

Sentry Instructions

Introduction

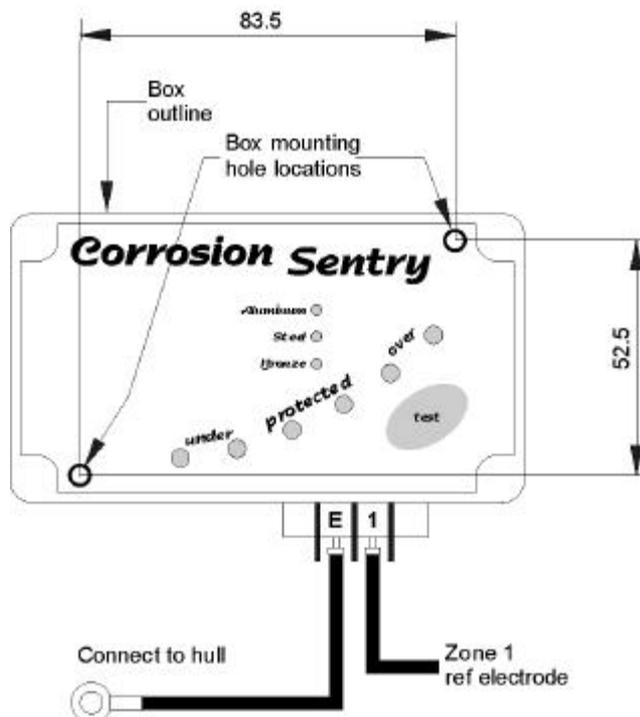
Sentry is an intelligent, microprocessor based, single zone corrosion monitor.

At the press of a button the LED's (Light Emitting Diodes) provide instant indication of the vessel's level of cathodic protection.

Note: Because each installation is potentially unique reference electrodes are purchased separately.

Sentry installation and test

The **Sentry** kit comprises a **Sentry** monitor, mounting screws, 3 AA batteries, and an earth lead.



- The **Sentry** can be bulkhead mounted in any convenient location such as in the engine room or in the vessel's bridge/pilot house. The box dimensions are 115 mm x 65 mm x 40 mm deep.
- Drill two 3.7/3.8mm diameter holes at 83.5 mm by 52.5 mm centers on the hull bulkhead or other suitable mounting location.
- Remove the **Sentry** lid taking care to keep it supported to avoid damaging the connecting wires. Mount the **Sentry** box using the two 8g x 12 mm self tapping screws provided.
- Insert the 3 AA batteries supplied. Refasten the **Sentry** lid.
- Connect terminal E to the hull with the earth lead provided.
- Connect terminal 1 to the reference electrode.

Note: The reference electrode is purchased separately.

Mount the **Sentry** and reference electrode as described above.

A convenient location should be chosen where the 'test' button may be operated and the indicator lights viewed.

Install the three batteries taking care that they are all correctly orientated.

Refit the cover ensuring that the enclosed pack of desiccant remains inside the unit.

Once re-assembled press the 'Test' button and check that all lights illuminate briefly.

Once the lamp test is complete check that the appropriate yellow material light illuminates e.g. Aluminum.

Sentry operation

Press the **test** button.

All the LED's will briefly light in the initial lamp test mode.

The LED corresponding to the hull material (e.g. aluminum) will then light and the protection level will be shown by two LED's on the protection level display.

In order to conserve battery life the unit operates for 30 seconds and then powers down.

A flashing 'material' light indicates that the batteries are in need of replacement.

The **Sentry** LED's indicate the current level of cathodic protection.

Providing that the **Sentry** has been set up for the correct **material** being protected then the green LED indication shows that the material is protected from corrosion. Red LED indication warns of under protection or over protection. Under protection indicates corrosion can take place. Over protection can also indicate that corrosion or other problems are occurring.

Extreme over or under protection is indicated by a single flashing red LED.

An extreme over protection indication may also be caused by faulty connection to the electrode or the electrode being out of the water.

Sentry calibration and options

The **Sentry** has been calibrated prior to dispatch from the factory and needs no further adjustment.

Three material settings are available on this model for correctly displaying the protection level of Aluminum, Steel or Bronze. This is set at the factory.

Sentry fault finding

In order to test the operation of the **Sentry** press 'test' and check that all lights illuminate for about one second. If this does not happen check that the batteries are not flat and that they are correctly installed.

Check that the correct yellow material light (aluminum, steel or bronze) is lit.

Disconnect the electrode wire from terminal '1' and check that the top red led flashes.

Link terminals 'E' and '1' and check that both green 'protected' lights illuminate.

Reconnect terminal 'E' to the hull and terminal '1' to the electrode.

Corrosion Theory

The rate of corrosion is influenced by a number of variables such as the type of material, the oxide layer present, the quality of the electrolyte and the potential relative to the reference electrode.

Moderate over protection can be accepted but may be uneconomic for steel, bronze and brass.

Over protection can cause paint disbondment and hydrogen embrittlement in high strength steel, and can cause amphoteric attack to aluminum.

Corrosion rates depend upon many factors and, for this reason, the protection should be monitored regularly under all operating conditions. These should include measuring the protection whilst the vessel is moored and whilst under way.

If the anodes on the vessel have been set up for seawater usage and the vessel is used in fresh water, the protection levels may fall and the **Sentry** will indicate the vessel is under protected. Under normal circumstances, this should not be a problem as corrosion rates in fresh water are significantly less than in seawater.

Care should always be taken where dissimilar metals are used next to one another.

Specifications

Dimensions:	115 x 65 x 40mm	Battery life:	2 years (average use)
Mounting:	bulkhead	Ref. Electrode:	Zinc
Power:	3 alkaline AA cells	Zones:	1 zone
Operating temp:	0 to 50 ⁰ C	Resolution:	+/- 5 mV
Range:	-1200mV to +1200mV	Protection:	IP 65