

ACL 300B Precision Static Locator

OPERATION MANUAL



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

Calibration is recommended every twelve months.

FEATURES

- Convenient pocket-size
- Lightweight
- Excellent reproducibility of readings
- Standard 9-volt battery included
- Long battery life
- Multiple ranges
- Low drift
- Accuracy $\pm 10\%$ of full scale at $\frac{1}{2}$ " spacing
- Battery Test switch
- Option carrying case available (part# CS13)

INTRODUCTION

The ACL 300B is a high-quality, portable, non-contact voltage meter. When used properly, it will consistently produce accurate readings with ease and will provide years of trouble-free operation.

This meter's accuracy is dependent upon three factors:

1. The instrument must be properly zeroed.
2. The distance between the surface of the sensitive electrode and the target or surface under examination must be accurately defined.
3. The target must be large relative to the sensitive electrode. (We refer to these relative sizes in our "Field of View" graph as "Aspect Ratio.")

OPERATION

1. Test meter before using, following instructions on p. 3 of this manual.
2. Turn the meter on by pushing the red power/range selector switch into the LO or the HI position.
3. Discharge static electricity from your body by touching a grounded metal object, such as a water pipe, a metal electrical conduit, grounded machinery or a workbench.
4. Zero the instrument. This can be done in two ways:
 - a. Point the instrument away from charged objects. Press the black ZERO switch twice and release. The switch will return to the READ position.
 - b. Point the instrument toward a known grounded surface. Press the black ZERO switch twice and release. The switch will return to the READ position.
5. Point the meter's electrode toward target and move to a distance of either 4" or $\frac{1}{2}$ ". Note the reading on appropriate meter scale.

Note: Distance is measured from the front surface of the electrode OR the corresponding edge of the groove surrounding the case (forward of the red switch).

Static charges should be interpreted as follows:

Red switch position	Distance from face of electrode to target	Meter's voltage range
LO	$\frac{1}{2}$ "	0-500V
LO	4"	0-3,000V
HI	$\frac{1}{2}$ "	0-5,000V
HI	4"	0-30,000V

* LO range is read directly from the meter.

* HI range is 10 times meter reading.

* If general magnitude of charge is unknown, start in LO range.

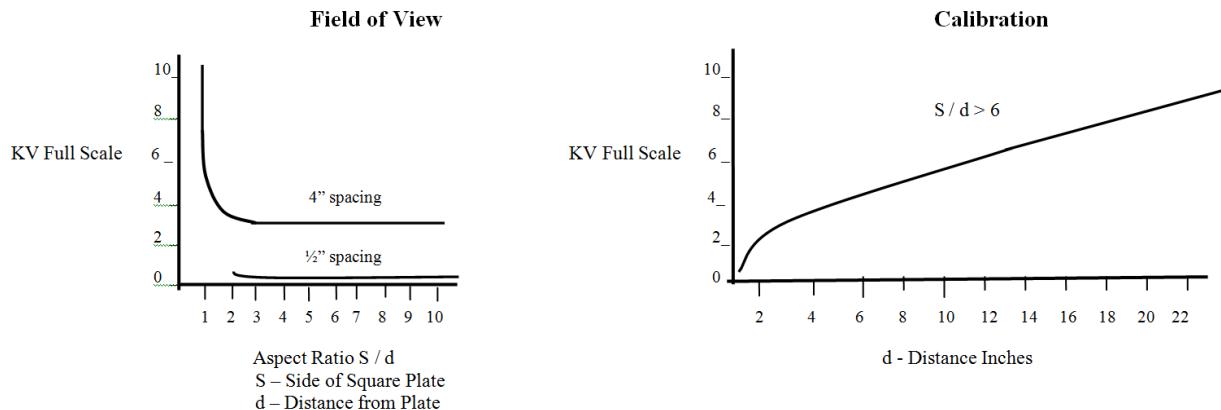
6. Repeat steps 1-4 for additional measurements.
7. Turn instrument off when not in use by returning red switch to middle position.
8. Remove the battery when storing the instrument for extended periods of time.

BATTERY REPLACEMENT:

To check battery, press black BATT/ZERO switch to left toward BATT side. The needle should move to the right of the red battery line. If it does not, battery replacement is needed. The battery should be replaced after forty hours of use or at least once a year. (NOTE: Dead battery voltage is 5.5 volts.) Turn off unit before replacing the battery. Replacement battery is Eveready 1222 or equivalent.

CLEANING:

If excessive drift is noted, the surface of the electrode may require cleaning. Wipe the surface of the electrode with a soft cloth saturated with clean alcohol and allow to dry thoroughly. Dust off any lint.



Test your new ACL 300B

Before Using

PREPARATION

1. Remove battery cover.
2. Attach wires to battery.
3. Insert battery into cavity with wires positioned under battery.
4. Replace cover.
5. Turn on meter to LO position by pressing red switch to left.
6. Press black BATT/ZERO switch to left toward BATT side.
7. The needle should move to the right of the red battery line. If it does not, battery replacement is needed.

TEST METER

1. Blow up supplied balloon or obtain a piece of plastic.
2. Rub balloon or plastic vigorously on arm.
3. Using free hand, press red switch on ACL 300B to the left in LO position.
4. Pointing ACL 300B away from balloon or other charged objects, press black BATT/ZERO switch twice to the right to zero meter.
5. Bring balloon toward meter's silver conductive sensor plate. Needle should move freely to extreme right or left.

Caution: DO NOT TOUCH BALLOON TO SENSOR PLATE.

6. Repeat with red switch on HI setting (right). Needle may not move to extreme right or left on HI.
7. If the needle moves frequently, the ACL 300B is ready to use.

PRECAUTIONS

1. Do not touch electrode with your fingers.
2. Insert meter into the case with the electrode down.

ACL MODEL #300B

CALIBRATION INSTRUCTIONS

Accuracy should be checked only at $\frac{1}{2}$ " spacing. At greater distances, the viewing area of the electrode and therefore the area of the surface needed for calibration become prohibitively large. Additionally, stray electrostatic charges and nearby grounds become a source of error.

EQUIPMENT REQUIRED

1. Monroe Electronics, Inc. Model 241 \pm 3KV Reference Supply (or equivalent), capable of a 500V DC and 3000V DC output at least 1% accurate.
2. A test fixture consisting of an electrically isolated metal plate at least 3" on a side (the larger, the better) and a means of positioning this plate $\frac{1}{2}$ " from the electrode of the unit under test.

TEST PROCEDURE

1. Connect the output of the Reference Supply to the test plate and the case (of the ACL 300B) to the low side of the Reference Supply or ground.
2. Position the unit under test so that its electrode is $\frac{1}{2}$ " from the plate's center.
3. Mechanically zero the meter
4. Turn the unit on to LO.
5. Press the zero switch two or three times and the meter should zero.
6. Apply +450V DC to the test plate from the Reference Supply.
7. The meter of the unit under test should read between +400 and +500 volts.
8. Release the applied voltage.
9. Repeat Step #5.
10. Repeat steps #6 & #7 using -450 V DC.
11. Observe the meter for approximately 30 seconds and it should not drift more than one division (50V). Twenty percent per minute drift maximum.
12. Release the applied voltage.
13. Set the unit under test to HI.
14. Repeat step #5.
15. Apply +3000V DC to the test plate.
16. The meter should read between +2500 and +3500 volts.

NOTE: Any accurate higher voltage may be used here between 2000 and 5000 volts and the meter should read the voltage applied $\pm 10\%$.