

The **Trillium Compact Ocean Bottom Seismometer (OBS)** is an ultra-low power broadband seismometer for ocean bottom deployments to 6000m depth. The OBS vessel and gimbal design preserves the full performance of the land-based Trillium Compact seismometer, including its exceptional dynamic range and low noise floor.

Incorporating a robust and reliable leveling gimbal that operates over a full 360° range, the Compact OBS will auto-level from all orientations. A full titanium cylindrical pressure vessel and proven glass-epoxy connectors ensure exceptional ruggedness and resistance to corrosion in marine and fresh water environments.

The system employs two separate connections: the primary analogue connection as well as a digital connection. The digital connector is provided for final configuration and sensor verification prior to deploying the OBS overboard.

PERFORMANCE DEPENDABILITY AVAILABILITY



COMPACT
Trillium
OCEAN BOTTOM SEISMOMETER



Benefits

- *The precise, kinematic 360° gimbal auto-levels from any orientation ensuring successful deployment and implementation.*
- *SoH outputs include case orientation, providing a powerful data set for optimizing deployment techniques.*
- *Ocean current induced noise effects are minimized due to a low-profile OBS design*
- *Ultra-low power consumption of 180 mw reduces battery costs*
- *120-second broadband seismometer that integrates with existing short period or mid-band infrastructure (platforms, power systems, and digitizers).*

Trillium OBS TECHNICAL SPECIFICATIONS Preliminary specifications: subject to change without notice.

SEISMOMETER	
TECHNOLOGY	
Topology	Symmetric triaxial
Feedback	Force balance with capacitive transducer
Mass Centering	Not required
PERFORMANCE	
Self-noise	See graph
Sensitivity	750V·s/m nominal ±0.5% precision
Off-axis Sensitivity	±0.5 %
Bandwidth	-3dB points at 120 s and 100 Hz
Transfer Function	Lower corner poles within ±0.5% of nominal provided High-frequency response within 1dB of nominal No peak in response at high frequency
Clip Level	26 mm/s from 0.1 Hz to 10 Hz
Parasitic Resonances	None below 100 Hz
Operational Tilt Range	±2.5° without re-leveling

DIGITAL COMMAND AND CONTROL INTERFACE	
USER INTERFACE	
Web browser	Onboard web server, using industry standard web browsers
Command line	Basic interface for non-SLIP connections
CONFIGURATION AND CONTROL	
Sensor	XYZ/UVW mode Calibration channel selection (off, all, U, V or W) Short/long period mode
Leveling	Initiate immediate leveling check Automatic cycle mode selection: ➤ (post power-on, three stage periodic) Automatic cycle parameter selection: ➤ (delay and interval times, max attempts)
Unit	Firmware updates State-of-health request Upload custom information

DATA OUTPUTS	
On-request	Seismometer mass position values Temperature Internal relative humidity Magnetometer readings Seismometer response (poles, zeroes, sensitivity) Instrument serial number, subassembly revisions Firmware revision Case orientation (with respect to vertical) Seismometer orientation (with respect to vertical) Download logged state-of-health Erase state-of-health log Upload/Download custom information
Leveling Log	Every leveling event logged in non-volatile memory Full before-and-after State of Health logged
State of Health Log	Scheduled interval recordings of SoH, includes: ➤ time from power on ➤ seismometer mass positions ➤ vessel and seismometer orientations ➤ magnetometer readings ➤ temperature Capacity for >2 years daily recordings

LEVELING AND ORIENTATION	
Technology	Dual degree-of-freedom motorized gimbals Jam-free mechanism Kinematic design preserves full seismometer performance
Range	>±180° relative to upright case
Accuracy	Levels to within ±0.5° of true vertical
Leveling initiation	Leveling checks done at some or all of: ➤ configurable delay after power on ➤ configurable periodic (three stage schedule) ➤ on external command Delay intervals configurable from seconds to months Levels only when needed based on configurable mass position threshold
Magnetometer	3-component, mounted on and leveled with seismometer

COMMUNICATIONS	
Interfaces	RS-232 serial, on main and auxiliary connectors
Protocols	Serial Line IP (SLIP) HTTP (POST and GET) Command line protocol

CONNECTORS/PLUGS	
Main	12-pin female, VSK-12-BCL rubber-molded glass epoxy 40V peak-to-peak differential seismic signal plus ground (3 channels) Serial RS-232 port (Rx, Tx) Calibration voltage input Power input and return
Auxiliary/diagnostic	4-pin female, VSG-4-BCL rubber-molded glass epoxy Serial RS-232 port (Rx, Tx, Grd) Auxiliary control input
Vacuum/pressure port	¼" male quick disconnect with shutoff Vent for evacuation and servicing

POWER	
Supply voltage	9 to 29 VDC isolated
Power consumption	<180 mW typical (leveled, quiescent)
Protection	Reverse-voltage and over-voltage protected Self-resetting over-current protection Unit can be powered on for descent and ascent

ENVIRONMENTAL	
Marine	Depth to 6000m, fresh and salt water
Operating temp.	-20°C to +60°C
Storage temp.	-40°C to +70°C
Shock	100g half sine, 5 ms without damage, 6 axes No seismometer mass lock required prior to deployment and through full experiment cycle.

PHYSICAL	
Enclosure	Titanium cylinder All connectors on end cap End cap removable for O-ring servicing Dual O-ring seals on end cap
Diameter	169 mm
Height	258 mm, not including connectors
Weight	12.9 kg on land, 7.1 kg in water



For more information, please email us at sales@osop.com.pa www.osop.com.pa

Figure 10-1 Top view

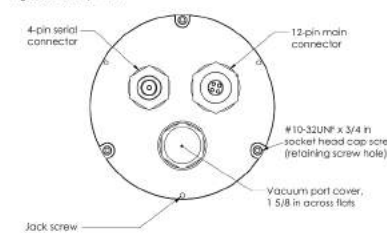


Figure 10-2 Side view

