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APPLICATION NOTE NO. 17

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Instructions for use of SBE 14 Remote Depth Readout

This Application Note describes the installation and use of the SBE 14 Remote Depth Readout, a large-format, 4-digit, liquid crystal display and sonic alarm in a weatherproof, plastic housing. The SBE 14 is intended for mounting at the CTD winch operator's position, and is operated in one of the following modes:

- **Connected directly to the computer:** In this configuration, the SBE 14 and the SBE 11*plus* Deck Unit (original 11*plus* or V2) each connect to the computer. The SBE 14 is powered by the computer's RS-232 serial port and controlled through SEASAVE. The computer must have an extra RS-232 serial port to accommodate the SBE 14, in addition to the port(s) needed for the SBE 11*plus*.
- **Connected directly to an SBE 11*plus* V2 (EPROM version 5.0 or greater) Deck Unit:** In this configuration, the SBE 14 connects to the SBE 11*plus* V2, and the SBE 11*plus* V2 connects to the computer. The SBE 14 is powered and controlled by the SBE 11*plus* V2.

Installation and setup for these modes differ significantly; see the following pages for details.

Drawings

Cable:

- SBE 14 to computer: 32809
 - SBE 14 to SBE 11*plus* V2: 32433
- Top assembly: 40136
PCB assembly: 40100
Schematic: 30108

Installation, Setup, and Testing - SBE 14 Connected Directly to Computer

Installation

1. Mount the SBE 14 where the winch operator can easily read the display.
2. Wire the SBE 14 and SBE 11*plus* (original or V2) as follows:
 - A. Using the 3-pin to DB-9 cable (drawing 32809), connect the SBE 14 to the computer RS-232 COM port.
 - B. Connect the SBE 11*plus* (original or V2) to the computer -
 - (1) Connect SBE 11*plus* data to GPIB parallel port or RS-232 COM port.
 - (2) If applicable, connect SBE 11*plus* modem to RS-232 COM port.

Setup

The SBE 14 is set up in Sea-Bird's SEASAVE software. SEASAVE is available in both a Windows and a DOS version. These setup instructions assume that you are running the Windows version.

1. Select *Remote Display* in the Configure menu. The following dialog box appears:

Select to enable computer to interface with SBE 14.

Select fresh or salt water.

Select computer COM port connecting to SBE 14.

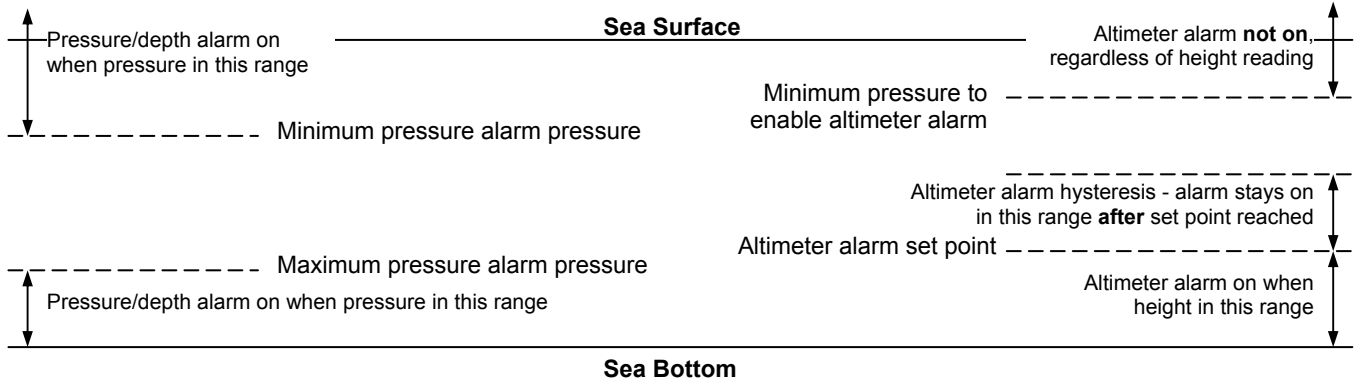
Select parameter to display on SBE 14:

- Altimeter height
- Depth
- Pressure
- Altimeter height (3 digits) + depth (4 digits) (alternate on display)
- Altimeter height (3 digits) + pressure (4 digits) (alternate on display)

SBE 14 updates display at this interval. If *Altimeter height + depth* or *Altimeter height + pressure* was selected, display alternates between altimeter height and other parameter at this interval. Do not set this to less than 1 second.

Enter the desired settings and click OK to save the settings when done.

