PIKE TECHNOLOGIES
Spectroscopic Creativity

Installation and User Guide

Electrochemical Cell for VeeMAX III™

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Introduction

PIKE Technologies' Electrochemical Cell is designed for in situ studies of redox processes and of electron transfer mechanisms. The Electrochemical Cell uses the VeeMAX III variable-angle specular reflectance/ATR VeeMAX platform. The cell is designed for ATR experiments. The angle of incidence may be varied to optimize spectral results. The ATR crystal is easily removed from the cell mount, which allows changing of the crystal type and facilitates the application of ATR surface coating. Additionally, the cell may be completely sealed for air-sensitive experiments. Electrodes are not included.

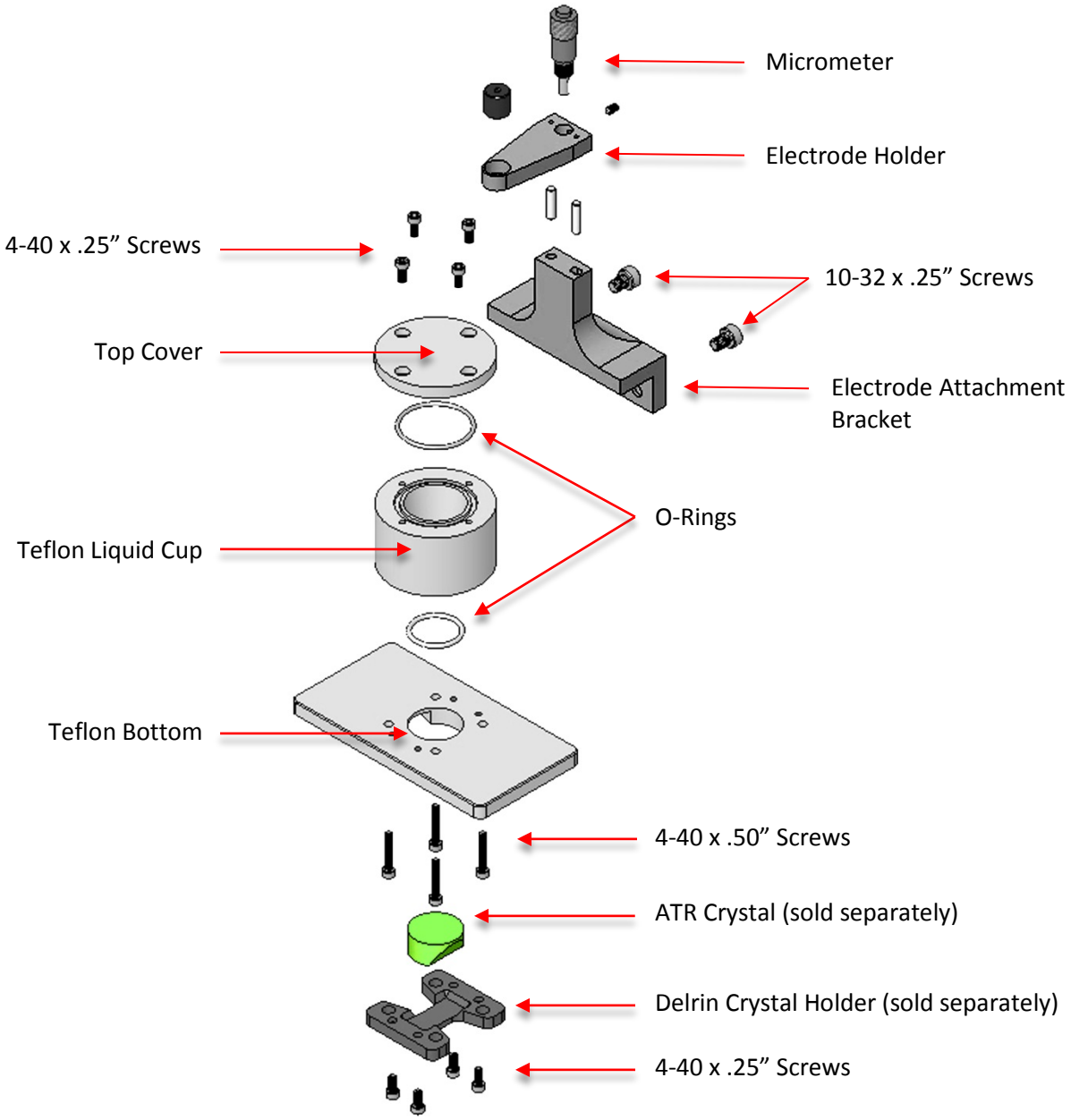


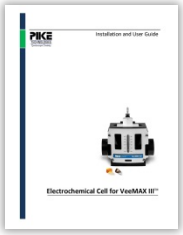
Figure 1. Cell Diagram

Unpacking Your Accessory

In order for you to quickly verify receipt of your accessory, we have included a packing list. Please inspect the package carefully.

