In-Situ Inc.

Innovations in Water Monitoring

# Instruction Sheet

## Rugged Conductivity Meter

### Equipment Check

**Clean the probe and check for damage**

Thoroughly clean the probe with distilled water to minimize buildup that will interfere with results.

Inspect the unit for obvious signs of damage. Nicks in the tape that expose the conductors will cause the tape to malfunction.

**Test the battery**

1. Press the red power button shown in Figure 1, number 3 (see opposite page). A blinking cursor will appear in the top left-hand corner of the display panel, Figure 1, number 7.
2. If the unit does not turn ON, replace the 9 V battery, Figure 1, number 1.

**Test the probe**

1. Turn the unit ON.
2. Allow 4 seconds for the probe to synchronize with the display panel.
3. Place the probe in tap water. The unit will emit a short audio and visual indication and the display will update with temperature and conductivity readings.
4. Remove the probe from the water. The unit will emit the same audio and visual indication and a blinking cursor will appear on the display panel.

### Field Use

1. Press the red power button. A blinking cursor appears in the display panel.
2. Slowly lower the probe until a brief light and buzz indicate the presence of water.
3. Take note of the marking on the tape. This is the static water level.
4. After 3 seconds the display updates with the temperature and conductivity values. Allow 10 seconds for the readings to stabilize.
5. Continue to lower the probe and take readings of temperature and conductivity at the desired depths.
6. When the probe is removed from the water, the unit emits a brief buzz while the LED lights, and the display panel clears.

*Note: The probe detects more accurately going into water than coming out of the water. There is a slight switching delay when the probe is moved from water to air.*

### Calibration

For best results, calibrate the Rugged Conductivity Meter in 1,413 µS/cm solution at 25° C before starting a measurement session.

1. Clean the probe with distilled water and allow it to dry.
2. Press the power button to turn the meter on.
3. Place the probe in 1,413 µS/cm solution and gently position the probe so that air bubbles are not trapped under the shroud.
4. Wait approximately 10 seconds for readings to stabilize.
5. Press and hold the calibration button on the control panel until "Please Wait" appears on the display, then release the button.
6. The meter will calibrate, after which the conductivity and temperature values will appear on the display panel. The calibration values are stored until the meter is recalibrated.

### Troubleshooting

**General**

Tighten the knobs that secure the control panel to the wheel, Figure 1, numbers 2 and 5.

**The unit turns off when the probe contacts water**

1. Replace the battery (Figure 1, number 1).
2. Check the tape for cuts that would allow water to enter. This condition may require factory service.

**The unit does not calibrate properly**

1. Gently move the probe to displace air bubbles and perform calibration.
2. Ensure that temperature readings are stable before performing calibration.
3. Clean the probe tip in distilled water, dry the probe, and perform calibration.


*Figure 1. Control panel*

| | |
|---|---|
| *1. Battery box* | *2. & 5. Panel attachment knobs* |
| *3. Power ON button*<br>*(Automatically shuts off after 5 minutes of inactivity)* | *4. Signal LED* |
| *6. Calibration button* | *7. Display panel* |

## General Guidelines

- Do not scrape the tape against sharp-edged well casing. If possible, hang the unit on the well casing, and position the tape over the tape guide to prevent damaging the tape.
- Avoid entanglement with other equipment in boreholes and wells.
- Rewind the tape onto the reel after each use.
- Clean the probe tip with distilled water.
- Do not tap or hit the probe to dislodge dirt or mud. Soak the probe tip in water to remove trapped dirt.

## Operating Principles

The Rugged Conductivity Meter measures and profiles conductivity, temperature, and static water level in wells and boreholes. Temperature is displayed as degrees Celsius. Conductivity values are displayed in micro Siemens per centimeter (µS/cm) with a range of 100 µS/cm to 80,000 µS/cm. Values represent specific conductivity.

The probe is attached to a measuring tape that is graduated in feet by 1/100 ft, or in meters by each millimeter.

The conductivity sensor is a four-electrode sensor, configured as two concentric rings designed to reduce the effects of fouling. The conductivity sensor is temperature compensated and uses a temperature coefficient of 2%. The compensation range is 0 to 30° C.

For best results, calibrate the Rugged Conductivity Meter before each measurement session.

To preserve battery life, the Rugged Conductivity Meter automatically shuts off after 5 minutes of inactivity. When the battery is low, "LOW BATT" appears on the display panel. The meter will continue to operate, but the battery should be changed as soon as possible.


*Figure 2. Rugged Conductivity Meter*

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