SBE 46 LCD Display Box

Limited Liability Statement

Extreme care should be exercised when using or servicing this equipment. It should be used or serviced only by personnel with knowledge of and training in the use and maintenance of oceanographic electronic equipment.

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Section 1: Introduction

This section includes contact information, Quick Start procedure, and photos of a standard SBE 46 shipment.

About this Manual

This manual is to be used with the SBE 46 LCD Display Box. It is organized to guide the user from installation through operation and data display. We've included detailed specifications, command descriptions, testing and operating procedures, and helpful notes throughout the manual.

Sea-Bird welcomes suggestions for new features and enhancements of our products and/or documentation. Please contact us with any comments or suggestions (seabird@seabird.com or 425-643-9866). Our business hours are Monday through Friday, 0800 to 1700 Pacific Standard Time (1600 to 0100 Universal Time) in winter and 0800 to 1700 Pacific Daylight Time (1500 to 0000 Universal Time) the rest of the year.

Quick Start

Follow these steps to get a Quick Start using the SBE 46. The manual provides step-by-step details for performing each task:

1. Program SBE 46 (see *Programming and Testing SBE 46* in *Section 3*):
   A. Connect PC and power supply to SBE 46.
   B. Set PCB jumpers —
      J1: pins 2 and 3; J3: on; J2: on if powered with internal battery.
   C. Configure SBE 46 as an SBE 37 in SEATERM.
   D. Turn on power toggle switch.
   E. Send desired commands to program SBE 46.

2. Set up instrument (see *Setting Up Instrument* in *Section 3*, and see instrument manual):
   A. Set instrument baud rate to same rate as SBE 46.
   B. Set instrument to wake up and start sampling when power is applied (if applicable), or start sampling now or at a delayed date and time.

3. Operate SBE 46 (see *Operating SBE 46* in *Section 3*):
   A. Set PCB jumpers — J1: pins 2 and 3 for SBE 11*plus* V2, pins 1 and 2 for all other instruments; J3: off.
   B. Connect SBE 46 to instrument.
   C. Connect power supply to SBE 46 and turn on power toggle switch.

Unpacking SBE 46

Shown below is a typical SBE 46 shipment.

SBE 46

AC Power Cable

DC power
connector

Note:
Cable from SBE 46 to
instrument not included with
standard shipment. **Order
instrument-specific cable
separately.**

Data I/O Cable

4-pin MS connector
(for *Sensor I/O* bulkhead
connector on SBE 46)

SBE 46 User Manual

Software, and electronic copies of
software manuals & user manual

Section 2: Description of SBE 46

This section describes the functions and features of the SBE 46, including data format, specifications, dimensions, and connectors.

System Description

The SBE 46 LCD Display Box is designed for indoor shipboard or laboratory display of up to four parameters obtained from an external instrument, without the need for a dedicated computer. The SBE 46 can interface with many Sea-Bird instruments:

SBE 46 receives power from and displays data from —
* SBE 11*plus* V2 Deck Unit (interfacing with SBE 9*plus* CTD)

SBE 46 provides power to and displays data from —
* SBE 37-SM or 37-SMP MicroCAT Conductivity and Temperature (pressure optional) Recorder with optional 4-pin I/O bulkhead connector
* SBE 37-SI or 37-SIP MicroCAT Conductivity and Temperature (pressure optional) Sensor
* SBE 38 Digital Oceanographic Thermometer
* SBE 39 Temperature (pressure optional) Recorder with optional 4-pin I/O bulkhead connector
* SBE 45 MicroTSG (Thermosalinograph)
* SBE 48 Hull Temperature Sensor
* SBE 50 Digital Oceanographic Pressure Sensor

Notes:
* Several of these instruments are available in both RS-232 and RS-485 versions. The SBE 46 is only compatible with the RS-232 versions.
* There are some limitations on input power when using the SBE 46 to power the SBE 37-SIP or 37-SMP MicroCAT. For those applications, provide 115/230 VAC or 6 – 15 VDC to the SBE 46. Higher input DC voltage (16 – 24 VDC) does not provide enough current for the SBE 37-SIP or 37-SMP.

The SBE 46 has a two-line LCD display with twenty, 12.7 mm (0.5 inch) high characters per line. Each line can display up to two parameters with user-programmable labels, providing a maximum of four parameters total.

Communication between the instrument and SBE 46 is over an RS-232C link, providing real-time data transmission and display. The SBE 46 can be externally-powered (115/230 VAC or 6 - 24 VDC) or internally-powered with a 9-volt battery.

User-selectable modes include:
* **Programming** – While connected to a computer and running a terminal program, setup commands can be sent to the SBE 46. Setup parameters are stored in EEPROM, so the SBE 46 only has to be programmed once for a particular data format.
* **Testing** – While connected to a computer and running a terminal program, data input to the computer is displayed on the SBE 46.
* **Operating** – While connected to an instrument that is logging data, the SBE 46 displays the instrument data. The SBE 46 can be programmed to sound an alarm, acting as a remote depth display with alarm when used with the SBE 11*plus* V2.

