

# ACL 600 Stati-Check Meter

## OPERATION MANUAL



**Meter is warranted for one year from the date of purchase on parts and labor.**

**Calibration is recommended every twelve months.**

## FEATURES

- Quick visual display of static from 0-19,990 volts
- Touch to test static in both positive and negative polarity
- Easy to ground by simultaneously touching 10mm snap contact
- Low battery indicator built into liquid crystal display (LCD)
- Micro-power circuit allows 9-volt alkaline battery to continuously display for approximately six months
- Conductive static-safe carrying case with protective anti-static foam included
- Detects how much static a person is carrying
- Audits any potential static generator or dissipater including the following:  
Wrist straps, heel grounders, toe straps, static-safe shoes, chairs, table mats, floor mats, ground leads, purpose-built floors, garments, static sprays, floor finishes, the difference in potential between two people or materials, etc.

## INTRODUCTION

The ACL 600 Stati-Check Meter is a simple, easy-to-use and inexpensive unit that indicates how much static is present on a person and that drains the charge to the connected ground. This unit can be held in the hand or mounted to a wall. The ACL 600 Stati-Check Meter is the all-around audit tool for your protection against static.

## OPERATION

Before using the ACL 600 Stati-Check Meter for any of the below tests, ground the meter using the provided six-foot cord. The cord has a 10mm snap at one end and a 4mm banana plug at the other end. The 10mm snap and the 4mm banana plug are a common ground on the ACL 600 Stati-Check Meter.

NOTE: Failure to ground the unit can result in inconsistent results. If the ACL 600 Stati-Check Meter is not grounded, a charge is retained, resulting in inconsistent readings. The circuit will only become responsive when offered a path to ground.

### Standard Test

To check for a static charge or buildup on a person and to ground the charge, simply set the unit in a convenient place and press a finger to the rectangular "Touch to Test" plate. The LCD will display a range of "0000" volts to "19,990" volts on the LCD depending on the static buildup on the person undergoing the test. Then touch the 10mm stud next to the word "Ground". This will discharge any static charge immediately.

### Testing Other Items

- A. Wrist strap and cord: Connect the 10mm snap into the 10mm stud on the ACL 600 Stati-Check Meter. Shuffle feet while touching the rectangular "Touch to Test" plate. If the wrist strap and cord are functioning properly, the ACL 600 Stati-Check Meter will display "0000" volts on the LCD. Disconnect the wrist strap from the cord and repeat the test while touching the plate and shuffling

feet again. Depending on humidity and type of footwear, a reading of several thousand volts of static charge may be displayed.

- B. Coil cords and ground leads: These can be checked the same way as above, by holding the bare metal/conductive connection to the “Touch to Test” plate.
- C. Custom floors, floor coatings, floor mats and carpet sprays: Hold the meter with thumb or fingers making contact with rectangular “Touch to Test” plate. Wearing heel grounders or other ESD footwear, shuffle feet on floor under evaluation while still making contact with “Touch to Test” plate. If floor has been properly grounded, the LCD will display “0000”. Try the same test on a known insulative floor while wearing the same footwear. Shuffle feet again to see that even with perfectly good footwear, a charge can be generated on an insulative floor. Finally, try the test on the insulative floor but with rubber-soled shoes and several thousand volts will be displayed.
- D. Chairs or chair covers: Hold the meter with thumb or fingers making contact with rectangular “Touch to Test” plate. Sit on the grounded chair and shuffle back and forth. If the chair or chair cover is working and grounded, then “0000” volts will be displayed on the LCD. Disconnect the chair or chair cover from ground or use an insulative chair, and make sure that any floor mats are not grounded. Shuffle again and the ACL 600 Stati-Check Meter will show that even little movement will generate large charges.
- E. Bonding plugs and common ground boxes: If ground is faulty or the bonding plug/common ground box has a fault, the ACL 600 Stati-Check Meter will display a charge. Repeat the process used for checking ground leads using a known working ground (i.e. outlet or other grounded surface).
- F. Difference in potential: Two people are needed for this test. Person #1 begins by holding the ACL 600 Stati-Check Meter and making contact with the rectangular “Touch to Test” plate with thumb or fingers. Person #1 then passes the meter to Person # 2 who will touch the rectangular plate and observe the value displayed on the LCD to determine the difference in charges between himself and Person # 1. This simulates the charge generated by Person # 1 passing a PCB (Printed Circuit Board) to Person # 2 if both persons were not grounded with footwear and/or wrist strap. There is a potential of several thousand volts to be generated by passing a PCB from one person to another.

The ACL 600 Stati-Check Meter can be applied to many other types of static control products in various static control situations.

