ESDEMC Technology LLC is a worldwide test and measurement solution provider in Electrostatic Control, Electrostatic Discharge (ESD), Electromagnetic Compatibility (EMC), High Voltage Power Supply, High Voltage RF test and measurement.

ESDEMC was founded in 2010 (Rolla, MO, USA) by group of experienced iNARTE certified professional ESD (Electrostatic Discharge) and EMC (Electromagnetic Compatibility) engineers, with great support from ESD-CHINA (the leading ESD industry solution provider in China, with over 30 years of experience) and the professors and students from Missouri University of Science and Technology Electromagnetic Compatibility Laboratory (the leading EMC academic research group in the USA, with over 20 years of experience).
We are devoted to delivering creative, flexible and cost effective solutions, and top-level consulting services. We offer customized design services to satisfy various customer needs.

ESDEMC Technology LLC is a Corporate Member of ESD Association.
OUR R&D CENTER & DISTRIBUTION NETWORK

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We have provided our quality and cost effective solutions to the US, China, UK, Japan, France, Brazil, Argentina, Malaysia, Australia, and Israel.

Our customers include:

Apple Inc.
NASA
Tektronix
Laird Technologies
NXP Thailand
TDK RF Solutions
Missouri University of Science and Technology
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ES127/EST601 AMTI-STATIC FOOTWEAR RESISTANCE METER

IONIZER RELATED
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ELECTROMAGNATIC COMPATIBILITY (EMC) TEST SOLUTIONS

HIGH VOLTAGE PULSE RF ATTENUATOR
HVAT-5K20 HV PULSE RF WIDEBAND ATTENUATOR (3RD VERSION) NEW

TRANSVERSE ELECTROMAGNETIC (TEM) CELL
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OTHER CUSTOMIZED SOLUTIONS/SYSTEMS
EM603 MOBILE SYSTEM BATTERY CURRENT OPTICAL MONITOR NEW
EM605 LOSSY MATERIAL CHARACTERIZATION SYSTEM NEW

WARRANTY ERROR! BOOKMARK NOT DEFINED.
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ELECTROSTATIC DISCHARGE (ESD) TEST SOLUTIONS

SYSTEM LEVEL ESD SIMULATOR
EST802/ES612 ESD SIMULATOR (IEC 61000-4-2)

ES613 ESD SIMULATOR (RC, RISE-TIME EXCHANGABLE TIP) NEW
(IEC 61000-4-2, ISO 10605)
- A4001 ESD TARGET
- A4002 ESD TARGET ADAPTER LINE
- A4010 ESD TEST TABLE AND RELATED ACCESSORIES

COMPONENT LEVEL ESD SIMULATOR
EST883 HBM/MM/CDM ESD SIMULATOR
(ANSI/ESD STM 5.1, STM 5.2, STM 5.3, MIL-STD-883)

ES621 IV-CURVE CHARACTERIZATION TRANSMISSION LINE PULSE GENERATOR
(ANSI/ESD STM5.5.1, SP5.5.2) NEW
- A6210 IV-CURVE TLP SOFTWARE
- A6211 SWITCHABLE HIGH VOLTAGE RISE-TIME FILTER NEW
- A6212 TRANSMISSION LINE EXTENSION UNIT NEW

FIRING TEST SYSTEM NEW
EST806 ELECTROSTATIC FIRING/IGNITER/SPARK SENSITIVITY METER
(MIL-STD-331)
## Overview:
The ES612/EST802 model ESD Simulator satisfies the requirements of standard IEC61000-4-2. The testing voltage can be continuously adjusted from 0 to ±20kV (or ±30kV) with very high resolution (10V) and stability (0.1% drift per 24 hours). It is an easy to operate and cost effective ESD test tool for system level ESD debugging and troubleshooting.

### Features:
- Lightest ESD Gun (500 g/1 lb.)
- Voltage adjustment with STD level presets
- Pulse Mode: single, 1p/s, 20p/s
- LED voltage display
- Voltage stability ≤ 0.5%
- Easy setup and operation

### Specifications:
- Contact and air discharge modes
- Charging resistor 50 - 100M
- Discharge RC modules (± 10%)
- 150pF/330 Ohm

### Basic Setup:
- High voltage ESD Controller
- ESD Gun with CD and AD tips
- Aluminum storage case

### Operation Conditions:
- Temperature  -10 to + 50 °C
- Humidity  20-80% RH
- Pressure  68-106 kPa

### Dimension/Weight:
- 35 x 28 x 15 cm (14 x 11 x 5.9 inch)
- 9 kg (20 lb)

### Standards:
- EN/IEC61000-4-2
- GB/T17626.2

### Applications:
- Electronics system for EMC testing
- IC and circuit ESD protection testing
- Equipment ESD susceptibility testing
- Measuring ESD protection performance of materials and connectors

### Support/Services:
- Lifetime Technical Support
- Free test consulting
- 1 Year Warranty (Extendable)
- Recalibration Service (Fee applies)
- Out-of-warranty repair (Fee applies)
### Overview:

The ES613 model ESD simulator is an all new ESD simulator designed with exchangeable RC network modules, zap-counter, remote control, optional battery, secondary ESD discharge detector and fast rise time tip. It meets the requirements of standard IEC61000-4-2 and ISO 10605.

### Features:
- Small and light ESD gun
- LCD display with touch screen
- Voltage stability ≤ 0.5%
- AD, CD and HV supply modes
- Secondary discharge detector
- Temperature and humidity monitor
- Remote control software
- Firmware upgrades through USB

### Specifications:
- Contact discharge and air discharge modes
- High voltage supply / calibration mode
- ESD source voltage up to ±20kV/30kV
- Discharge RC modules (± 10%)
  - 150pF/330 Ohm, 150pF/2000 Ohm
- Customized RC module available
- ESD zap counter

### Standards:
- EN/IEC61000-4-2
- ISO 10605

### Applications:
- Electronics system for EMC testing
- IC and circuit ESD protection evaluation
- Equipment ESD susceptibility evaluation
- Measuring ESD protection performance of materials and connectors

### Operation Conditions:
- Temperature -10 to + 50 °C
- Humidity 20-80% RH
- Pressure 68-106 kPa

### Optional Accessories:
- Faster rise time tip
- Internal long lasting battery
- Secondary ESD discharge detector
- Optical RS232 link
- Remote control software
- Temperature and humidity monitor

### Support/Services:
- Lifetime Technical Support
- Free test consulting
- 1 Year Warranty (Extendable)
- Recalibration Service (Fee applies)
- Out-of-warranty repair (Fee applies)
**A4001 ESD CURRENT TARGET (ESD SIMULATOR CALIBRATION SET)**

### Overview:
ESD Simulators are calibrated according to standard IEC/EN 61000-4-2 or ISO10605. This model A4001 ESD Current Target (or ESD calibration set) allows the user to take measurements conforming to the requirements of the new standard up to 4GHz.

### Features:
- Wideband up to 4GHz
- 0.5A/V Transfer Impedance, ±1%
  (with one 20dB Attenuator, 5A/V)
- Gold Plating
- Excellent voltage linearity up to 30kV

### Specifications:
- **Frequency response**  DC – 4GHz  
  < ± 0.5 dB up to 1GHz, < ± 1.2 dB up to 4GHz
- **Input Resistance** 2.08 Ohm (±1%)  
  (2.00 Ohm when match with 50 Ohm load)
- **Max. IEC Pulse Amplitude**  
  Tested up to ± 30kV
- **Voltage Non-linearity**  
  <2% up to 20kV, < 5% up to ± 30kV
- **Net Weight** Approx. 0.5 kg
- **Dimensions** Approx. 70 X 30 mm

### Standards:
- EN/IEC61000-4-2 Ver 2009
- ISO 10605
- GB/T17626.2

### Applications:
- Calibration kit for ESD Simulator

### Basic Setup:
- A4001-N ESD Current Target
- AT2WN-20 20dB Precision Attenuator
- RG4-NS-8 RG400 coax cable N to SMA
- Traceable Calibration Certificate

### Options/ Accessories:
- 6, 20, 30 dB Precision Attenuators
- RG400 or semi-flex coax cable with choice of connector (N, SMA, BNC)
- A4002 ESD Target adapter line

### Support/Services:
- Lifetime Technical Support
- 1 Year Warranty (Extendable)
- Recalibration Service (Fee applies)
- Out-of-warranty repair (Fee applies)
# A4002 ESD CURRENT TARGET ADAPTER LINE

## Overview:
ESD Current Targets are calibrated according to standard IEC/EN 61000-4-2 or ISO10605. This model A4002 ESD Current Target Adapter Line allows the user to measure the frequency response of ESD targets within the requirements of standards up to 4GHz.

