

## PRECISION FIELD METER Installation, Operation and Maintenance



Figure 1. [222541](#) Precision Field Meter.

### Description

A small hand held precision field meter with digital display designed to measure electrostatic voltage potentials using the field-mill influence principal. Use the Precision Field Meter to meet EN 61340-5. "Periodic audits of facilities ...shall be undertaken by a nominated person or team using appropriate measuring equipment where required. A check shall be carried out on the adequacy and availability of records. (EN 61340-5-1 paragraph 10.1 Periodic audits) "A check shall be carried out to ensure that discarded packaging and other materials that may be electrostatic generative, or not in compliance with the relevant parameters of clauses 5 and 7, are disposed of promptly in a way that does not put ESDS [ESD sensitive items] at risk." (EN 61340-5-1 paragraph 10.10 Check of discarded packaging and other materials) "A check shall be carried out to ensure that electrostatic fields are not greater than those specified in 5.3.5." [10,000 v/M] (EN 61340-5-1 paragraph 10.11 Electrostatic fields)

The precision field meter [222541](#) is designed to measure electrostatic voltage potentials over a pre-selected distance (distance between sensor head and object). The selection of the distance is menu driven and the following distances are available: 1cm, 2cm, 5cm, 10cm and 20cm. The internal microcomputer automatically uses the measured field strength (V/m) and the pre selected distance (cm) to calculate the voltage potential (Volt). For voltage levels exceeding 999V, the digital display shows the value in kV.

### Inspection

Remove the test unit from the carton and inspect for shipping damages.

Each [222541](#) unit should include the following:

- 1 Precision Field Meter, item #[222541](#)
- 1 Ground Cord
- 1 Crocodile Clip
- 1 Case
- 1 Rechargeable Battery

Battery chargers are available separately. For the UK choose item [222527](#). For Europe choose item [222528](#).

### Measurement Principle

The precision field meter is a parametric operating amplifier. The charge caused by an electrical field generates an alternating current proportional to the electrical field strength. The selective operating amplifier measures the current averaged over time.

### Operating Instructions

ON	Click button once to sample
OFF	Double click button
HOLD	Click button once while sampling
DISTANCE	To set sampling distance click and hold until "change cm" appears then click until set correctly

### Measurement Distance

The On power measurement distance is always set to 2cm. The unit must be positioned with the front of the modulator at the stated measurement distance away from the object being monitored. Two centimetres is normally the best distance to use as voltage levels up to 20kV can be measured. The measurement distance should be increased if the measurement object is highly charged or where it has a rough surface. The lowest measurement distance of 1cm should be selected where low charges are present and the surface of the object is smooth.

### Change Measurement Distance

Press and hold the button (approximately 2 seconds) until "change cm" appears in the second row. The pre selected distance in cm will be displayed in the first row.

Click the button once to change the measurement distance. With each click of the button the measurement distance will change.

Each distance will appear in turn as follows: 2cm, 5cm, 10cm, 20cm, 1cm and back to 2cm. When you reach the required distance, wait and do not press the button until a voltage reading appears in the second row. The new measurement distance is now also shown in the first row. The distance is measured from the modulator, which is 3mm in front of the instrument housing.

### Distance Support

The meter is supplied with two distance supports 23mm long. The distance supports can be screwed into the aluminum plate on the front of the meter and will provide the right measurement distance for the standard setting of 2cm.

### Display

The alphanumeric Liquid Crystal Display (LCD) consists of two rows of 12 digits each. The measurement distance in cm is shown in the first row, while the voltage reading in volts is displayed in the second row. When the level of 999V is reached, the display will switch automatically into the kV mode. The voltage reading is always given as 3 digits, such as: 578V, 3,85kV, 24.0kV and 274kV. If "overflow!" appears on screen select a greater measurement distance.

### Grounding

The unit has to be connected to ground for correct measurements of voltage levels and polarity. Use the grounding socket of the unit to connect to earth potential. The unit consists of a conductive housing allowing it to be used without a grounding cord if the operator is at earth potential (e.g. is wearing conductive shoes, or is using a properly connected wrist strap).

### Zero Adjust

Zero adjustment is not normally required. If the unit does not show U=OOX while the modulator system is shielded (i.e. the modulator system is covered by the hand of a grounded person), use the trimmer for zero adjustment. The last digit can be ignored, as it will give a measurement inaccuracy of less than the specified tolerance.

## Maintenance

It is very important not to touch parts of the modulator system. They must be free from foreign materials, such as dust, any spray or similar particles, as well as condensed water. If required, the modulator system can be cleaned with alcohol and a dust free tissue, when switched off.

## Battery

The battery must be recharged when "Low Battery" appears on screen. The unit must be switched off before opening the battery compartment. Slide off the battery compartment door on the rear of the unit. Carefully remove the battery from the compartment, noting the routing of the battery clip wires, and detach the battery clip. After recharging carefully reinsert the battery in the compartment, routing the wires so that they do not interfere with the battery compartment door. Slide the battery compartment door back into position. When recharging the battery always follow the manufacturer's instructions.

## Warning

The unit is not approved for use inside areas containing explosives and must not be used in power plants. The meter cannot measure alternating fields above 1Hz.

The precision field meter must be grounded in the presence of high electrostatic charges. The first measurement must be conducted at sufficient distance from the object to evaluate the voltage potential safely. Sparking on the modular system can cause damage to the unit and must always be avoided. Dust or any other impurities on the modulator system will invalidate any readings obtained from the field meter.

## Service and Repair

The case of [222541](#) precision field meter is sealed. Breaking the seals voids all guarantees. If for any reason you believe the meter is not working correctly, contact Vermason Ltd. There are no user serviceable parts.

Caution: The [222541](#) is a precision electronic instrument and it must not be subjected to extremes of shock and vibration. Damage to the meter may result from dropping the unit or any other improper handling.

## Specifications

Weight  
160g including battery

Dimensions  
70 x 122 x 26mm

Power Supply  
9 V rechargeable battery

## Measurement Range

Distance 1cm  
0 - 10kV (max resolution 1V)

Distance 2cm  
0 - 20kV (max resolution 2V)

Distance 5cm  
0 - 50kV (max resolution 10V)

Distance 10cm  
0 - 100kV (max resolution 10V)

Distance 20cm  
0 - 200kV (max resolution 20V)

Display  
Two row alphanumeric LCD

## Adjustment

A plate capacitor is used providing the homogeneous field, plate size 200mm x 200mm, distance between plates 20mm, the modulator system is centered in one plate connected to ground.

## Limited Warranty

Vermason expressly warrants that for a period of one (1) year from the date of purchase, Vermason Precision Field Meters will be free of defects in material (parts) and workmanship (labour). Within the warranty period, a unit will be tested, repaired or replaced at Vermason's option, free of charge. Call Customer Service at 0044 (0) 1462 672005 for a Return Material Authorisation (RMA) and for proper shipping instructions and address. Any unit under warranty should be shipped prepaid to the Vermason factory. You should include a copy of your original packing slip, invoice, or other proof of purchase date. Warranty repairs will take approximately two weeks.

If your unit is out of warranty, Vermason will quote repair charges necessary to bring your unit to factory standards. Call Customer Service at 0044 (0) 1462 672005 for a Return Material Authorisation (RMA) and proper shipping instructions and address.

## 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 Vermason 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.