

ESDEMC

EXPERT ESD/EMC SOLUTIONS

ESDEMC Technology LLC
Product Catalog

2013 Q2

Expert ESD and EMC Solutions

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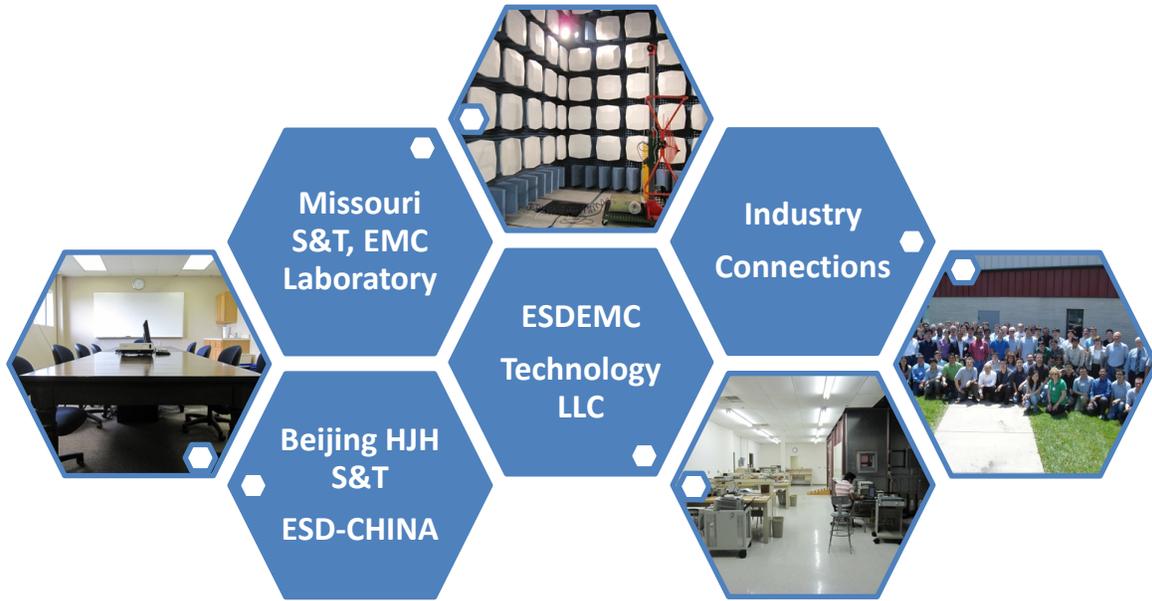
ESDEMC

EXPERT ESD/EMC SOLUTIONS

ESDEMC Technology LLC is a worldwide test and measurement solution provider in electrostatic control, electrostatic discharge (ESD), electromagnetic compatibility (EMC), high voltage power supply, and high voltage RF test and measurement.



ESDEMC was founded in 2010, in 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.

ESEM Technology LLC is a Corporate Member of ESD Association.



OUR R&D CENTER AND DISTRIBUTION NETWORK

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OUR CUSTOMERS

We provide our high quality and cost-effective solutions worldwide. We have customers in the US, China, Canada, Korea, UK, Japan, France, Brazil, Argentina, Malaysia, Australia, and Israel.

Our Customers include:

Apple, Bosch, Bose, Hewlett Packard, Haefely EMC Technology, Laird Technologies, LG Electronics, Lockheed Martin, NASA, NXP, TDK RF Solutions, Tektronix, ThermoFisher Scientific, Missouri University, and many others.



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ELECTROSTATIC DISCHARGE (ESD) TEST Solutions

COMPONENT LEVEL ESD SIMULATORS

ES621 IV-CURVE TRANSMISSION LINE PULSER (ANSI ESD STM5.5.1 AND SP5.5.2)

A6210 IV-Curve TLP Software

A6211 Switchable High Voltage Rise-Time Filter

A6212 Transmission Line Extension Unit

Upgrades Available

Customizable

ES651 DIFFERENTIAL ESD INJECTION AND IV MEASUREMENT PROBING SYSTEM **NEW**

A6511 ESD Signal Differential Splitter

A6512 Injection Probe with V/I Measurement Circuit Build

A6513 Probing Mounting Fixture

A6514 Precision XYZ Positioner

A6515 Precision Contact Needles

Customizable

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

SYSTEM LEVEL ESD SIMULATORS

ES613 ESD SIMULATOR (IEC 61000-4-2, ISO 10605)

A4001 ESD Current Target

A4002 ESD Current Target Adapter Line

A4003 ESD Current Target and Adapter Line Set

ES631-LAN CABLE DISCHARGE EVENT (CDE) EVALUATION SYSTEM **NEW**

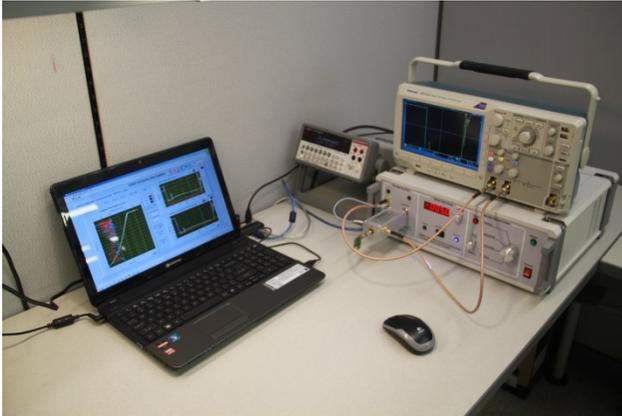
ES802/ES612 ESD SIMULATOR (IEC 61000-4-2)

FIRING TEST SYSTEM

EST806 ELECTROSTATIC FIRING/IGNITER/SPARK SENSITIVITY METER (MIL-STD-331)

