**NUS with Winch**

The TDB2650 is a 2.65-meter diameter polyethylene (PE) buoy platform, purpose-built for advanced marine monitoring and research applications. Featuring a two-tiered modular design, it integrates a central core module for housing resident sensors and peripheral modules with integrated moon pools that support expansion and serve as testbeds for emerging marine technologies.

Designed with an open-architecture framework, the TDB2650 offers standardized mechanical, electrical, and software interfaces, enabling plug-and-play integration of new sensors and payloads. This ensures adaptability to a wide range of mission requirements and supports rapid deployment of evolving technologies.

The TDB2650 buoy was custom-developed for the National University of Singapore (NUS). A key feature is its central moon pool, engineered to accommodate a compact winch system for depth profiling operations.

The first unit was delivered to NUS in 2022. Based on field feedback, a second order was placed in 2023, incorporating several enhancements, including the integration of 12 solar panels for increased energy autonomy. The upgraded buoy was delivered in 2024, with a successful Factory Acceptance Test (FAT) marking a major milestone in the collaborative development of this advanced oceanographic platform.

**Geometric details of the buoy:**

|  |  |  |
| --- | --- | --- |
| Component | Values | Units |
| Float height | 1400 | mm |
| Buoy Outer diameter | 2650 | mm |
| Buoy Inner diameter | 590 | mm |
| Total buoyancy | 6200 | kg |
| Top structure Width | 1200 | mm |
| Top structure height | 3193 | mm |
| Height of solar panel from floats | 2739 | mm |









