MVPICON™

Conductivity Probe

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GENERAL DESCRIPTION

The MVP ICON Conductivity Probe is designed for general purpose measurements in a temperature range from 0 °C to 100 °C. The conductivity probe is a 4-graphite electrode cell design (K=0.45). It features a thermistor to allow for automatic temperature compensation and temperature readings. Temperature and conductivity or temperature and concentration/PPM measurements may be taken simultaneously.

Solid-state componentry built into the LIGHTNING MVP ICON™ instrument controls this sensing element. The MVP ICON Conductivity Probe can only be used in combination with the MVP ICON instrument. Any other combination might cause loss of performance or irreversible damage to both probe and meter.

Part No: 78089-00

KIT COMPONENTS

Each MVP ICON Conductivity Probe kit contains one probe.

TEST PROCEDURE

A. Using the MVP ICON Conductivity Probe

(a) Prior to daily use, rinse briefly with deionized or distilled water. The MVP ICON Conductivity Probe must be calibrated prior to its first use. See **B. Calibration for Conductivity** below for details.

(b) Ensure that the MVP ICON Conductivity Probe is securely connected to the MVP ICON instrument. Insert probe into sample. Follow instructions on the MVP ICON to complete reading. Both conductivity and temperature or concentration and temperature readings will be displayed on the MVP ICON. The date of last calibration will appear on the MVP ICON home screen.

(c) The probe is usable only with water-based liquids. It is necessary to immerse to a depth where the fluid is above the open cell chamber.

(d) To ensure correct measurement values, samples or standards need to be mixed well. This may be done by a magnetic stirrer or by gentle stirring with the probe for at least 5 seconds. You may continue to stir while the reading is taking place.

(e) The MVP ICON Conductivity Probe should be rinsed thoroughly with deionized or distilled water between samples then gently blotted dry.

B. Calibration for Conductivity

The MVP ICON Conductivity Probe features a single-point calibration.

Note: It is important that a conductivity calibration standard be chosen for conductivity within ± 20% - 50% of the sample.

(a) Rinse the MVP ICON Conductivity Probe with deionized or distilled water.

(b) Connect the probe to the MVP ICON instrument, ensuring a tight connection.

(c) Insert the probe into the conductivity standard to begin. Ensure that the standard is mixed well. Soak probe **for at least 2 minutes.**

(d) From the MVP ICON instrument menu, select "Calibration," ensuring the instrument is in Conductivity mode.

(e) Enter the reference value (conductivity standard value in µS) and press "Calibrate."

C. Calibration for Concentration

After the probe has been calibrated for conductivity, it may then be calibrated for concentration as parts-per-million (PPM). Standards will first need to be created in the MVP ICON Dashboard software. For more information on creating standards, please refer to the MVP ICON User Guide.

(a) Ensure the device is in "Concentration" mode. From the MVP ICON instrument menu, select "Calibration" then select one of the available standards listed on the device.

(b) Insert the probe into the source water and press "Calibrate."

(c) Insert the probe into the standard and press "Calibrate."

(d) The MVP ICON will either display "Calibration Successful" or "Calibration Failed." If the calibration failed, remix the sanitizer or cleaner and try again. If unable to calibrate, contact BioControl Technical Support at 800.245.0113.

(e) Once calibration is complete, rinse probe with distilled or deionized water and blot dry.

Note: In order for the MVP ICON Conductivity Probe to be properly calibrated, there must be a 10% difference in conductivity between the source water and the chemical standard.

D. Calibration for Temperature

The temperature sensor within the MVP ICON Conductivity Probe is factory calibrated. It only needs calibration if being used at temperatures 20 °C above or below room temperature. The probe features single-point calibration at a known temperature.

Any known temperature within the operating range may be selected for calibration. Note that calibration is most accurate when a temperature point close to the sample temperature is selected.

(a) Insert the probe into a liquid of desired temperature for calibration.

(b) From the MVP ICON menu, ensure the instrument is in "Temperature" mode and press "Calibration."

(c) Follow the instructions on the MVP ICON screen. When prompted, enter the known calibration temperature obtained from reference thermometer and press "Calibrate."

STORAGE

To store the probe, clean it thoroughly and rinse with deionized or distilled water.

