



# ELIT-ORP-33C : ORP Combination Electrode

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Working with Meters and Analyser to measure Redox



**Cost effective refillable ORP Combination Electrode for Precision Measurements: Lab, Field and light Industrial use, where the electrode is not submerged or under pressure**

## Specifications:

- Dimensions: 12 x 120 mm
- 1 m (optional 3 m) cable with BNC connector
- Temp. Range: 0°C to 80°C
- Refillable Glass Body
- Platinum-Ring
- Wide ring liquid junction
- Reference System: Ag/AgCl System in a saturated KCl solution with approximately 200 mV offset against the Hydrogen reference system ( $E_h = E_{\text{measured}} + \text{approx. } 200 \text{ mV}$ )

## Operating Instructions:

### Preparation:

1. Remove the protective bottle from the sensing element and save it for future storage.
2. Remove the covering Parafilm from the refill stopper and open the stopper temporarily.
3. Clean any salt deposits from the exterior of the electrode by rinsing with distilled water.
4. Connect the electrode to the Meter or Analyser.
5. ORP measurements are temperature dependent, however there is no temperature compensation available

### Measurements:

ORP means Oxidation-Reduction-Potential (Redox Potential).

ORP measurements determine the oxidizing or reducing properties of a solution.

The higher the reading (in mV), the higher the availability of oxidising agents in the solution.

Optimal value for Freshwater Aquariums: 250 to 300 mV

Optimal value for Saltwater Aquariums: 350 to 400 mV

Harmful for fish: values over 400 mV

ORP in ponds lower than 150 mV indicates decomposing organic material.

ORP in ponds higher than 450 mV indicates chlorine or cleaning agents present.

ORP in ponds around 300 mV indicates good water quality in respect of ORP.

ORP of 700 mV and pH of 7.2 are ideal values for swimming pools

### Maintenance:

1. Keep the electrode in the protective bottle filled with a saturated KCl solution for long term storage (for more than 1 hour). During storage seal the refill stopper with Parafilm.
2. General cleaning:
  - For non-organic contamination, soak the electrode in 0.1 M HCl for 10 minutes, rinse with distilled water.
  - For organic or oily contamination, soak the electrode for 10 minutes in a 1:10 dilution of household detergent.
  - After one of the above cleaning procedure, soak the electrode in saturated KCl solution for 3 hours.
  - The ORP electrodes contain an Ag/AgCl reference that may become clogged in solutions that contain silver complexing or binding agents such as TRIS, proteins and sulfides. Frequent cleaning may be required when measuring solutions that contain these agents.
3. Checking Electrode Operation:
  - Place the electrode into pH7 solution saturated with Quinhydrone, the reading should be  $86 \pm 15 \text{ mV}$ .
  - Place the electrode into pH4 solution saturated with Quinhydrone, the reading should be  $263 \pm 15 \text{ mV}$ .
  - Alternatively the electrode can be checked in ZoBell's solution, the reading should be 238 mV at 25°C.

## Applications:

- Aquaria
- Corrosion Measurements
- Pollution Control
- Disinfection
- Cooling Towers
- Aquaculture
- Water Quality Check
- Swimming Pools
- Pulp Bleaching
- Wastewater Treatment

**This electrode works with every pH / mV meter with a BNC connector.**

**For continuous real-time measurements we recommend our ELIT monitors.**