Notes:
* Help files provide detailed information on the use of SEATERM. Note that the SBE 46 is not available in SEATERM's instrument list; **SEATERM interacts correctly with the SBE 46 if you select the SBE 37 in SEATERM's instrument list**.
* It is possible to use the SBE 46 without SEATERM by sending direct commands from a dumb terminal or terminal emulator, such as Windows HyperTerminal.
* Sea-Bird supplies the current version of our software when you purchase an instrument. As software revisions occur, we post the revised software on our FTP site. See our website (www.seabird.com) for the latest software version number, a description of the software changes, and instructions for downloading the software from the FTP site.

The SBE 46 is supplied with a powerful Win 2000/XP software package, SEASOFT© V2, which includes SEATERM©, a terminal program for easy communication and data retrieval. SEATERM can send commands to the SBE 46 and/or the connected instrument to provide system setup and testing. Note that SEATERM **does not process the data**.

Data Format

The SBE 46 displays up to four parameters from the connected instrument. When the SBE 46 receives a line of data (data from one sample) from the connected instrument, it:
1. Reads the data,
2. Breaks the data into parameters, and
3. Assigns each parameter to a location on the LCD display.

The SBE 46 defines any combination of spaces, tabs, and commas as a break between two parameters. For example, each of the following is a break between two parameters:
• a comma
• a space
• a comma followed by a space

If the SBE 46 detects date and time (by checking for two colons [:] in the data), it ignores the date and displays the time.

Following is the SBE 46's output data format. Note that the SBE 46 inserts one space between the first and second parameter on a line:

> **Note:**
> **P1LABEL**, **P2LABEL**, **P3LABEL**, and **P4LABEL** are user-programmable data labels.

• **One Parameter (data1)**
  Top line of display: P1LABEL=data1

• **Two Parameters (data1, data2)**
  Top line of display: P1LABEL=data1
  Bottom line of display: P2LABEL=data2

• **Three Parameters (data1, data2, data3)**
  Top line of display: P1LABEL=data1 P2LABEL=data2
  Bottom line of display: P3LABEL=data3

• **Four Parameters (data1, data2, data3, data4)**
  Top line of display: P1LABEL=data1 P2LABEL=data2
  Bottom line of display: P3LABEL=data3 P4LABEL=data4

> *Example*:
> An SBE 37-SI is set up to output temperature, conductivity, date and time, and salinity. When connected to a computer, the SBE 37-SI data looks like this in SEATERM:
> ```
>    20.7977, 0.00005,    0.0103, 25 Apr 2000, 10:09:56
> ```
> *where*
> 20.7977 = temperature
> 0.00005 = conductivity
> 0.0103 = salinity
> 25 Apr 2000 = date
> 10:09:56 = time
>
> The SBE 46 is programmed with **P1Label=T**, **P2Label=C**, **P3Label=S**, **P4Label=TM**.
>
> When connected to the SBE 46, the SBE 37-SI data looks like this on the SBE 46 display:
> ```
>   T=20.7977 C=0.00005
>   S=0.0103 TM=10:09:56
> ```

