

# CHARGE DETECTOR PROBE

## Model 234



### Operating Instructions

9/08



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## 1.0 DESCRIPTION

The Model 234 Charge Detector Probe shown in Figure 1-1 is designed to measure charge on the surface of an object while it is being triboelectrically charged due to motion of another media flowing, rubbing or separating from the test object.

It is used in conjunction with the ETS Model 230 Nanocoulombmeter. The Probe features a plug-in 0.375" (9.5mm) stainless steel conical tip contact electrode that can either be held against the side of the test object or accepts a cable terminated with a standard 0.162" (4mm) banana plug that is attached directly to the test object. The Model 234 incorporates a remote ZERO/READ switch that can be used to control zero function similar to the optional foot switch available with the Model 230. Cable lengths are 3' (.9m).

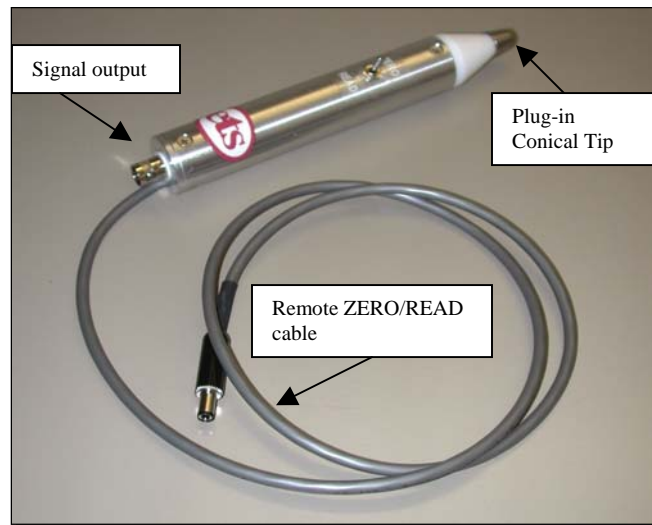


Figure 1-1: Model 234 Charge Detector Probe

## 2.0 SET-UP

Connect the White Teflon<sup>®</sup> Signal cable from the front panel of Model 230 to the Signal Input connector on the Model 234 Probe. Plug the Remote ZERO/READ cable into the REMOTE ZERO jack located on the rear of the Model 230 as shown in Figures 2 and 3.

Place the conical tip electrode against the surface of the object being triboelectrically charged. **Do not** use the Probe to just measure the static charge on the surface of the object.



Figure 2-1: Probe signal connection



Figure 2-2: ZERO/READ switch connection

To make a direct connection to the test object the conical tip can be removed and a cable with a straight banana plug can be inserted. The other end is connected to the test object. This configuration is best used when the test object has a metal or other conductive surface to which to clip or make a hard connection to. The conical tip is removed by pulling it out of the Teflon<sup>®</sup> Probe head.

### 3.0 OPERATION

To measure charge on the test object first select the appropriate RANGE (20, 200 or 2000 nC) then place the either the ZERO/READ switch on the front panel of the Model 230 or the remote switch on the Model 234 in the READ position.

Begin the charging process and monitor the charge on the Model 230 meter. If the reading is over or under scale (blank display or readings very low) return to the ZERO position, change range then restart the measurement. Range changes cannot be made when the Model 230 is in the READ mode. When the test is finished place the switch back to the ZERO position.

The Model 230 has a BNC recorder output jack ( $\pm 1.99V$ ) for recording the measurement. Refer to Figure 2-2.

## 4.0 WARRANTY

Electro-Tech Systems, Inc. warrants its equipment, accessories and parts of its manufacture to be and remain free from defects in material and workmanship for a period of one (1) year from date of invoice and will, at the discretion of Seller, either replace or repair without charge, F.O.B. Glenside, similar equipment or a similar part to replace any equipment or part of its manufacture which, within the above stated time, is proved to have been defective at the time it was sold. Equipment claimed defective must be returned properly identified to the Seller (or presented to one of its agents for inspection). This warranty only applies to equipment operated in accordance with Seller's operating instructions.

Seller's warranty with respect to those parts of the equipment that are purchased from other manufacturers shall be subject only to that manufacturer's warranty.

The Seller's liability hereunder is expressly limited to repairing or replacing any parts of the equipment manufactured by the manufacturer and found to have been defective. The Seller shall not be liable for damage resulting or claimed to result from any cause whatsoever.

This warranty becomes null and void should the equipment, or any part thereof, be abused or modified by the customer or if used in any application other than that for which it was intended. This warranty to replace or repair is the only warranty, either expressed or implied or provided by law, and is in lieu of all other warranties and the Seller denies any other promise, guarantee, or warranty with respect to the equipment or accessories and, in particular, as to its or their suitability for the purposes of the buyer or its or their performance, either quantitatively or qualitatively or as to the products which it may produce and the buyer is expected to expressly waive rights to any warranty other than that stated herein.

ETS must be notified before any equipment is returned for repair. ETS will issue an RMA (Return Material Authorization) number for return of equipment.

Equipment should be shipped prepaid and insured in the original packaging. If the original packaging is not available, the equipment must be packed in a sufficiently large box (or boxes if applicable) of double wall construction with substantial packing around all sides. The RMA number, description of the problem along with the contact name and telephone number must be included in formal paperwork and enclosed with the instrument. Round trip freight and related charges are the owner's responsibility.