

# Digital Static Locator Installation, Operation, and Maintenance



Figure 1. Digital Static Locator Item #[19430](#)

## Description

Desco's Digital Static Locator is a compact electrostatic fieldmeter used for locating and measuring static charges. Its pocket size makes it handy to use and four button operation makes it easy to operate.

The Digital Static Locator measures static voltages within  $\pm 20\text{kV}$  (20,000V) at a distance of 1". Results are simultaneously displayed numerically and in bar graph format. POWER on/off, ZERO adjustment, Ion Balance (IB) and HOLD are all push button operation. The HOLD button allows the display to retain the static charge reading. This is especially useful where display is difficult to see during measurement.

Two LED guide ring lights help position the fieldmeter at the right distance from a charged test object. The conductive case and ground snap facilitate grounding for accurate measurement. The circuitry of the [19430](#) has been designed to make measurements in areas using air ionization.

## Features

- Easy to read, easy to use operations
- Lightweight, compact design
- Range light assures accurate and repeatable measurements
- Automatic range switching up to  $\pm 20\text{kV}$  (20,000V) at 1" (25mm)
- Digital and bar graph display
- Automatic power off after five minutes (may be disabled if preferred)

## Specifications

**Measuring range:** 0 to  $\pm 1.49\text{ kV}$  (Lo range)  
 $\pm 1.0\text{ kV}$  to  $\pm 20.0\text{ kV}$  (Hi range)  
 (Range hysteresis:  $\pm 1.0\text{ kV}$  to  $\pm 1.5\text{ kV}$ )  
 0 to  $\pm 200\text{ V}$  (Ion Balance measuring range)

**Measuring distance:**  $1" \pm 1/64"$  (25mm  $\pm 0.5\text{mm}$ ); LEDs guide for correct distance (between charged object and fieldmeter)

**Response time:**  $< 1\text{ s}$

**LCD display renewal rate:** 5 times/s

**Accuracy:**  $20\text{KV} \pm 10\%$

**Ambient conditions:**  $50^\circ\text{-}100^\circ\text{F}$ , ( $10^\circ\text{-}40^\circ\text{C}$ ); 0 - 60 %RH (non-condensing)

**Display features:** Bar graph; red LCD positive polarity voltage, blue LCD negative polarity voltage

**Bar graph precision:**  $\pm 0.1\text{ kV}$  for low range  $\pm 1.5\text{ kV}$  for high (Hi) range;  $\pm 15\text{ V}$  for ion balance range

**Digital reading:** Auto-ranging, three digits . = 0 to  $\pm 1.49\text{ kV}$  . =  $\pm 1.0\text{ kV}$  to  $\pm 20.0\text{ kV}$  (Hi) = 0 to 200 (Ion Balance)

Ion Balance mode display: [IB] is displayed  
 Battery capacity display indicator  
 HOLD switch to retain display after measurement  
 Error sign [Error] appears if the sensor is damaged

**Alarm feature:** Beep sound will be heard during the following actions:

- Power on: one beep
- Power on with Auto Off feature disabled: [Depress power button for more than 3 seconds] three beeps
- Auto power-off: short beeps at 1 second interval for 5 seconds before power off
- Over range: Continuous sound

<b>Auto power-off:</b>	Power turns off automatically after five minutes. [A.OFF] is displayed whenever this feature is disabled.
<b>Power source:</b>	9 V, 6F22Y manganese battery.
<b>Battery life:</b>	In excess of 30 hours.
<b>Size:</b>	4 7/8" (123mm) (L) × 2 7/8" (73mm) (W) × 1" (25mm)(D)
<b>Weight:</b>	6 oz. (170g)
<b>Case material:</b>	Conductive resin (ABS)

## Operation

The [19430](#) has four push buttons. The buttons operate by pressing once lightly. There is no need to press the button repeatedly. Its effective life may be decreased by repeated misuse.

The POWER button turns the fieldmeter on and off. If the [19430](#) is left on for 5 minutes, it will automatically turn itself off. To resume operations, press the red POWER button once. To disable the AutoOff feature and allow continuous operation, press the red Power button and hold down for at least 3 seconds when turning the fieldmeter on.

The HOLD button holds the display of a measured charge. HOLD mode turns off the focusing LEDs. No measurements are possible when in the HOLD mode. The hold measurement feature enables the user to use the meter in inaccessible areas. When the HOLD button is pressed once during a measurement, the digital numerical value and the bar graph will be held on the display. This function allows the operator to move the meter where it can be more easily read. The HOLD mode is displayed above the battery capacity display. To cancel HOLD mode and resume measurement, press HOLD once more.

The IB button and prepares the fieldmeter for Ion Balance measurement. Refer to Section 6 for details.

The ZERO button sets the meter to a zero charge. When the digital meter is turned on, the zero adjustment is inoperative if it is in HOLD mode or the meter reads more than  $\pm 0.20$ .

**NOTE:** For reliable measurement, the fieldmeter must be grounded properly using the ground lead provided. The plastic case of the [19430](#) Electrostatic Fieldmeter is made of conductive resin. The grounding terminal provides the reference potential for the electrical

circuit. This terminal must be grounded properly for accurate measurement.

