

Non-ROV Device

Electrical Overviews

The float, **Frost**, is powered by a 10S2P 2550 mah Panasonic Eneloop Pro NiMH battery pack. Two T200 thrusters are powered directly from the 12V battery pack through ESCs, while a buck converter supplies regulated voltage to the Arduino Mega . A pressure sensor and 3DR telemetry module are connected to the Arduino Mega for sensing and wireless data transmission. The system is protected using 2A ATO style fuse in the positive terminal of each battery in series and 5A ATO style fuse on the negative terminal of the whole pack.

Propulsion System Overview

The float uses two T200 thrusters (CW and CCW) mounted at the bottom for stability and lower centre of gravity.

The propulsion system was selected for its efficiency, compact size and reliability in underwater environments.

Mechanical Overview

The structure consists of a sealed electronics enclosure and an external propulsion frame. The electronics enclosure houses the batteries, Arduino Mega, telemetry module, pressure sensor, ESCs and fuse assembly. The thrusters are mounted externally to improve water flow and efficiency.

The enclosure is designed to minimize water ingress while maintaining easy accessibility for maintenance and battery replacement.

Sealing & Safety Overview

The electronics chamber uses sealed end caps and gasket protection to reduce water leakage risk. All electrical components are securely mounted inside the enclosure to prevent movement during operation. A pressure cap is also used in case of extensive pressure generated inside the float.

The system includes multiple fuse protections:

- Two 2A ATO style fuses.
- One 5A ATO style fuse.

Communication Overview

A 3DR, 500mW Radio Telemetry Module is used for wireless communication between the float and the

surface station. It can switch between 415MHz and 915MHz. It utilizes UART serial communication for bi-directional data transfer at upto 250kbps in certain conditions and in lower data packets can reach upto a few kilometres in distance.



Fig.1 : Frost.

Appendix



Fig.2 : Batterypack



Fig.3 : ATO style fuse



Fig.4: Panasocnic eneloop pro 2550mah
NiMH Battery

Electrical SID

