

1 Planning and selecting suitable locations for the SeaKeepers ocean and weather monitoring system

Each of the four components of the SeaKeepers monitoring system must be properly located in order for the system to operate optimally.

1.1 Positioning the through hull fitting and related valves and containment vessels

The through hull fitting needs to be located in a position forward of any gray, black or heated water discharges and about six feet (2 meters) below the water line. It should be away from any obstructions that would create unnecessary turbulence or bubbles ahead of the intake, to ensure that clean, bubble-free seawater can be pumped through the system.

The intake scoop or pod attaches to the through-hull fitting outside the hull, using the two threaded turrets, which will have been positioned using the welding/mounting jig supplied. The mounted pod will face forward and parallel to the stream lines along the hull, and lie flush against it.

The intake gate valve should be located where it can be easily reached. The dimensions of the intake valve assembly are shown in Figure 2.3. There should be space to work in and around the valve.

The containment vessel is part of the intake valve assembly. See page 2.11 and Figure 2.5. Approximately 12” (30cm) of additional clearance is required above the containment vessel during assembly.

1.2 Positioning the instrumentation enclosures

The equipment enclosures (computer and instrumentation modules – figure 0.3) should be mounted close to the through hull fitting. They should be mounted beside or within several feet of one another. {If possible the instrumentation module should be mounted below or close to the water line.} Many installations have been done in the bow thruster compartment or other forward compartments; others in the engine room or engineer’s control room. Mounting plates are provided on the enclosures. They may be configured either vertically or horizontally.

The modules (computer and instrumentation) should be mounted so that their doors may be fully opened or removed, for servicing. The computer module must also have at least one inch (3 cm) of space at either side to permit air flow through the cooling fan vents if used.

An additional space allowance should be made for the hose strain relief (see figure on page 2-9) and the bend radius of the stainless steel reinforced hoses at the bottom right of the instrument module.

1.3 Positioning the MET station

The Met station must be placed in an unobstructed area where it can record accurate wind speed and direction data. The aesthetics of private yachts are a primary concern of the owners and captains, however the wind sensor cannot perform adequately unless it is in an exposed location offering a complete or nearly complete unobstructed view of 360 degrees. The anemometer (wind speed and direction) should be mounted where it is clear of turbulent air spinning over the tops of deck houses and around stacks, which usually dictates a position as high above the highest deck as possible. Ancillary masts have been designed to mount the various packages that comprise the met station. Drawings are available but the mast is not supplied.

Pictures of a properly mounted MET station appear as figures 3.1 and 3.2.

1.4 Positioning the INMARSAT Std C Antenna

The INMARSAT std C transceiver/antenna must point upward towards the sky at all times to insure a clear line of sight to the INMARSAT and GPS satellites. Satellite signals are not capable of penetrating metal structures such as exhaust stacks and masts. In the horizontal, it should not be mounted within 1.5 meters of any other antennae, nor within the 10 degree vertical beam pattern of radar antennae. It is important that people be no closer than 0.25 meters from the antenna while it is transmitting because of the radiation it emits.

1.5 Planning cable runs

In selecting locations for the various components of the SeaKeepers system one must ensure that cables can be run to connect the various components and the ships network hub without breaching any of the cable run limitations discussed in the cables section of the specifications.

Illustration of cable runs and distribution of key system components on a vessel

- 1 SeaKeepers module
- 2 ships computer network hub
- 3 Meteorological station
- 4 INMARSAT antenna

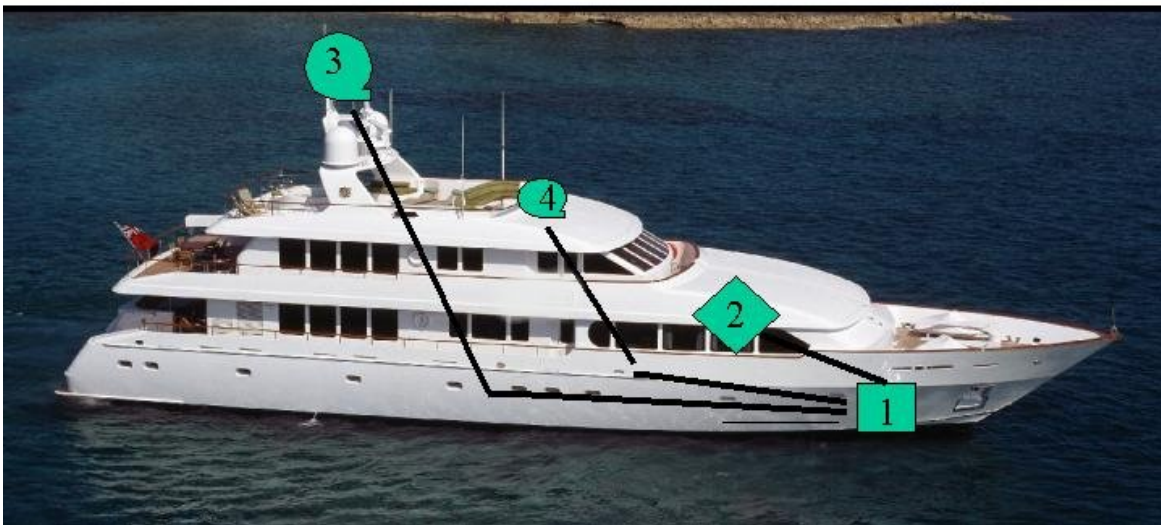


Figure 1.1

In the layout shown above in Figure 1.1 the three SeaKeepers components and the vessels Local Area Network hub may be interconnected with three cables.

