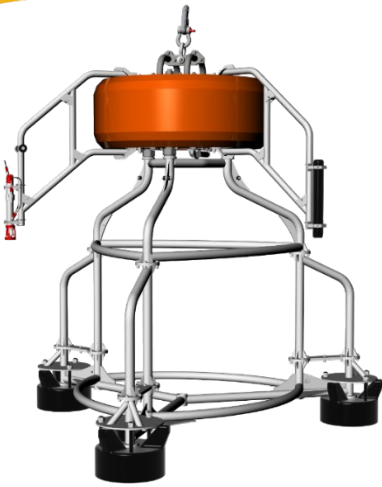


# Benthic Tripod “Abyss Warrior”

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# Benthic Tripod “Abyss Warrior”

Self-Recovery | In-Situ Multiparameter Observation



## Introduction

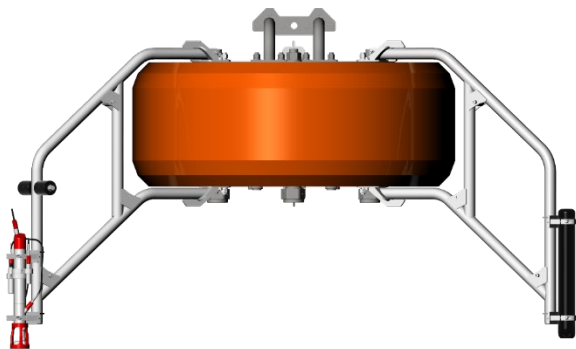
Abyss Warrior is a retrievable multi-parameter in-situ observation system for the seabed boundary layer, which is mainly used for comprehensive observation of the seabed.

It can carry a variety of self-contained ocean observation instruments to make long-term and stable in-situ observations of the physical, chemical, geological, and biological parameters of the seabed boundary layer. It can monitor various data such as seabed topography, ocean currents, water temperature, salinity (conductivity), depth (pressure), turbidity, dissolved oxygen, and underwater vision.

## Feature

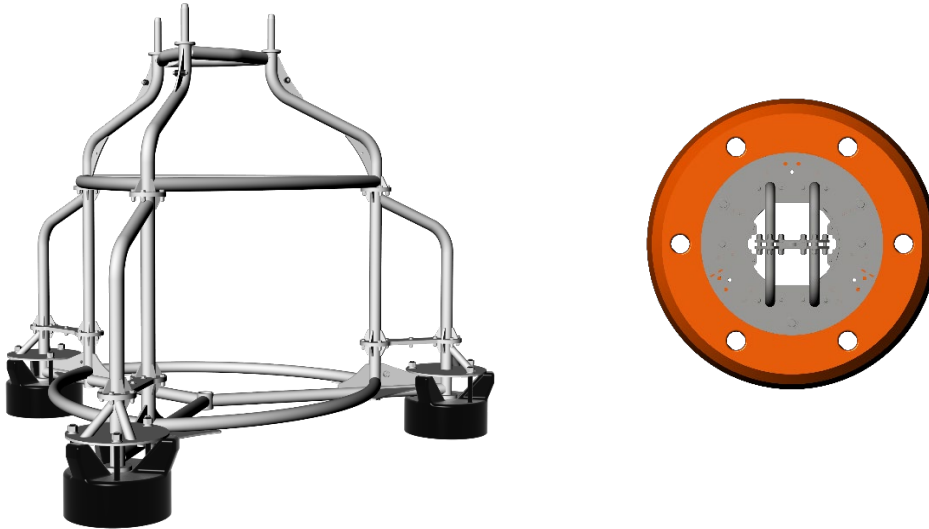
### Acoustic release & Self recovery

It carries double acoustic release system. The reentry capsule can float up autonomously to withdraw the equipment and data through a manual trigger or timed release.