ES621 IV-CURVE CHARACTERIZATION TRANSMISSION LINE PULSER

The ES621 is a very cost-effective dynamic IV-Curve Characterization Transmission Line Pulser (TLP) 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 to 15p/s
- Internal precision HV supplies: 0 to ± 2 kV
- Adjustable pulse rate: 0.3p/s to 15p/s
- Up to 40A peak current injection onto short and 20A onto 50Ω load

Operation Conditions:

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

Optional Accessories:

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

Upgrades Available:

- Very Fast TLP (VF-TLP)
- High Current TLP

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

Dimension and Weight:

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

Support and Services:

- Lifetime Technical Support
- 1 Year Warranty (Extendable)
- Free Test Consultation
- Free ESD Design Review

ES651 DIFFERENTIAL ESD INJECTION AND IV MEASUREMENT PROBING SYSTEM *NEW*

The ES651 is an innovative differential ESD signal injection and I/V signal measurement probing system. It is designed to handle ESD injection on complex DUT or ESD injection at different locations with very flexible probing distances. The system has integrated ESD current and voltage measurement set-ups on both polarity ends. Both the voltage and current measurement systems are calibrated up to 1GHz for advanced ESD debugging and research measurements.



Features:

- Differential Signal Method
- Very repeatable ESD injection signal at different locations on DUT
- Integrated voltage and current measurement with ESD injection probe
- Low cost and replaceable contact needles
- Precision XYZ positioners

Specifications *Customizable*:

- Current Measurement
Bandwidth: 250K-2GHz
Rise Time: 200ps
Accuracy: $\pm 3\%$
- Voltage Measurement:
Bandwidth: DC-1GHz
Rise Time: 200ps
Accuracy: $\pm 3\%$
- ESD Differential Splitter:
Max Voltage: 4kV @ 50 Ω
Bandwidth: 1Mhz to 1GHz
Phase Shift: 180 ~ 160 degrees

Applications:

- General ESD injection and IV measurement test for component level, board level, and system level testing

Operation Conditions:

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

Configurations:

- A6511 ESD Signal Differential Splitter
- A6512 Injection Probe with V/I Measurement Circuit Build
- A6513 Probe Mounting Fixture
- A6514 Precision XYZ Positioner
- A6515 Precision Contact Needles

Support and Services:

- Lifetime Technical Support
- 1 Year Warranty (Extendable)
- Free Test Consultation
- Free ESD Review

ES613 ESD SIMULATOR (IEC61000-4-2/ISO 10605)

The ES613 model ESD simulator is 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 $\leq 0.5\%$
- 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 and calibration mode
- ESD source voltage up to $\pm 20\text{kV}/\pm 30\text{kV}$
- Discharge RC modules ($\pm 10\%$)
150pF/330 Ohm, 150pF/2000 Ohm
330pF/330 Ohm, 330pF/2000 Ohm
- ESD zap counter

Operation Conditions:

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

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

Optional Accessories:

- Discharge RC Modules (several available)
- A6132 ESD Current Monitor Module
- A6133 Secondary Discharge Detector Module
- A6134 Optical USB Link for Remote Control
- A6135 Temperature and Humidity Module
- A6136 Battery Module for Portable Testing

Support and Services:

- Lifetime Technical Support
- Free Test Consultation
- Free ESD Design Review
- 1 Year Warranty (Extendable)
- Recalibration Service (Fee applies)
- Out-of-warranty repair (Fee applies)

A4001 ESD CURRENT TARGET (ESD SIMULATOR CALIBRATION KIT)

ESD Simulators are calibrated according to standard IEC/EN 61000-4-2 or ISO10605. The A4001 ESD Current Target (or ESD Calibration Set) allows the user to take measurements conforming to the requirements of these standards up to 4GHz.



Features:

- Wideband up to 4GHz
- 0.5A/V Transfer Impedance, $\pm 1\%$ (with one 20dB Attenuator, 5A/V)
- Gold Plating
- Excellent voltage linearity up to 30kV
- Traceable Calibration Certificate

Specifications:

- Frequency response: DC – 4GHz
< ± 0.5 dB up to 1GHz, < ± 1.2 dB up to 4GHz
- Input Resistance: 2.08Ω ($\pm 1\%$)
(2.00Ω when matched with 50Ω load)
- Maximum IEC Pulse Amplitude:
Tested up to ± 30 kV
- Voltage Non-linearity:
<2% up to 20kV, <5% up to ± 30 kV

Standards:

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

Applications:

- Calibration kit for ESD Simulator

Dimension and Weight

- 70 x 30mm
- 0.5 kg

Options and Additional Accessories:

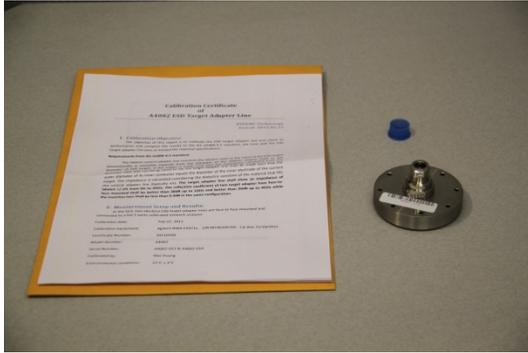
- AT2WN-6/20/30 N Attenuators 6, 20, or 30dB
- AT2WS-20 20db SMA Attenuator
- RG400 or semi-flex coax cable with choice of connector (N, SMA, BNC)
- A4002 ESD Current Target adapter line

Support and Services:

- Lifetime Technical Support
- 1 Year Warranty (Extendable)
- Recalibration Service (Fee applies)
- Out-of-Warranty Repair (Fee applies)

A4002 ESD CURRENT TARGET ADAPTER LINE

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

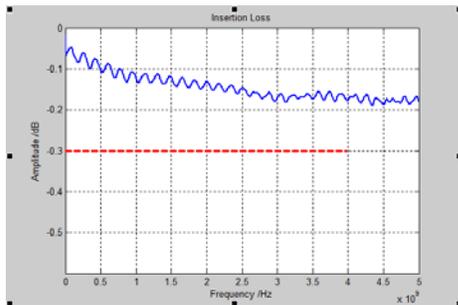


Features:

