MODEL LD25 · SILVER / SILVER CHLORIDE / 0.5M KCL

LD25 Reference Electrode Installation Procedure

INSTALLATION PROCEDURES

The purpose of this statement is to ensure that the reference electrodes when delivered to site are correctly stored, checked for functionality and installed.

STORAGE

The electrodes are individually numbered and delivered to site boxed with the red protective caps in place. The purpose of the caps is to protect the sensor end of the electrode from contamination or damage whilst in storage.

With the delivery inside the box there will be a calibration certificate for all the delivered electrodes. This document should be kept with the record documents for the contract. The calibration certificate is a record of the individual reference potentials measured against a saturated calomel electrode (SCE) at **20°C** under laboratory conditions.

The Corrosion Engineer may refer to the information on the calibration certificate during the operation of the monitoring system.

The electrodes should be checked to ensure that they match the order and stored with the red caps in place in a safe, dry place within a temperature range of **0°C and 45°C**.

It is important to ensure that the electrode and its cable are protected from physical damage.

PRE INSTALLATION FUNCTIONAL CHECK

The purpose of this procedure is to check that the electrode potential is stable.

Prepare a solution of **3% salt solution**; **30g** of sodium chloride (salt) per **1 Lt** of water.

Remove the cap from the electrode and soak the tip of the electrode in the solution for a minimum of **2 hours** and maximum of **3 hours**.

After soaking the electrode measure the potential using a calomel electrode (SCE) with a digital voltmeter at **10mohm and 1000mohm** input impedance with the SCE connected to the positive/common terminal and record the results. The potentials should be steady and in the range **+/- 20mv** of the calibrated values.

A satisfactory alternative to using a saturated calomel electrode would be to check the soaking electrode potentials against each other or use one extra electrode as a test electrode.

Once the electrode is checked it should be removed from the solution, the cap carefully replaced and it should be installed within **48 hours**.

ELECTRODE INSTALLATION

It is recommended that the electrodes are positioned and installed in accordance with the international standard ISO 12696:2022.

Procedure

- Breakout the concrete at the electrode position to expose the reinforcement and blow out all the debris
- Tie the electrode alongside the reinforcement using a plastic cable tie and temporarily support the cable
- Make a record of the electrode number and remove the red cap
- Thoroughly wet the concrete and remove the surface water
- Make good the concrete using a suitable conductive cementitious repair mortar being careful to ensure that the electrode is fully encapsulated (do not use any primers for the reinforcement or concrete)
- After the mortar has cured check the electrode stability using a digital voltmeter at 10mohm and 1000mohm input impedance. Connect the common lead (black) to the electrode and the red lead to the steel. The reading should be steady and not drift or fluctuate during a **5 second** measuring period. If the potential drift towards zero on the low input impedance it implies that the electrode contact is poor. If it drifts on the high input impedance setting it is advisable to check that there is no damage to the cable.

In some cases the concrete is cored and the electrode placed in the core hole with the concrete then made good. At other times, to ensure good contact, the electrodes are pre-potted in a mortar cylinder before embedding in the concrete.

The important points to remember are that the concrete should be pre-wetted, the red cap removed and the cable supported while the concrete is placed and cured. The electrode-measuring tip must be fully encapsulated by the repair mortar. Variations on this procedure can be acceptable subject to agreement by the Design engineer.