

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** – 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) mode between samples.
- **Serial Line Sync** – A pulse on the serial line causes the MicroTSG to wake up, sample, and enter quiescent mode 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 an expendable anti-fouling device to inhibit internal fouling. The anti-foulant is typically effective for at least one year.

SOFTWARE

The MicroTSG is supplied with SEATERM®, a powerful terminal program for easy communication and data retrieval. SEATERM can send commands to the MicroTSG to provide status display, data acquisition setup, data display and capture, and diagnostic tests.

MECHANICAL INSTALLATION

- The MicroTSG has four 6.35 mm (1/4-inch) thru-bolt holes for mounting to the ship.
- The housing is tapped with 3/8-inch U.S. standard NPT threads.
- Nylon hose barb fittings for 1/2-inch tubing are provided.

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 to 6 S/m (60 mS/cm), physical calibration over the range 2.6 to 6 S/m (26 to 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 milliamps at 8 VDC;
 30 milliamps 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)