- Wideband up to 4GHz
- Different connectors available
- Highly conductive contact surface
- Strong 304 stainless steel base
- Low insertion loss
- Traceable Calibration Certificate

Specifications:

- Insertion loss $\leq 0.3\text{dB}$ up to 4GHz



Insertion loss

- Reflection coefficient $< -30\text{dB}$ up to 1GHz
 $< -20\text{dB}$ up to 4GHz



Reflection Coefficient

Standards:

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

Applications:

- Calibration kit for ESD current targets

Options:

- A4002-N N Type Connector
- A4002-3.5 Precision 3.5mm Connector
- A4002-PN Precision N Type Connector

Support and Services:

- Lifetime Technical Support
- 1 Year Warranty (Extendable)
- Recalibration Service (Fee applies)
- Out-of-Warranty Repair (Fee applies)

A4003 ESD CURRENT TARGET AND ADAPTER LINE SET

ESD Simulators are calibrated according to standard IEC/EN 61000-4-2 or ISO10605. The A4003 ESD Current Target and Adapter Line Set is a complete calibration kit for ESD targets, ESD target adapter Line and ESD simulators.



Features:

- Complete all-in-one calibration set for ESD simulators

Specifications:

- See specifications for the A4001 ESD Current Target and the A4002 ESD Current Target Adapter Line

Set Includes:

- ESD Target
- Adapter Line
- 20dB N Attenuator
- Cable
- Storage Case
- Traceable Calibration Certificate

Standards:

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

Applications:

- Calibration kit for ESD simulators per IEC61000-4-2
- Calibration kit for ESD current targets per IEC61000-4-2
- Calibration kit for ESD target adapter line per IEC61000-4-2

Options and Additional Accessories:

- AT2WN-6/20/30 N Attenuator 6, 20, or 30dB
- AT2WS-20 20dB SMA Attenuator
- N Type, Precision N, or 3.5mm Connector for the Adapter Line
- RG400 or semi-flex coax cable with choice of connector (N, SMA, BNC)

Support and Services:

- Lifetime Technical Support
- 1 Year Warranty (Extendable)
- Recalibration Service (Fee applies)
- Out-of-Warranty Repair (Fee applies)

ES631-LAN CABLE DISCHARGE EVENT (CDE) EVALUATION SYSTEM

NEW

The ES631-LAN Cable Discharge Event Evaluation System is a comprehensive system designed to simulate the effects of LAN cable discharge to any LAN based network system.



Features:

- LAN cable ESD test up to ± 2.5 kV
- Simulate delayed caused differential discharge for each signal pair
- Embedded current and voltage measurement for each wire
- Large 5 inch touch screen display
- Charge voltage stability better than 0.5%
- USB remote control

Specifications:

- LAN cable CDE simulation up to ± 2.5 kV
- Current measurement:
Bandwidth 25 KHz-1 GHz, Accuracy $\pm 3\%$
- Voltage measurement:
Bandwidth DC-1GHz, Accuracy $\pm 3\%$
- 8 lines static charge controlled separately
- 4 Discharge Modes:
Differential Line CH1- Delay- CH2
Differential Line CH2- Delay- CH1
Single Line CH1 Discharge
Single Line CH2 Discharge
- Channel discharge delay selectable
- Polarity: Positive / Negative
- USB Remote Control (virtual RS232)
Sample code and standalone software are provided.

Applications:

- General ESD analysis for cable discharge event (CDE)
- LAN based network system ESD robustness test

Operation Conditions:

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

Dimension and Weight:

- 35 x 28 x 15 cm (14 x 11 x 5.9 inches)
- 9kg (20 lbs.)

Basic Setup:

- CDE main controller
- Aluminum case
- User manual

**2 current probes are provided with default configuration, more current probes are available with additional cost*

Support and Services:

- Lifetime Technical Support
- 1 Year Warranty (Extendable)
- Recalibration Service (Fee applies)
- Out-of-warranty repair (Fee applies)

ES612/EST 802 ESD SIMULATOR (IEC61000-4-2)

The ES612/EST802 model ESD Simulator satisfies the requirements of standard IEC61000-4-2. The testing voltage can be continuously adjusted from 0 to $\pm 20\text{kV}$ (or $\pm 30\text{kV}$) with very high resolution and stability. 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: $\leq 0.5\%$
- Easy setup and operation
- Aluminum Storage Case

Specifications:

- Contact and air discharge modes
- Charging resistor 50 - 100M
- Discharge RC modules ($\pm 10\%$)
- 150pF/330 Ohm

Operation Conditions:

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

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 connector

Dimension and Weight:

- 35 x 28 x 15 cm (14 x 11 x 5.9 inch)
- 9 kg (20 lbs.)

Support and Services:

- Lifetime Technical Support
- Free test consulting
- 1 Year Warranty (Extendable)
- Recalibration Service (Fee applies)
- Out-of-Warranty Repair (Fee applies)

EST806 ELECTROSTATIC FIRING/IGNITER/SPARK SENSITIVITY METER

The EST806 Series Electrostatic Firing/ Igniter /Spark Sensitivity test systems are designed for military electrostatic discharge test standards. It contains several test setups and configurations to determine personnel borne ESD (0 to $\pm 30\text{kV}$), helicopter borne ESD (0 to $\pm 300\text{kV}$), and test the ESD susceptibility of pyrotechnic devices, powders and liquids (0 to $\pm 50\text{kV}$).



0 to $\pm 30\text{kV}$ Personnel Borne ESD for explosive



0 to $\pm 50\text{kV}$ Personnel Borne

Features:

- LED display, high resolution.
- Stable and accurate.
- Voltage output 0.01 to $\pm 30\text{kV}$
- Current output up to $1000 \mu\text{A}$.

