

The SBE 45 MicroTSG Thermosalinograph is an externally powered, high-accuracy instrument, designed for shipboard determination of sea surface (pumped-water) conductivity and temperature. Salinity and sound velocity can also be computed. The MicroTSG is constructed of plastic and titanium to ensure long life with minimum maintenance.

## OPERATION OVERVIEW

Communication with the MicroTSG is over an internal, 3-wire, RS-232C link, providing real-time data transmission. Commands can be sent to the MicroTSG to provide status display, data acquisition setup, data display and capture, and diagnostic tests. User-selectable operating modes include:

- **Polled sampling** – On command, the MicroTSG takes one sample and sends the data to the computer.
- **Autonomous sampling** – At pre-programmed intervals, the MicroTSG samples and sends the data to the computer. The MicroTSG does not enter quiescent (sleep) state between samples.
- **Serial Line Sync** – A pulse on the serial line causes the MicroTSG to wake up, sample, and enter quiescent state automatically.



Calibration coefficients stored in EEPROM allow the MicroTSG to transmit data in engineering units.

## SENSORS

The MicroTSG retains the temperature and conductivity sensors used in the SBE 21 Thermosalinograph, but has improved acquisition electronics that increase accuracy and resolution, and lower power consumption. The MicroTSG's aged and pressure-protected thermistor has a long history of exceptional accuracy and stability (typical drift is less than 0.002 °C per year). Electrical isolation of the conductivity electronics eliminates any possibility of ground-loop noise.

The MicroTSG's internal-field conductivity cell is unaffected by external fouling, and uses expendable anti-foulant devices.

## OPTIONAL PN90402 - SBE 45 POWER, NAVIGATION, and REMOTE TEMPERATURE INTERFACE BOX

An optional AC- or DC-powered Interface Box:

- Provides isolated DC power and an optically isolated RS-232 data interface.
- Contains a NMEA 0183 port for appending navigation information from a NMEA navigation device to the data stream.
- Contains an RS-232 port for appending the output of an optional remote temperature sensor (SBE 38), allowing for measurement of sea surface temperature with minimal thermal contamination from the ship's hull.
- Outputs the data stream (MicroTSG, NMEA navigation device, and SBE 38 data) to the computer over an RS-232 interface.

## SOFTWARE

The MicroTSG is supplied with a powerful Win 95/98/NT/2000/XP software package, SEASOFT<sup>®</sup>-Win32. SEASOFT's modular programs include:

- SEATERM — terminal program for instrument setup and data display.
- SEASAVE — real-time data acquisition and display
- SBE Data Processing — filtering, aligning, averaging, and plotting of data and derived variables.

# MicroTSG (Thermosalinograph)

**SBE 45**

## SPECIFICATIONS

### Measurement Range

Conductivity: 0-7 S/m (0-70 mS/cm)  
 Temperature \*: -5 to 35 °C

### Initial Accuracy

Conductivity: 0.0003 S/m (0.003 mS/cm)  
 Temperature \*: 0.002 °C  
 Salinity: 0.005 PSU, typical

### Typical Stability (per month)

Conductivity: 0.0003 S/m (0.003 mS/cm)  
 Temperature \*: 0.0002 °C  
 Salinity: 0.003 PSU, typical

### Resolution

Conductivity: 0.00001 S/m (0.0001 mS/cm)  
 Temperature \*: 0.0001 °C  
 Salinity: 0.0002 PSU, typical

### Calibration Range

Conductivity: 0-6 S/m (60 mS/cm); physical calibration 2.6-6 S/m (26-60 mS/cm), plus zero conductivity (air)

