



CODEVINTEC

Tecnologie per le Scienze della Terra e del Mare

45° 27' 39.384" N
9° 07' 30.145" E

Pegasus OBS Digital Recorder Data acquisition system



An intuitive and versatile ecosystem for ocean bottom experiments

Designed specifically for ocean bottom experiments, the Pegasus OBS workflow optimizes onshore and shipboard processes to address common challenges of this demanding environment.

A compact and mobile integrated seismic acquisition system, Pegasus OBS combines high fidelity data acquisition with ultra-low power consumption to provide a versatile platform for any experiment.



From Experiment Design to Publishing

Streamlined Workflow

The Pegasus OBS workflow allows you to effectively plan your deployment and pre-configure the digitizer and sensor prior to boarding the ship. Once on-deck, the system configuration can be set or adjusted using the Bluetooth enabled mobile app, all without needing to open the pressure vessels.

Ultra-low Size, Weight and Power

The remarkably small form factor and low power consumption of the Pegasus OBS digital recorder minimizes the cost of batteries, extends maximum experiment duration, reduces overall station size requirements, and simplifies integration into existing systems or new vessel designs.

Versatile Sensor and Power Compatibility

Pegasus OBS supports a broad range of sensor types including active and passive seismometers or geophones, pressure gauges and hydrophones. Four input channels permit simultaneously recording seismic and pressure or hydroacoustic signals.

The Pegasus OBS can utilize a wide range of power sources, allowing you to select the equipment that best suits the experiment. A separate backup power input permits use of a reserve battery to keep the timing system running even after the main batteries are depleted, so that clock drift can always be measured against GNSS at the end of an experiment

High-Precision Timing

Pegasus OBS' high-precision timing system includes a low-drift temperature compensated clock, a real-time clock, and an internal GNSS receiver. Simple one-tap mobile app actions synchronizes the internal clock to GNSS time just before deployment, and measures time drift offset relative to GNSS time immediately after recovery.

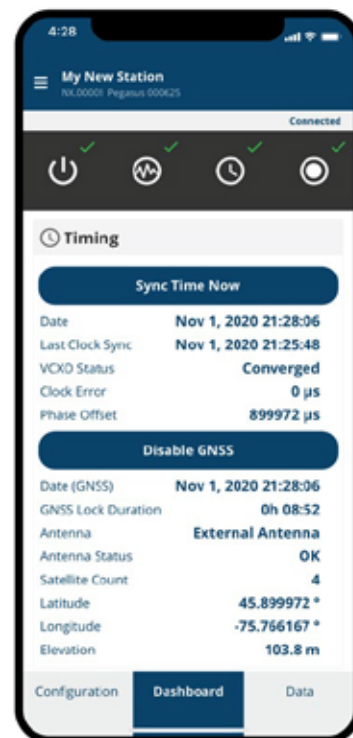
Complete Ready-to-Process Data

Retrieving data has never been easier for OBS deployments. The Pegasus OBS digitizer automatically produces complete, ready-to-use data in MiniSEED format along with StationXML instrument response and experiment metadata. Receive 1 year of 4-channel 100 sps data in less than 2 minutes, all without having to open the pressure vessel. Data retrieval can even produce automatically time-corrected data, interpolating the GNSS time offset recorded by the Pegasus.

Purpose Built, OBS Workflow

Every aspect of the Pegasus OBS ecosystem has been optimized to provide the greatest efficiency for ocean bottom experiments.

- > Powerful pre-planning tools
- > Bluetooth mobile interface allows you to configure the digitizer without opening the pressure vessels
- > Low SWaP (Size, Weight and Power) minimizes battery cost and overall system size
- > Retrieve 1 year of 4-channel 100 sps data in less than 2 minutes
- > High fidelity data produced by very low noise, high precision digitizer technology
- > Complete, ready to analyze datasets



iOS and Android apps connect seamlessly over Bluetooth to provide the primary on-deck interface for the Pegasus OBS.