## Features:
- Wideband up to 4GHz
- Different connectors available
- Highly conductive contact surface
- Strong 304 stainless steel base
- Low insertion loss

## Specifications:
- Reflection coefficient
  - < -30dB up to 1GHz
  - < -20dB up to 4GHz
- Insertion loss
  - <= 0.3dB up to 4GHz

## Standards:
- EN/IEC61000-4-2-2009
- ISO 10605
- GB/T17626.2

## Applications:
- Calibration kit for ESD current targets

## Basic Setup:
- ESD Target Adapter Line
- Traceable calibration certificate

## Options:
- A4002-N N type connector
- A4002-3.5 Precision 3.5mm connector
- A4002-PN Precision N type Connector

## Support/Services:
- Lifetime Technical Support
- 1 Year Warranty (Extendable)
- Recalibration Service (Fee applies)
- Out-of-warranty repair (Fee applies)
**Overview:**

The model EST883 ESD Simulator is designed for component level ESD Tests. It features a wide voltage level setting (0- ± 20kV), 1% precision voltage control and meets common ESD Test standard requirements (includes HBM, MM, CDM tester modules). The specification of the ESD tester can be customized according to the end-user’s need.

**Features:**

- Voltage range: 0 ~ ± 20 KV
- Pulse Mode: single, 1p/s ~20p/s continuous adjustable
- Continues voltage adjustment
- 3 digit LED voltage display
- Easy setup and operation

**Specifications:**

- Contact and air discharge modes
- Charging resistor 10 - 100M
- Voltage range: 0 ~ ± 20 KV adjustments with presets
- Voltage stability ≤ 0.5% (24 hr)
- Voltage precision ≤ ± 1%

**Model Configurations:**

- EST883A HBM
- EST883B HBM + MM
- EST883C HBM + MM + CDM

**Basic Setup:**

- High Voltage Controller
- ESD tester with HBM (MM and CDM) accessory
- Aluminum suite case
- Manual

**Option Accessories:**

- A8831 HBM Tester set
- A8832 MM Tester set
- A8833 CDM Tester set

**Standards:**

- MIL-STD-883E
- MIL-STD-750 M1020
- MIL-PRP-19500
- MIL-PRP-38535
- IEC747-1

**Applications:**

- ESD Test and research (for HBM, MM, CDM)
- ESD Sensitive Component classification

**Operation Conditions:**

- Temperature -10 to + 50 °C
- Humidity 20-80% RH
- Pressure 68-106 kPa

**Support/Services:**

- Lifetime Technical Support
- 1 Year Warranty (Extendable)
### Overview:

ES621 is a very cost effective dynamic IV-Curve Characterization Transmission Line Pulse (TLP/VFTLP) System designed for component level ESD testing according to ANSI/ESD STM5.5.1 and SP5.5.2.

### Features:

- TLP/VFTLP/customizable pulse
- Maximum line voltage 2kV
- Maximum injection current 40A into short / 20A into 50Ω load
- Four operation modes: (Single / Sequence / Repeat / Remote)
- RS232 remote control
- Internal precision HV supplies

### Specifications (Customizable):

- Rise time ≤ 120 ps
- Repeat rate 0.3p/s – 15p/s
- Internal precision HV supplies (0 to ± 2kV)
- Adjustable pulse rate 0.3p/s – 15p/s
- **Up to 40A peak current injection onto short and 20A onto 50Ω load**

### Standards:

- ANSI/ESD STM5.5.1-2008
- ANSI/ESD SP5.5.2-2007

### Applications:

- Component level ESD testing
- IC and circuit ESD protection testing
- IV-Curve characterization

### Operation Conditions:

- Temperature: -10 to + 50 °C
- Humidity: 20-80% RH
- Pressure: 68-106 kPa

### Support/Services:

- Lifetime Technical Support
- 1 Year Warranty (Extendable)

### Dimension / Weight:

- 2 U Rack Mount Chassis (17.5 x 5.5 x 13 inch)
- 5 kg (10 lb.)

### Option Accessories:

- A6210 IV-Curve Software
- A6211 Switchable Rise-time Filter
- A6212 Transmission Line Extension Unit

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Overview:

EST806 Series Electrostatic Firing/ Igniter /Spark Sensitivity test systems are designed for military electrostatic discharge test standards (MIL STD 1512, 1576 (Method 2205), 1751A, (Methods 1031, 1032 & 1033), 331C. It contains several test setups and configurations to determine personnel borne ESD (0 to ±30kV), helicopter borne ESD (0 to ±300kV), and test the ESD susceptibility of pyrotechnic devices, powders and liquids (0 to ±50kV).

Features:
- LED display, high resolution.
- Stable and accurate.
- Voltage output 0.01 to ±30kV
- Current output up to 1000 µA.

Standards:
- MIL-STD-331C
- MIL-STD-1512
- MIL-STD-1576

Applications:
- ESD testing of electro-explosive devices (EED), fuzes, electric detonators, explosives, etc.
- ESD testing of powders, liquids and pyrotechnic devices

Specifications:
- High output DC voltage (0.01 to ±30kV, Standard test is 25kV).
- Drifting < 0.5% per 24 hours
- Drain voltage < 0.5% charging voltage when the high-pressure switch is on.
- Discharge resistance: 
  0 Ω, 500 ±25Ω, 5000 ±250Ω, customization available
- Discharge capacitor: 500 ±25pF
- Discharge Inductance < 5uH

Operation Conditions:
- Temperature -10 to +40 °C
- Humidity 0 - 80% RH

Support/Service:
- Lifetime technical support
- 1 year warranty (Extendable)

Optional setup:
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HIGH VOLTAGE SUPPLY & APPLICATIONS

HIGH VOLTAGE DC-DC POWER SUPPLY MODULE
HVM SERIES HIGH VOLTAGE DC-DC MODULE NEW

HIGH VOLTAGE AC-DC POWER SUPPLY SYSTEM
ES813 ES HIGH VOLTAGE GENERATOR – PRECISION, LAB USE UPGRADE

HIGH VOLTAGE MEASUREMENT AND CALIBRATION
ES105 HIGH RESISTANCE HIGH VOLTAGE METER UPGRADE

ES106 ULTRA HIGH IMPEDANCE HIGH VOLTAGE METER
# HIGH VOLTAGE DC-DC POWER SUPPLY MODULES

**HVM SERIES HIGH VOLTAGE DC-DC MODULES**  
**NEW**

## Overview:

HVM Series High Voltage DC-DC Module is a cost effective, highly efficient, high precision and adjustable DC-DC high voltage module.

## Features:

- Low cost
- Easy configuration
- Light weight and size
- Highly efficient DC-DC supply
- Overcurrent protection
- Short circuit protection
- Max ripple Vpp < 0.1%
- Long, well-insulated output HV wire

## Specifications:

- Power input 9-48 VDC (±10%)
- Voltage control 0 to +5V
- Voltage output 0 to +30kV
- Current output 1mA
- Load regulation < 0.5%
- Max ripple voltage <0.1%
- Time drift ≤ 0.1% per hour  
  (After 30 minutes of operation)
- Temperature drift ≤ 0.1% per °C

## Applications:

- High voltage supply
- Electrostatic discharge testing
- Electrostatic applications

## Work Conditions(Typical):

- Temperature  -10 to + 50 °C  
- Humidity  0% - 70% RH

## Dimension / Weight (Typical):

- 100 x 70 x 50 mm  
  (3.9 x 2.75 x 2 inch)
- 0.55 kg (1.2 lb)

(Note different sizes will be used for different power levels, the smallest module being 38 x 38 x 20 mm)

## Support/Service:

- 1 year warranty
- Lifetime technical support
## HVM Module Detail Specification/Options: Output Voltage / Output Current Reference Table

