



TRANSFORMING TECHNOLOGIES
OUTSTANDING ALTERNATIVES IN STATIC CONTROL

Ohm Metrics™

**Static Field Meter & Ionizer Verification Unit
Model EFM115**



Instruction Manual

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Description

Ohm Metrics Pocket Static Field Meter: EFM115

The EFM115 is a convenient electrostatic field meter used to locate and measure static charges and test the balance of air ionizers. Its compact design and four button interface makes it easy to operate. The EFM115 measures static voltages within $\pm 20\text{kV}$ (20,000V) at a distance of 1".

The EFM115 can be used to measure low voltages up to 200V in ion balance mode with a built in charge plate. The combination of field meter and ion balance tester makes the EFM115 the ideal meter for static audits, and periodic verification of ionizers and meets periodic test requirements per Compliance Verification ESD TR53 and conforms to ANSI/EOS/ESD (S4.1, S7.1, S12.1, S2.1).

Ohm Metrics test and measurement products, from Transforming Technologies, are useful, reliable tools for characterizing and identifying the electrical resistance of materials and the performance of personal grounding products.

- All Ohm Metrics products are designed to support ESDA Compliance Verification TR53.
- All Ohm Metrics products can be calibrated.
- All Ohm Metrics test and measurement products are warranted for 1 full year.

The EFM115 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)

Product Specifications

Product Number

EFM155 Electrostatic Field Meter

Measuring range

Static voltage $\pm 0 \sim \pm 1.49 \text{ kV}$ (Low range)
 $\pm 1.0 \sim \pm 20.0 \text{ kV}$ (High range)

Ion balance voltage $0 \sim \pm 200 \text{ V}$

Measuring distance $25 \text{ mm} \pm 0.5$

Accuracy $\pm 10\%$

Ambient conditions $0^\circ\text{C} \sim 40^\circ\text{C}$, 680%RH or lower

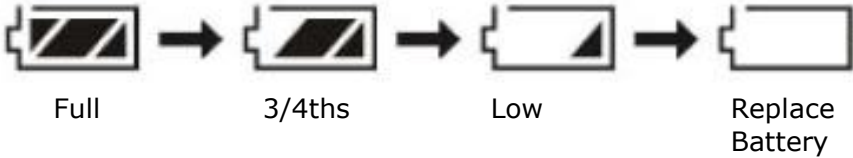
Display Large LCD display (Digital and bar graph)

Power 9V, 6F22Y manganese battery:
1PCE (Life: Approx. 30hours)

Weight Approx. 140g without ion balance
plate (Ion balance plate : Approx.
30g)

Power Requirements

The EFM115 uses a 9V, 6F22Y Manganese battery and has a life of about 30 hours. The life of the battery is displayed on the LED front panel, with a battery icon that changes in 4 stages:



Battery Replacement Procedure

The battery compartment on the back side of the field meter has a removable cover marked **OPEN**.

NOTE: 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.

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

EFM115 Front Panel

Sensor for Determining Electrostatic charge levels



Focus-Ring LED lights

Charge plate for ion balance is built in.



CE RoHS

The below message appears during sensor failure

Err

Four color coded buttons to switch Measurement modes



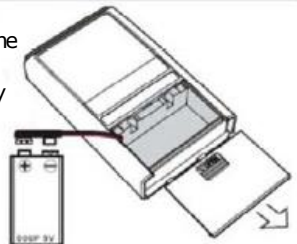
Ground unit properly prior to use to ensure accuracy



Unit comes with handy carrying case



Open the lid on the back of meter to change battery



Operation:

Four Button Interface

The EFM115 has four push buttons: **Power** (Red) **Ion Balance** (Blue) **Hold** (Yellow) and **Reset** (Orange). The buttons operate by pressing once lightly.

Note: Do not push the buttons with excessive force or repeatedly. The effective life may be decreased by repeated misuse.

Press the **Power** button once and the unit will turn on in "Static Field Meter" Mode. This is the default mode and will be set to this every time the unit is turned on. The meter is equipped with an auto-off feature to save battery power. After 5 mins of inactivity, the unit will beep 5 times and turn itself off. To resume operations, press the **Power** button once. The auto-off feature can be disabled by pressing and holding the **Power** button for at least three seconds when powering on the meter. The EFM115 will beep once and the display will read "A.OFF" to indicate the feature has been disabled.

After the meter has been turned on, press the blue **Ion Balance** button once to switch into Ion Balance Mode. Refer to section **Operation: Ion Balance** for more information.

The yellow **Hold** button will freeze the meter after it is pressed once. The LED display will freeze the numerical reading and the bar graph which allows the operator to read the meter more easily and record data. To cancel "Hold

Mode" and resume testing, press the **Hold** button once more.

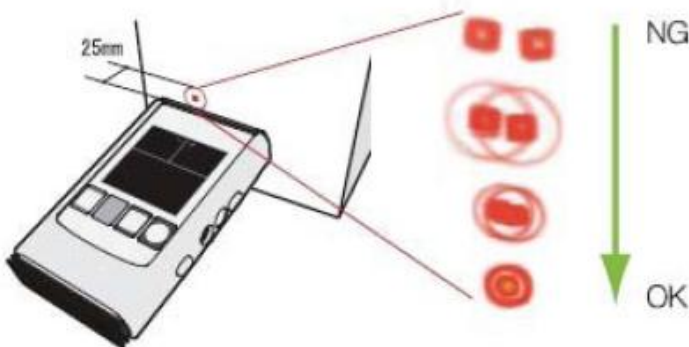
The Orange **Reset** button sets the meter to a zero charge.