## FREQUENTLY ASKED QUESTIONS

### **Q. Why do I need to use the ACL 600 Stati-Check Meter?**

- A. The ACL 600 Stati-Check Meter is a visual method of auditing an ESD-protected area. The level of static charge generated by human contact or man-made products within the protected area is clearly displayed on the LCD. The static charge range is 0-19,990 volts of the Human Body Model (HBM). The meter also gives a day-to-day check on performance of conductive, dissipative, and anti-static products used within an ESD-protected area.

**Q. Does the ACL 600 Stati-Check meter need to be grounded in order to work properly?**

A. Yes. If the meter is properly grounded, when a test is performed the meter will read voltage and will slowly drain the charge to zero. If the meter is not properly grounded, when a test is performed the displayed value will be inaccurate and the voltage will remain on the person or object under test, as it has nowhere to drain.

**Q. When I touch the stainless steel “Touch to Test” plate and a static charge is displayed, how do I discharge the static?**

A. First you must make sure that the ground lead is connected to the 4mm banana socket and the lead is connected to ground. Then touch the 10mm stud next to the word “Ground”. This will discharge any static charge immediately.

**Q. The ACL 600 Stati-Check Meter indicates 0-19,990 volts (HBM). The 0-9 volts are obviously indicated by the printed zero on the label, units of ten (10) are shown with the first display digit and so on. However, if the meter displays voltage up to 19,990 volts, why is the fourth digit not displayed?**

A. The meter uses a 3 ½ digit display, therefore the 10,000 + volt display is shown when you are in excess of 10,000 volts (i.e. the “1” will then appear).

**Q. If the meter measures both positive and negative polarity, why is it that only the minus (-) sign shown on the display?**

A. A negative charge is indicated by the display of the minus (-) sign. For a positive charge, no indication of polarity is displayed.

**Q. Do I affix the unit to a wall outside the ESD-protected area or use it as a pocket /mobile meter?**

A. Either option is acceptable. If the meter is wall-mounted outside the ESD-protected area, it will serve as an educational entry system. By touching the meter and then discharging before entering the protected area, operators and customers will become aware that they carry excessive charges.

**Q. After I discharge (ground) myself, do I need to take any further precautions?**

A. Because static charges are constantly generated by materials worn or handled, personnel must be grounded constantly. The ACL 600 Stati-Check Meter will indicate if a wrist strap is grounded by touching the stainless steel “Touch to Test” plate. If the user is properly grounded, a zero voltage will be displayed even while shuffling feet. If the user is not properly grounded, then the level of static will be displayed on the LCD.

**Q. Will the meter only indicate if wrist straps are not grounded?**

- A. The meter will display voltage from 0-19,990 volts if any product either creates a charge or is not grounded. There is also a difference in potential between two people. This can be displayed by a person touching the stainless steel plate while handing the meter to another person who also touches the plate. At that point in time the difference in potential between the two people is displayed, simulating one operator passing a printed circuit board (PCB) to another person.

**Q. What is the 10mm snap on the front of the meter used for?**

- A. The front 10mm snap can be used as a method of grounding charges that are displayed on the LCD when the operator touches the stainless steel plate. For example, as the operator touches the test plate, the voltage may read 500 volts. The operator should then at the same time touch the 10mm snap and the charge will disappear in a split second. The 10mm snap can also be used as a way of grounding the meter if a 4mm banana connection is unavailable.

**CALIBRATION PROCEDURE**

1. Unscrew the unit. Connect 1 volt supply to the input of the meter, i.e. 0 volts to ground (4mm Banana Socket) and 1 volt to the end of R12 on the PCB which is connected to U1 (Large Blue Resistor inside the unit on the PCB). Monitor this voltage with your Digital Volt Meter (D.V.M.) and adjust VR1 (adjustable pot inside the meter on the PCB) until the reading matches the D.V.M. [The 1 volt supply can be an ordinary AA cell].
2. Power the ACL 600 Stati-Check Meter with a variable supply set to 6.5 volts and monitor this with your Digital Volt Meter. Adjust VR2 (adjustable pot inside the unit) until the "LOBAT" indication just comes on.

Warranty labels are affixed to the outside of The ACL 600 Stati-Check meter. As the above procedure indicates, the unit must be opened in order to calibrate it, thus breaking the labels and voiding the warranty. Sending the meter back to the supplier for annual calibration is recommended.

**SPECIFICATIONS**

Power Supply:	9-volt PP3 alkaline battery	
Battery Life:	Approximately six months	
Operating Voltage:	> 6.5 volts .9 volts Lowbat set at 6.5 volts	
Temperature Range:	Operation	40°F to 120°F (5°C to 49°C)
	Storage	40°F to 95°F (5°C to 35°C)
Relative Humidity:	0% to 90% (non-condensing)	
Accuracy:	± 5%	
Weight:	220g	