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</tr>
<tr>
<td>DC 200V</td>
<td>10mA 100mA 500mA 1A</td>
<td>5A</td>
</tr>
<tr>
<td>DC 300V</td>
<td>5mA 100mA 500mA 1A</td>
<td>3A</td>
</tr>
<tr>
<td>DC 400V</td>
<td>5mA 100mA 500mA 1mA</td>
<td>2A</td>
</tr>
<tr>
<td>DC 500V</td>
<td>1mA 100mA 500mA 1A</td>
<td>2A</td>
</tr>
<tr>
<td>DC 600V</td>
<td>1mA 50mA 100mA 500mA</td>
<td>1A</td>
</tr>
<tr>
<td>DC 800V</td>
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<td>1A</td>
</tr>
<tr>
<td>DC 1000V</td>
<td>1mA 50mA 100mA 500mA</td>
<td>1A</td>
</tr>
<tr>
<td>DC 1200V</td>
<td>1mA 50mA 100mA 500mA</td>
<td>1A</td>
</tr>
<tr>
<td>DC 1500V</td>
<td>1mA 50mA 100mA 500mA</td>
<td>1A</td>
</tr>
<tr>
<td>DC 2000V</td>
<td>1mA 10mA 50mA 100mA</td>
<td>500mA</td>
</tr>
<tr>
<td>DC 2500V</td>
<td>1mA 10mA 50mA 100mA</td>
<td>500mA</td>
</tr>
<tr>
<td>DC 3000V</td>
<td>1mA 10mA 50mA 100mA</td>
<td>300mA</td>
</tr>
<tr>
<td>DC 3500V</td>
<td>1mA 10mA 50mA 100mA</td>
<td>200mA</td>
</tr>
<tr>
<td>DC 4000V</td>
<td>1mA 10mA 50mA 100mA</td>
<td>200mA</td>
</tr>
<tr>
<td>DC 4500V</td>
<td>1mA 10mA 50mA 100mA</td>
<td>200mA</td>
</tr>
<tr>
<td>DC 5000V</td>
<td>1mA 10mA 50mA 100mA</td>
<td>200mA</td>
</tr>
<tr>
<td>DC 5500V</td>
<td>1mA 10mA 50mA 100mA</td>
<td>200mA</td>
</tr>
<tr>
<td>DC 6000V</td>
<td>1mA 5mA 10mA 50mA</td>
<td>160mA</td>
</tr>
<tr>
<td>DC 6500V</td>
<td>1mA 5mA 10mA 50mA</td>
<td>160mA</td>
</tr>
<tr>
<td>DC 7000V</td>
<td>1mA 5mA 10mA 50mA</td>
<td>140mA</td>
</tr>
<tr>
<td>DC 8000V</td>
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<td>120mA</td>
</tr>
<tr>
<td>DC 9000V</td>
<td>1mA 5mA 10mA 50mA</td>
<td>100mA</td>
</tr>
<tr>
<td>DC 10 kV</td>
<td>1mA 5mA 10mA 50mA</td>
<td>90mA</td>
</tr>
<tr>
<td>DC 15 kV</td>
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<td>60mA</td>
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<tr>
<td>DC 20 kV</td>
<td>1mA 2mA 5mA 10mA</td>
<td>50mA</td>
</tr>
<tr>
<td>DC 25 kV</td>
<td>1mA 2mA 5mA 10mA</td>
<td>40mA</td>
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<td>DC 30 kV</td>
<td>1mA 3mA 5mA 10mA</td>
<td>30mA</td>
</tr>
<tr>
<td>DC 35 kV</td>
<td>1mA 2mA 5mA 10mA</td>
<td>20mA</td>
</tr>
<tr>
<td>DC 40 kV</td>
<td>1mA 2mA 5mA 10mA</td>
<td>20mA</td>
</tr>
<tr>
<td>DC 45 kV</td>
<td>1mA 2mA 5mA 10mA</td>
<td>20mA</td>
</tr>
<tr>
<td>DC 50 kV</td>
<td>1mA 2mA 5mA 10mA</td>
<td>20mA</td>
</tr>
<tr>
<td>DC 60 kV</td>
<td>1mA 2mA 3mA 5mA</td>
<td>10mA</td>
</tr>
<tr>
<td>DC 80 kV</td>
<td>1mA 2mA 3mA 5mA</td>
<td>10mA</td>
</tr>
<tr>
<td>DC 100 kV</td>
<td>1mA 1.5mA 2mA 3mA</td>
<td>4mA</td>
</tr>
</tbody>
</table>

(Please note, this is the parameter reference, please contact us to discuss more details or customized values)
### Input Voltage / Output Current Reference Table

<table>
<thead>
<tr>
<th>INPUT VOLTAGE</th>
<th>OUTPUT VOLTAGE / CURRENT (TYPICAL)</th>
<th>OUTPUT POWER (MAX)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC 5V</td>
<td>100V, 5mA</td>
<td>≤5W</td>
</tr>
<tr>
<td></td>
<td>3 kV, 1mA</td>
<td></td>
</tr>
<tr>
<td>DC 6V</td>
<td>100V, 5mA</td>
<td>≤5W</td>
</tr>
<tr>
<td></td>
<td>3 kV, 1mA</td>
<td></td>
</tr>
<tr>
<td>DC 9V</td>
<td>100V, 20mA</td>
<td>≤20W</td>
</tr>
<tr>
<td></td>
<td>5 kV, 2mA</td>
<td></td>
</tr>
<tr>
<td>DC 12V</td>
<td>100V, 1A</td>
<td>≤100W</td>
</tr>
<tr>
<td></td>
<td>30 kV, 2mA</td>
<td></td>
</tr>
<tr>
<td>DC 15V</td>
<td>100V, 1.2A</td>
<td>≤120W</td>
</tr>
<tr>
<td></td>
<td>30 kV, 3mA</td>
<td></td>
</tr>
<tr>
<td>DC 18V</td>
<td>200V, 700mA</td>
<td>≤150W</td>
</tr>
<tr>
<td></td>
<td>30 kV, 4mA</td>
<td></td>
</tr>
<tr>
<td>DC 24V</td>
<td>200V, 1A</td>
<td>≤200W</td>
</tr>
<tr>
<td></td>
<td>50 kV, 2mA</td>
<td></td>
</tr>
<tr>
<td>DC 28V</td>
<td>200V, 1.2A</td>
<td>≤250W</td>
</tr>
<tr>
<td></td>
<td>50 kV, 4mA</td>
<td></td>
</tr>
<tr>
<td>DC 36V</td>
<td>300V, 1A</td>
<td>≤300W</td>
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<tr>
<td></td>
<td>50 kV, 5mA</td>
<td></td>
</tr>
<tr>
<td>DC 48V</td>
<td>500V, 1A</td>
<td>≤500W</td>
</tr>
<tr>
<td></td>
<td>60 kV, 4mA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>100 kV, 2mA</td>
<td></td>
</tr>
</tbody>
</table>

(Please note, this is the design reference, the module dimension increases with the max output power)

### Product Grade (Please indicate product grade when ordering)

<table>
<thead>
<tr>
<th>Class</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>A – Commercial Grade</td>
<td>-10 to + 50 °C, partially low drift, high precision components</td>
</tr>
<tr>
<td>B – Industrial Grade</td>
<td>-25 to + 65 °C, fully low drift, high precision components</td>
</tr>
<tr>
<td>C – Military Grade</td>
<td>-40 to + 85 °C, fully military grade components, shake resistant, water resistant, smoke resistant</td>
</tr>
</tbody>
</table>

### Order Model Number: (for detailed specification options, see previous tables)

**PART NUMBER**

HVM - A 103 13 P 12

- **Category**: HVM = HV Module
- **Model Series**: A = Commercial, B = Industrial, C = Military
- **Max Out Voltage**
  - HVM = 103 = 10 x 1E3 = 10 kV
  - HVM = 202 = 20 x 1E2 = 2 kV
  - HVM = 104 = 10 x 1E4 = 100 kV
- **Max Out Current**
  - HVM = 13 = 1 x 1E3 mA
  - HVM = 12 = 0.1 mA
  - HVM = 11 = 10 mA
  - HVM = 16 = 1 A
- **Polarity**
  - HVM = N = Negative
  - HVM = P = Positive
- **Input Voltage**
  - HVM = 12 = 12 V
  - HVM = 24 = 24 V
## Overview:

The ES813 Series Electrostatic/High Voltage Generators are designed for high precision and high stability laboratory usage with voltage output from DC 0 to ± 20, 30, 50, 60, 80, 100kV (check detail specifications). They can be widely used in Electrostatic Generation, Electrostatic Discharge (ESD) testing, Electrospinning, and other high voltage applications.

### Features:
- Over current protection
- Over heat protection
- Voltage 0 to max continuous adjustment
- Low ripple and drift output
- Precision voltage/current displays
- Easy setup and operation

### Specifications:
- DC voltage 0 to ± max continuous adjust
- Precision 1%
- Ripple <0.1%
- 110 or 220 or Universal VAC
- Time drift 0.1% per 24 hours
- Over current protection
- Over heat protection

### Applications:
- High voltage power supply
- High voltage susceptibility testing
- ESD susceptibility testing
- Electrostatic generator
- Material insulation testing
- HV or E-field calibration
- Electrospinning

### Basic Setup:
- Instrument
- HV Cable
- Manual

### Optional Models (examples):
- ES813-D20.1  0 to ± 20, 1mA
- ES813-P60.1  0 to + 60, 1mA
- **Customization available**

### Operation Conditions:
- Temperature  -10 to +50 °C
- Humidity  20-80% RH
- Pressure  68-106 kPa

### Typical Dimension/Weight (varies with model):
- DC 0-20kV or 30kV @ 1mA max
  28 × 13 × 28 cm, 3-6 kg
- DC 0-50kV or 60kV @ 1mA max
  35 × 33 × 15cm single output
  45 × 45 × 18cm dual outputs, 14-20 kg

### Support/Services:
- Lifetime Technical Support
- 1 Year Warranty (Extendable)
### Output Voltage / Output Current Reference Table