Temperature \*: +1 to +32 °C

### Time Resolution

1 second

### Clock Stability

13 seconds/month

### Input Power

8-30 VDC

### Acquisition Current

34 mA at 8 VDC; 30 mA at 12-30 VDC

### Quiescent Current

10 microamps

### Acquisition Rate

1 Hz maximum

### Operating Pressure

34.5 decibars (50 psi) maximum

### Flow Rate

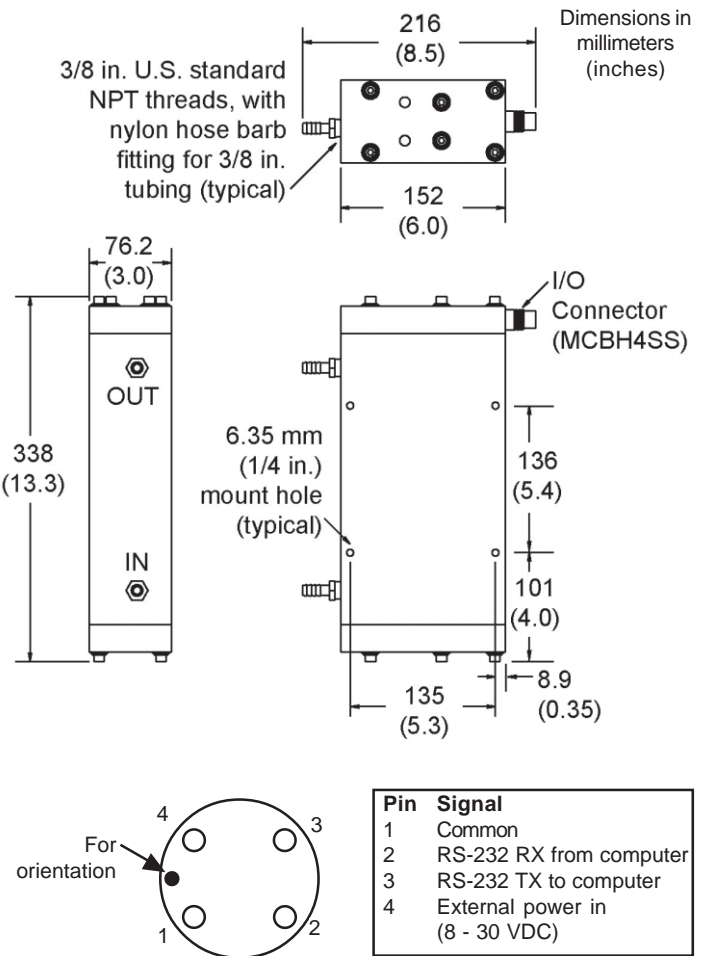
10 to 30 ml/sec (0.16 to 0.48 gal/min)

### Materials

PVC housing

### Weight

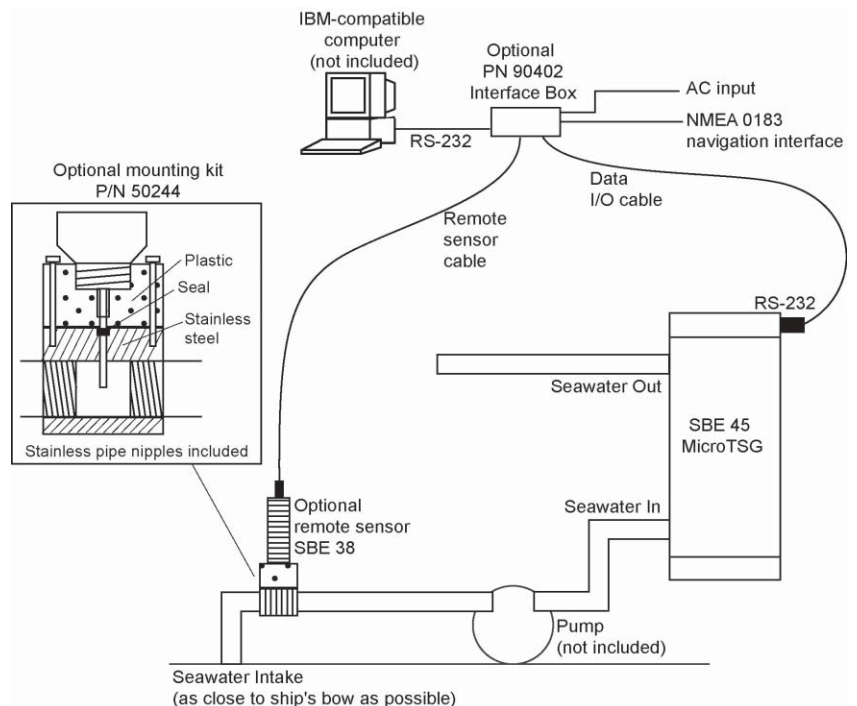
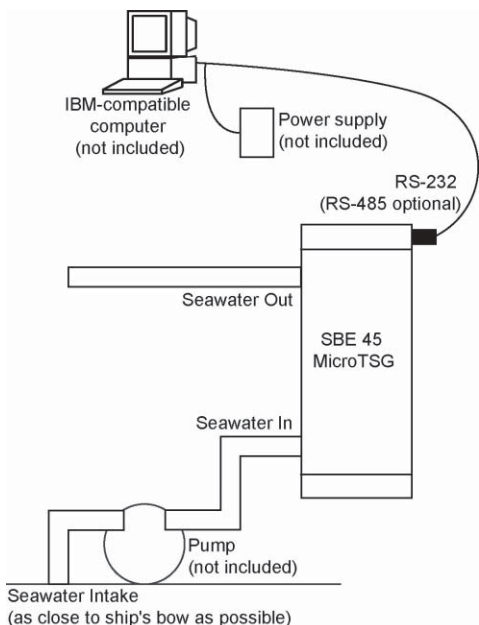
4.6 kg (10.2 lbs)



\* For specifications for optional SBE 38 remote temperature sensor, see SBE 38 datasheet.

## System Schematic: SBE 45 with Optional PN 90402 Interface Box and Remote Temperature Sensor

### System Schematic: SBE 45



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