Standards:

- MIL-STD-331C
- MIL-STD-1512
- MIL-STD-1576
- MIL-STD-1751A

Applications:

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

Specifications:

- High output DC voltage (0.01 to $\pm 30\text{kV}$ / 300kV)
- Drifting: $<0.5\%$ per 24 hours
- Drain voltage: $<0.5\%$ charging voltage when the high-pressure switch is on.
- Discharge resistance:
- 0Ω , $500 \pm 25\Omega$, $5000 \pm 250\Omega$
- Discharge capacitor: $500 \pm 25\text{pF}$
- Discharge Inductance: $< 5\mu\text{H}$
- Full Acrylic Test Chamber

Operation Conditions:

- Temperature: -10 to $+40 \text{ }^\circ\text{C}$
- Humidity: 0 to 80% RH

Optional setup:

- ESD waveform calibration test load $1 \pm 5\%$ ohm (ESD target)
- Power ESD Electrode Assembly
- Firing Test Chamber (steel with exhaust port)
- Acrylic Door/Window

Support and Services:

- Lifetime technical support
- 1 year warranty (Extendable)

ELECTROMAGNETIC COMPATIBILITY (EMC) TEST SOLUTIONS

HIGH VOLTAGE PULSE RF ATTENUATOR

HVAT SERIES HV PULSE RF WIDEBAND ATTENUATOR (3RD VERSION)
Many options available

TRANSVERSE ELECTROMAGNETIC (TEM) CELL

EM601 IC STRIPLINE TEM CELL UP TO 5.5GHZ, HIGH VOLTAGE SIGNAL

OTHER CUSTOMIZED SOLUTIONS

EM603 MOBILE SYSTEM BATTERY CURRENT OPTICAL MONITOR

EM605 LOSSY MATERIAL CHARACTERIZATION SYSTEM

HVAT SERIES HV PULSE RF WIDEBAND ATTENUATOR (3RD VERSION)

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 kilovolt range resulting in non-linearity by as much as 50%. The HVAT Series Attenuator is a robust wideband high voltage attenuator designed to measure such transient HV signals with an excellent wideband up to 4.5GHz (non-symmetric) 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:

- 3, 6, or 20 dB attenuation
- Tested up to 10kV, 100ns TLP pulse
- N or SMA type female connectors
- Matches to 50Ω system
- Frequency response:
S11 ≤ -20 dB
S21 = 20 ±1 dB

Dimension and Weight:

- 13 x 7.5 x 4 cm (5.5 x 3.0 x 1.6 inches)
- 0.6 kg (1.3 lbs)

Applications:

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

Operation Conditions:

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

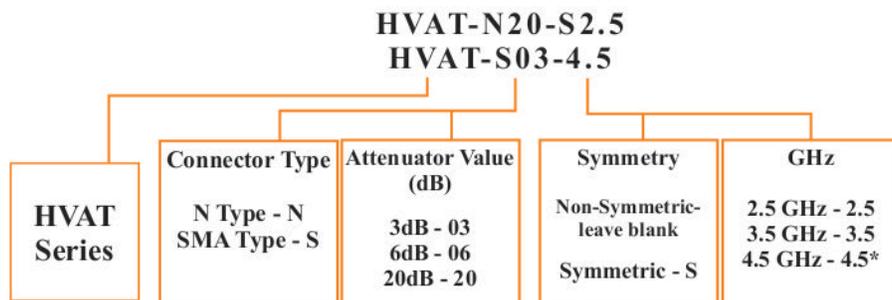
Options:

- 3, 6, or 20 dB attenuation
- N or SMA connectors
- Symmetric (both ends can be either input or output) or non-symmetric
- 2.5, 3.5, or 4.5GHz (4.5 only on non-symmetric)

Support and Services:

- 1 Year Warranty (Extendable)
- 1 Year Free Calibration (Extendable)

Model Number Chart:



* 4.5GHz only available in non-symmetric

EM601 IC STRIPLINE TEM CELL (UP TO 5.5GHZ, HV SIGNAL)

The 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 5.5 GHz bandwidth
- Can handle up to 4kV high voltage on 50Ω systems
- Can be used for ESD field injection testing with TLP to determine field susceptibility

Specifications:

- Frequency response up to 5.5GHz (First spike by undesired higher order mode)
- Board field injection area to 50 x 50 mm
- Test up to 5kV TLP pulse

Dimension:

- Cell: 110 x 110 x 25 mm
- IC test cavity: 50 x 50 mm

Standards:

- IEC61967-4 Integrated circuits - Measurement of Electromagnetic Emissions

Applications:

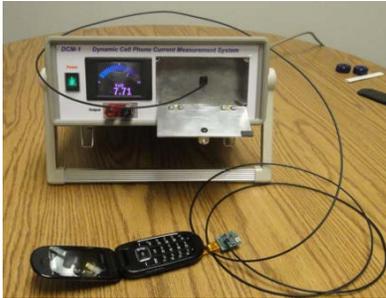
- Electromagnetic immunity test of IC
- Electromagnetic radiation test of IC
- ESD Field susceptibility test of IC
- Extremely strong E and H field Injection

Support and Services:

- Lifetime technical support
- 1 year warranty (Extendable)

EM603 MOBILE SYSTEM BATTERY CURRENT OPTICAL MONITOR

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.