<table>
<thead>
<tr>
<th>Output Voltage (Typical)</th>
<th>Output Current (Typical)</th>
<th>Output Current (Max)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC 1000V</td>
<td>1mA</td>
<td>1A</td>
</tr>
<tr>
<td>DC 1200V</td>
<td>1mA</td>
<td>1A</td>
</tr>
<tr>
<td>DC 1500V</td>
<td>1mA</td>
<td>1A</td>
</tr>
<tr>
<td>DC 2000V</td>
<td>1mA 10mA 50mA 100mA 500mA</td>
<td>500mA</td>
</tr>
<tr>
<td>DC 2500V</td>
<td>1mA 10mA 50mA 100mA 500mA</td>
<td>500mA</td>
</tr>
<tr>
<td>DC 3000V</td>
<td>1mA 10mA 50mA 100mA 500mA</td>
<td>300mA</td>
</tr>
<tr>
<td>DC 3500V</td>
<td>1mA 10mA 50mA 100mA 200mA</td>
<td>200mA</td>
</tr>
<tr>
<td>DC 4000V</td>
<td>1mA 10mA 50mA 100mA 200mA</td>
<td>200mA</td>
</tr>
<tr>
<td>DC 4500V</td>
<td>1mA 10mA 50mA 100mA 200mA</td>
<td>200mA</td>
</tr>
<tr>
<td>DC 5000V</td>
<td>1mA 10mA 50mA 100mA 200mA</td>
<td>200mA</td>
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<tr>
<td>DC 5500V</td>
<td>1mA 10mA 50mA 100mA 200mA</td>
<td>200mA</td>
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<tr>
<td>DC 6000V</td>
<td>1mA 5mA 10mA 50mA 160mA</td>
<td>160mA</td>
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<tr>
<td>DC 6500V</td>
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<td>140mA</td>
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<tr>
<td>DC 7000V</td>
<td>1mA 5mA 10mA 50mA 120mA</td>
<td>120mA</td>
</tr>
<tr>
<td>DC 8000V</td>
<td>1mA 5mA 10mA 50mA 100mA</td>
<td>100mA</td>
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<tr>
<td>DC 9000V</td>
<td>1mA 5mA 10mA 50mA 90mA</td>
<td>90mA</td>
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<tr>
<td>DC 10 kV</td>
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<td>DC 15 kV</td>
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<tr>
<td>DC 20 kV</td>
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<tr>
<td>DC 25 kV</td>
<td>1mA 2mA 5mA 10mA 20mA</td>
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<tr>
<td>DC 30 kV</td>
<td>1mA 2mA 5mA 10mA 20mA</td>
<td>20mA</td>
</tr>
<tr>
<td>DC 35 kV</td>
<td>1mA 2mA 5mA 10mA 20mA</td>
<td>20mA</td>
</tr>
<tr>
<td>DC 40 kV</td>
<td>1mA 2mA 5mA 10mA 20mA</td>
<td>20mA</td>
</tr>
<tr>
<td>DC 45 kV</td>
<td>1mA 2mA 5mA 10mA 20mA</td>
<td>20mA</td>
</tr>
<tr>
<td>DC 50 kV</td>
<td>1mA 2mA 5mA 10mA 20mA</td>
<td>20mA</td>
</tr>
<tr>
<td>DC 60 kV</td>
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<td>10mA</td>
</tr>
<tr>
<td>DC 80 kV</td>
<td>1mA 2mA 3mA 5mA 10mA</td>
<td>10mA</td>
</tr>
<tr>
<td>DC 100 kV</td>
<td>1mA 1.5mA 2mA 3mA 4mA</td>
<td>4mA</td>
</tr>
</tbody>
</table>
Input Voltage / Output Current Reference Table

<table>
<thead>
<tr>
<th>INPUT VOLTAGE</th>
<th>OUTPUT VOLTAGE / CURRENT (TYPICAL)</th>
<th>OUTPUT POWER (MAX)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 110V</td>
<td>1000V、1A</td>
<td>≤1 kW</td>
</tr>
<tr>
<td></td>
<td>100 kV、2mA</td>
<td></td>
</tr>
<tr>
<td>AC 220V</td>
<td>1000V、2A</td>
<td>≤2 kW</td>
</tr>
<tr>
<td></td>
<td>100 kV、2mA</td>
<td></td>
</tr>
</tbody>
</table>

Product Grade (Please indicate product grade when ordering)

<table>
<thead>
<tr>
<th>Class</th>
<th>Details</th>
</tr>
</thead>
</table>
| A – Commercial Grade (Default) | -10 to + 50 °C  
Partially low drift, high precision components |
| B – Industrial Grade | -25 to + 65 °C 
Fully low drift, high precision components |
| C – Military Grade | -40 to + 85 °C  
Fully military grade components 
Shake resistant, water resistant, smoke resistant |

Order Model Number: (for detailed specification options, see previous tables)

ES813-D50.1-220

Series #  
ES813 Precision  
ES HV Generator  
Polarity  
N = Negative  
P = Positive  
D = Dual polarities (2 outputs)  
S = Dual polarities (1 output)  
C = Customized  
Voltage Output  
50 = 50 KV  
20 = 20 KV  
Current Output  
1 = 1mA  
5 = 5mA  
0.5 = 0.5mA  
AC Line Input  
110 = 110VAC  
220 = 220VAC  
UNI = Universal

Note: UNI is not available in all combinations, please contact us!
## ES105 High-Impedance High-Voltage Meter Upgrade

### Overview:
ES105 is a high performance and cost effective high-impedance high-voltage meter. It features significantly high input impedance (> up to 100 GΩ), high accuracy and high resolution measurement, and a wide measurement range (0-100kV). It can be used to measure high voltage (contact measurement), and to calibrate precision high voltage supplies, high-impedance high-voltage generators, high voltage meters, non-contact electrometers, ESD simulators, etc.

### Features:
- High input impedance ≥ 100 GΩ
- Wide measurement range
- High accuracy and resolution
- Stable reading
- Portable with large LCD/LED
- Battery or AC supply
- Measure DC and AC up to 100kV

### Specifications:
- Range: ± 1V ~ 100kV (customizable)
- Accuracy: ± 1% ± 2 words
- Input impedance: ≥ 10GΩ (customizable, like 30GΩ, 100GΩ)
- Display: 4 ½ Digit LCD/LED
- Resolution: 1V / 10V

### Applications:
- Electrostatic voltage measurement
- ESD generator/simulator calibration
- Electrostatic voltmeter calibration
- High-impedance high-voltage measurement

### Operation Conditions:
- Temperature 32 °F. – 122 °F (0 to + 50 °C)
- Humidity 0 - 70% RH

### Dimension/Weight:
- 20 × 15 × 50 cm (7.85 × 5.91 × 19.68 inch)
- 2 kg (4.41 lb)

### Support/Services:
- Lifetime Technical Support
- 1 Year Warranty (Extendable)

### Basic Setup:
- Instrument
- Manual

### Model Options:
- ES105-10: DC $R_{in}$ ≥ 10GΩ
- ES105-30: DC $R_{in}$ ≥ 30GΩ
- ES105-100: DC $R_{in}$ ≥ 100GΩ
- ES105A-10: DC / AC $R_{in}$ ≥ 10GΩ
- ES105A-30: DC / AC $R_{in}$ ≥ 30GΩ
- ES105A-100: DC / AC $R_{in}$ ≥ 100GΩ
- ES105-CV: Customized for higher voltage/higher input impedance (100GΩ)
## ES106 ULTRA-HIGH RESISTANCE HIGH-VOLTAGE METER

### Overview:

Model ES106 is a high voltage meter that features very high input impedance ($\geq 10 \, \text{T\Omega}$) so there is insignificant current leakage while the object is being measured. It is mainly used for high voltage measurement, especially for high resistance measurement of static electricity generators, human body static electricity, oil potential, etc.

### Features:
- High input resistance $\geq 10 \, \text{T\Omega}$
- Wide measurement range
- High accuracy & resolution
- Large LCD display
- Battery powered
- Light and portable

### Specifications:
- **Measurement range:**
  $\pm 10V \sim \pm 20kV$
- **Measurement accuracy:**
  $\pm 5\% \pm 2$ words
  (higher accuracy can be customized)
- **Input impedance**
  $\geq 100T \, \Omega = 1 \times 10^{14} \, \Omega$
- **Display:**
  4 ½ Digit LCD
- **Resolution:** 10V

### Applications:
- Electrostatic voltage measurement
- High voltage measurement
- ESD simulator voltage calibration
- Electrostatic voltmeter calibration
- Surface voltage measurement
- Oil/gasoline surface potential measurement

### Basic Setup:
- Instrument
- Manual

### Operation Conditions:
- **Temperature**
  32 °F. – 122 °F
  (0 to +50 °C)
- **Humidity**
  0 - 70% RH

### Dimension/Weight:
- **20 × 15 × 50 cm**
  (7.85 × 5.91 × 19.68 inch)
- **2 kg** (4.41 lb)

### Support/Services:
- Lifetime Technical Support
- 1 Year Warranty (Extendable)
ELECTROSTATIC TEST SOLUTIONS

ELECTROSTATIC VOLTAGE MEASUREMENT
ES101 EXPLOSION-PROOF ELECTROSTATIC FIELD VOLTMETER

ES102 VIBRATING CAPACITOR FIELD VOLTMETER

ES103 SOLID-STATE ELECTROSTATIC VOLTMETER

ES105 HIGH RESISTANCE HIGH VOLTAGE METER UPGRADE

ES106 ULTRA HIGH IMPEDANCE HIGH VOLTAGE METER

ELECTROSTATIC CHARGE MEASUREMENT
ES111 SERIES COULOMB METER UPGRADE

RESISTANCE & RESISTIVITY MEASUREMENT
ES122 DIGITAL LOW CURRENT METER (PICOAMMETER)

ES124 DIGITAL HIGH RESISTANCE LOW CURRENT METER NEW
A1240 SURFACE RESISTIVITY SHIELDED TEST BOX
A1241 RESISTANCE TEST REFERENCE FIXTURES
A1242 SURFACE RESISTIVITY TEST ELECTRODES

ES125 VOLUME RESISTIVITY/CONDUCTIVE TESTER (4-ELECTRODE METHOD) NEW

ES127 ANTI-STATIC FOOTWEAR RESISTANCE METER
In general, the electrostatic voltage measurement solutions could be divided into 2 categories: the contact measurement method and non-contact measurement method.

