



The SEACAT Thermosalinograph accurately determines sea surface temperature and conductivity from underway vessels. Typically mounted near the ship's seawater intake in a PVC water jacket assembly, the sensors are connected by cable to an AC-powered junction box positioned near the user's computer. The junction box provides sensor power and an isolated data interface, and contains a NMEA 0183 port for appending GPS navigation information to the data stream. Salinity, density, sound velocity, and other variables may be computed, tabulated, and plotted using the IBM PC/compatible software supplied.

To measure sea surface temperature with minimum thermal contamination from the ship's hull, an optional remote sensor may be installed at the seawater intake (ideally located near the bow).

For corrosion resistance, only plastic, titanium, and the glass/platinum cell are exposed to seawater. Valves are provided for controlling seawater circulation and fresh water flushing, and the sensor assembly is easily removed for cleaning and calibration.

CONDUCTIVITY SENSOR

The platinum-electrode glass conductivity cell's unique internal-field geometry eliminates proximity effects; this feature is critically important in thermosalinograph applications where the cell must operate in a water jacket's confined volume. The internal-field cell also makes possible the use of expendable anti-fouling attachments (supplied with the SBE 21) that inhibit biological fouling. The same conductivity sensor and stable interface electronics have been used on more than 1000 SBE 16 (moored) and SBE 19 (profiling) SEACATs in use around the world today.

PRIMARY AND OPTIONAL REMOTE TEMPERATURE SENSORS

The thermistor temperature sensors are stable and immune to shock and vibration, and the interface electronics are the same as used in the SBE 16 and 19 SEACATs. The optional remote temperature sensor, SBE 38, provides RS-232 output and has a 5-year history of accurate and reliable lab and marine-environment field operation.

AUXILIARY ANALOG INPUT CHANNELS

Four 0-5 volt A/D input channels (available at a water jacket bulkhead connector) are a standard feature, allowing users to interface auxiliary sensors (e.g., fluorimeters, dissolved oxygen, pH, turbidity) with the thermosalinograph. The channels can be configured for either four single-ended (standard) or two differential (optional) 0-5 volt inputs. Acquisition and display of the auxiliary sensor data is fully supported in Sea-Bird's SEASOFT[®] software.

OPERATION

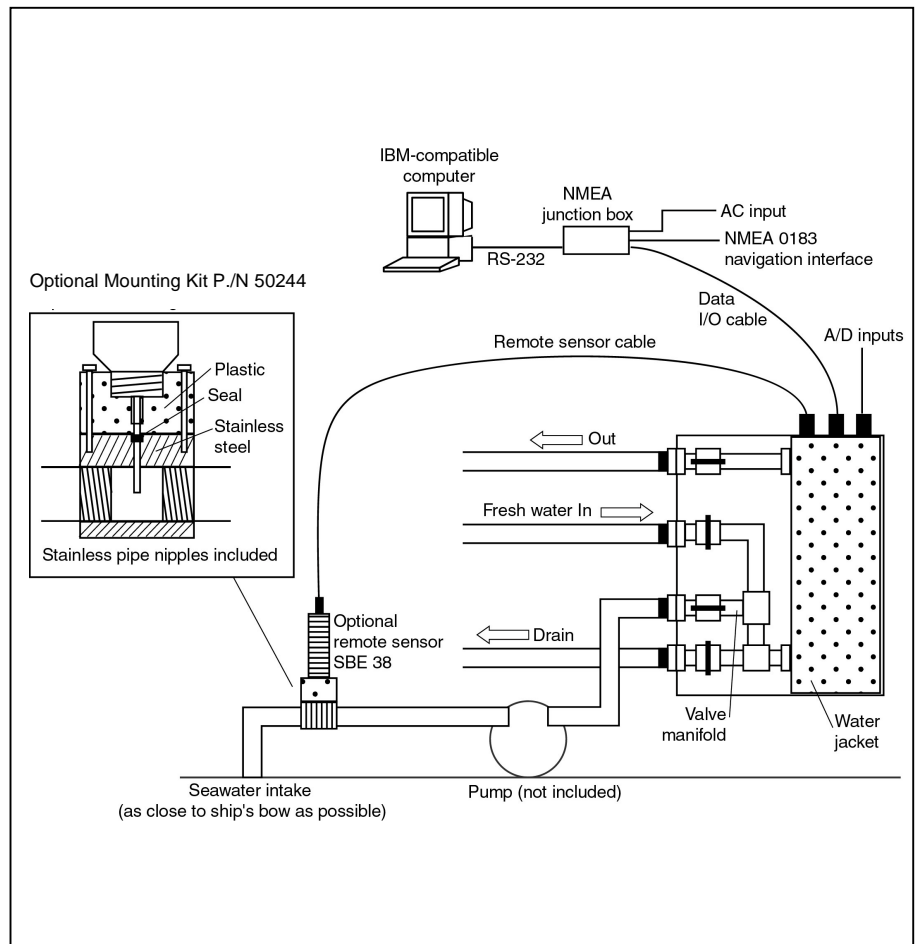
For real-time monitoring, the SBE 21 is typically set to sample every five seconds. SEASOFT's flexible programming capability permits a choice of display formats: for example, hourly temperature and salinity data might be plotted, after which the CRT display will *page* to a new screen. Successive screens can also be dumped to a printer, and the real-time data can be logged to a disk simultaneous with internal recording. When the memory fills, real-time output and logging to disk will continue after internal recording stops. A second serial port on the data acquisition computer can be used to send real-time data to another serial device. When a computer cannot be dedicated to logging the data, the SBE 21's internal memory permits autonomous operation with periodic downloading.

