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INSTRUCTION MANUAL

Warranty

WPI (World Precision Instruments, Inc.) warrants to the original purchaser that this equipment, including its components and parts, shall be free from defects in material and workmanship for a period of 30 days from the date of receipt. WPI's obligation under this warranty shall be limited to repair or replacement, at WPI's option, of the equipment or defective components or parts upon receipt thereof f.o.b. WPI, Sarasota, Florida U.S.A. Return of a repaired instrument shall be f.o.b. Sarasota.

The above warranty is contingent upon normal usage and does not cover products which have been modified without WPI's approval or which have been subjected to unusual physical or electrical stress or on which the original identification marks have been removed or altered. The above warranty will not apply if adjustment, repair or parts replacement is required because of accident, neglect, misuse, failure of electric power, air conditioning, humidity control, or causes other than normal and ordinary usage.

To the extent that any of its equipment is furnished by a manufacturer other than WPI, the foregoing warranty shall be applicable only to the extent of the warranty furnished by such other manufacturer. This warranty will not apply to appearance terms, such as knobs, handles, dials or the like.

WPI makes no warranty of any kind, express or implied or statutory, including without limitation any warranties of merchantability and/or fitness for a particular purpose. WPI shall not be liable for any damages, whether direct, indirect, special or consequential arising from a failure of this product to operate in the manner desired by the user. WPI shall not be liable for any damage to data or property that may be caused directly or indirectly by use of this product.

Claims and Returns

• Inspect all shipments upon receipt. Missing cartons or obvious damage to cartons should be noted on the delivery receipt before signing. Concealed loss or damage should be reported at once to the carrier and an inspection requested. All claims for shortage or damage must be made within 10 days after receipt of shipment. Claims for lost shipments must be made within 30 days of invoice or other notification of shipment.

Please save damaged or pilfered cartons until claim settles. In some instances, photographic documentation may be required. Some items are time sensitive; WPI assumes no extended warranty or any liability for use beyond the date specified on the container.

• WPI cannot be held responsible for items damaged in shipment en route to us. Please enclose merchandise in its original shipping container to avoid damage from handling. We recommend that you insure merchandise when shipping. The customer is responsible for paying shipping expenses including adequate insurance on all items returned.

• Do not return any goods to WPI without obtaining prior approval and instructions (RMA#) from our returns department. Goods returned unauthorized or by collect freight may be refused. The RMA# must be clearly displayed on the outside of the box, or the package will not be accepted. Please contact the RMA department for a request form.

• Goods returned for repair must be reasonably clean and free of hazardous materials.

• A handling fee is charged for goods returned for exchange or credit. This fee may add up to 25% of the sale price depending on the condition of the item. Goods ordered in error are also subject to the handling fee.

• Equipment which was built as a special order cannot be returned.

• Always refer to the RMA# when contacting WPI to obtain a status of your returned item.

• For any other issues regarding a claim or return, please contact the RMA department

Warning: This equipment is not designed or intended for use on humans.

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Care and Use of Microelectrode Holder and Half-Cells

Serial No._____

www.wpiinc.com

120815

Microelectrode Holders

WPI microelectrode holders are designed to provide an electrical coupling between fluid-filled glass pipettes and high input impedance microelectrode amplifiers. The 2-mm diameter gold-plated pin or receptacle connects directly to the probe input connector of WPI microelectrode amplifiers. An Ag/AgCl half-cell or silver wire, molded into the holder, provides the interface to the microelectrode electrolyte.

Use of the Holders

After the glass capillary micropipette is pulled (for example, with a WPI micropipette puller) it is usually filled with 3 M KCl. Insert a syringe needle (*e.g.* 30-gauge) completely into the shank of the micropipette and inject with chloride-containing electrolyte. Care must be taken to eliminate air bubbles by tapping the pipette with the tip pointed downwards. Fill the holder with the same chloride solution. The stem of the micropipette is then carefully pushed into the half-cell through the small hole in the holder gasket. At this point there must be no air bubbles or gaps throughout the micropipette and holder. The outside of the holder should be carefully dried with a tissue and the tip plug is then inserted into the tip jack of the probe. The electrode is now ready for use.

Chloridization

Holders with silver wires should be chloridized before use. This may be done easily by immersing the wire in 1 M hydrochloric acid and applying +1.5 V to the holder vs. a return electrode, such as a large platinum wire. If, before chloridizing, the wire is tarnished (yellow to dark red) it may be cleaned by passing it quickly over a flame, being careful to avoid melting the acrylic body, or washing in urea solution.

Cleaning and Storage

If the holder is not to be used for a period of time (more than a day) it should be rinsed with distilled water and carefully dried. The holders should not be stored in solution, especially salt solutions, because the stainless steel tip will cause rust to deposit on the Ag/AgCl pellet. Do not use organic solvents such as alcohol or acetone for cleaning.

Noise or potential drift may be an indication that the Ag/AgCl pellet or wire has been poisoned (with protein, iron or other material). Often the poisoned portion is limited to only the surface and can be removed. A pellet can be rejuvenated with a suitably small drill bit or reamer. A wire may be lightly sanded.

A spare gasket for the holder is provided since the gasket can become damaged after repeated insertions of the glass tubing. For the MEH1 series the gasket may be glued using silicone adhesive (WPI No. 1571). Use a small length of the glass tubing to center the gasket and allow for overnight curing of the adhesive.

Double Junction Electrode

To avoid contaminating a sample with potassium or chloride ion, a double-junction electrode may be constructed using any of the microelectrode holders. The inside of the holder is filled with 3 M KCl, while the glass capillary is filled with another electrolyte, such as ammonium nitrate.

Reference Cell (Indifferent Electrode) Models RC1, RC1T, RC2, RC2F, RC3, RC4, RC5, RC6

Reference cells are Ag/AgCl pellets molded into a connector or wire. They are designed to be used as the ground leg (return path) from a preparation. We recommend the use of a wick or a salt-saturated gel between the reference electrode and the surrounding fluid medium. This is done to prevent contamination of the Ag/AgCl by protein, which may adversely affect the electrode behavior.