual preferences and senders.

Following is an example of a partial table used to display battery voltage. The actual table has 256 indexed values. The measured voltage has a range from 0 to 3.3 volts. In this example it is desired to measure battery voltage from 0 to 18 volts so the input voltage from the battery is scaled down using a voltage divider ratio of  $3.3/18 = 0.1833$ . The scaled down voltage is converted to an averaged digital value and then used as an index lookup in the table. For example an Input voltage of 1.178 volts becomes index value 18 in the table which corresponds to the 8 character display value of 1.1 vdc. Using this method allows the SeaGauge to display just about any range of values form a large variety of sensors/senders.

<i>Index</i>	<i>Input Voltage</i>	<i>Measured Voltage</i>	<i>Display value</i>
1	0.065	0.012968	0 vdc
2	0.131	0.025936	0.1 vdc
3	0.196	0.038904	0.1 vdc
4	0.262	0.051872	0.2 vdc
5	0.327	0.06484	0.3 vdc
6	0.393	0.077808	0.3 vdc
7	0.458	0.090776	0.4 vdc
8	0.523	0.103744	0.5 vdc
9	0.589	0.116712	0.5 vdc
10	0.654	0.12968	0.6 vdc
11	0.720	0.142649	0.7 vdc
12	0.785	0.155617	0.7 vdc
13	0.851	0.168585	0.8 vdc
14	0.916	0.181553	0.9 vdc
15	0.981	0.194521	0.9 vdc
16	1.047	0.207489	1.0 vdc
17	1.112	0.220457	1.1 vdc
18	1.178	0.233425	1.1 vdc
19	1.243	0.246393	1.2 vdc
20	1.309	0.259361	1.3 vdc
21	1.374	0.272329	1.3 vdc
22	1.439	0.285297	1.4 vdc
23	1.505	0.298265	1.5 vdc
24	1.570	0.311233	1.5 vdc
25	1.636	0.324201	1.6 vdc
26	1.701	0.337169	1.7 vdc
27	1.767	0.350137	1.7 vdc

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Each table has 2048 characters to modify and there are 88 choices for each character for a total of over 18,000 character choices for each table. For this reason the tables are much too large to be modified directly from the Setup Mode. However table files can be obtained and downloaded to the unit to allow for modification of any table. All that is needed is a computer interface (RS232 or Bluetooth) and a communication program such as HyperTerminal or the SeaView utility. Contact Checto Digital Instruments for more information on obtaining additional table files to match particular senders/sensors.

Programming files are ACSII text with 2 or 8 characters per line. Each file is loaded into a specified starting location according to the following table.

<i>Table</i>	<i>Bytes /line</i>	<i>Address</i>	<i>Start Page</i>	<i>End Page</i>	<i>Erase Command</i>
<b>Sensor Labels</b>	8	E000	70	70	*7070
<b>Groups</b>	1	E200	71	71	*7171
<b>Label Positions</b>	1	E400	72	72	*7272
<b>Alarms</b>	1	E600	73	73	*7373
<b>Channels</b>	1	E800	74	74	*7474
<b>Parameters</b>	1	EA00	75	75	*7575
<b>Lookup Table 0</b>	8	A000	50	53	*5053
<b>Lookup Table 1</b>	8	A800	54	57	*5457
<b>Lookup Table 2</b>	8	B000	58	5B	*585B
<b>Lookup Table 3</b>	8	B800	5C	5F	*5C5F
<b>Lookup Table 4</b>	8	C000	60	63	*6063
<b>Lookup Table 5</b>	8	C800	64	67	*6467
<b>Lookup Table 6</b>	8	D000	68	6B	*686B
<b>Lookup Table 7</b>	8	D800	6C	6F	*6C6F

The first line of each file is used to specify the file type and the memory to erase before loading the new data. GREAT care must be taken to be sure the correct memory locations are erased else the unit may no longer function and will have to be completely reprogrammed.

### ASCII TEXT Format

SeaView supports only two types of table formats – 8 characters per line and 1 byte per line. Multiple characters per line are used for Strings such as display labels and calibration tables. Single byte per line are used for parameters such as alarms and display groups.

**It is very important to use the correct format when editing a table.**

The following is an example of the first few lines of a sensor calibration table that uses the 8 character per line format. All characters following the second quote mark “” are ignored and used as comments. String must contain 8 characters enclosed by single quotes.

```
[TABLE][8800][8][256]
db ' 0.0 ' ;000
db ' 0.0 ' ;001
db ' 0.1 ' ;002
db ' 0.1 ' ;003
db ' 0.2 ' ;004
db ' 0.3 ' ;005
db ' 0.3 ' ;006
db ' 0.4 ' ;007
db ' 0.5 ' ;008
db ' 0.5 ' ;009
db ' 0.6 ' ;010
```

- The string “TABLE” enclosed by “[“ ”]” indicates the file is a ASCII text
- The string “[8800]” indicated the starting address of “8800” HEX.
- The string “[8]” indicated there are 8 characters per line
- The string “[256]” indicates there are 256 lines in the file to download.

The following is an example of an Alarm table that uses the single byte per line format. All characters following the first comma are ignored and used as comments. A 2 character byte value in Hex format must follow the “db %” label on each line.

```
[TABLE][E600][1][128]
db %00, 255 ;"OIL " ;0
db %FF,
db %00, 255 ;"MPH " ;1
db %FF,
db %00, 255 ;"WATER " ;2
db %FF,
db %00, 255 ;"RTEMP " ;3
db %FF,
db %00, 255 ;"LTEMP " ;4
db %FF,
```

- The string “TABLE” enclosed by “[“ ”]” indicates the file is a ASCII text
- The string “[E600]” indicated the starting address of “E600” HEX.
- The string “[1]” indicated there are 8 characters per line
- The string “[128]” indicates there are 128lines in the file to download.