MECHANICAL INSTALLATION

The PVC base or back plate may be drilled for mounting to the ship. Seawater connections (for normal use) and fresh water connections (for cleaning) are PVC pipes with 1 inch (25.4 mm) U.S. standard NPT threads. Mating female fittings are provided, and can easily be adapted to locally available pipe sizes. A stainless steel and plastic in-line pipe mount is available for safe below-waterline installation of the remote temperature sensor.

MEMORY & DATA FORMAT

The SEACAT Thermosalinograph has an 8 Mbyte FLASH RAM. Each sample of temperature and conductivity uses 4 bytes, remote temperature (if active) adds 3 bytes per sample, and each optional A/D voltage adds 1.5 to 2 bytes. Inter-record headers, written each 1000 samples, contain sample numbers, data pointers, and time/date from the SBE 21's internal real-time clock.



POWER, COMPUTER, and GPS INTERFACE

A 100-250 VAC-powered interface box supplies isolated DC power, provides an optically-coupled RS-232 standard interface to the user's computer, and permits the appending of GPS data via a NMEA 0183 interface port. Each sample, including primary and remote temperature, conductivity, and optional analog voltages, is transmitted via the junction box, where GPS information (converted to a uniform format from a wide range of receiver types) is appended prior to transfer to the user's computer. A 10-meter neoprene cable for connecting the water jacket / sensor assembly to the junction box (additional length may be ordered at time of purchase), an AC power cord, and a 1.5-meter cable for connecting the junction box to the computer's RS-232 interface are also supplied.

SPECIFICATIONS

	Range	Accuracy	Resolution
Conductivity (S/m)	0 - 7	±0.001	±0.0001
Temperature, primary (°C)	-5 to +35	±0.01	±0.001
Temperature, remote (°C)	-5 to +35	±0.01	±0.0003
Sample interval	3 seconds or longer in steps of 1 second		
Water jacket volume	approximately 5 liters		
Recommended flow rate	approximately 1 liter per second		
Water jacket pressure limit	3.45 x 10 ⁵ N-m ⁻² (50 psi)		
Dimensions, mm (inches)	577 (22.7) high x 483 (19.0) wide x 229 (9.0)		
Shipping weight, kg (lbs)	41 (90)		