1. Turn the focusing LED and sensor toward an uncharged area.
2. Press the POWER button. A single beep for one second indicates proper operation. The battery capacity indicator and bar graph will be displayed.
3. The meter reading should be zero (0). Use the ZERO button if it is not.
4. Hold the fieldmeter 1" away from the charged surface. Two beams of light will form concentric circles when the meter is the correct distance, 1" away, from the surface. The measurement accuracy is dependent on a stable ground reference and the 1 inch measuring distance. It is also dependent on the "aspect ratio", relating the size of the object to be measured to the measurement distance. This aspect ratio should be at least 3 for best accuracy, i.e. the object should be at least a 3 in square when measuring at a 1 in distance. Accurate measurements may be made at other measurement distances by scaling the meter range and observing the proper aspect ratio. For example, at a measurement distance of 3 inches, multiply the meter reading by 3 to give a range of 0 to 60 kilovolts. For accuracy, the object being measured at this distance should be at least a 9 inch square."
5. A bar graph and a digital display on the [19430](#) displays the voltage of the charge. Press HOLD if you want to hold the display of the measured charge.
6. To turn off meter: Press POWER if you have not used the HOLD mode.

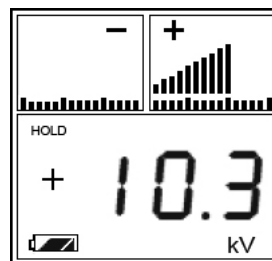


Figure 3.

If you have pressed HOLD and wish to retain the meter reading for the next use, press the POWER button to turn off the [19430](#).

If you have pressed HOLD and do not wish to retain the meter reading for next use, press HOLD then POWER.

If the [19430](#) is left on for five minutes, the unit will beep five times then turn itself off automatically. To disable this feature, simply press and hold the red power button for at least three seconds when turning the [19430](#) on. Three beeps and the A-OFF display indicates that the feature has been disabled.

## Results

A display of [+] or [-] next to the digital numeric value represents the polarity of the static electricity being measured. In addition, the color of the bars in the bar graph indicates the polarity of the static charge. Red and blue bars indicate positive and negative charges respectively.

During a static voltage measurement, if the digital display starts flashing along with a continuous beep, stop taking the measurement. The static charge is greater than the meter can measure. Attempts to measure too high a charge may damage the sensor.

## Operation of Ion Balance Measurement

**NOTE:** The Digital Static Locator Ion Balance measurement feature should not be used to measure the ion balance of static bars. It may be used to measure other static control devices for ion balance and to check for residual charges on surfaces.

The Digital Static Locator can also be used to measure ion balance voltage (residual voltage).

1. Depress the charge plate release button on either side of the fieldmeter to remove the charge plate assembly.
2. Insert the plate assembly into the other end of the fieldmeter (the end with the Desco logo) until it clicks into place.

**NOTE:** Ion Balance plate must not move during measurement.

3. The conductive case must be grounded using the supplied grounding lead. It is imperative for accurate ion balance and to drain any charge that has developed prior to measurement.
4. To turn on the ion balance measuring circuit, press the blue IB button.
5. Turn sensor toward an uncharged area.
6. The meter reading should be zero (0). Press the Zero button if it is not.
7. Hold the fieldmeter centered in front of the ionizer at any convenient, repeatable distance, such as 1 foot.
8. A bar graph and a digital display on the [19430](#) displays the ion balance information. Press HOLD if you want to hold the display of the measured charge.
9. To turn off the meter:

Press POWER if you have not used the HOLD mode.

If you have pressed HOLD and wish to retain the meter reading for the next use, press the POWER button to turn off the [19430](#).

If you have pressed HOLD and do not wish to retain the meter reading for next use, press HOLD then POWER.

10. Depress the charge plate release buttons on either side of the fieldmeter to remove the charge plate. Store the plate on the opposite end but [pressing it until it clicks into place.

If the [19430](#) is left on for five minutes, the unit will beep five times then turn itself off automatically. This feature can be disabled (refer to Section 5).

## Battery Replacement

The Digital Static Locator uses 9 V, 6F22Y Manganese battery. The life of the battery is about 30 hours. When the POWER switch is on, a battery capacity indicator displays the state of the battery on the front panel.

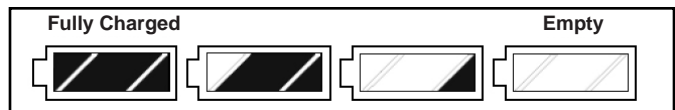


Figure 2. Residual battery capacity as displayed.

**NOTE:** The dark area in the battery indicator display is not proportional to the remaining energy.

## Replacement Procedure

The battery compartment on the back side of the fieldmeter has a removable cover marked OPEN. Be careful while connecting or disconnecting the battery. To avoid breaking the contacts, do not pull the connection plug hard.