### **Firm & Corrosion resistant**

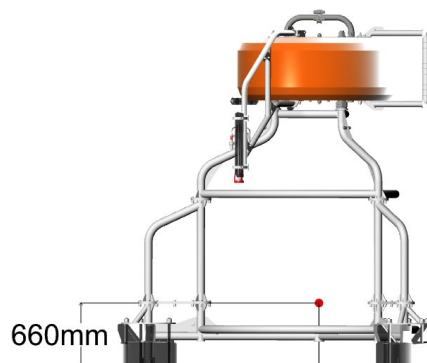
Titanium frame and glass beads floatation provide the equipment with higher mechanical strength and corrosion resistance.

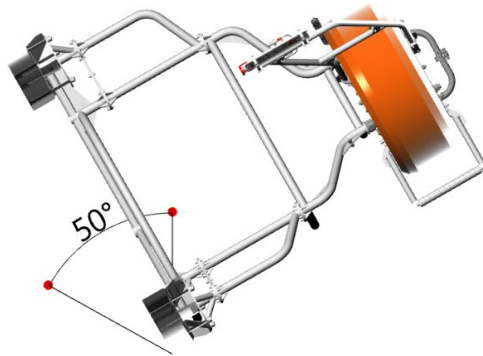


### **Steady sinking & Soft landing**

Proper weight distribution allows the device to sink in the water in a balanced and stable manner.

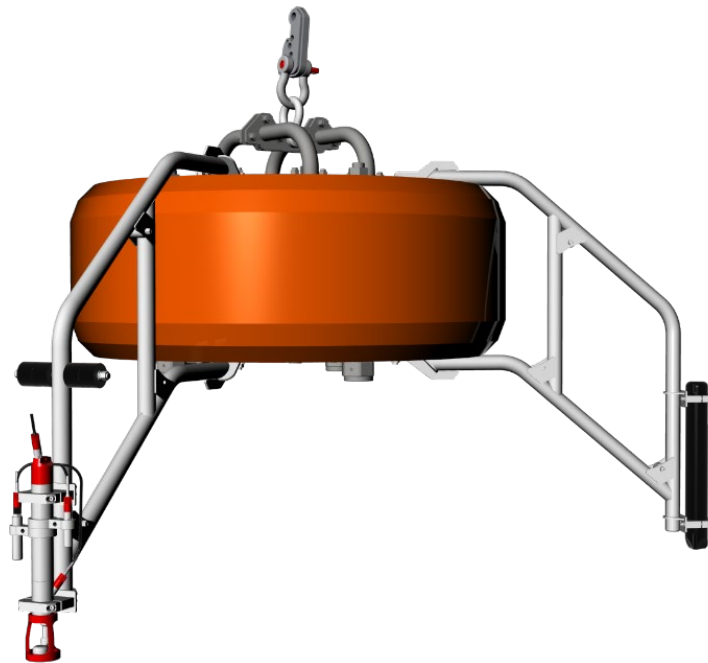
Belleville washers carried on the equipment provide cushioning during landing and greatly reduce the possibility of equipment damage caused by landing.





**Customised Service**

The structure of the platform and carried sensors & instruments can be customised to satisfy different requirements of research parameters.