1. A multi stranded CAT5 cable with three twisted pairs connects the Meteorological station (3) to the module (1), Belden 9503.
2. A multi stranded CAT5 cable with three twisted pairs connects the Local Area Network hub (2) to the module (1), Belden 9503.

3. A Thrane and Thrane supplied 20 meter 19 conductor cable to interconnect the INMARSAT integrated antenna/transceiver (4) and the computer module (1).

If it is not possible to utilize this configuration because the cable run from the module to the INMARSAT antenna is longer than 20 meters, then the next configuration may be implemented. In this first example power at 110 or 220 Volts is necessary only at the computer module.

Illustration of cable runs and distribution of key components on a larger vessel.

1. SeaKeepers 1000 computer module
2. ship's computer network hub
3. Meteorological station
4. INMARSAT C transceiver/antenna
5. Junction box with 24 Volt supply from vessel.

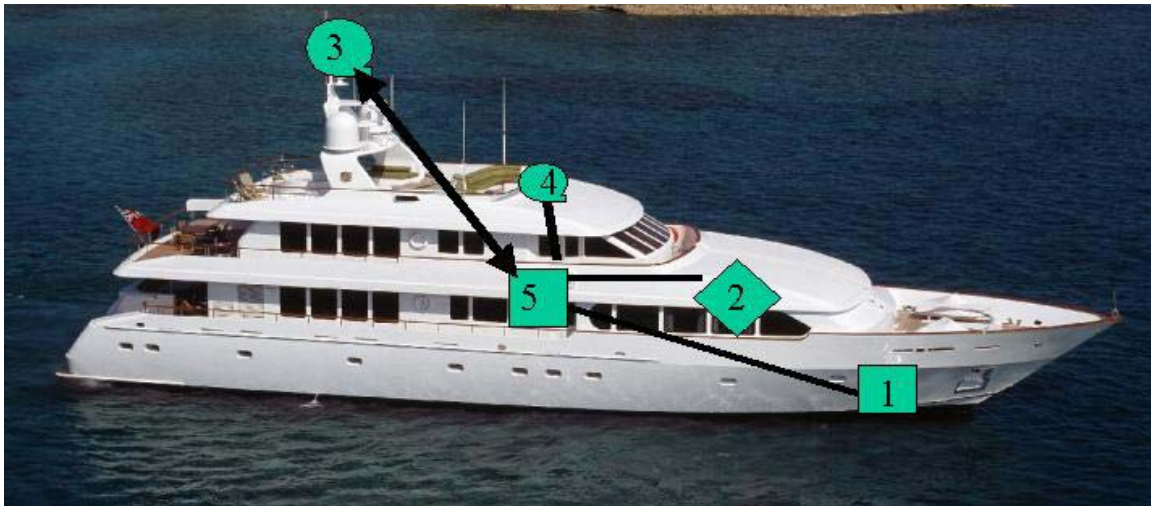


Figure 1.2

The illustration above, Figure 1.2, indicates the distribution of the critical components that need to be inter-wired on a SeaKeepers yacht where the distance from the module (1) to the INMARSAT transceiver/antenna (4) is greater than 20 meters. In this example the INMARSAT cable has been

terminated into a junction box within 20 meters of the antenna. A 24 Volt (4 Amp) supply from the vessel is utilized to power both the INMARSAT and also the meteorological station..

1. The cable between the module (1) and the junction box (5) is a TRICAB marine grade 8 twisted pair 18 AWG cable. (supplied)
2. The cable between the junction box (5) and the meteorological station (3) is a multi stranded CAT 5 cable with three twisted pairs Belden 9503. (supplied)
3. The cable between the antenna (4) and the junction box (5) is the Thrane and Thrane 20 meter 19 conductor cable. (supplied)
4. The cable between the LAN hub (2) and the junction box (5) is a multi stranded CAT 5 cable with three twisted pairs, Belden 9503. (supplied)

In this configuration it is necessary to supply power at 110V / 8 A AC or 220V / 4A AC at the computer module and 24V / 4A DC to the junction box.

A third situation occurs on vessels that have cable run lengths of more than 100 feet between the junction box and the module, for these vessels it will be necessary to implement RS422 data telemetry between the module and the junction box. The cabling and converters required to implement this are described in section 4.7.