A **contacting electrostatic voltmeter** is a voltmeter with extremely high impedance (normally >10^{14} \Omega). One of the difficulties during electrostatic voltage measurement is to avoid influence/discharge of static charges on the object under test. Therefore, when a contacting voltage meter is used, the current leakage needs to be well controlled. Normally this method does not work well for objects with very high voltage (>20kV) and a small amount of charge as the current leakage could be high enough to discharge the object during measurement. All contacting voltmeters will discharge the object to some degree.

A **non-contacting electrostatic voltmeter** performs a non-contacting field measurement without modifying or destroying the charge on the device. There are two types of non-contact voltage measurement methods: **non-feedback field voltmeter** and **feedback field voltmeter**. The advantage of both methods is that they will not discharge the DUT (although it might influence the charge distribution). The disadvantage is the lower accuracy due to the field distribution of different shapes and distances of DUTs. For a non-feedback field meter, unless well calibrated, the accuracy could be as low as a 50% variance (but still good enough for most static control applications). The non-contact field voltage meter measures the field strength and keeps certain distance with a chart showing the function between distance and voltage coefficient. Some improved field meters use a vibration capacitor coupling method to avoid the long term drift problem from the small current leakage of the amplifier. Some newer types of non-contact voltage meters have internal high voltage source and feedback functions integrated to measure the voltage on DUT. The **Vibrating Reed Electrometer** does not really measure voltage, but changes the voltage on the vibrating tip until the E-field between the tip and DUT is zero. Then, the meter assumes that the tip has the same voltage as the voltage of the field creating source (there is no need to be concerned with the coefficient). However, one disadvantage with such a device is when it measures the voltage on a complex structure such as an IC (generally a plastic package with metal pins). For charges on plastic, the plastic does not form an equal potential surface. Thus, one could get very close with a probe and take the reading as “equivalent voltage.” But, one cannot measure the voltage on the metal pins accurately, since the meter will measure the field from the plastic package and all fields from nearby pins resulting in an “equivalent voltage.” Also, in the available market, such instruments do not measure up to 30 kV or more. Normally, available instruments are in the range of 10kV to 20kV; unless special calibration or modifications/customizations are made.
**ES101 EXPLOSION-PROOF ELECTROSTATIC VOLTmeter**

**Overview:**

ES101 is a very cost effective and explosion-proof electrostatic voltmeter/field meter. It measures the static voltages of various charged objects from conductors to insulators. With its explosion-proof capability, it can be used in various types of explosive gasses (such as gasoline, carbon disulfide, city gas, ethylene, acetylene, hydrogen, benzene, etc.). It has been widely used in many industries such as petroleum, chemical, oil depots, rubber, plastics, coating, pharmaceutical research, production, storage, and transportation safety management in relation to static measurements.

<table>
<thead>
<tr>
<th>Features:</th>
<th>Specifications:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Explosion-proof Exia II CT6</td>
<td>• Measurement range</td>
</tr>
<tr>
<td>• Very wide application areas</td>
<td>± 10V ~ ± 100 kV (extendable).</td>
</tr>
<tr>
<td>• Light and portable (120g)</td>
<td>• Accuracy: &lt;± 10%.</td>
</tr>
<tr>
<td>• Reading-hold function</td>
<td>• Explosion-proof-level: Exia II CT6,</td>
</tr>
<tr>
<td>• Non-contact measurement</td>
<td>• Ex certificate number: CJEx08.147</td>
</tr>
<tr>
<td>• Low power consumption</td>
<td>• Input impedance: &gt; $10^{16}$Ω</td>
</tr>
<tr>
<td>• Battery indicator &amp; Auto power off</td>
<td>• 3 1/2 digit LCD with polarity, over-range, low battery indicators.</td>
</tr>
<tr>
<td></td>
<td>• Power: 6F22 9V battery</td>
</tr>
<tr>
<td></td>
<td>• Consumption: &lt; 15mW.</td>
</tr>
</tbody>
</table>

**Applications:**

• Non-contact measurement of surface potential from conductors to insulators
• Test the performance of static control products
• On-site inspection of static sensitive objects (even in some explosive gaseous areas)
• Static electric-field measurement

**Basic Setup:**

• Instrument
• Manual
• Case

**Operation Conditions:**

• Temperature 0 to + 40 °C
• Humidity 0 - 80% RH
• Pressure 68 - 106 kPa

**Dimension / Weight:**

• 12×7×3.2 cm (4.72 ×2.76×1.26 inch)
• 0.2 kg (0.44 lb)

**Support/Services:**

• Lifetime Technical Support
• 1 Year Warranty (Extendable)
ES102 VIBRATING CAPACITOR ELECTROMETER

Overview:

ES102 is a cost effective electrostatic voltmeter/field meter with low drift for long term monitoring capability. It measures the voltages of various charged objects from conductors to insulators. The default measurement range is 200V, 2kV and 20kV, but can be calibrated for extended ranges such as 100kV, 500kV, etc.

Features:
- High Resolution
- Wide measurement range
- Can be calibrated to extended ranges
- LED digital display
- High accuracy
- Low power consumption
- Analog output

Specifications:
- Measurement ranges
  0 to ±200V or ±2kV or ±20kV
  (Can be customized or user calibrated)
- Max resolution 0.1V
- Accuracy better than 5%
- Analog output: 0 ~ ±100mV,
  Other options: -1 ~ +1 V, 4~20mA, 0~5V
- Auto calibration at 1kV/100V,
  error <= 0.2% after calibration

Applications:
- Measurement of surface potential of insulators, semiconductors/conductors
- Monitoring/controlling electrostatic for IC manufacturing
- Monitoring of electric field clouds and atmosphere (to predict thunderstorms)

Options:
- ES102 Vibrating Capacitor Electrometer
- A1021 Standard Probe/Sensor (ES102)
- A1022-S Probe/Sensor Cable for A1021
- ES102A Vibrating Capacitor Electrometer for electrets
- A1023-S Shielded probe/sensor for electrets

Operation Conditions:
- Temperature 0 to + 40 °C
- Humidity 0 - 90% RH
- Pressure 68 - 106 kPa

Dimension/Weight:
- 220 x 230 x 80 mm (8.7 x 9.1 x 3.1 inch)
- 2 kg (4.4 lb)

Support/Services:
- Lifetime Technical Support
- Free Test Plan Review
- 1 Year Warranty (Extendable)

Basic Setup:
- Instrument
- Vibrating Capacitive Sensor and Cable
- Manual
**ES103 SOLID-STATE ELECTROMETER**

**Overview:**
ES103 is a cost effective solid-state electrometer, a multipurpose device that can measure voltage, charge, resistance, and current with different setups. This model features $>10^{14} \Omega$ input impedance and up to 200V voltage range.

**Features:**
- Input impedance $>1 \times 10^{14} \Omega$
- Measure electrostatic voltage up to 50kV, micro-current down to 0.001pA and high resistance with different measurement setups

**Specifications:**
- Measurement range DC±0.1mV ~ 200V
- Reading accuracy ± (0.5% reading + 2 words)
- Input impedance $>1 \times 10^{14} \Omega$
- Time drift < 0.1% in 24 hours
- Temperature drift <0.01%/°C
- 110 or 220V AC

**Standards:**
- Meets standard ISO1853, GB2439, GB11210, GB12014-89, JIST8118, GB/T 12703-91

**Applications:**
- Conductivity and resistivity measurement of anti-static material (configured as resistivity meter)
- Charge measurement of powders, liquids and solids (configured as coulomb meter)
- Weak current measurement (configured as a picoammeter)
- High voltage measurement (configured as a HV-meter)

**Dimension / Weight:**
- 22 x 23 x 8 cm (8.66 x 9.06 x 3.14 inch)
- 2 kg (5.5 lb)

**Support/Services:**
- Lifetime Technical Support
- Free Test Plan Review
- 1 Year Warranty (Extendable)

**ES105 HIGH-IMPEDANCE HIGH-VOLTAGE METER (SEE HIGH VOLTAGE SOLUTIONS)**

**ES106 ULTRA-HIGH RESISTANCE HIGH-VOLTAGE METER (SEE HIGH VOLTAGE SOLUTIONS)**
ES111 SERIES COULOMB METER

Overview:

The ES111 Series Digital Static Charge Meter (Coulomb Meter) is designed to measure electric charge with a $3\frac{1}{2}$ digit LED display, directly showing the amount of charge; built with large-scale integrated circuits, high input resistance static amplifiers, and precision components.