1. Press down on OPEN and slide the cover down.
2. Remove the old battery (if present).
3. Connect the new battery and insert it into the battery compartment.
4. Reattach the cover back to the battery compartment.

Before closing the cover, make sure that no parts of the leads are outside the battery compartment.

## Safety Instructions

- **DANGER** indicates an immediately hazardous situation which, if not avoided, will result in death or serious injury.
- **WARNING** indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
- **CAUTION** indicates a potentially hazardous situation which, if not avoided, will result in property damage.
- **NOTE** indicates precautions necessary to avoid potential equipment failure.

This equipment must be installed and maintained as outlined in this manual. This equipment is not constructed for classified (hazardous) environments. It cannot be used where it will be exposed to ignitable or corrosive materials.

The [19430](#) is intended for use in areas that are free of water, oil, solvents and other conductive contaminants. Exposure to such contaminants will cause failure of the electrical insulation system in the product. Formulation of dew on the fieldmeter must be avoided.

Do not operate near corrosive fumes of acid/alkali or corrosive gases such as chlorine. The [19430](#) must be properly grounded to function accurately.

The [19430](#) contains a microcomputer chip. It should not be used in an environment with excessive electromagnetic noise. The internal parts of the [19430](#) should never come in contact with foreign substances.

The [19430](#) has been calibrated for a measuring distance of  $1" \pm 1/64"$  (25mm  $\pm 0.5$ mm).

## Important Notes and Cautions

1. Store and use the fieldmeter in a clean and dry environment. Foreign substances should never enter or touch the internal parts.
2. Vibration and impact may damage and/or affect the sensitivity of measurement of the instrument.
3. Do not attempt to take apart the fieldmeter.
4. The measuring distance between the fieldmeter and a test object should be  $1" \pm 1/64"$  (25mm  $\pm 1$ mm). The calibration was carried out at this distance. The specified accuracy is valid for this distance.

5. Grounding of the instrument is essential for sensitive ion balance measurements.
6. To maintain the high insulation level of insulation of the plate, the [19430](#) should be stored in a place having less than 60 %RH. It should be kept inside a plastic zipper bag with desiccant.
7. This fieldmeter is not an explosion-proof product. Do not use this product in flammable atmosphere such as paint-thinner, benzene, gasoline, propane, natural gas etc.
8. The instrument should be re-calibrated once a year. Contact Desco Customer Service when a recalibration of the fieldmeter is necessary.

## Troubleshooting Guide

Fault	Possible Causes	Solution
Fieldmeter is on but when turned toward a charges object, the number and the bar graph do not change.	The meter is in HOLD mode of operation.	Cancel the HOLD mode by pressing the HOLD button once.
The display cannot be set to zero.	The meter is in HOLD mode. The true ZERO point has shifter.	Cancel the HOLD mode by pressing the HOLD button once.  If the meter reads 0.20 or more for an uncharged object, a read adjustment may be needed. Contact your local representative or Desco Customer Service for read adjustment, repair or replacement.
When the POWER button is pressed, LCD display does not appear.	No battery, low battery capacity or bad contact. Malfunction of the LCD display.	Replace the battery / Make proper connection.  Discontinue use and contact your local representative or Desco Customer Service for read adjustment, repair or replacement.
A part of the LCD display does not appear.  Display shows ERROR.  Alarm does not sound.	Malfunction of the LCD display.	Discontinue use and contact your local representative or Desco Customer Service for read adjustment, repair or replacement.

### **Limited Warranty**

Desco expressly warrants that for a period of (1) year from the date of purchase an Desco Digital Static Locator will be free of defects in material (parts) and workmanship (labor). Within the warranty period, a credit for purchase of a replacement Desco Digital Static Locator, or, at Desco's option, the Digital Static Locator will be repaired or replaced free of charge. If product credit is issued, the amount will be calculated by multiplying the unused portion of the expected five year life times the original unit purchase price. Call our Customer Service Department at 909-664-9980 (Chino, CA) for a Return Material Authorization (RMA) and proper shipping instructions and address. Please include a copy of your original packing slip, invoice, or other proof of date of purchase. Any unit under warranty should be shipped prepaid to the Desco factory. Warranty replacements will take approximately two weeks.

If your unit is out of warranty, call our Customer Service Department at 909-664-9980 (Chino, CA) for a Return Material Authorization (RMA) and proper shipping instructions and address. Desco will quote repair charges necessary to bring your unit up to factory standards.

### **Warranty Exclusions**

THE FOREGOING EXPRESS WARRANTY IS MADE IN LIEU OF ALL OTHER PRODUCT WARRANTIES, EXPRESSED AND IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH ARE SPECIFICALLY DISCLAIMED. The express warranty will not apply to defects or damage due to accidents, neglect, misuse, alterations, operator error, or failure to properly maintain, clean or repair products.

### **Limit of Liability**

In no event will Desco or any seller be responsible or liable for any injury, loss or damage, direct or consequential, arising out of the use of or the inability to use the product. Before using, users shall determine the suitability of the product for their intended use, and users assume all risk and liability whatsoever in connection therewith.