Features:

- Customizable current and voltage ranges
- Allows for monitoring of current during immunity
- Highly accurate

Specifications:

- Default current range: 0 to 1A
Customizable
- Frequency response: >100Hz
- Accuracy better than 1%
- Default voltage range: 3.7 to 4.2V
Customizable
- Power: 100-240V AC

Dimension and Weight:

- 30 x 25 x 11 cm (12 x 4.4 x 10 inches)
- 2.5 kg (5 lbs)

Applications:

- Immunity, ESD & latch-up test failure analysis for mobile systems (cell phones, PDAs, laptops, tablets)
- Mobile system battery current monitoring

Operation Conditions:

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

Optional Accessories:

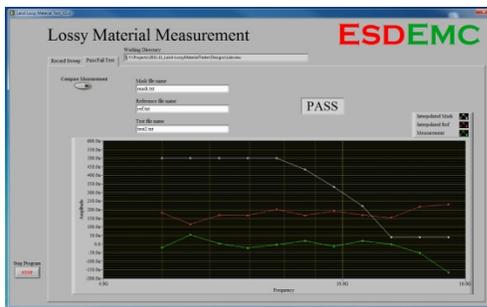
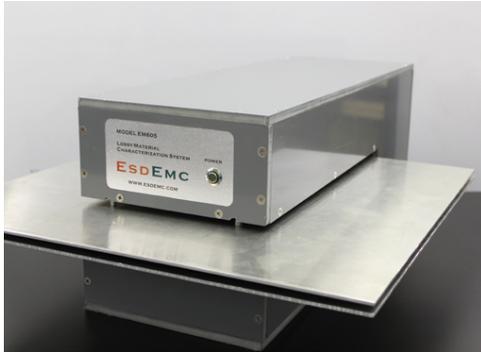
- A6030 Flex Battery Contact
- A6031 Optical Fiber Cable

Support and Services:

- Lifetime Technical Support
- 1 Year Warranty (Extendable)

EM605 LOSSY MATERIAL CHARACTERIZATION SYSTEM

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. The EM605 is a Microwave Absorbing Material Characterization System that measures the signal loss through a material sample in a frequency range of 5 to 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

Operation Conditions:

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

Optional Accessories:

- A6050: 30MHz to 5GHz Coupling Transceiver Module
- A6051: 30MHz to 5GHz Material Test Fixture

Support and Services:

- Lifetime Technical Support
- 1 Year Warranty (Extendable)

HIGH VOLTAGE SUPPLY & APPLICATIONS

HIGH VOLTAGE DC-DC POWER SUPPLY MODULES

HVM SERIES HIGH VOLTAGE POWER SUPPLY MODULES

Several Models Available

HIGH VOLTAGE AC-DC POWER SUPPLY SYSTEM

ES813 PREISION HIGH VOLTAGE GENERATOR FOR LAB USE

Several Models Available

Customizable

HIGH VOLTAGE MEASUREMENT AND CALIBRATION

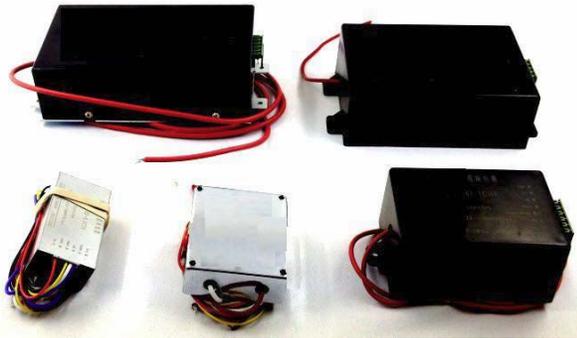
ES105 HIGH RESISTANCE HIGH VOLTAGE METER

Several Models Available

Customizable

HVM SERIES HIGH VOLTAGE DC-DC MODULES

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



Features:

- Low cost
- Easy configuration
- Light weight
- 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

Operating Conditions (Typical):

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

Dimension and Weight:

- Power levels will come in different sizes, the smallest module being 38 x 38 x 20mm

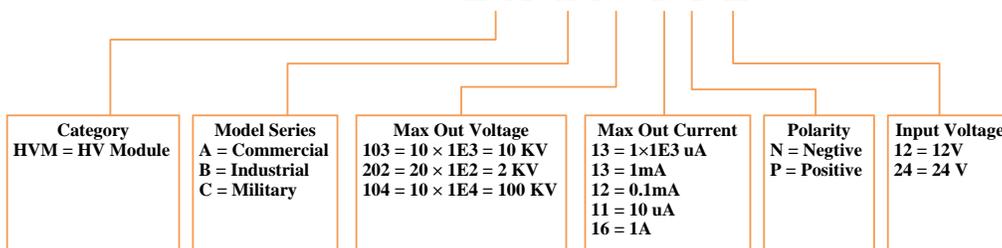
Please see the following pages on specifications and ordering.

Support and Service:

- 1 Year Warranty
- Lifetime Technical Support
- Free ESD Design Review

Model Number Guide

HVM - A 103 . 13 P 12



HVM Module Detail Specification/Options: Output Voltage/Output Current Reference Table