Features:

- Light and portable
- 3 $\frac{1}{2}$ digit LED display
- Stable and fast read
- Meets all ESDA, EIA, IEC, SAE, MIL-STD, ASTM and GB standards etc.

Specifications:

- Measurement range (0.1pC – 100 μC, depends on model options )
- Precision ±0.5 % ± 2 counts

Options: (Customized design available)

- ES111-A, ± 10pC to 20μC
  The most widely used model for general measurement purposes

- ES111-B, ± 0.1pC - 200nC
  For small/low charge items such as components, IC, etc.

- ES111-C, ± 1nC - 2μC
  For large/high charge items such as work wear, packaging bags, etc.

- ES111-D, ± 0.1uC ~100μC
  For electrostatic sparking charge test, can directly measure spark discharge capacity up to ±20kV

Applications:

- Measurement of electric charge and charge density of anti-static clothing, textiles, powder, liquid, and solid material; electronics components, etc.
- Measuring electrostatic spark discharge capacity
- Study electrification by friction
- Measuring the capacity of electrostatic conductors
- Measurement of surface potential and surface charge density

Dimension/Weight:

- 20×15×50 cm
  (7.85×5.91×19.68 inch)
- 2 kg (4.41 lb)

Operation Conditions:

- Temperature 32 °F – 122 °F
  (0 to + 50 °C)
- Humidity 0 - 70% RH
Basic Setup:
- Instrument
- Manual

Support/Services:
- Lifetime Technical Support
- Free Test Plan Review
- 1 Year Warranty (Extendable)

### OPTIONAL ACCESSORIES FOR ES111 SERIES COULMB METER

<table>
<thead>
<tr>
<th>Model #</th>
<th>Product Name</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1110</td>
<td>Contact Probe</td>
<td></td>
</tr>
<tr>
<td>A1110-P</td>
<td>Contact Probe with HV Protection</td>
<td>20kV spark HV current limit Resistor</td>
</tr>
<tr>
<td>A1111-1</td>
<td>Faraday Cup, Size S (no-lid)</td>
<td>(90/63mm Diameter) x 80 mm High</td>
</tr>
<tr>
<td>A1111-1L</td>
<td>Faraday Cup, Size S (lid)</td>
<td>(90/63mm Diameter) x 100 mm High</td>
</tr>
<tr>
<td>A1111-2</td>
<td>Faraday Cup, Size M (no-lid)</td>
<td>(156/140 mm Diameter) x 155 mm High</td>
</tr>
<tr>
<td>A1111-2L</td>
<td>Faraday Cup, Size M (lid)</td>
<td>(156/140 mm Diameter) x 175 mm High</td>
</tr>
<tr>
<td>A1111-4</td>
<td>Faraday Bucket</td>
<td>(0.5/0.4 m Diameter) x 1.0 m High</td>
</tr>
<tr>
<td>A1111-C-X</td>
<td>Customized Faraday Cup/Bucket</td>
<td>As required by User</td>
</tr>
</tbody>
</table>
### ES122/EST122 DIGITAL LOW CURRENT METER (PICOAMMETER)

#### Overview:

ES122 is a low current (fA) Meter/Picoammeter with range from ±1fA to ±20mA. The instrument features high precision, rapid and stable measurement, and easy reading.

#### Features:

- Wide measurement range (±1fA to ±20mA)
- Light and portable
- 4 ½ digit LED display
- Stable and fast read
- Normal and fast read modes

#### Specifications:

- Measurement range ±1fA to ±20mA
- Precision 0.5 ~ 1%

#### Applications:

- Physics and material research
- Anti-static shoe resistance testing
- Measurement of material resistivity
- Measurement of photodiode dark current
- Computer room floor resistance testing

#### Basic Setup:

- Instrument
- Manual

#### Operation Conditions:

- Temperature 0 to +40 °C
- Humidity 0 - 80% RH
- Pressure 68 - 106 kPa

#### Dimension/Weight:

- 27 x 23 x 8 cm (10.6 x 9 x 3.1 inch)
- 2.5 kg (5.5 lb)

#### Support/Services:

- Lifetime Technical Support
- Free Test Plan Review
- 1 Year Warranty (Extendable)
## ES124/EST121 DIGITAL HIGH RESISTANCE LOW CURRENT METER  **NEW**

### Overview:
ES124 is a high resistance meter with wide measurement range (0.01×10^4 Ω TO 1×10^18 Ω) and additional low current measurement function (patented). The instrument features high precision, rapid and stable measurement. It can be widely used in insulation resistance testing of materials of static control products, such as anti-static shoes, anti-static plastic rubber products, and computer room floors.

![Image of ES124 Digital High Resistance Low Current Meter](image)

### Features:
- Measurement of resistance and current
- Wide measurement range
- Dual 3 ½ digit LED displays (R and I)
- Stable and fast reading

### Specifications:
- **Measurement range:**
  - 0.01×10^4 to 1×10^17 Ω
  - 2×10^-4 to 1×10^-16 A
- **Internal test voltages:**
  - 10/50/100/250/500/1000V
- **Precision:** 0.5-1 %

### Standards:
- ASTM D257, ANSI/ESD S1.1, STM 2.1, S4.1, S7.1, STM9.1, SP9.2, STM12.1, STM97.1, and TR53

### Applications:
- Anti-static shoe resistance measurement
- Measurement of material resistivity
- Measurement of photodiode dark current
- Physics and materials research

### Dimension/Weight:
- **29 x 25 x 12 cm**
  - (11 x 10 x 4.7 inch)
- **2.5 kg (5.5 lb)**

### Operation Conditions:
- **Temperature:** 0 to + 40 °C
- **Humidity:** 0 - 80% RH
- **Pressure:** 68 - 106 kPa

### Basic Setup:
- Instrument
- Cables
- Manual

### Option Accessories:
- Surface and volume resistance measurement electrode
- Shielded measurement box

### Support/Services:
- Lifetime Technical Support
- 1 Year Warranty (Extendable)
### Optional Accessories for ES124/EST121 High Resistance Low Current Meter

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A1240 Shielded Resistivity Test Box</strong></td>
<td>Fully shielded steel enclosure with high quality insulated surface for resistivity testing. This way the test can be done with little influence from the test environment.</td>
</tr>
<tr>
<td><strong>A1241 High Resistance Reference Fixtures</strong></td>
<td>High resistance verification kit is used to instantly verify the instrument performance; it is a fast, easy, low-cost way to verify proper operation of a resistance/resistivity meter. Voltage Rating 1000V. Set includes 100MΩ, 1GΩ, 10GΩ, 100GΩ, 1TΩ fixtures, BNC connector, and a shielded enclosure.</td>
</tr>
<tr>
<td><strong>A1242 Surface Resistivity Test Electrodes</strong> (Concentric Ring Electrodes)</td>
<td>This concentric ring electrode is used for resistivity testing according to STM 11.11 and ANSI/ESD STM 11.12, ASTM D-257 and EIA-541.</td>
</tr>
</tbody>
</table>
# ES125/EST991 Volume Resistivity/Conductivity Test System

## Overview:

When 2-electrode or 3-electrode test methods are used, the measurement accuracy of volume resistivity is influenced by the surface resistance between the electrodes and material under test. ES125 is a volume resistivity/conductivity test system with a 4-electrode test method to overcome such problems. It can measure samples with an ultra-wide measurement range from $10^{-9}$ to $10^{11}\Omega\cdot m$ that covers material from conductors, anti-static materials and some insulators.

