



ESVM2 HIGH VOLTAGE METER



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User Manual

Revision 2.1

2019.04.30

BEFORE USING THE ESVM2, CAREFULLY REVIEW THIS MANUAL AND OBSERVE THE PRECAUTIONS FOR USE SET FORTH IN SECTION 5 HEREOF.

The owner of the ESVM2 is responsible for ensuring all persons using the ESVM2 are capable of operating the same in accordance with the precautions and instructions set forth in this manual. The EMC Shop, LLC and it's division ESDguns.com, are not liable for any damages that may result from either the use or operation of the ESVM2 in a manner inconsistent with any of the provisions or precautions set forth in this manual, or any attempt to repair, replace or otherwise remove any part of the ESVM2.

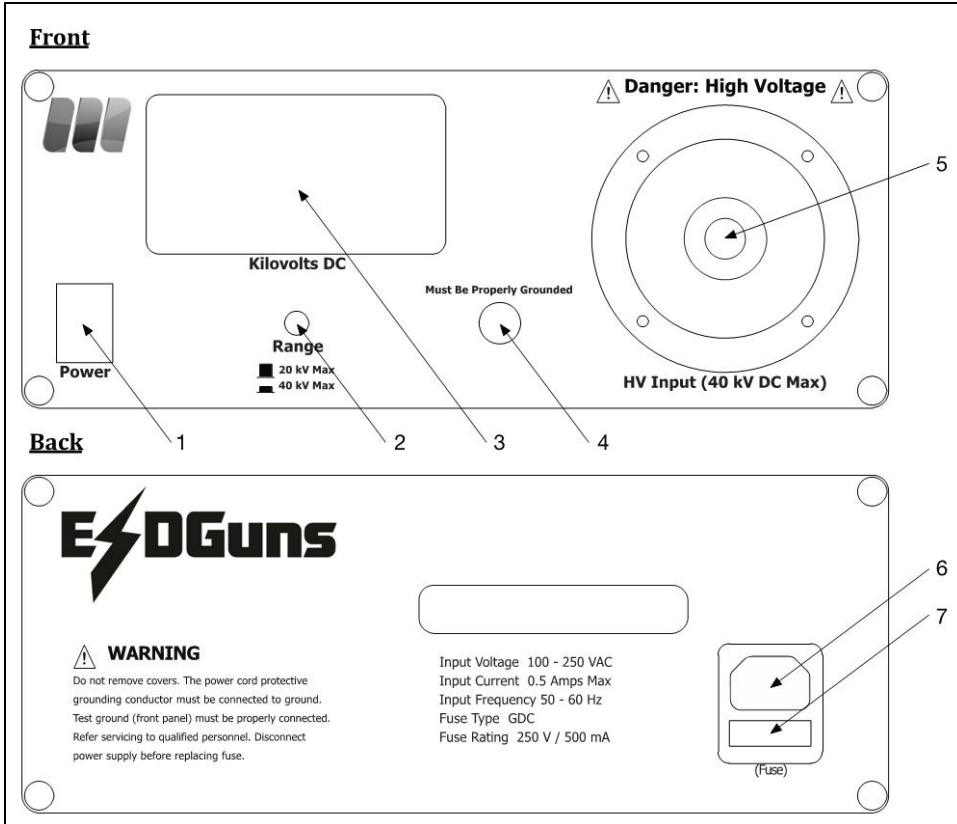
The ESVM2 is designed for commercial purposes only. The EMC Shop shall not be liable for any damages that result from the use or operation of the ESVM2 for any non-commercial purpose or by any person not trained to utilize or operate the ESVM2.

The EMC Shop does not warrant the accuracy of the ESVM2 beyond the $\pm 1\%$ range set forth in Section 1 hereof.

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1. Description

The ESVM2 is a dual range, dual polarity High Voltage Digital Meter that will measure any DC voltage between 2,000 and 40,000 volts. The ESVM2 is designed to measure high voltage in an efficient, safe, and reliable manner with an accuracy of $\pm 1\%$.