2. Set up the SBE 14 alarms (see the figure for alarm operation details):



A. Select *Alarms/Remote Display Alarm* in the Configure menu. The following dialog box appears:

The 'Remote Display Alarm Configuration' dialog box contains the following elements:

- Two checked checkboxes: 'Enable Remote Display Minimum Pressure Alarm' and 'Enable Remote Display Maximum Pressure Alarm'.
- An input field for 'Sound Alarm when Pressure is Less than (decibars):' with the value '10'.
- An input field for 'Sound Alarm when Pressure is Greater than (decibars):' with the value '1000'.
- 'OK' and 'Cancel' buttons at the bottom.

 Two callout boxes provide instructions:

- The left callout box points to the 'Enable Remote Display Minimum Pressure Alarm' checkbox and explains: 'Select to enable minimum pressure alarm. Enter a value that corresponds to a fairly shallow depth chosen to alert winch operator that CTD is about to reach surface on way up.'
- The right callout box points to the 'Enable Remote Display Maximum Pressure Alarm' checkbox and explains: 'Select to enable maximum pressure alarm. Enter a value that corresponds to maximum operating depth capability of CTD, or some lesser depth at which you want winch operator to stop descent of CTD.'

Enter the desired settings and click OK to save the settings when done.

B. Select *Alarms/Altimeter Alarm* in the Configure menu. (**Note:** *Alarms/Altimeter Alarm* will be grayed out if the CTD configuration does not include an altimeter. If desired, add the altimeter to the configuration .con file before proceeding). The following dialog box appears:

The 'Altimeter Alarm Configuration' dialog box contains the following elements:

- A checked checkbox: 'Enable Altimeter Alarm'.
- An input field for 'Alarm Set Point (meters):' with the value '30'.
- An input field for 'Alarm Hysteresis (meters):' with the value '10'.
- An input field for 'Minimum Pressure to Enable Altimeter Alarm (db):' with the value '20'.
- 'OK' and 'Cancel' buttons at the bottom.

 Three callout boxes provide instructions:

- The top-left callout box points to the 'Enable Altimeter Alarm' checkbox and explains: 'Select to enable altimeter alarm.'
- The middle-left callout box points to the 'Alarm Set Point' and 'Alarm Hysteresis' fields and explains: 'Enter values for alarm set point (distance above bottom for alarm to turn on) and alarm hysteresis. Alarm will remain on until CTD is above alarm set point + alarm hysteresis. This prevents alarm from cycling on and off due to ship heave.'
- The right callout box points to the 'Minimum Pressure to Enable Altimeter Alarm' field and explains: 'Set minimum pressure to at least 20 db. This prevents SEASAVE from sending alarm on/off commands when system is sitting on deck or entering water (when altimeter is measuring distance to deck or top of water surface).'

Enter the desired settings and click OK to save the settings when done.

3. Change other configuration settings in the Configure menu, if desired.

4. Select *Save Seasave Configuration as* in the File menu to save all configuration changes.

Testing

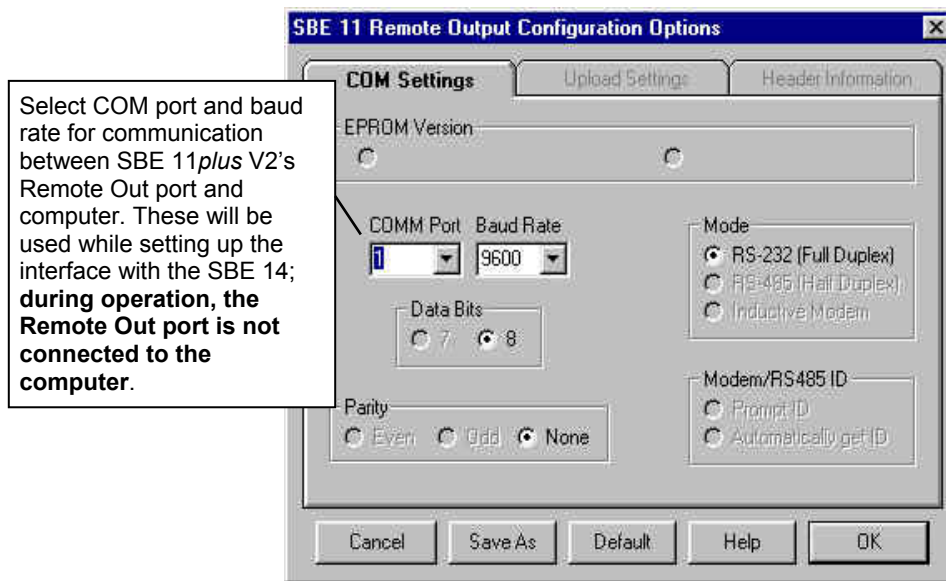
The SBE 14 can be tested by running SEASAVE using either a real-time connection to an SBE 911*plus* system, or with archived data.

Setup, Installation, and Testing - SBE 14 Connected to SBE 11plus V2

Setup

Sea-Bird's terminal program is used to set up the SBE 11plus V2 to transmit data to the SBE 14. The terminal program is available in both a Windows (SEATERM) and a DOS (TERM11) version. These setup instructions assume that you are running **SEATERM**, the Windows version.