Specifications

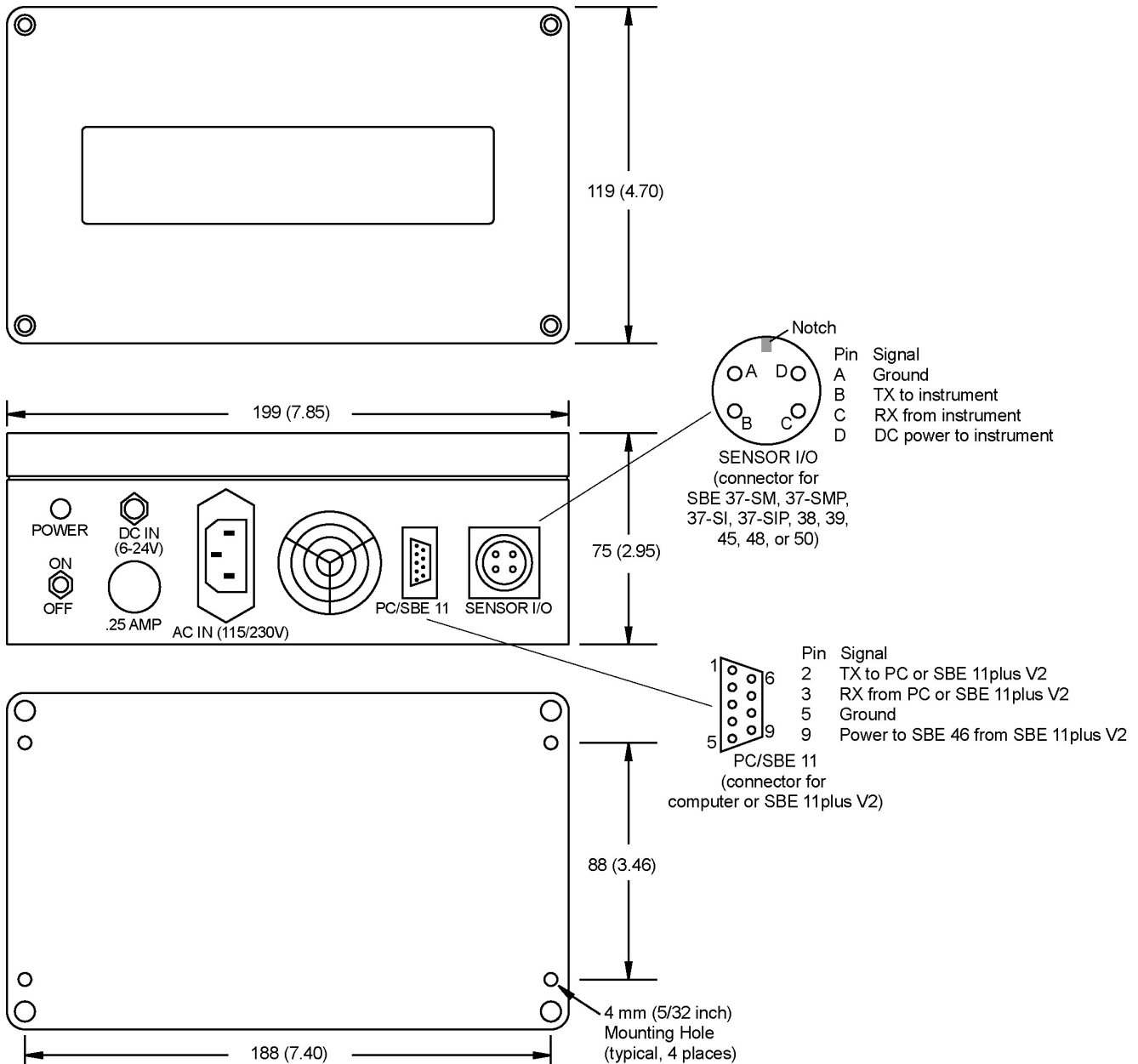| Display	2 line display, 20 characters each line, up to two parameters and associated user-programmable labels per line, character height 12.7 mm (0.5 inch)
Input AC Power	115/230 VAC Steady State Power Output *: up to 750 milliamps to power an external instrument.
Input DC Power	6 - 24 VDC *Power Input (VDC)* *Steady State Power Output ** *(to power an external instrument)* 6 – 12 Up to 500 milliamps 15 Up to 400 milliamps 20 Up to 150 milliamps Operating Current: 20 milliamps when not powering an external sensor. SBE 46 can be powered externally or with internal battery. For internal battery power: 1. Install a standard 9-volt alkaline or lithium transistor battery. 2. Install jumper J2.
Environmental	For indoor use; do not get wet
Materials	ABS plastic housing
Weight	0.9 kg (2.0 lbs)

*Note: There are some limitations on input power when using the SBE 46 to power the SBE 37-SIP or 37-SMP MicroCAT.
For those applications, provide 115/230 VAC input (resulting in 750 mA output) or $6 - 15$ VDC input (resulting in ≥ 400 mA output) to the SBE 46. Higher input DC voltage ($16 - 24$ VDC) does not provide enough current for the SBE 37-SIP or 37-SMP.
Note that the SBE 37-SIP and 37-SMP specifications state that they require 500 mA input. However, the 500 mA is a transient current for pump startup that can be provided by the SBE 46; the 400 mA output from the SBE 46 at 15 VDC input is sufficient for the maximum steady state power required by these MicroCATs (260 mA to run the pump).

Dimensions and Connectors

Dimensions in millimeters (inches)

119 (4.70)

199 (7.85)

POWER

DC IN (6-24V)

ON

OFF

.25 AMP   AC IN (115/230V)

PC/SBE 11   SENSOR I/O

75 (2.95)

Notch

Pin	Signal
A	Ground
B	TX to instrument
C	RX from instrument
D	DC power to instrument

SENSOR I/O
(connector for
SBE 37-SM, 37-SMP,
37-SI, 37-SIP, 38, 39,
45, 48, or 50)

Pin	Signal
2	TX to PC or SBE 11plus V2
3	RX from PC or SBE 11plus V2
5	Ground
9	Power to SBE 46 from SBE 11plus V2

PC/SBE 11
(connector for
computer or SBE 11plus V2)

88 (3.46)

4 mm (5/32 inch)
Mounting Hole
(typical, 4 places)

188 (7.40)

Wiring SBE 46

On ship, cables longer than 3 meters should be installed inside an earthed metal conduit by a qualified electrician. This minimizes the potential for external signals to disrupt communication and ensures that high voltage lines (such as the sea cable) are sufficiently protected. Cables shorter than 3 meters can be used without shielding when installing or bench testing the instrument.

Section 3: Programming, Testing, and Operating SBE 46

This section describes installing software; SBE 46 jumper settings; programming, testing, mounting, and operating the SBE 46; and setting up the instrument interfacing with the SBE 46.

Installing Software

Notes:
- Help files provide detailed information on the software.
- It is possible to use the SBE 46 without SEATERM by sending direct commands from a dumb terminal or terminal emulator, such as Windows HyperTerminal.
- Sea-Bird supplies the current version of our software when you purchase an instrument. As software revisions occur, we post the revised software on our FTP site. See our website (www.seabird.com) for the latest software version number, a description of the software changes, and instructions for downloading the software from the FTP site.