1. – Power Switch
2. – Range Selector
3. – LED Display (Kilovolts DC)
4. – Ground Terminal (Common with Ground Terminal of Input Connect)
5. – High Voltage Input
6. – AC Power Connector
7. – Fuse

2. Connections

- Power Cable: IEC with a minimum of 10A rating (IEC/NA, IEC/EU, IEC/BRIT, etc.) (Part: ESVM2-CUS, ESVM2-CGB, ESVM2-CEU, or ESVM2-CAS)

- High Voltage Cable: 40kV DC Insulation or better, UL 3239 (Part: ESVM2-HV)
- Ground Cable: 3kV Insulation or better, #18 AWG, 150°C (Part: ESVM2-GR)

3. Applications

- Laboratory Measurements
- Troubleshooting High Voltage Circuits
- Electrostatic Air Cleaner Service and Maintenance
- Static Power Supply Monitoring

4. Features

- Measures 2,000 to 40,000 Volts DC
- Dual range switch provides increased resolution for measuring voltages below 20 kilovolts
- Extremely high input impedance (10 giga-ohms) minimizes circuit loading
- Large LED display
- Advanced solid-state design
- Retractable Flip Feet (standard)
- Retractable Tilt Handle (optional)

5. Precautions



Warning

All testing involving high voltage sources should be performed with caution. Appropriate personal safety equipment should be used when testing high voltage sources.

The following are recommended minimum precautions for the handling of high voltage electrical sources in conjunction with the ESVM2:

- Test facilities should be confined to limited access areas surrounded by barriers, partitions and high voltage warning signs.
- Access to confined test areas should be limited to trained, skilled personnel.
- User should be familiar with the operations of the ESVM2 High Voltage Digital Meter prior to use.
- User should be aware of the location and routing of the high voltage and associated cables at all times.
- Never operate high voltage equipment with both hands. Always keep one hand free.
- Never modify or remove the third wire safety ground from the ESVM2 when in use.
- User must ensure that all AC outlets used in conjunction with the ESVM2 are securely grounded. These outlets should be periodically checked by ground fault test equipment.
- The ESVM2 is designed only for use in measuring high voltage DC sources. It is not suitable or capable of measuring any AC voltage, including outlets, or building mains.

When using the ESVM2, the high voltage source should be turned off if any of the following conditions exist:

- Any part of any person's body could make contact or be in close proximity of a high voltage point.
- Any conductive material could make contact with or be in close proximity of a high voltage point.
- Either of the test leads, from the ESVM2, are to be moved from one point to another point, or show any evidence of damage or wear.

6. Operation

- Place the ESVM2 on a secure, unimpeded surface in an appropriate size work area. Area should provide adequate space for both test equipment and test personnel.
- Plug the included line cord into a source of 100 - 250 volts AC, 50 – 60 Hz. Note that a 3-wire U-grounded outlet is necessary to ensure good grounding of the instrument cabinet.
- Insert the banana plug of the ground cable to the front panel banana jack identified by the ground symbol (as defined in Section 11). Clip the other end of the cable to the system ground of the high voltage source being measured.
- Insert the high voltage test cable into the High Voltage Input. Clip the other end of the high voltage test cable to the output of the high voltage source to be measured.
- Turn the power switch to the ON position. The LED display will illuminate. (If the LED does not light, has blank or flashing segments, or irregular characters reset unit before use. If the problem persists, contact factory for assistance.)
- Select the maximum range with the push button selector switch. (Note: The 20 kV range will provide an additional digit of resolution.)
- Apply power to the high voltage source.
- Take the voltage reading. The LED readout is in kilovolts.



Warning

Do not operate this device unless properly grounded. Personal injury may occur when contact is made with, or any part of the body comes within proximity to any high voltage point.

7. Fuse Replacement

To replace the fuse in the ESVM2, follow these simple steps:

- Turn off meter and remove AC power cord from receptacle.
- The fuse holder is located beneath the AC power cord receptacle.
- Open door by prying open from the top.
- Replace fuse (note that a spare fuse is included in the fuse holder).
- Close the fuse holder door.