Technical Specifications Pegasus OBS Digital Recorder Specifications subject to change without notice

Digitizer performance & Capabilities

Sampling	Simultaneous on all channels
Resolution	28 bit for ≤ 10 sps 26 bit for 20 to 50 sps 24 bit for ≥ 100 sps
Type	24-bit ADC per channel
Accuracy	Nominal gain accurate within $\pm 0.5\%$
Dynamic Range (typical)	142 dB @ 20 sps, 135 dB @ 100 sps (40 Vpp (1x gain), full-scale peak to RMS shorted-input noise)
Preamp Gain	1x, 4x, 10x, 40x, 80x Sensor A and B independently selectable
Sample Rates	1, 2, 5, 10, 20, 40, 50, 100, 200, 250, 500, 1000 sps
Decimation Anti-Aliasing Filter	> Linear phase (also known as non-causal or acausal) > -140 dB (linear phase) at output Nyquist frequency, 0 dB at 80% Nyquist

Sensor inputs

Channels	3-channel Sensor A port and 1-channel Sensor B port
Input Voltage Range (Peak-to-peak differential)	3-channel Sensor A port and 1-channel Sensor B port 40 V, 10 V, 4 V, 1 V, 0.5 V
Input Impedance	1.7 M Ω (40 k Ω for 40 Vpp range)

Sensor compatibility

Sensor Types	Differential analog sensors such as broadband seismometers, geophones, accelerometers, hydrophones, pressure gauges
Control Lines	3 on Sensor A and 1 on Sensor B port — typically used for mass center, and selecting XYZ/UVW or SP/LP modes
Sensor Power	> Supply power pass-through to sensor channels (9-17 V DC, 1 A) > Over-current protected
Auto Mass Centering	Configurable thresholds, intervals
Serial Interface	Sensor A supports digital management of Nanometrics sensors

Data recording & retrieval

Data sets	> Waveform data: miniSEED, STEIM2 compressed > Station metadata including instrument response: StationXML > State-of-Health: miniSEED > Instrument logs
Internal Memory	High reliability 128 GB eMMC
Data Download	USB3.0 Superspeed (>100MB/s) to application available for Windows, OSX, and Linux
User Interface	Bluetooth connectivity with mobile application (iOS and Android) for configuration and live view of waveforms and state-of-health

Timing - GNSS & Precision Network Timing

Timing System	Internal VCXO clock disciplined to Seascan time base module, synchronized to GNSS UTC timing source pre/post deployment
Free-running Timing Source	Seascan SISMTB time base module (customer serviceable)

Free-running Timing Stability	> Pre-correction: 4.3 msec/day > Post-correction: 0.04 msec/day (typical)
GNSS Timing Receiver	Internal 33-channel GNSS module
GNSS Timing Source	Selectable from GPS, GLONASS, BeiDou, Galileo, QZSS
GNSS Timing Accuracy	Typical < 3 μ s to UTC with GNSS lock
GNSS Power	Selectable: OFF or Temporarily ON (pre/post deployment)
Timing Clock Output	1 Hz Pegasus system time top of second, 125 Hz passthrough from Seascan

Power

Main Power Supply	9-17 V DC non-isolated input (via Power connector) or 5 V DC USB for Harvesting
Timing System Reserve Power	4-17 V DC Automatically enabled when main power drops below reserve power voltage Reserve power voltage must be less than the configured low-voltage shutdown for main power

Power (CONT'D)

Power-up	< 10 seconds
Protection	Electronic resettable fuse design, reverse battery protection
Battery Manager	User-configurable low voltage shutdown and restart thresholds

Certifications

Regulatory	RoHS
-------------------	------

Power usage (Typical)

Normal Mode	< 200 mW for 3 channels, < 240 mW when 4th channel is enabled
Timing System Reserve Mode	6 mW for persistent timing system when on reserve battery

Connectors & Leds

Sensor A (3-channel)	19-pin, shell size 14, female
Sensor B (1-channel)	7-pin, shell size 10, female
Power/Telemetry	7-pin, shell size 10, male
USB	USB-C receptacle
BLE Antenna	MCX (female) for dipole antenna
GNSS Antenna	MCX (female) with 3.3 V supply for active antenna
Rear Auxiliary Header	16-pin Samtec connector for timing outputs and reserve power input
Seascan Timing Mount	26-pin Samtec connector for Seascan time base modules with .230" pins or .320" pins (when used with alternate standoffs supplied)

Environmental

Operating Temperature	-5°C to +35°C
Storage Temperature	-40°C to +70°C
Humidity	Up to 90% non-condensing

Physical characteristics

Housing	Aluminum alloy
Weight	520 g
Size	180 mm (L) x 102.5 mm (W) x 79 mm (H)