Sea-Bird recommends the following minimum system requirements for installing the software: Windows 2000 or later, 500 MHz processor, 256 MB RAM, and 90 MB free disk space for installation. Although SEASOFT V2 was designed to work with a PC running Win 2000/XP; extensive testing has not shown any compatibility problems when using the software with a PC running Windows Vista.

If not already installed, install SEATERM and other Sea-Bird software programs on your computer using the supplied software CD:

1. Insert the CD in your CD drive.

2. Install software: Double click on **SeasoftV2_*date*.exe** (*date* is the date that version of the software was created). Follow the dialog box directions to install the software. The installation program allows you to install the desired components. Install all the components, or just install SEATERM.

The default location for the software is c:\Program Files\Sea-Bird. Within that folder is a sub-directory for each program.
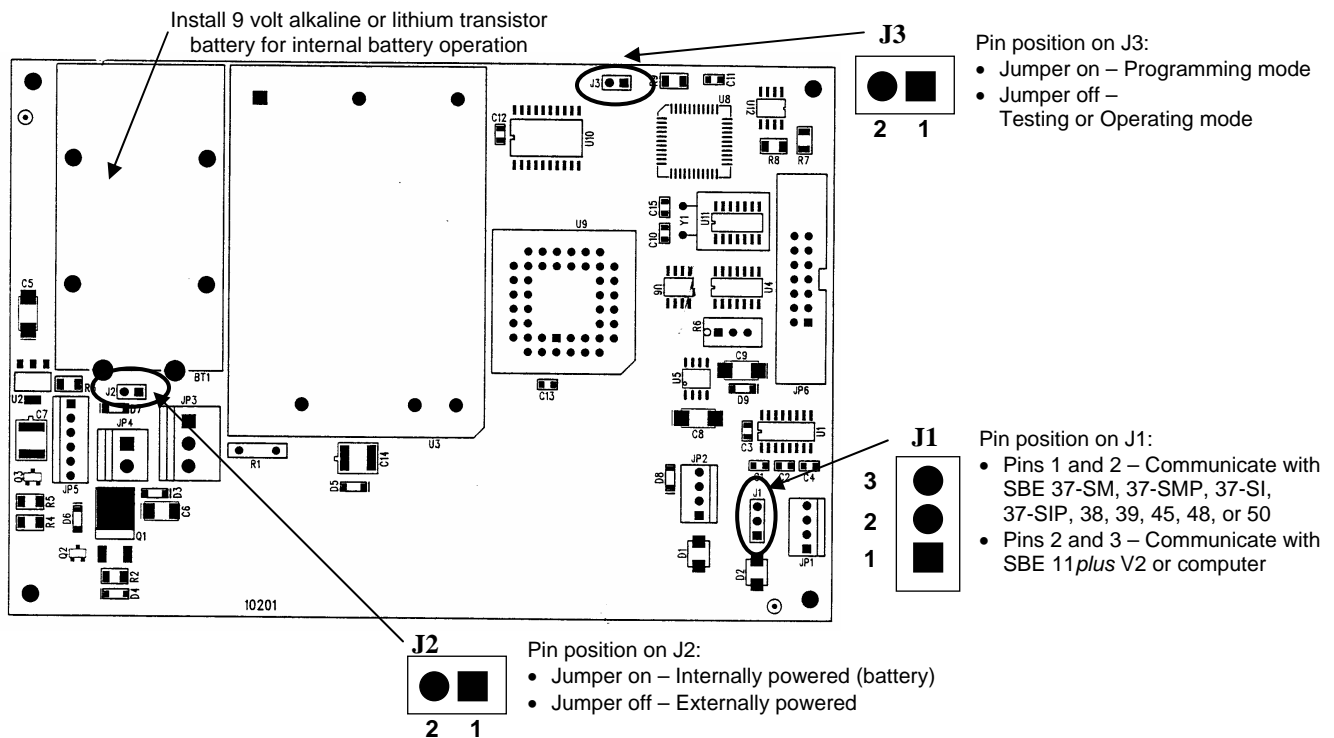
Removing Lid and Checking Jumpers

CAUTION:
Avoid getting anything on the PCB, which can be damaged by water or other materials.
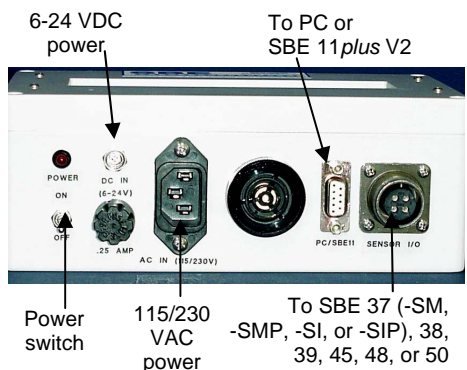
The SBE 46's Printed Circuit Board (PCB) has several jumpers that control how the SBE 46 is powered and responds. Remove the SBE 46 lid to check the jumper settings as described below:

Remove screw (typical, 4 places)

Do not remove (typical, 4 places)

1. Remove the four 4 mm, recessed, self-retaining, Phillips-head screws securing the lid to the housing body. **Do not remove the four smaller screws in the lid – these secure the LCD to the lid**.
2. Remove the lid, **being careful not to pull out the ribbon cable.**
3. See the drawing below for jumper descriptions and locations. Move jumpers as directed in the programming, testing, and operating procedures.
4. When done moving/checking jumpers, re-secure the lid to the housing body with the four Phillips-head screws.