OUTPUT VOLTAGE (TYPICAL)	OUTPUT CURRENT (TYPICAL)				OUTPUT CURRENT (MAX)
DC 100V	10mA	100mA	500mA	1A	5A
DC 200V	10mA	100mA	500mA	1A	5A
DC 300V	5mA	100mA	500mA	1A	3A
DC 400V	5mA	100mA	500mA	1mA	2A
DC 500V	1mA	100mA	500mA	1A	2A
DC 600V	1mA	50mA	100mA	500mA	1A
DC 800V	1mA	50mA	100mA	500mA	1A
DC 1000V	1mA	50mA	100mA	500mA	1A
DC 1200V	1mA	50mA	100mA	500mA	1A
DC 1500V	1mA	50mA	100mA	500mA	1A
DC 2000V	1mA	10mA	50mA	100mA	500mA
DC 2500V	1mA	10mA	50mA	100mA	500mA
DC 3000V	1mA	10mA	50mA	100mA	300mA
DC 3500V	1mA	10mA	50mA	100mA	200mA
DC 4000V	1mA	10mA	50mA	100mA	200mA
DC 4500V	1mA	10mA	50mA	100mA	200mA
DC 5000V	1mA	10mA	50mA	100mA	200mA
DC 5500V	1mA	10mA	50mA	100mA	200mA
DC 6000V	1mA	5mA	10mA	50mA	160mA
DC 6500V	1mA	5mA	10mA	50mA	160mA
DC 7000V	1mA	5mA	10mA	50mA	140mA
DC 8000V	1mA	5mA	10mA	50mA	120mA
DC 9000V	1mA	5mA	10mA	50mA	100mA
DC 10 kV	1mA	5mA	10mA	50mA	90mA
DC 15 kV	1mA	5mA	10mA	50mA	60mA
DC 20 kV	1mA	2mA	5mA	10mA	50mA
DC 25 kV	1mA	2mA	5mA	10mA	40mA
DC 30 kV	1mA	3mA	5mA	10mA	30mA
DC 35 kV	1mA	2mA	5mA	10mA	20mA
DC 40 kV	1mA	2mA	5mA	10mA	20mA
DC 45 kV	1mA	2mA	5mA	10mA	20mA
DC 50 kV	1mA	2mA	5mA	10mA	20mA
DC 60 kV	1mA	2mA	3mA	5mA	10mA
DC 80 kV	1mA	2mA	3mA	5mA	10mA
DC 100 kV	1mA	1.5mA	2mA	3mA	4mA

Please note, this is the parameter reference. Please contact us to discuss more details or customized values.

Input Voltage/Output Current Reference Table

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

Please note, this is the design reference. The module dimension increases with the max output power.

Product Grade

Please indicate product grade when ordering.

Class	Details
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

ES813 SERIES ELECTROSTATIC HIGH VOLTAGE GENERATOR

The ES813 Series Electrostatic High Voltage Generators are designed for high precision and high stability laboratory usage with voltage output from DC 0 to $\pm 20, 30, 50, 60, 80,$ or 100kV (check detail specifications). They are 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 \pm 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

Typical Dimension and Weight (varies with model):

- DC 0-20kV or 30kV @ 1mA max
28 x 13 x 28 cm, 3-6 kg
- DC 0-50kV or 60kV @ 1mA max
35 x 33 x 15cm single output
45 x 45 x 18cm dual outputs, 14-20 kg

Operating Conditions:

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

Customization is available.

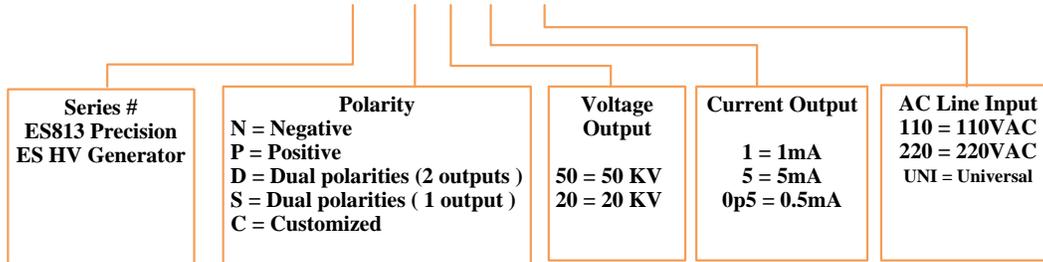
Please see the following pages on specifications and ordering.

Support and Services:

- Lifetime Technical Support
- 1 Year Warranty (Extendable)
- Free Testing Consultation

Model Number Guide
Universal not available on all models.

ES813-D50.1-220



ES813 Model Detail Specification/Output Voltage/Output Current Reference Table

OUTPUT VOLTAGE (TYPICAL)	OUTPUT CURRENT (TYPICAL)				OUTPUT CURRENT (MAX)
DC 1000V	1mA	50mA	100mA	500mA	1A
DC 1200V	1mA	50mA	100mA	500mA	1A
DC 1500V	1mA	50mA	100mA	500mA	1A
DC 2000V	1mA	10mA	50mA	100mA	500mA
DC 2500V	1mA	10mA	50mA	100mA	500mA
DC 3000V	1mA	10mA	50mA	100mA	300mA
DC 3500V	1mA	10mA	50mA	100mA	200mA
DC 4000V	1mA	10mA	50mA	100mA	200mA
DC 4500V	1mA	10mA	50mA	100mA	200mA
DC 5000V	1mA	10mA	50mA	100mA	200mA
DC 5500V	1mA	10mA	50mA	100mA	200mA
DC 6000V	1mA	5mA	10mA	50mA	160mA
DC 6500V	1mA	5mA	10mA	50mA	160mA
DC 7000V	1mA	5mA	10mA	50mA	140mA
DC 8000V	1mA	5mA	10mA	50mA	120mA
DC 9000V	1mA	5mA	10mA	50mA	100mA
DC 10 kV	1mA	5mA	10mA	50mA	90mA
DC 15 kV	1mA	5mA	10mA	50mA	60mA
DC 20 kV	1mA	2mA	5mA	10mA	50mA
DC 25 kV	1mA	2mA	5mA	10mA	40mA
DC 30 kV	1mA	3mA	5mA	10mA	30mA
DC 35 kV	1mA	2mA	5mA	10mA	20mA
DC 40 kV	1mA	2mA	5mA	10mA	20mA
DC 45 kV	1mA	2mA	5mA	10mA	20mA
DC 50 kV	1mA	2mA	5mA	10mA	20mA
DC 60 kV	1mA	2mA	3mA	5mA	10mA
DC 80 kV	1mA	2mA	3mA	5mA	10mA
DC 100 kV	1mA	1.5mA	2mA	3mA	4mA

Input Voltage / Output Current Reference Table

INPUT VOLTAGE	OUTPUT VOLTAGE/CURRENT (TYPICAL)	OUTPUT POWER (MAX)
AC 110V	1000V、1A	≤1 kW
	100 kV、2mA	
AC 220V	1000V、2A	≤2 kW
	100 kV、2mA	

Product Grade

Please indicate product grade when ordering.