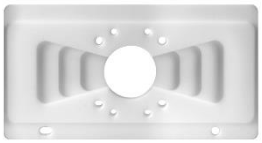
Packing List

Electrochemical Cell Manual
PN 350-001332
Quantity 1



Electrode Holder with Bracket
Quantity 1

Teflon Bottom
Quantity 1



Teflon Lid
013-3201
Quantity 1

Teflon Liquid Cup
Quantity 1

Delrin Crystal Holder
Quantity 1
(Sold Separately)

Screws
4-40 x .25” (4) 10-32 x .25” (2)
4-40 x .50” (4)

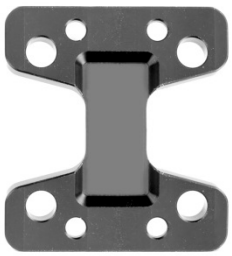
Cell Assembly

1. With the liquid cup flipped over, center and place the ATR crystal over the small O-ring as shown below. The liquid cup is tapered. The larger inner diameter is the top of the cup and the smaller inner diameter is the bottom of the cup, where the crystal is placed.

2. Place the Teflon rectangular bottom over the ATR crystal and align with the screw holes on the bottom of the cup. The crystal orientation with the flat edge aligned perpendicular with the recess of the Teflon rectangular bottom. Using a 3/32” hex wrench, attach the Teflon bottom to the liquid cup using four 4-40 x .50” screws. Do not over-tighten the screws as this may strip the threads.

3. Place the Delrin crystal holder plate over the screws which were installed in step 2. The recess on the plate should be seated against the crystal. Secure using four 4-40 x .25” screws. Do not over-tighten the screws as this may strip the thread of the Teflon rectangular bottom. The Delrin crystal holder is customized for ATR crystal face angle. 45° and 60° Delrin holders are available.

45° Delrin Holder



60° Delrin Holder

4. It is recommended that integrity of the seal be checked prior to placing the electrochemical cell onto the VeeMAX III.

Electrochemical Cell Installation

1. Included with the electrochemical cell is an electrode holder. If this is required for your experiment, attached the electrode bracket to the back of the VeeMAX III.

2. Remove the electrode bracket/micrometer by pulling upward below the micrometer to remove it from its seating pins.

3. Replace the specular insert located on the top of the VeeMAX with the assembled Electrochemical Cell.

Cell Customization

PIKE's Electrochemical Cell for the VeeMAX III has been designed to be adaptable to custom experimental setups. Drill holes in the Electrochemical Cell Teflon lid to accommodate electrodes and purge lines. The micrometer holder located on the back of the VeeMAX III top plate may be used to set the distance between an electrode and crystal if required. The Derlin™ plug in the micrometer arm may be machined to accommodate electrode diameter.

Contact between an electrode and the crystal may be made through a user customized spring-type device. As an alternative, a thin foil may be threaded underneath the O-ring sealing the bottom of the liquid cup.

Precautions

The O-rings shipped with the electrochemical cell are Viton. Be sure to check the compatibility of the O-ring to solvents being used in the electrochemical cell. Perfluoroelastomer O-rings are available. Contact PIKE Technologies to order.

Always check the integrity of the electrochemical cell seal prior to placing the electrochemistry onto the VeeMAX III base optics.

Replacement Parts and Options

Part Number	Description
013-3110	ZnSe Crystal, 45°
013-3130	ZnSe Crystal, 60°
013-3112	Ge Crystal, 45°
013-3132	Ge Crystal, 60°
013-3114	Si Crystal, 45°
013-3134	Si Crystal, 60°
013-3115	ZnS Crystal, 45°
013-3135	ZnS Crystal, 60°
013-3345	45° Crystal holder
013-3360	60° Crystal holder

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