Install 9 volt alkaline or lithium transistor battery for internal battery operation

J3

Pin position on J3:
- Jumper on – Programming mode
- Jumper off –
  Testing or Operating mode

J1

Pin position on J1:
- Pins 1 and 2 – Communicate with SBE 37-SM, 37-SMP, 37-SI, 37-SIP, 38, 39, 45, 48, or 50
- Pins 2 and 3 – Communicate with SBE 11*plus* V2 or computer

J2

Pin position on J2:
- Jumper on – Internally powered (battery)
- Jumper off – Externally powered

Programming and Testing SBE 46

6-24 VDC power

To PC or SBE 11*plus* V2

Power switch

115/230 VAC power

To SBE 37 (-SM, -SMP, -SI, or -SIP), 38, 39, 45, 48, or 50

Programming and testing will set up the SBE 46 and verify that it works, prior to operation with an instrument.

Setup

1. Connect the 9-pin to 9-pin cable to the SBE 46's *PC/SBE 11* and to your computer's serial port.
2. Connect the power supply to the SBE 46.
   - If planning to power the SBE 46 from the SBE 11*plus* V2 when operating the system, you must provide a temporary power supply for programming and testing.
3. Place the J1 jumper on pins 2 and 3. This allows the SBE 46 to communicate with the computer.
4. Install a jumper on J3, connecting pins 1 and 2. This places the SBE 46 in programming mode.

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Program and Test

Notes:
- The SBE 46 is not available
  in the list of Instrument
  Types. **Select the SBE 37 as
  the instrument type.**
- See SEATERM's help files for
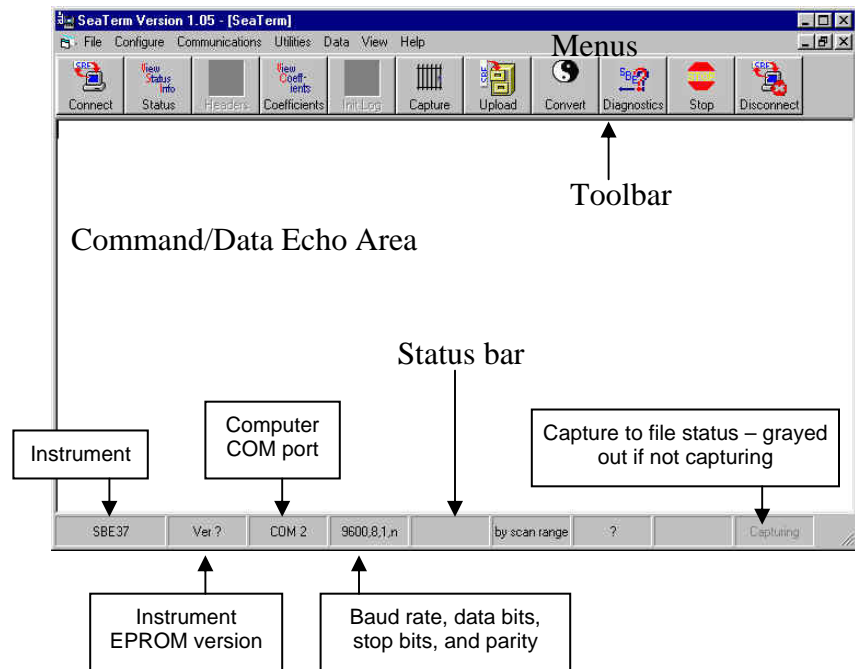 detailed information on the
  use of the program.

1. Double click on SeaTerm.exe. If this is the first time the program is used,
   the setup dialog box may appear:

Select the instrument type (**SBE 37**) and the computer COM port for
communication with the SBE 46. Click OK.

2. The main screen looks like this:

- Menus – Contains tasks and frequently executed instrument commands.
- Toolbar – Contains buttons for frequently executed tasks and instrument
  commands. All tasks and commands accessed through the Toolbar are
  also available in the Menus. To display or hide the Toolbar, select View
  Toolbar in the View menu. Grayed out Toolbar buttons are not applicable.
- Command/Data Echo Area – Echoes a command that was executed using
  a Menu or Toolbar button, as well as the instrument's response.
  Additionally, a command can be manually typed in this area, from the
  available commands for the instrument. Note that the SBE 46 must be
  powered up for it to respond to a command.
- Status bar – Provides status information. To display or hide the Status bar,
  select View Status bar in the View menu.

Note:
Once the SBE 46 is configured and
powered up (Steps 3 and 4 below),
to update the Status bar:
- on the Toolbar, click Status; or
- from the Utilities menu, select
 Instrument Status.
SEATERM sends the status
command, which displays in the
Command/Data Echo Area, and
updates the Status bar.