8. Calibration, Service and Maintenance

The ESVM2 is calibrated at the factory and sealed, and is not designed for calibration in the field. It has no user serviceable internal parts or adjustments. If calibration becomes necessary, contact The EMC Shop, LLC. or your preferred reseller.

The EMC Shop, LLC or ESDGuns.com shall not be held responsible for any accident or issue caused by unauthorized repair, modification, or adjustment.

9. Cleaning

To remove dust, dirt, or contamination from the exterior, the ESVM2 may be cleaned with a soft cloth moistened with water or a mild detergent. The unit should be fully disconnected before cleaning, and completely dry before resuming operation.

10. Specifications

	Conditions	Value	Units
Input Power	50 - 60 Hz, 0.5 Amps max.	100 - 250	VAC

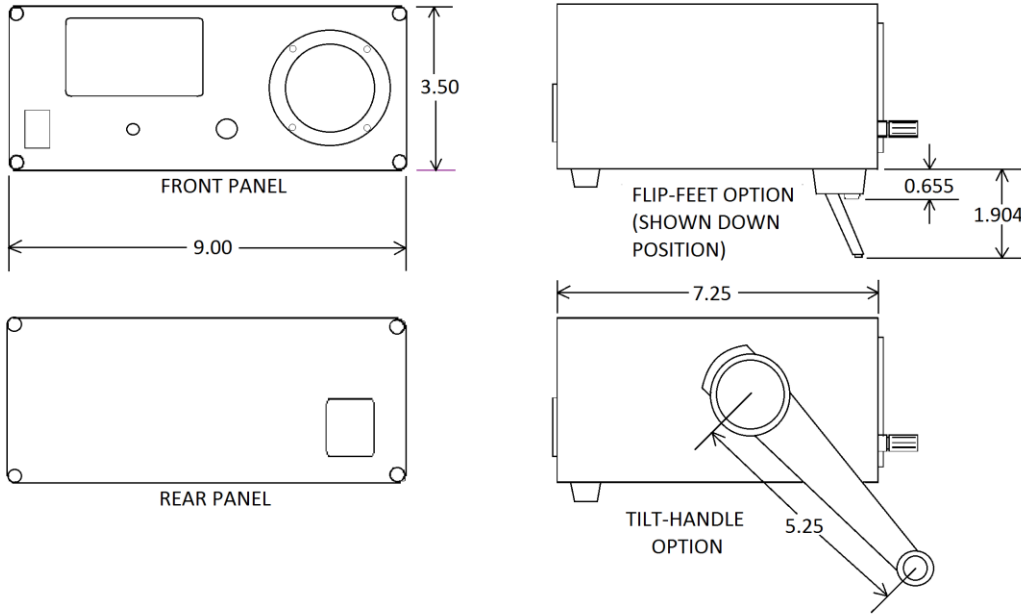
Measured Voltage	DC Only	2,000 – 40,000	VDC
Input Impedance:		10	G Ohm
Input HV Connector	HV-Insulated 40 kV	F310RX	
Input Return Connector		Binding Post	
Accuracy		+/- 1	%
Resolution		4.5	Digits
Sampling Rate		2	Per Second
Display		LED	
Operating Temperature	0 – 80% Relative Humidity	0° to +50°	C
Storage Temperature	0 – 90% Relative Humidity	-25° to +65°	C
Case Dimensions	Imperial	9.0 W x 3.5 H x 7.25 D	Inches
Case Dimensions	Metric	22.86 W x 8.89 H x 18.415 D	cm
Weight	Imperial	4	lbs.
Weight	Metric	1.8	kg
Fuse	Slow Blow	0.5 / 250	A / VAC

11. Certifications



Conforms to UL standards 61010-1 & 61010-2-030. Certified to CSA standard C22.2 numbers 61010-1 & 61010-2-030 Control Number 3097531.

12. Dimensions



13. Symbol Definitions



- Warning: General caution required.



- Ground: Frame or chassis terminal connected to earth ground.