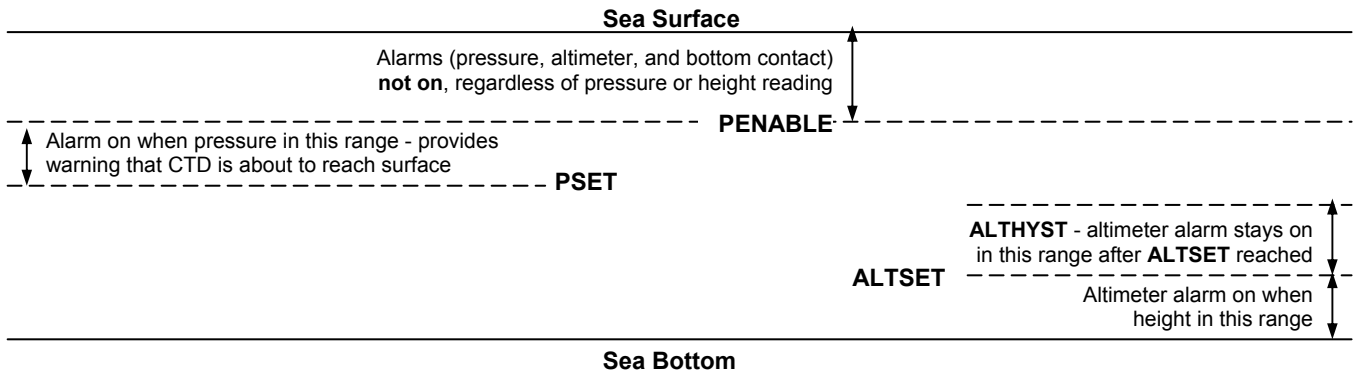
1. Temporarily connect the SBE 11plus V2's Remote Out port to a COM port on the computer, using the supplied test cable (PN 80114).
2. Select *SBE 11 Remote Out* in the Configure menu. The following dialog box appears:



Enter the desired settings and click OK or Save As to save the settings when done.

3. Turn on the power switch on the SBE 11plus V2.
4. Click the Connect button on the Toolbar. SEATERM returns an **S>** prompt, showing that correct communications between the computer and the SBE 11plus V2 Remote Out port have been established.

5. Send the following commands to set up the SBE 14 display and alarm parameters (see the figure for alarm operation details):
 - **BAUD=300** Set baud rate for data transfer between the SBE 11*plus* V2 and SBE 14 to 300.
 - **ALARMS=x** Enable/disable alarms:
 If **ALARMS=0**, all alarms are disabled. Any combination of bottom contact switch, pressure, and altimeter alarm can be enabled by adding alarm value (bottom contact = 1; pressure = 2; altimeter = 4) to **x**.
Example: To enable all alarms, set **ALARMS=7** (1 + 2 + 4 = 7).
 - **FORMAT=x** Set data type for display on SBE 14:
x=129 Altimeter height
x=130 Depth
x=144 Pressure
x=145 Pressure + Altimeter height (these parameters alternate on display)
x=131 Depth + Altimeter height (these parameters alternate on display)
 - **PENABLE=x** Set minimum pressure to enable alarms (bottom contact, pressure, and altimeter) to **x** decibars.
 - **PSET=x** (if pressure alarm enabled) Set pressure alarm to **x** decibars.
 - **ALTSET=x** (if altimeter alarm enabled) Set altimeter alarm to **x** meters.
 - **ALTHYST=x** (if altimeter alarm enabled) Set altimeter hysteresis to **x** meters. Alarm will remain on until CTD is above **ALTSET + ALTHYST**, to prevent alarm from cycling on and off due to ship heave.
 - **LAT=x** Set latitude to use for pressure to depth conversion to **x** degrees.
 - **NAVG=x** Set number of scans to average to **x** (6 or greater). With **NAVG=6**, the SBE 14 display updates every 0.25 seconds (6 scans / 24 scans/second = 0.25 seconds).
6. Send other commands to configure the remote output, if desired.
7. Disconnect the SBE 11*plus* V2's Remote Out port from the computer COM port.



Installation

1. Mount the SBE 14 where the winch operator can easily read the display.
2. Wire the SBE 14 and SBE 11*plus* V2 as follows:
 - A. Using the 3-pin to 5-pin cable (drawing 32433), connect the SBE 14 to the 5-pin Remote Out port on the SBE 11*plus* V2.
 - B. Connect the SBE 11*plus* V2 to the computer -
 - (1) Connect SBE 11*plus* V2 data to GPIB parallel port or RS-232 COM port.
 - (2) If applicable, connect SBE 11*plus* V2 modem to RS-232 COM port.

Testing

The SBE 14 can be tested using either a real-time connection to an SBE 911*plus* system, or with archived data on tape.