Following are the Toolbar keys applicable to the SBE 46:

Toolbar Keys	Description	Equivalent Command*
Status	Display instrument status.	**DS**
Capture	Capture instrument responses on screen to file. File has .cap extension. Press Capture again to turn off capture. Capture status displays in Status bar.	—
Disconnect	Free computer COM port used to communicate with SBE 46. COM port can then be used by another program. Note that SBE 46 must be connected to COM port for data to be obtained.	—

*See *Command Descriptions*.

3. In the Configure menu, select **SBE 37**. The dialog box looks like this:
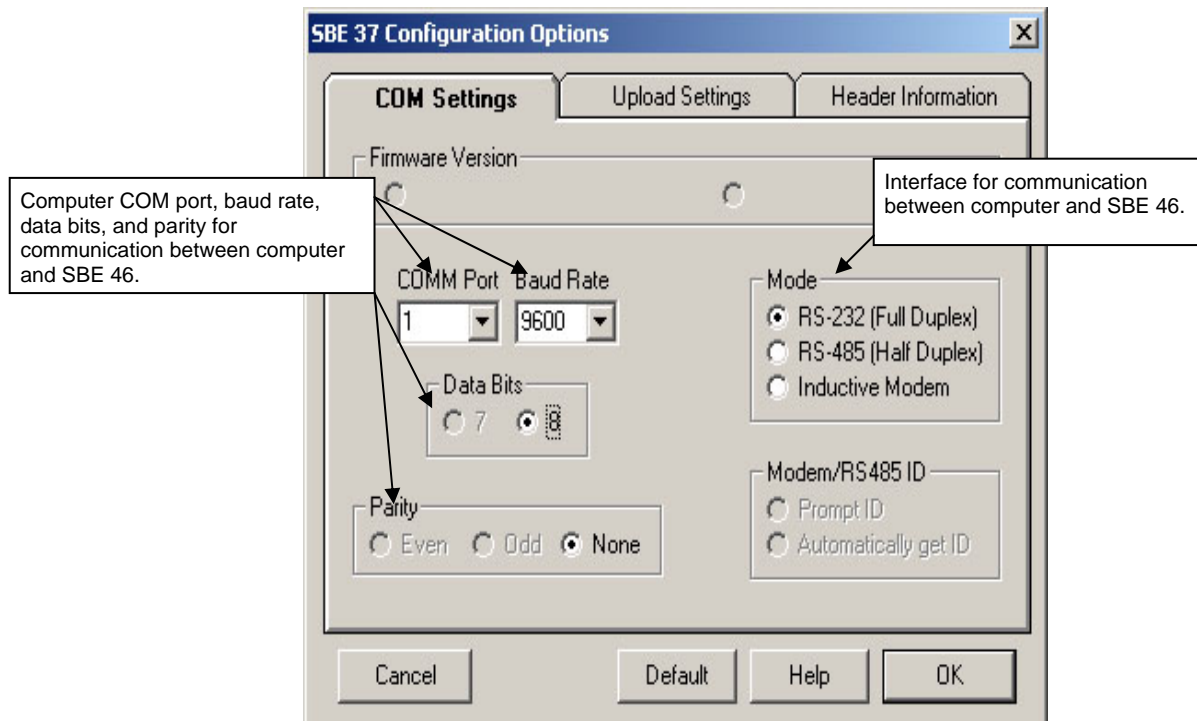
Make the selections in the Configuration Options dialog box:
*   Baud Rate: 9600 (or 1200, 2400, or 4800, as documented on Configuration Sheet)
*   Data Bits: 8
*   Parity: None
*   Mode: RS-232 (Full Duplex)
Click OK to save the settings.

Note:
When you click OK, SEATERM saves the Configuration Options settings to the SeaTerm.ini file in your Windows directory. SeaTerm.ini contains the last saved settings for **each** instrument. When you open SEATERM and select the desired instrument (SBE 19, 25, 37, etc.) in the Configure menu, the Configuration Options dialog box shows the last saved settings for that instrument.

4. Turn on the SBE 46's power switch. The SBE 46 displays the result of the status (**DS**) command:

```
SBE-46 LCD DISPLAY V 1.2
alarm disabled
p1 label = t =          (default is t)
p2 label = c =          (default is c)
p3 label = p =          (default is p)
p4 label = s =          (default is s)
S>
```

This shows that correct communications between the computer and the SBE 46 has been established. If the system does not respond as shown:

- Toggle the power switch again to attempt to establish communications.
- Verify that the SBE 37 was selected in the Configure menu and the settings were entered correctly in the Configuration Options dialog box.
- In the Communications menu, select *Options / Cycle baud when connecting*, and turn the power off and on again. SEATERM tries to connect at the baud set in Step 3. If it cannot, it cycles through all other possible baud rates to try to connect.
- Check power cabling and cabling between the computer and SBE 46.

5. Send the desired commands, described below. When entering commands:
- Input commands in upper or lower case letters and register commands by pressing the Enter key.
- The SBE 46 sends ? CMD if an invalid command is entered.
- If the system does not return an S> prompt after executing a command, press the Enter key to get the S> prompt.