Do not store probes immersed in any solutions.

PRECAUTIONS

The MVP ICON Conductivity Probe is rugged and durable and requires little maintenance. To ensure lasting performance read and follow all operating guidelines.

Avoid prolonged immersion in samples containing fats or proteins. Samples containing proteins/fats should be read quickly and the probe should be rinsed thoroughly with deionized water between samples. When testing is complete, clean with water and a laboratory detergent and rinse with deionized or distilled water.

Avoid prolonged immersion in samples expected to have pH values at the ends of the pH range of 0 to 14 or other corrosive substances. When unavoidable, rinse with ample water between samples. Rinse with distilled water when the measurement is complete and prior to storage.

Avoid prolonged exposure to extreme temperatures. Above 50 °C, limit the immersion of probe to the time needed to obtain a stable reading.

Do not use the probe outside the specified temperature range (see **SPECIFICATIONS**) as this might result in probe performance failure or irreversible damage to the probe.

Samples must be aqueous liquids.

If information is required regarding the chemical resistance of the probe, contact BioControl.

OPERATING TIPS

For best performance, use standards only once.

Proteins, fats, and oils may be removed by gentle scrubbing in a solution of Terg-A-Zyme (Alconox company), or a similar product. Afterwards, rinse thoroughly with deionized or distilled water. Cleaning agents are available from your laboratory supply vendor. Contact BioControl for additional information.

Keep conductivity standards sealed when not in use. If the probe will not calibrate, it usually indicates a failing probe or contaminated standards. Re-calibrate with fresh standards.

For best results, use conductivity standards that have already been reconstituted (not powdered tablets or packets). Also use standards with specified temperature values at 25 °C. Contact BioControl Technical Support for more information.

Best results are obtained by stirring the probe in the standard for 5-10 seconds prior to calibrating or taking a reading.

For optimal accuracy, it is recommended to calibrate at the temperature of the samples being measured.

TROUBLESHOOTING

If the following are observed; drift, instability of the reading, slow calibration, probe will not calibrate and/or conductivity value doesn't change as expected when changing samples, clean probe with tap water and a soft bristled brush or Q-tip. Use a mild detergent (e.g. a non-abrasive soft soap) or alcohol.

Soak the probe in warm (40 °C/104 °F) tap water for 5 to 10 minutes, and then place in a calibration standard solution (see **OPERATING TIPS**) at room temperature for 10 to 15 minutes.

SPECIFICATIONS

Probe Technology	4-electrode cell design
Probe Type	Graphite electrodes and epoxy body
Concentration Range	10-200,000 PPM
Concentration Accuracy	± 5% Full Scale
Concentration Resolution	1 PPM
Conductivity Range	0-100,000 microSiemens (µS)
Conductivity Accuracy	± 1% Full Scale
Conductivity Resolution	0.1 µS
Temperature Range	0 ° to 100 °C
Temperature Accuracy	± 0.5 °C
Temperature Resolution	0.1 °C
Calibration	Single-Point Calibration
Temperature Compensation	Automatic across entire range
Temperature Coefficient	2.5% /°C Non-selectable
Cell Constant	0.45 Non-selectable
Results	Conductivity (µS), Concentration (PPM), Temperature (°C/°F), and Pass/Fail
Data-logging	1,000 fully programmable test points 10,000 results stored in Dynamic Memory Allocation (DMA)

WARRANTY

BioControl Systems, Inc. (BCS) warrants this product to be free from defects in materials and workmanship, when stored under labeled conditions and used as intended for 12 months from date of purchase. BCS agrees during the applicable warranty period to replace all defective products after return to BCS. BCS shall not have obligation under this Limited Warranty to make replacements which result, in whole or in part, from negligence of the Buyer, or from improper use of the products, or use of the product in a manner for which it was not indicated. Buyer shall notify BCS of any products which it believes to be defective during the warranty period. At BCS option, such products shall be returned to BCS, transportation and insurance prepaid. BCS shall replace any such product found to be defective, at no charge. Should BCS examination not disclose any defect covered by the foregoing warranty, BCS shall so advise Buyers and dispose of the product in accordance with Buyer's instructions.

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