## Features:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultra-wide measurement range</td>
<td>from $10^{-9}$ to $10^{11}\Omega\cdot m$ (conductor to insulator)</td>
</tr>
<tr>
<td>Can be reconfigured for 3-electrode test system</td>
<td>for higher range (up to $10^{19}\Omega\cdot m$)</td>
</tr>
</tbody>
</table>

## Specifications:

- Measurement Range: $10^{-9}$ to $10^{11}\Omega\cdot m$
- Accuracy: 1%
- Input impedance: $>10^{14}\Omega$
- Electrometer range: ±100mV to 200V
- Pico ampere meter: $20 \times 10^{-3}$ to $10^{-15}\text{A}$

## Basic Setup:

- EST122 Pico ampere meter
- EST103 Solid-state electrometer
- A1240 Shielded resistivity test box (with insulation plate $> 100\ T\ \Omega\cdot m$)
- 4-electrode resistivity test device
- Digital adjustable DC power supply

## Option Accessories:

- 3-electrode resistivity test device

## Standards:

- ASTM D991
- ISO 1853, ISO 3915
- GB11210, GB2439, GB/T15662
- JT230

## Applications:

- Measurement of material volume resistivity/conductivity (rubbers, conductive graphite, etc...)
- Material characterization and research

## Support/Services:

- Lifetime Technical Support
- 1 Year Warranty (Extendable)

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Static Test Solutions
ELECTROSTATIC CONTROL SOLUTIONS

GROUNDING MEASUREMENT

ES126 COMPREHENSIVE BODY GROUNDING TESTER

ES126A PORTABLE COMPREHENSIVE BODY GROUNDING TESTER

ES127 ANTI-STATIC FOOTWEAR RESISTANCE METER

IONIZER RELATED

ES138 CHARGE PLATE MONITOR
ES126/EST302 COMPREHENSIVE BODY GROUNDING TESTER

Overview:
ES126 is a comprehensive body grounding tester with an LED display and alarm to test body grounding resistance. The instrument can detect not only dangerous levels of body to ground resistance ($>10^9\Omega$), but also the body resistance that is unsafe for contact with electric power ($<10^4\Omega$) which can cause electric shock injury accidents. The instrument features a wide measurement range, two operating modes: foot to foot mode and hand to foot mode, and also can measure wrist-strap functionality.

Features:
- Fast and easy to read LED indicator
- Audible alarm function
- Power saving (1 battery for 6 months)
- Measure with both anti-static and insulation safety indication
- Measure resistance between hand to foot and foot to foot

Specifications:
- Test range: $10^3 \sim 10^{10} \Omega$
- Power: 6V battery
- Accuracy: 1/2 division value

LED Indicator:
- **RED** $R \leq 10^4$
  Resistance is too low. Contact with main power may cause injury; alarm will sound.
- **GREEN** $0^5 \leq R \leq 10^9$
  Resistance meets both **anti-static** and **insulation safety** requirements.
- **ORANGE** $R \approx 10^9$
  Resistance is barely adequate, but is not good for **anti-static** purposes.
- **RED** $R \geq 10^{10}$
  Resistance is too high for **anti-static** purposes; alarm will sound.

Applications:
- Measure comprehensive human body grounding resistance, including anti-static clothes, shoes, socks, etc.

Dimension/Weight:
- 415 x 330 x 1200 mm (16.3 x 13 x 47 inch)
- 5 kg (11 lb.)

Operation Conditions:
- Temperature 50 °F – 95 °F (10 to + 35 °C)
- Humidity 0 - 80% RH

Support/Services:
- Lifetime Technical Support
- 2 Year Warranty (Extendable)
### ES126A/EST301A PORTABLE COMPREHENSIVE GROUNDING TESTER

**Overview:**
ES126A is a portable version of the ES126 comprehensive body grounding tester with an LED display and alarm to test body grounding resistance (including the human body, shoes, socks and other resistance). The instrument can detect not only dangerous levels of body to ground resistance (> $10^9 \Omega$), but also the body resistance that is unsafe for contact with electric power (< $10^4 \Omega$) which can cause electric shock injury accidents.

**Features:**
- Measurement of comprehensive body grounding resistance including clothes, shoes, wrist strap etc.
- Fast and accurate reading
- Portable and power saving
- Audible alarm function

**Specifications:**
- Test range: $10^3 \sim 10^9 \Omega$
- Power: 6V battery
- Accuracy: 1/2 division
- Security zone: Green light
- Low resistance risk: Red light

**Alarm Function:**
- Resistance < $10^5$
  Red light + alarm, resistance too low.
- Resistance between $10^5 \sim 10^8$
  Green light on, resistance meets safety requirement.
- Resistance >$10^8$
  Red light + alarm, resistance too high.

**Applications:**
- Measurement of comprehensive body grounding resistance including anti-static clothes, shoes, wrist strap, etc.
- Wrist strap resistance measurement

**Dimension/Weight:**
- 415 x 330 x 1200 mm
  (16.3 x 13 x 47 inch)
- 5 kg (11 lb.)

**Operation Conditions:**
- Temperature 50 °F. – 95 °F
  (10 to + 35 °C)
- Humidity 0 - 80% RH

**Support/Services:**
- Lifetime Technical Support
- 1 Year Warranty (Extendable)
ES127/EST601 AMTI-STATIC FOOTWEAR RESISTANCE METER

Overview:
In accordance with most ESD standards such as ANSI ESD S20.20, TR53, the resistance of anti-static shoes should be in the range of $10^5$ to $10^9 \Omega$ during production; hence, this value should be checked periodically (every 200 hours). This instrument is an accurate, easy to use footwear resistance meter with the function of a DC supply, voltmeter, and ammeter all in one. This instrument has a dual digital display, which shows the test voltage and resistance. In addition, this instrument measures and displays the current directly as well as the resistance.

Features:
- Wide measurement range
- Measure and display the resistance, current or voltage with dual-displays
- High accuracy
- Static control products

Specifications:
- Resistance measurement range: $10\Omega \sim 1.999 \times 10^{10}\Omega$.
- Current measurement range: $20mA \sim 100pA$ ($1 \times 10^{-10} ~ 2 \times 10^{-2}A$)
- 3 1/2 digit LED display
- Accuracy: 1-5%
- Resolution: 1/2000
- Test voltage: DC100V ± 2V

Standards:
- GB4386-1995
- ANSI/ESD STM 9.1-2006

Applications:
- Measuring the resistance of anti-static and conductive footwear
- Measuring the resistance and resistivity of anti-static materials
- Measuring the resistance of computer room raised floor system
- Measuring the resistivity for insulating materials

Basic Setup:
- Instrument
- Manual

Operation Conditions:
- Temperature -10 °C. – 40 °C
- Humidity 0 - 80% RH

Dimension/Weight:
- 2kg
- 100 x 280 x 280 mm
  (3.937 x 11.0236 x 11.0236 inch)

Support/Services:
- Lifetime Technical Support
- 2 Year Warranty (Extendable)
# ES138/EST138 SERIES CHARGE PLATE MONITOR

## Overview:

The ES138 Series Electrostatic Charged Plate Monitor (CPM) is used to measure the effectiveness of air ionization systems and audit ionizer performance. It is in accordance with FED-STD-101 Method 4046.1、MIL-STD-3010A、MIL-PRS-81705D、and GJB2605-96 to measure the static electricity decay time for various materials, such as fabrics, plastics, rubber, non-woven, etc. In accordance with ANSI/ESD STM3.1-2006、ANSI/ESD SP3.3-2006 2006 to test the performance of ionizers (neutralization rate, balance and offset voltage) in accordance with ANSI/ESD STM97.2-2006、IEC 61340-4-5:2004 to measure the dynamic voltage of anti-static floor-shoes.

## Features:
- AC and rechargeable battery support
- Analog or USB interface
- Charging voltage from 0 to ±1000V, ±5000V or ±7000V depends on the model number
- High accuracy and portable
- 4 ½ digit Dual-LED display
- Minimum resolution: ±1V

## Specifications:
- Plate Capacitor: 20PF to ±2PF
- Accuracy ±2%
- Analog output & USB interface
- Built-in ±1kV or ±5kV switch
- Power Supply: 85~260VAC/50Hz, and rechargeable battery
- Timer: 0.01 to 999.99 seconds

## Standards:
- FED-STD-101 Method 4046.1、MIL-STD-3010A、MIL-PRS-81705D、GJB2605-96
- ANSI/ESD STM3.1-2006、SP3.3-2006
- ANSI/ESD STM97.2-2006、IEC 61340-4-5:2004

## Options:
- ES138-A 1kV, Analog output only
- ES138-B 1 kV, Analog output with USB software
- ES138-C 5 kV, Analog output with USB software
- ES138-D 1kV & 5kV (7kV max), Analog output with USB software

## Applications:
- Measuring ion wind properties
- Measuring ionization equipment balancing
- Monitoring the electrostatic attenuation of a charged object
- Testing anti-static properties of materials
- Measuring body static electricity
<table>
<thead>
<tr>
<th>Dimension/Weight:</th>
<th>Support/Services:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 27 x 23 x 8 cm (10.6 x 9 x 3.1 inch)</td>
<td>• Lifetime Technical Support</td>
</tr>
<tr>
<td>• 2.5 kg (5.5 lb)</td>
<td>• 2 Year Warranty (Extendable)</td>
</tr>
<tr>
<td></td>
<td>• 2 Year free calibration service</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operation Conditions:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Temperature 0 to + 40 °C</td>
<td></td>
</tr>
<tr>
<td>• Humidity 0 - 80% RH</td>
<td></td>
</tr>
<tr>
<td>• Pressure 68 - 106 kPa</td>
<td></td>
</tr>
</tbody>
</table>
ELECTROMAGNETIC COMPATIBILITY (EMC) TEST SOLUTIONS

HIGH VOLTAGE PULSE RF ATTENUATOR
HVAT-5K20 HV PULSE RF WIDEBAND ATTENUATOR (3rd VERSION) NEW

TRANSVERSE ELECTROMAGNETIC (TEM) CELL
EM601 IC STRIPLINE TEM CELL (UP TO 3.5GHZ, HIGH VOLTAGE SIGNAL) NEW

OTHER CUSTOMIZED SOLUTIONS
EM603 MOBILE SYSTEM BATTERY CURRENT OPTICAL MONITOR NEW

EM605 LOSSY MATERIAL CHARACTERIZATION SYSTEM NEW
Overview:

Common RF attenuators cannot handle transient high voltage (HV) pulse. They can be permanently damaged since the attenuator’s frequency response is normally a strong function of the voltage across it at the kilo volt range resulting in non-linearity by as much as 50%. Model HVAT-5K20 is a robust wideband high voltage attenuator designed to measure such transient HV signals with an excellent wideband up to 4.5GHz and voltage linearity up to 5kV. Below 5kV, the linearity changes no more than 1-2%.