Command Descriptions

|	
DS	Display operating status. Equivalent to Status button on Toolbar.
Baud=x	**x=** baud rate (1200, 2400, 4800, or 9600). Default 9600.
EnableAlarm=x	**x=Y**: Sound alarm when data scan contains an *a* or *A* character. This allows SBE 46 to act as a remote depth display with alarm when used with SBE 11*plus* V2.
	x=N (default): Do not sound alarm when data scan contains an *a* or *A* character.
P1Label=str	**str** = data label 1 (default **t**).
P2Label=str	**str** = data label 2 (default **c**).
P3Label=str	**str** = data label 3 (default **p**).
P4Label=str	**str** = data label 4 (default **s**).

Note:
str can be any combination of characters with a maximum length of 10. Spaces can be entered at the beginning of the string to make the data labels on each line of the display line up.

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6. Test the programming as follows:
    A. Remove the jumper on J3. This takes the SBE 46 out of programming mode and into testing/operating mode. The SBE 46 display should look like this:
    ```
    SBE-46 LCD DISPLAY
    V 1.2
    ```
    B. On the computer, type the entries shown below and hit the Enter key. View the responses on the SBE 46:

Computer Entry	SBE 46 Response (shown with defaults for **P1Label**, **P2Label**, **P3Label**, and **P4Label**)
1.0	t=1.0 V 1.2 (SBE 46 firmware version)
1.0,2.0	t=1.0 c=2.0
1.0,2.0,3.333	t=1.0 c=2.0 p=3.333
1.0,2.0,3.333,4.444	t=1.0 c=2.0 p=3.333 s=4.444
1.0,12 Apr 2000,12:30:45	t=1.0 c=12:30:45

Mounting SBE 46 (optional)
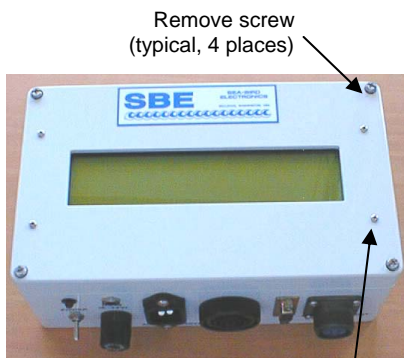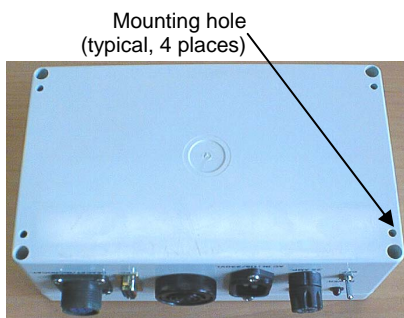
Remove screw (typical, 4 places)

Do not remove (typical, 4 places)

1. Remove the four 4 mm, recessed, self-retaining, Phillips-head screws securing the lid to the housing body. **Do not remove the four smaller screws in the lid – these secure the LCD to the lid**.

2. Remove the lid, **being careful not to pull out the ribbon cable**.

Mounting hole (typical, 4 places)

3. Using customer-supplied hardware, mount the SBE 46, using the four 4 mm ($^5/_{32}$ inch) mounting holes at the back of the housing body. Provide clearance as follows:
    - Bottom — 305 mm (12 inches) clearance for installing connectors.
    - Top and sides — small clearance, to prevent binding when removing the lid.
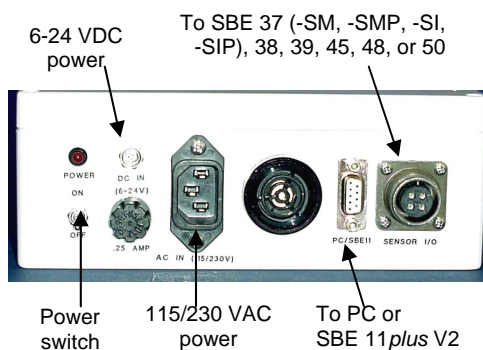
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Setting Up Instrument

This section describes the setup of the instrument (SBE 11*plus* V2, 37-SM, 37-SMP, 37-SI, 37-SIP, 38, 39, 45, 48, or 50) required for it to interface with the SBE 46. See the appropriate instrument manual for details on connecting the instrument to the computer, running the terminal program, and a list of instrument commands.

1. Set the instrument baud rate to the same rate as the SBE 46.

2. Set the instrument to wake up and start sampling when power is applied (applicable to the **SBE 37-SI, 37-SIP, 38, 45,** and **50**):

3. Set the instrument to start sampling now or at a delayed start time (applicable to the **SBE 37-SM, 37-SMP, 39, or 48**):

Operating SBE 46

1. Set the SBE 46 jumpers:
   A. **J1**:
      - **SBE 37-SM, 37-SMP, 37-SI, 37-SIP, 38, 39, 45, 48, or 50**: Jumper pins 1 and 2.
      - **SBE 11*plus* V2**: Jumper pins 2 and 3.
   B. **J2**: Jumper in place only if SBE 46 is powered by internal battery.
   C. **J3**: Verify that jumper has been removed for operating mode.