Class	Details
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

ES105 HIGH IMPEDANCE HIGH VOLTAGE METER

The ES105 is a high performance and cost-effective high-impedance high-voltage meter. It features significantly high input impedance ($\geq 100\text{ G}\Omega$), 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, and ESD simulators, etc.



Features:

- High input impedance $\geq 100\text{ G}\Omega$
- 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: $\pm 1\text{V}$ to 100kV (customizable)
- Accuracy: $\pm 1\% \pm 2$ words
- Input impedance: $\geq 10\text{G}\Omega$ *Customizable*
- Display: 4½ Digit LCD/LED
- Resolution: 1V/10V

Operation Conditions:

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

Applications:

- Electrostatic voltage measurement
- ESD generator and simulator calibration
- Electrostatic voltmeter calibration
- High-impedance high-voltage measurement

Dimension and Weight:

- 20 × 15 × 50cm (7.85 × 5.91 × 19.68 inches)
- 2 kg (4.41 lbs)

Model Options:

- ES105-10: DC $R_{in} \geq 10\text{G}\Omega$
- ES105-30: DC $R_{in} \geq 30\text{G}\Omega$
- ES105-100: DC $R_{in} \geq 100\text{G}\Omega$
- ES105A-10: DC/AC $R_{in} \geq 10\text{G}\Omega$
- ES105A-30: DC/AC $R_{in} \geq 30\text{G}\Omega$
- ES105A-100: DC/AC $R_{in} \geq 100\text{G}\Omega$
- ES105-CV: Customized for higher voltage/higher input impedance (100GΩ)

Support and Services:

- Lifetime Technical Support
- 1 Year Warranty (Extendable)

ELECTROSTATIC TEST SOLUTIONS

ELECTROSTATIC VOLTAGE MEASUREMENT

ES101 EXPLOSION PROOF ELECTROSTATIC FIELD VOLTMETER

Several Models Available

ES102 VIBRATING CAPACITOR ELECTROMETER

A1021 Standard Probe/Sensor

A1022-S Probe/Sensor Cable for A1021

ES102-A Vibrating Capacitor Electrometer for Electrets

A1023 Shield Probe/Sensor for Electrets

ES103 SOLID-STATE ELECTROMETER

ES105 HIGH RESISTANCE HIGH VOLTAGE METER (SEE PAGE 30)

ELECTROSTATIC CHARGE MEASUREMENT

ES111 SERIES COULOMB METER

ES111-A: $\pm 10\text{pC}$ to 20μ

ES111-C: $\pm 1\text{nC}$ to $2\mu\text{C}$

ES111-B: $\pm 0.1\text{pC}$ to 200nC

ES111-D: $\pm 0.1\mu\text{C}$ to $100\mu\text{C}$

A1110 Series Contact Probes

A1111 Series Faraday Cups

RESISTANCE AND RESISTIVITY MEASUREMENT

ES122 DIGITAL LOW CURRENT METER (PICOAMMETER)

ES124 DIGITAL HIGH RESISTANCE LOW CURRENT METER

A1240 Surface Resistivity Shielded Test Box

A1241 Resistance Test Reference Fixtures

A1242 Surface Resistivity Test Electrodes

ES125 VOLUME RESISTIVITY CONDUCTIVE TEST (4 ELECTRODE METHOD)

ELECTROSTATIC VOLTAGE MEASUREMENT

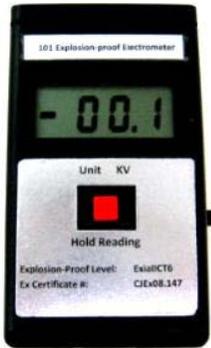
In general, electrostatic voltage measurement solutions can be divided in two categories: contact measurement methods and non-contact measurement methods.

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 or 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 ($>20\text{kV}$) 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** and **feedback**. 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 voltmeters 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.” Normally, available instruments are in the range of 10kV to 20kV; unless special calibration or modifications and customizations are made.

ES101 EXPLOSION-PROOF ELECTROSTATIC VOLTMETER

The ES101 is a very cost-effective 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.).



Features:

- Explosion-proof Exia II CT6
- Many application areas
- Light and portable (120g)
- Reading-hold function
- Non-contact measurement
- Low power consumption
- Battery indicator & auto power off
- 3½ digit LCD with polarity, over-range, and low battery indicators.

Specifications:

- Measurement range: $\pm 10\text{V}$ to $\pm 100\text{kV}$
- Accuracy: $< \pm 10\%$.
- Explosion-proof-level: Exia II CT6,
- Ex certificate number: CJEx08.147
- Input impedance: $> 10^{16}\Omega$
- Power: 6F22 9V battery
- Consumption: $< 15\text{mW}$

Dimension and Weight:

- 12×7×3.2 cm (4.72 ×2.76×1.26 inches)
- 0.2 kg (0.44 lbs)

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

Operation Conditions:

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

Support and Services:

- Lifetime Technical Support
- 1 Year Warranty (Extendable)

ES102 VIBRATING CAPACITOR ELECTROMETER

The 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 $\pm 200V$ or $\pm 2kV$ or $\pm 20kV$
Customizable
- Max resolution: 0.1V
- Accuracy better than 5%
- Analog output: 0 ~ $\pm 100mV$,
Other options: -1 ~ +1V, 4~20mA, 0~5V
- Auto calibration at 1kV/100V,
error $\leq 0.2\%$ after calibration

Dimension and Weight:

- 22 x 23 x 8cm (8.7 x 9.1 x 3.1 inches)
- 2 kg (4.4 lbs)

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)

Operation Conditions:

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

Options:

- 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

Support and Services:

