THORNTON

Leading Pure Water Analytics

METTLER TOLEDO

Calibration & Accuracy Verification Procedures

200CR Sensor Calibration in Concentration Mode

The 200CR and 2000 conductivity instruments cannot perform a direct sensor calibration correctly when measuring in the concentration mode--reading out %HCl, H_2SO_4 or NaOH. The Sensor Calibration procedure in Chapter 9 of the instrument manual must not be used. In most cases, the most accurate results will be obtained by simply entering the sensor cell multiplier value, M, from its label into the Edit Sensor Cal menu via the MENUS key. The same must also be done for the temperature multiplier. This is given in Section 10.3.

If another measurement of concentration shows a discrepancy and it has high validated accuracy, then a sensor calibration is desirable. (Any specific gravity or density measurements must be temperature corrected or controlled for accurate concentration determination.) The following procedure may be used:

1. Take a grab sample of the solution for calibration and determine its concentration by an accurate reference means.

2. Immerse the 240-501 sensor into the sample, above the vent holes on the sides for 20 minutes to assure reaching temperature equilibrium. Tap and agitate the sensor to be sure of releasing any air bubbles from the holes.

3. Take a reading of the concentration with the 200CR/2000 instrument and 240-501 sensor. Solution must completely fill the internals of the sensor at the time of measurement. Hold the sensor 1/2" off the bottom of the container when taking the reading to assure an unrestricted conduction path between the two holes on the bottom of the sensor, while making sure the side holes are still below the sample level.

4. Record the sensor cell multiplier stored in the 200CR/2000 at the time of measurement which will be called M_{old}

5. Compute a new multiplier as: M_{new} = (Reference concentration / instrument reading) x M_{old}

For example, if the reference method showed a concentration of 5.03% and the 200CR read 4.56% with a multiplier of 48.231 then the new multiplier would be: M_{new} = (5.03 / 4.56) x 48.231 = 53.202

6. Store the new multiplier value in the 200CR.

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