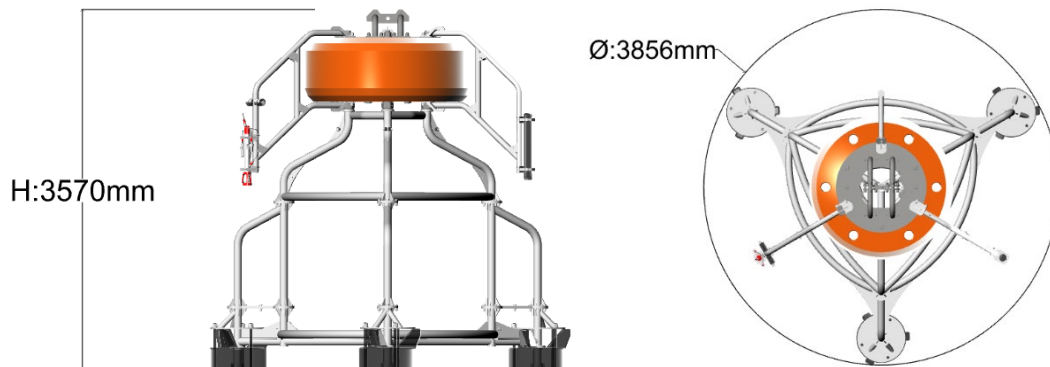




## Specification

### Weight & Size

- Diameter of the main body: 3856mm (151.811in)
  - Height of the main body: 3570mm (140.551in)
  - Overall weight (air): approx 2500kg (5511lb)
    - Weight of titanium frame (air): 1650kg
    - Weight of titanium frame (water): 1410kg
    - Weight of reentry capsule: 700kg &
    - Positive buoyancy of reentry capsule: 200kg
- \*P.S. The weight & size depend on the carried instruments.



## **Appearance & Material**

- Frame
  - Titanium (TA2)
  - Density: 4.54g/cm<sup>3</sup>
  - Tensile strength: 441Mpa
  - Yield strength: 373Mba
  - Tripod structure
- Floatation of reentry capsule
  - Glass beads floatation
  - Cylindrical
- Counterweight
  - Q235A

## **Carrying Capacity**

- Positive buoyancy: 200kg
- Carrying capacity: 80kg

## **Instruments & Sensors**

- Integrated instruments and sensors can be customised

### **• Acoustic Doppler Current Profiler (ADCP)**

- Acoustic frequency: 2MHz
- Layer size: 0.1-2m
- Compass accuracy: 2°
- Velocity range: ±10m/s
- Velocity accuracy: 1%±0.5cm/s
- Velocity resolution: 1 mm/s
- Profile range: 10m

### **• Single-point current meter**

- Acoustic frequency: 2MHz
- Compass accuracy: 2°
- Velocity range: ±10m/s
- Velocity accuracy: 1%±0.5cm/s
- Velocity resolution: 1 mm/s

• **CTD**

**Temperature:**

- Range:  $-5^{\circ}\text{C} \sim 35^{\circ}\text{C}$
- Initial accuracy:  $\leq \pm 0.002^{\circ}\text{C}$
- Resolution:  $\leq 0.0001^{\circ}\text{C}$

**Conductivity:**

- Range: 0-85 mS/cm
- Initial accuracy:  $\leq \pm 0.003$  mS/cm

**Pressure:**

- Range: 6000m
- Initial accuracy:  $\pm 0.05\%$  full scale
- Resolution:  $< 0.001\%$  full scale

**Turbidity:**

- Range: 0-25FTU, 0-125FTU, 0-500FTU, 0-2500FTU
- Resolution: 0.005FTU
- Accuracy: 0.025FTU

**Dissolved Oxygen:**

- Method: Optical
- Range: 0-45 mg/l 或 0-500uM(0-150%)
- Accuracy:  $\leq 0.1$  mg/l 或  $\leq 8\mu\text{M}(5\%)$

• **Iridium beacon**

- Ocean Depth Rating: 7000m
- Trigger mode: Pressure operated switch
- Deployment time: 2 years (below the surface)  
Approx 95 days (at the surface)

• **Inclinometer**

- Range: pitch angle:  $-180^{\circ} \sim +180^{\circ}$ ;
- Roll angle:  $-90^{\circ} \sim 90^{\circ}$
- Yaw angle:  $0^{\circ} \sim 360^{\circ}$
- Accuracy:  $\pm 0.5^{\circ}$ ,
- Maximum operating frequency: 200Hz,
- Stand-by power consumption:  $< 1\text{mA}$ ;

## **Environmental adaption**

- Operating depth:  $\leq 6000\text{m}$
- Operating temperature:  $-25^{\circ}\text{C} \sim +50^{\circ}\text{C}$
- Storage temperature:  $-25^{\circ}\text{C} \sim +70^{\circ}\text{C}$





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