6-24 VDC power

To SBE 37 (-SM, -SMP, -SI, -SIP), 38, 39, 45, 48, or 50

Power switch

115/230 VAC power

To PC or SBE 11*plus* V2

2. Connect the instrument to the SBE 46:
   A. **SBE 37-SM, 37-SMP, 37-SI, 37-SIP, 38, 39, 45, 48, or 50**: Connect 4-pin bulkhead I/O connector on instrument to SBE 46 *SENSOR I/O* 4-pin connector.

B. **SBE 11*plus* V2**: Connect 5-pin *Remote Out* connector on SBE 11*plus* V2 back panel to SBE 46 *PC/SBE 11* 9-pin connector.

3. Connect the power supply to the SBE 46.

4. Turn on the power toggle switch on the SBE 46. The SBE 46 display initially looks like this:
```
SBE-46 LCD DISPLAY
V 1.2
```

As the instrument begins to sample and send data, the SBE 46 display looks like this (if temperature, conductivity, salinity, and time are displayed):
```
T=20.7977 C=0.00005
S=0.0103 TM=10:20:02
```

Glossary

PCB – Printed Circuit Board.

Scan – One data sample. The data sample may contain primary data (temperature, conductivity, pressure), date and time, and derived variables (such as salinity and sound velocity).

SBE 46 – LCD Display Box for interfacing with:
- SBE 11*plus* V2 Deck Unit
- SBE 37-SM or 37-SMP MicroCAT Conductivity and Temperature (pressure optional) Recorder
- SBE 37-SI or 37-SIP MicroCAT Conductivity and Temperature (pressure optional) Sensor
- SBE 38 Digital Oceanographic Thermometer
- SBE 39 Temperature (pressure optional) Recorder
- SBE 45 MicroTSG (Thermosalinograph)
- SBE 48 Hull Temperature Sensor
- SBE 50 Digital Oceanographic Pressure Sensor

SEASOFT V2 – Sea-Bird's complete Win 2000/XP software package, which includes software for communication, real-time data acquisition, and data analysis and display. SEASOFT V2 includes **SEATERM**, SeatermAF, Seasave, SBE Data Processing, and Plot39.

SEATERM – Terminal program in SEASOFT V2 used to communicate with the SBE 46. SEATERM can send commands to the SBE 46 to provide status display, programming, testing, and capture. Note that the SBE 46 is not available in SEATERM's instrument list; **SEATERM will interact correctly with the SBE 46 if you select the SBE 37 in SEATERM's instrument list, regardless of which instrument you will be using with the SBE 46**.

Appendix I: Command Summary

To send commands to the SBE 46, the SBE 46 must be in programming mode (J3 jumper on, J1 jumper on pins 2 and 3) and connected to a computer running a terminal program (SEATERM, or a dumb terminal or terminal emulator, such as Windows HyperTerminal).

When entering commands:
- Input commands in upper or lower case letters and register commands by pressing the Enter key.
- The SBE 46 sends ? CMD if an invalid command is entered.
- If the system does not return an S> prompt after executing a command, press the Enter key to get the S> prompt.

Note:
str can be any combination of characters with a maximum length of 10. Spaces can be entered at the beginning of the string to make the data labels on each line of the display line up.

COMMAND	DESCRIPTION
DS	Display status.
Baud=x	**x=** baud rate (1200, 2400, 4800, or 9600). Default is 9600.
EnableAlarm=x	**x= Y**: Sound alarm when data scan contains an *a* or *A* character. This allows SBE 46 to act as a remote depth display with alarm when used with SBE 11*plus* V2. **x= N** (default): Do not sound alarm when data scan contains an *a* or *A* character.
P1Label=str	**str** = data label 1.
P2Label=str	**str** = data label 2.
P3Label=str	**str** = data label 3.
P4Label=str	**str** = data label 4.

Appendix II: Replacement Parts

Part Number	Part	Application Description	Quantity in SBE 46
801215	9-pin DB-9P to 5-pin MS3106A-14S-5P cable, 2.4 m (8 ft)	SBE 46 *PC/SBE 11* connector to SBE 11*plus* V2 *Remote Out* connector	-
80437	4-pin MS3106A-14S-2P to 4-pin RMG-4FS cable, 2.4 m (8 ft)	SBE 46 *SENSOR I/O* connector to SBE 37-SM, 37-SMP, 37-SI, 37-SIP, 38, 39, or 50 I/O connector	-
801216	4-pin MS3106A-14S-2P to 4-pin MCIL-4MP cable, 2.4 m (8 ft)	SBE 46 *SENSOR I/O* connector to SBE 45 I/O connector	-
171887	9-pin DB-9P to 9-pin DB-9S cable, 3.0 m (10 ft)	SBE 46 *PC/SBE 11* to computer	-
171888	25-pin DB-25S to 9-pin DB-9P cable adapter	For use with computer with DB-25 connector	1
801217	DC power cable	Provides DC power to SBE 46	-
17015	AC power cable	Provides AC power to SBE 46	-

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