



# Sonar Head Installation Guidelines

---

## 1.1 Introduction

The proper installation of the Sonic 2024 sonar head is critical to the quality of data that will be realised from the system. No matter the type of installation (hull mount, moon pool, or over-the-side pole), the head must be in an area of laminar flow over the array. Any vibration or movement of the sonar head, independent of vessel motion, will result in reduced swath coverage and noise in the data. To this end, the head must be installed on as sturdy a mounting arrangement as possible; fore and aft guys are NOT recommended as a means to obtain this stability.

The initial investigation of where to mount the sonar head should take into account any engines, pumps, or other mechanical equipment that may not be operating at the time, but may be a cause of vibration or noise when operating under normal survey conditions.

The structural stability of any decks, bulkheads, or superstructure, which will be employed when mounting the sonar head, must be taken into account and strengthened if necessary.

## 1.2 Over-the-Side mount

The over-the-side mount is normally employed for shallow water survey vessels and/or temporary survey requirements. The over-the-side mount consists of a frame structure that is attached to the vessel's hull or superstructure. A pole will be attached to the frame, normally through the use of swivel flanges, flanges, or other means by which the head can be swung up when not in use and deployed when needed. A similar mounting arrangement is the bow – mount, which is specialised form of an over-the-side mount.

In order to ensure stability of the pole, it should have a securing arrangement as close to the water line as possible. As stated above, the use of fore or aft guy wires is strongly discouraged.

When the pole is in the 'up' position it should be secured so that there is no or little movement that would be strain on the flanges or mount. The head should be washed with fresh water as soon as possible and inspected for any damage or marine growth. If the head is to remain in the 'up' position a covering should be put over the head that will protect it from the sun.



Figure 1: Typical over-the-side mount



### 1.3 Moon Pool Mount

Deploying the sonar head through a moon pool is usually a more stable mounting arrangement than an over-the-side pole. A moon pool is an area, within a vessel, that is open to the water. The sonar head is normally mounted in such a way that it can be deployed and recovered through the moon pool. The pole or structure that the sonar head is mounted on is normally shorter and sturdier than an over-the-side mount; this can allow for higher survey speeds.

### 1.4 Hull Mount

The hull mount is the sturdiest of all possible ways to mount a sonar head. With a hull mount, the sonar head is physically attached to the vessel's hull. With this way of securing the sonar head, there is no possibility of movement outside that of the movement of the vessel.

There are disadvantages to the hull mount: the head cannot be inspected easily for marine growth or damage; the vessel may be restricted in the depth of waters that can be surveyed due to the head being permanently attached to the hull.

A normal hull mount will also involve the fabrication of a fairing, on the hull, to ensure correct flow patterns over the sonar head.

### 1.5 ROV Mounting

The Sonic 2024 is ideal for undersea operations due to its compact size and low power consumption. As all processing is done in the Receive Module all that is required is to provide single mode fibre optic communication between the SIM and the Receive Module. The 48VDC can come from the surface or be supplied via the ROV's own power distribution.

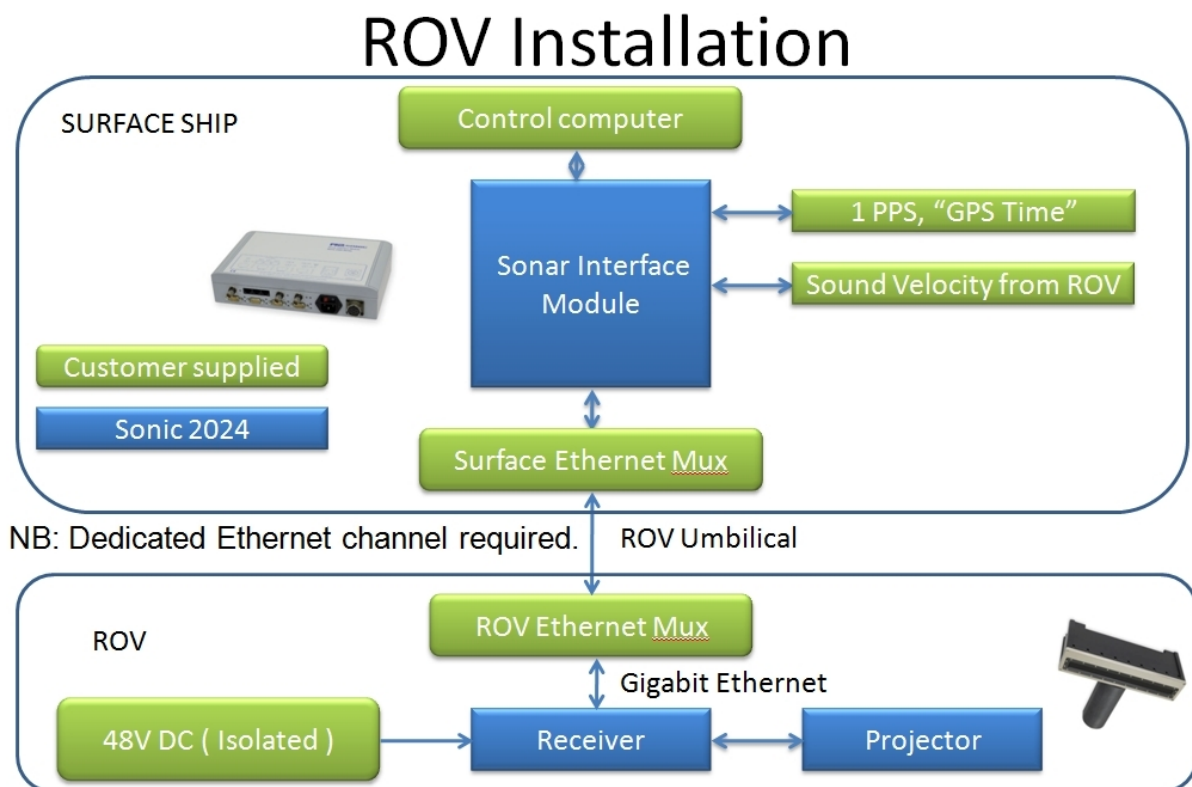


Figure 2: Sonic 2024 ROV Installation



- Isolated 48V DC, 1A average, 4A Peak, supplied by ROV
- Uplink/Downlink: Gigabit Ethernet channel dedicated to sonar. The sonar wet end is time synchronized with the GPS clock through the Gigabit Ethernet so no other traffic can be allowed on the sonar channel.
- Time Reference: Sonar data is time stamped with GPS time in sonar head.
- ROV attitude data and sound velocity is transmitted to surface through ROV data MUX, and can either be input to Sonar Interface Module for time tagging, or to online computer.
- 3 m pigtail can be supplied by R2Sonic to connect Sonar head with ROV bottle.