

# SEAGAUGE Wave & Tide Recorder

**SBE 26plus**  


The SBE 26plus is the next generation wave and tide recorder, bringing improvements in many areas over its SBE 26 predecessor:

- Deployment length – 32 Mbyte vs 8 Mbyte memory; 12 batteries vs 9 *and* reduced power consumption (6 times longer deployment for a typical sampling scheme of water-level measurements every 30 minutes and 8.5-minute, 4 Hz wave-burst samples eight times a day).
- Sampling flexibility – If desired, measure the tide for only a portion of the tide interval, reducing power consumption. Logging start and stop times can be programmed.
- Real-time output – Output real-time tide data, wave data, and/or wave statistics.
- Upload speed - Binary upload of data in memory at up to 115,200 baud vs. ASCII upload at up to 38,400 baud, providing up to 6 times faster upload.
- Upgrade flexibility - Downloadable instrument firmware upgrades for future enhancements do not require opening the electronics compartment to physically install a new EPROM.



The 26plus combines Sea-Bird's non-volatile FLASH memory with a stable time base, precision thermometer, and Quartz crystal pressure sensor to provide wave and tide recording of unprecedented resolution and accuracy, along with high-quality temperature information. A second input connector for an optional SBE 4M conductivity sensor is also standard.

The 26plus integrates pressure samples to obtain water level measurements unaffected by wave action, and also independently burst-samples pressure at rates up to 4 Hz for wave amplitude calculation. Water level sampling interval and integration duration and wave burst sampling interval and duration are programmable. The tide interval is user-programmable over a range of 1 minute to 12 hours. The 26plus can continuously measure pressure (if equipped with Quartz pressure sensor), or can conserve battery power by removing power from the pressure sensor between tide measurements, with user-programmable pressure integration from 10 seconds to the entire tide interval. Temperature data is recorded with each tide integration. Waves are characterized by burst sampling with the number of samples per burst, burst interval, and burst integration time programmed by the user. A tide and temperature measurement consists of 9 bytes (12 bytes with optional conductivity); each sample in a wave burst uses 3 bytes.

The large memory and low power requirements permit frequent water level recording and highly detailed wave characterization. For example, with Quartz pressure sensor, standard alkaline batteries, and optional conductivity sensor, a 445-day deployment could include water level measurements every 30 minutes (integrating pressure for the entire 30 minutes) and an 8.5-minute, 4 Hz wave-burst (2048 samples) eight times a day; a 670-day deployment could be achieved if pressure integration is limited to 11 minutes for each water level measurement.

## CONFIGURATION AND OPTIONS

A standard 26plus is supplied with:

- Plastic housing for depths to 600 meters (1960 feet)
- 20 meter (45 psia) Digiquartz<sup>®</sup> temperature-compensated pressure sensor
- Accurate temperature sensor – aged thermistor embedded in 26plus end cap
- Frequency input channel and bulkhead connector for optional SBE 4M conductivity sensor
- 32 MB FLASH memory
- 12 alkaline D-cell batteries; battery compartment is separated from electronics by a moisture-proof seal.
- Impulse glass-reinforced epoxy bulkhead connectors

Options include:

- Digiquartz temperature-compensated pressure sensor, in ranges from 0.2 to 680 meters (15 to 1000 psia)
- Lower priced Druck temperature-compensated strain gauge pressure sensor in ranges from 20 to 600 meters (45 to 880 psia), generally intended for wave sampling applications; will not provide highest quality tide data.
- SBE 4M Conductivity sensor, interfaced via bulkhead connector and clamped to 26plus housing
- High accuracy external temperature sensor
- RS-485 full duplex interface in place of standard RS-232 interface
- Wet-pluggable (MCBH *Micro*) connectors in place of standard connectors
- Mounting fixture

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## SOFTWARE

The 26plus includes SEASOFT<sup>®</sup> for Waves, a comprehensive package of Windows programs including deployment planning, instrument setup and data retrieval, plotting, auto-spectrum and time series analysis, and statistics reporting.

## SPECIFICATIONS

### Quartz Pressure (standard)

- Range: 9 ranges, from 0 - 0.2 m (15 psia) to 0 - 680 m (1000 psia)
- Accuracy: 0.01% of full scale (3 mm for 45 psia range \*)
- Repeatability: 0.005% of full scale (1.5 mm for 45 psia range \*)
- Hysteresis: 0.005% of full scale (1.5 mm for 45 psia range \*)
- Calibration: 0 psia to full scale pressure
- Resolution \*: Tide - 0.2 mm for 1-minute integration; 0.01 mm for 15-minute integration
- Wave - 0.4 mm for 0.25-second integration; 0.1 mm for 1-second integration

\*Stated values in mm are for 45 psia pressure sensor. Scale for other ranges, multiplying by (actual sensor psia / 45 psia).

### Strain Gauge Pressure (optional)

- Range: 4 ranges, from 0 - 20 m (45 psia) to 0 - 600 m (880 psia)
- Accuracy: 0.1% of full scale (30 mm for 45 psia range \*)
- Repeatability: 0.03% of full scale (9 mm for 45 psia range \*)
- Hysteresis: 0.03% of full scale (9 mm for 45 psia range \*)
- Calibration: 0 psia to full scale pressure
- Resolution \*: Tide - 0.2 mm for 1-minute integration; 0.01 mm for 15-minute integration
- Wave - 0.4 mm for 0.25-second integration; 0.1 mm for 1-second integration

\*Stated values in mm are for 45 psia pressure sensor. Scale for other ranges, multiplying by (actual sensor psia / 45 psia).

### Standard Temperature [°C]

- Range: -5 to +35 Accuracy: 0.01
- Resolution: 0.001 Calibration: +1 to +32<sup>1</sup>

### High Accuracy Temperature [°C] (optional)

- Range: -5 to +35 Accuracy: 0.002
- Resolution: 0.0001 Calibration: +1 to +32<sup>1</sup>

### Conductivity [S/m] (optional)

- Range: 0 to 7 Accuracy: 0.001
- Resolution: 0.00002
- Calibration: 2.6 - 6 plus zero conductivity (air)<sup>1</sup>

<sup>1</sup>Measurements outside specified calibration ranges will be at slightly reduced accuracy due to extrapolation errors.

Real-time clock: Quartz TCXO watch-crystal type 32,768 Hz; accuracy ± 2 ppm (5 sec/month).  
Battery-backed for minimum 2-year operation without main batteries installed.

Memory: 32 MB Flash RAM

Power Supply: Internal: standard 12 alkaline D-cells,  
External (optional) 12 - 20 VDC

Housing: Acetal copolymer Plastic to 600 m

Weight (with alkaline batteries):

Plastic housing 6.8kg (15 lbs) in air; 6.8kg (15 lbs) in water  
Mounting fixture 3.6kg (8 lbs) in air; 1.4kg (3 lbs) in water