### Intel Hex Format

An alternate format used to download program code and data files is the INTEL HEX format. This format can not be edited and is only used to download firmware updates via the flash port.

#### YOU MUST USE A FLASH CABLE TO LOAD INTEL HEX FILES

These files have a \*.hex extension are used to update unit firmware. You should backup unit firmware before attempting an upgrade. This can be accomplished by using the file save feature and specifying a file type of \*.hex. SeaView will copy the current firmware to the specified file only if a FLASH cable is attached.

A sample listing is shown for informational purposes only. These files may be obtained from Checto Digital Instruments for firmware and maintenance updates.

```
[INTELHEX]0164
:1002000001E0E9000FFFE90F0FFE0C002C00A6E251
:10021000006B05B1E00E2AFB2C013C000C001C47D2
:10022000E4E0E442416B0BB0E496E4E2A0E280E05B
:10023000EBF70C001C003C004C0042336B04C34045
:100240003AFC0C011C472C4C3C7A4C005CEDE4E47D
:10025000E642656B0DC26296E6E0A0E0A0E280E4B3
:10026000EBF3B2FFB2EED618A68BFE50EA50EB705D
:10027000EF70EE84EF84FFFF84DFCF8F28EE9FC8
:10028000FF38EE8FFE94DFCF70EB70EAAF50EA508C
:10029000EB84DFCF8F94FFFF94EF94DFCF50EE1F
:1002A00050EF70EB70EAAF50EA50EB84DFCF8F94E1
```

- The string "INTELHEX" enclosed by "[[" "]" indicates the file is a INTEL text
- The string "0164" indicates the start to end memory page to erase
- Data following the ":" symbol on each line is HEX program code data

SeaView can accept and load INTEL HEX format files using the normal FLASH menu options.

## **One Year Warranty**

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“We”, “our”, or “us” refers to **Chetco Digital Instruments**, the manufacturer of this product. “You” or “your” refers to the first person who purchases this product as a consumer item for personal, family, or household use.

We warrant this product against defects or malfunctions in materials and workmanship, and against failure to conform to this product's written specifications, all for one year (1) from the date of original purchase by you. WE MAKE NO OTHER EXPRESS WARRANTY OR REPRESENTATION OF ANY KIND WHATSOEVER CONCERNING THIS PRODUCT. Your remedies under this warranty will be available so long as you can show in a reasonable manner that any defect or malfunction in materials or workmanship, or any nonconformity with the product's written specifications, occurred within one year from the date of your original purchase, which must be substantiated by a dated sales receipt or sales slip. Any such defect, malfunction, or non-conformity which occurs within one year from your original purchase date will either be repaired without charge or be replaced with a new product identical or reasonably equivalent to this product, at our option, within a reasonable time after our receipt of the product. If such defect, malfunction, or non-conformity remains after a reasonable number of attempts to repair by us, you may elect to obtain without charge a replacement of the product or a refund for the product. THIS REPAIR, REPLACEMENT, OR REFUND (AS JUST DESCRIBED) IS THE EXCLUSIVE REMEDY AVAILABLE TO YOU AGAINST US FOR ANY DEFECT, MALFUNCTION, OR NON-CONFORMITY CONCERNING THE PRODUCT OR FOR ANY LOSS OR DAMAGE RESULTING FROM ANY OTHER CAUSE WHATSOEVER. WE WILL NOT UNDER ANY CIRCUMSTANCES BE LIABLE TO ANYONE FOR ANY SPECIAL, CONSEQUENTIAL, INCIDENTAL, OR OTHER INDIRECT DAMAGE OF ANY KIND.

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This warranty does NOT apply in the following circumstances: (1) when the product has been serviced or repaired by anyone other than us, (2) when the product has been connected, installed, combined, altered, adjusted, or handled in a manner other than according to the instructions furnished with the product, (3) when any serial number has been effaced, altered, or removed, or (4) when any defect, problem, loss, or damage has resulted from any accident, misuse, negligence, or carelessness, or from any failure to provide reasonable and necessary maintenance in accordance with the instructions of the owner's manual for the product.

We reserve the right to make changes or improvements in our products from time to time without incurring the obligation to install such improvements or changes on equipment or items previously manufactured.

This warranty gives you specific legal rights and you may also have other rights which may vary from state to state.

REMINDER: You must retain the sales slip or sales receipt proving the date of your original purchase in case warranty service is ever required.

**Chetco Digital Instruments, INC.**  
**14377 Highway 101 South Unit C**  
**Harbor, OREGON 97415**  
**541-661-2051**

# SEAVIEW SOFTWARE LICENSE AGREEMENT

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## **SeaView User's Manual**

### **How to Obtain Service**

We back your investment in quality products with quick, expert service and genuine replacement parts. If you're in the United States and you have questions, please contact the Factory Customer Service Department using our number listed below. You must send the unit to the factory for warranty service or repair. Please call the factory before sending the unit. You will be asked for your unit's serial number (shown above). Use the following number:

**541-661-2051**

U.S.A. only. Monday through Friday, except holidays.

Your unit is covered by a full one-year warranty. (See inside for complete warranty details.) If your unit fails and the failure is not covered by the original warranty, Chetco Digital Instruments has a flat-rate repair policy that covers your unit and accessories packed with the unit at the factory. There is a 180-day warranty on all non-warranty repairs from the factory, which is similar to the original warranty, but is for 180 days rather than one year. For further details, please call us at the above number.

Remember, non-warranty repairs are subject to Chetco Digital Instruments published flat rate charges and 180-day warranty.

CHETCO DIGITAL INSTRUMENTS, INC

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HARBOR, OR 97415

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