Note: The Reset button is inoperative in "Hold Mode".

Proper Measurement Distance

The EFM115 is equipped with two "Focus Rings" that are beamed from the front of the meter in ensure proper measuring distance. Two beams of light will form concentric circles when the meter is the correct 1" away from the charged surface.

Note: If measuring at 1" is not possible, you can take a measurement at 3" and multiply the result by 2. You can also take a measurement 6" away from the surface, and multiply the result by 3.



Operation: Field Meter

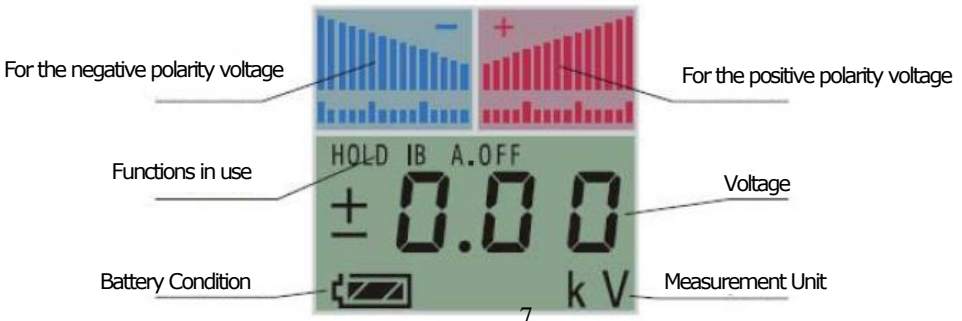
1. The field meter must be grounded properly with the ground lead provided.
2. Press the **Power** Button once to activate the meter. A single beep will indicate proper operation.
3. The meter reading should be zero (0). Use the **Reset** button if it is not.
4. Hold the field meter 1" away from a surface, using the "Focus Rings" for proper distance.
5. A bar graph and a numerical LED readout displays the voltage of the charged surface. Press **Hold** to freeze the screen to better read the result.
6. Press the red **Power Button** to turn off meter.



Understanding the Results

Easy-to-read LCD Display

The LCD Display on the EFM115 is divided into three sections. The upper left section displays a bar graph in blue to indicate a negative polarity. The upper right section displays a bar graph in red to indicate a positive polarity. The lower section display numerical values, voltage measurement and function sections.



The EFM115 is calibrated for the voltage range 0 to \pm 20kV. The meter displays results in Kilovolts (kV). 1 kV = 1000 volts (V). A display of (+) or (-) next to the numerical results represents the polarity of the static charge. Also, the red bar graph indicates a positive polarity and the blue bar graph represents negative.

If the reading blinks at [\pm 22.0] with a continuous warning sound during a measurement, the maximum voltage reading has been reached or exceeded.

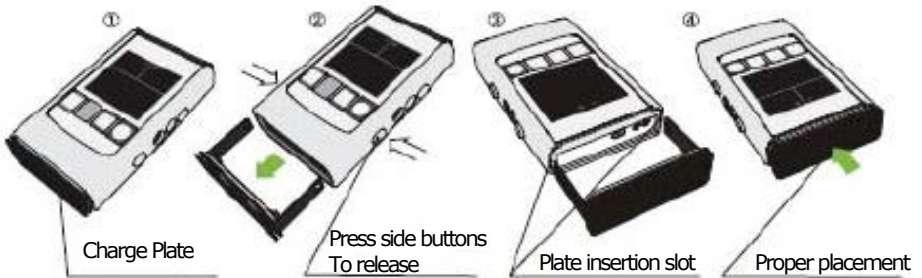
Note: Attempts to measure too high a static charge may damage the sensor.

Operation: Ion Balance

The compact and lightweight design of the EFM115 makes it ideal for periodic verification of ionizers. The EMF115 can be used to measure low voltages up to 200V in ion balance mode.

1. Before starting ion balance measure, remove the charge plate from the bottom of the meter by depressing the release buttons on either side of the meter.
2. Insert the charge plate into the top of the meter until it clicks into place.
3. For a reliable measurement, the field meter must be grounded properly with the ground lead provided.
4. To access "Ion Balance Mode", turn on the meter and press the blue **Ion Balance** button. The display will read "IB".

5. Turn the meter towards an uncharged surface. The meter reading should be zero (0). Press the **Reset** button if it is not.
6. Hold the meter centered in front of the ionizer at any convenient repeatable distance, such as one foot.
7. A bar graph and a digital display on the EFM115 display the ion balance information. Press **Hold** to freeze the display.
8. When finished with Ion Balance Mode, depress the charge plate release buttons and return the plate to the bottom of the meter until it clicks.



Proper installation of the charge plate

About Transforming Technologies

Since 1998, Transforming Technologies has helped electronic manufacturing facilities to protect their products and processes from the many serious problems associated with static electricity.

Transforming Technologies offers a wide range of unique and outstanding products to detect, protect, eliminate and monitor electrostatic charges. Our products are integral components of an effective static control program.

Service and Warranty

Transforming Technologies, LLC provides a limited warranty for the Model EFM115. All new products are guaranteed to be free from defects in material and workmanship for a period of one (1) year from the date of shipment. Liability is limited to servicing (after evaluating, repairing or replacing) any product returned to Transforming Technologies. The company does not warrant damage due to misuse, neglect, alteration or accident. In no event shall Transforming Technologies be liable for collateral or consequential damages.

To receive service under warranty, please contact Transforming Technologies Technical Support.



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