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

ES103 SOLID-STATE ELECTROMETER

The ES103 is a cost-effective solid-state electrometer, and 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 $\pm 0.1\text{mV}$ to 200V
- Reading accuracy: $\pm (0.5\% \text{ reading} + 2 \text{ words})$
- Input impedance: $> 1 \times 10^{14} \Omega$
- Time drift: $< 0.1\%$ in 24 hours
- Temperature drift: $< 0.01\% / ^\circ\text{C}$
- 110 or 220V AC

Dimension and Weight:

- 22 x 23 x 8 cm (8.66 x 9.06 x 3.14 inches)
- 2 kg (5.5 lb)

Standards:

- Meets standards 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)

Support/Services:

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

ES105 HIGH IMPEDANCE HIGH VOLTAGE METER (*SEE PAGE 30*)

ES111 SERIES COULOMB METER

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

Specifications:

- Measurement range: Check model options
- Precision: $\pm 0.5\% \pm 2$ counts

Dimension and Weight:

- 20x15x50 cm (7.85x5.91x19.68 inches)
- 2 kg (4.41 lbs)

Operation Conditions:

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

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

Models: *Custom designs available*

- **ES111-A:** $\pm 10\text{pC}$ to $20\mu\text{C}$
The most widely used model for general measurement purposes
- **ES111-B:** $\pm 0.1\text{pC}$ to 200nC
For small/low charge items such as components, IC, etc.
- **ES111-C:** $\pm 1\text{nC}$ to $2\mu\text{C}$
For large/high charge items such as clothing, packaging bags, etc.
- **ES111-D:** $\pm 0.1\mu\text{C}$ to $100\mu\text{C}$
For electrostatic sparking charge test, can directly measure spark discharge capacity up to $\pm 20\text{kV}$

Support and Services:

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

OPTIONAL ACCESSORIES: ES111 COULOMB METER



Model #	Product Name	Specification
A1110	Contact Probe	
A1110-P	Contact Probe with HV Protection	20kV spark HV current limit resistor
A1111-1	Faraday Cup, Size S (no-lid)	(90/63mm diameter) x 80 mm High
A1111-1L	Faraday Cup, Size S (lid)	(90/63mm diameter) x 100 mm High
A1111-2	Faraday Cup, Size M (no-lid)	(156/140 mm diameter) x 155 mm High
A1111-2L	Faraday Cup, Size M (lid)	(156/140 mm diameter) x 175 mm High
A1111-4	Faraday Bucket	(0.5/0.4 m diameter) x 1.0 m High
A1111-C-X	Customized Faraday Cup/Bucket	Custom design

ES122/EST122 DIGITAL LOW CURRENT METER (PICOAMMETER)

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



Features:

- Wide measurement range
- Light and portable
- 4½ digit LED display
- Stable and fast read
- Normal and fast read modes

Specifications:

- Measurement range: $\pm 1\text{fA}$ to $\pm 20\text{mA}$
- Precision: 0.5 to 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

Dimension and Weight:

- 27 x 23 x 8 cm (10.6 x 9 x 3.1 inches)
- 2.5 kg (5.5 lbs)

Operation Conditions:

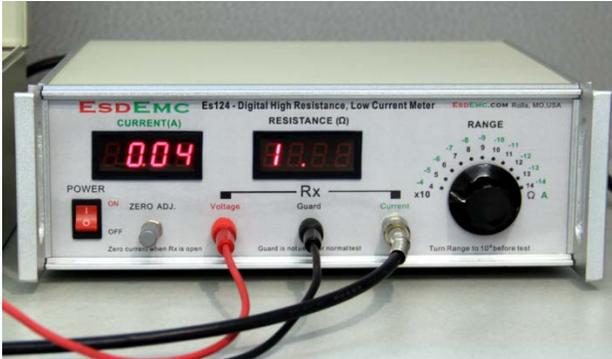
- Temperature: 0 to + 40 °C
- Humidity: 0 to 80% RH
- Pressure: 68 to 106 kPa

Support and Services:

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

ES124/EST121 DIGITAL HIGH RESISTANCE LOW CURRENT METER

The ES124 is a high resistance meter with wide measurement range and additional low current measurement function (patented). The instrument features high precision, rapid and stable measurement. It is 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.



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 $1 \times 10^{17} \Omega$
 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 and Weight:

- 29 x 25 x 12 cm (11 x 10 x 4.7 inches)
- 2.5 kg (5.5 lbs)

Operation Conditions:

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

Optional Accessories are listed on the next page.

Support and Services:

- Lifetime Technical Support
- 1 Year Warranty (Extendable)

OPTIONAL ACCESSORIES: ES124 HIGH RESISTANCE LOW CURRENT METER

A1240 SHIELDED RESISTIVITY TEST BOX



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.

A1241 HIGH RESISTANCE REFERENCE FIXTURES



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 100M Ω , 1G Ω , 10G Ω , 100G Ω , 1T Ω fixtures, BNC connector, and a shielded enclosure.

A1242 SURFACE RESISTIVITY TEST ELECTRODES (Concentric Ring Electrodes)



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.

ES125/EST991 VOLUME RESISTIVITY/CONDUCTIVITY TEST SYSTEM

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 $10^{11}\Omega.m$ that covers material from conductors, anti-static materials and some insulators.



Features:

- Ultra-wide measurement range from 10^{-9} to $10^{11}\Omega.m$ (conductor to insulator)
- Can be reconfigured for 3-electrode test system for higher range (up to $10^{19}\Omega.m$)

Specifications:

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

Applications:

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

Standards:

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

System Includes:

- ES122 Digital Low Current Meter
- ES103 Solid-State Electrometer
- A1240 Shielded Resistivity Test Box (with insulation plate $>100 T \Omega.m$)
- 4-Electrode Resistivity Test Device
- Digital Adjustable DC Power Supply

Option Accessories:

- 3-Electrode Resistivity Test Device

Support and Services:

- Lifetime Technical Support
- 1 Year Warranty (Extendable)
- Free Test Design Review

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.

ESDEMC

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