Features:

- High voltage pulse attenuator
- Tested up to 10kV, 100ns TLP pulse, 5K @ 50Ω
- Frequency response DC-4.5GHz
- Excellent linear voltage response

Specifications:

- 20 dB attenuation
- Tested up to 10kV, 100ns TLP pulse
- N type female connectors
- Matches to 50Ω system
- Frequency response
  - S11 ≤ -20 dB
  - S21 = 20 ±1 dB

Applications:

- Transmission Line Pulse (TLP) waveform measurement/calibration
- Electrical Fast Transient (EFT)/Burst Immunity Tester/Waveform measurement/calibration
- High voltage RF pulse measurement

Basic Setup:

- Instrument
- Manual

Options:

- 2.5GHz, 3.5GHz, 4.5GHz

Operation Conditions:

- Temperature -10 to + 50 °C
- Humidity 20 - 80% RH
- Pressure 68 - 106 kPa

Dimension / Weight:

- 13 x 7.5 x 4 cm
  (5.5 x 3.0 x 1.6 inch)
- 0.6 kg (1.3 lb.)

Support/Services:

- 1 Year Warranty (Extendable)
- 1 Year free calibration (Extendable)
# TRANSVERSE ELECTROMAGNETIC (TEM) CELL

## EM601 IC STRIPLINE TEM CELL (UP TO 3.5GHz, HV SIGNAL) (3\(^{RD}\) VERSION) NEW

### Overview:
EM601 IC Stripline TEM Cell is the latest TEM cell design for IC immunity and radiation measurement devices up to 3.5 GHz. Its bandwidth far exceeds the 1GHz requirements from IEC61967-4. The design has been further improved for high voltage signal up to 4kV for strong homogeneous field creation.

### Features:
- Up to 3.5 GHz bandwidth
- Can handle up to 4 kV high voltage on 50Ω system
- Can be used for ESD field injection testing with TLP to determine field susceptibility

### Standards:
- IEC61967-4 Integrated circuits - Measurement of electromagnetic emissions

### Specifications:
- Frequency response up to 3.5GHz (First spike by undesired higher order mode)
- Board field injection area to 50 x 50 mm
- Test up to 5kV TLP pulse

### Applications:
- Electromagnetic immunity test of IC
- Electromagnetic radiation test of IC
- ESD Field susceptibility test of IC
- Extremely strong E and H field Injection

### Support/Services:
- Lifetime technical support
- 1 year warranty (Extendable)

### Dimension:
- Cell 110 x 110 x 25 mm
- IC test cavity 50 x 50 mm
**Overview:**

This system measures the DC current of a cell phone battery via optical fiber. This allows for the monitoring of current during immunity and ESD testing in order to identify changes in the time varying current profile that can be caused by termination of applications by ESD or latch up.

**Applications:**

- Immunity, ESD & latch-up test failure analysis for mobile system (cell phone, PDA, laptop, tablets)
- Mobile system battery current monitoring

**Specifications:**

- Default current range 0-1A (Can be adjusted or customized)
- Frequency response > 100 Hz
- Accuracy better than 1 %
- Default voltage range: 3.7 – 4.2 V (Can be adjusted or customized)
- Power 100-240V AC

**Operation Conditions:**

- Temperature -10 to + 50 °C
- Humidity 20-80% RH
- Pressure 68-106 kPa

**Dimension/Weight:**

- 30 x 25 x 11 cm (12 x 4.4 x 10 inch)
- 2.5 kg (5 lb)

**Options/Accessories:**

- A6030 Flex battery contact
- A6031 Optical fiber cable

**Support/Services:**

- Lifetime technical support
- 1 year warranty (Extendable)
EM605 LOSSY MATERIAL CHARACTERIZATION SYSTEM

Overview:

Microwave absorbing materials have been widely used in many industries for EMI/EMC solutions. To ensure the quality of manufactured absorbing material, prompt on-site quality control and performance testing is needed. EM605 is a Microwave Absorbing Material Characterization System that measures the signal loss through a material sample in a frequency range of 5 – 15GHz (with the option of extension to lower frequencies).

Features:

- Mechanically robust design
- Ultra-wideband 5-15GHz
- Cost effective
- Portable for on-site quality control
- One step self-calibration
- One step easy operation

Specifications:

- Bandwidth: 5-15GHz
- Accuracy: 5%
- Data points: 20, uniformly distributed
- Dynamic range: >50dB
- Sample size: 11 x 11 cm
- PC interface: USB or RS232
- Customization available

Applications:

- Microwave absorbing material testing
- Simple wideband scalar network analyzer
- Quality control of absorbing material

Basic Setup:

- Sample holder
- Receiving and transmitting antennas
- RF and signal processing, data converter
- Software (PC Graphical User Interface)

Operation Conditions:

- Temperature: -10 to +50 °C
- Humidity: 20-80% RH
- Pressure: 68-106 kPa

Options/Accessories:

- 30MHz – 5GHz coupling transceiver module
- 30MHz – 5GHz material test fixture

Support/Services:

- Lifetime technical support
- 1 year warranty (Extendable)
WARRANTY

ESDEMC Technology warrants to the owners, each instrument and sub-assembly manufactured by them to be free from defects in material and workmanship for a period of one year after shipment from the factory. This warranty is applicable to the original purchaser only.

Liability under this warranty is limited to service, adjustment or replacement of defective parts (other than tubes, fuses, or batteries) on any instrument or sub-assembly returned to the factory for this purpose, transportation prepaid.

This warranty does not apply to instruments or sub-assemblies subjected to abuse, abnormal operating conditions, or unauthorized repair or modification. Since ESDEMC Technology has no control over conditions of use, no warranty is made or implied as to the suitability of our product for the customer’s intended use.

THIS WARRANTY SET FORTH IN THIS ARTICLE IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES AND REPRESENTATIONS, EXPRESS, IMPLIED OR STATUTORY INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. Except for obligations expressly undertaken by ESDEMC Technology in this warranty, the Owner hereby waives and releases all rights, claims and remedies with respect to any and all guarantees, express, implied, or statutory (including without limitation, the implied warranties of merchantability and fitness), and including but without being limited to any obligation of ESDEMC Technology with respect to incidental or consequential damages, or damages for loss of use. No agreement or understanding varying or extending the warranty will be binding upon ESDEMC Technology unless in writing signed by a duly authorized representative of ESDEMC Technology.

In the event of a breach of the foregoing warranty, the liability of ESDEMC Technology shall be limited to repairing or replacing the non-conforming goods and/or defective work, and in accordance with the foregoing: ESDEMC Technology shall not be liable for any other damages, either direct or consequential.

RETURN POLICIES AND PROCEDURES

FACTORY REPAIR:

Return authorization is required for factory repair work. Products being returned for repair must be accompanied by a copy of a dated invoice and a Return Material Authorization (RMA) number. To obtain an RMA number, call customer service. Repairs will be returned promptly. Repairs are normally returned to the customer within 10 business days after receipt by ESDEMC Technology. Return (to the customer) UPS charges will be paid by ESDEMC Technology on warranty work. Return (to the customer) UPS charges will be prepaid and added to invoice for out-of-warranty repair work.

All products returned by air or by an overnight service will be expedited. Expedited factory repairs will be returned to the customer by the same mode of transportation by which the product was returned for repair (i.e., products returned to the factory by an overnight service will be returned to the customer by an overnight service). NOTE: Return (to the customer) transportation expenses for expedited factory repairs will always be at the expense of the customer despite the warranty status of the equipment.

MODIFIED EQUIPMENT:

Products returned for repair that have been modified will be not tested unless the nature and purpose of the modification is understood by ESDEMC representatives and does not render the equipment untestable at the repair facility. ESDEMC Technology will reserve the right to deny service to any modified equipment returned to the factory for repair regardless of the warranty status of the equipment.