

# ELECTROSTATIC DISCHARGE SIMULATOR

## Model 930D 930D-FTS

Generates ESD pulses up to  $\pm 26\text{kV}$  for ESD susceptibility testing of electronics and other products that are sensitive to an electrostatic discharge.

### Features:

- Voltage range:  $\pm 100 - 26,000\text{V}$
- Plug-in R/C networks available:
  - HBM (100pf/1500 $\Omega$ )
  - IEC 61000-4-2 (150pf/330 $\Omega$ )
  - MM (200pf/0 $\Omega$ )
  - MIL STDs 331, 1512, 1576 (500pf/0, 500 & 5k $\Omega$ )
  - Custom Networks
- Contact & air discharge
- Remote discharge capability
- Optional Charged Device Model (CDM) configuration
- Optional IEC 61000-4-2 Test Target



### Applications:

Electrostatic discharge (ESD) is a significant factor in both the premature failure of electronic equipment and the ignition of volatile vapors, powders and devices. ESD is now a common cause of microelectronic circuit disruption or failure. Sensitivities below 500V are not uncommon. Since it is not always possible to control the environment where electronic devices or volatile substances are used, the burden of product reliability falls upon the manufacturer to design and build equipment that reduces susceptibility to ESD. The Model 930D ESD Simulator can be an invaluable aid in developing equipment or meeting proper substance handling requirements in today's military, industrial and consumer environments.

The ETS Model 930D is available in both gun and bench Firing Test System (FTS) configurations to meet virtually any ESD susceptibility testing requirement.



**electro-tech systems, inc.**

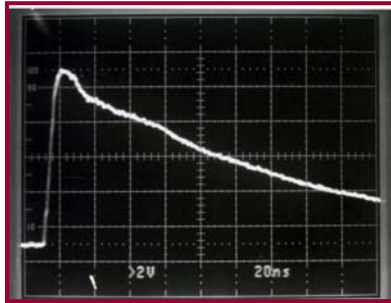
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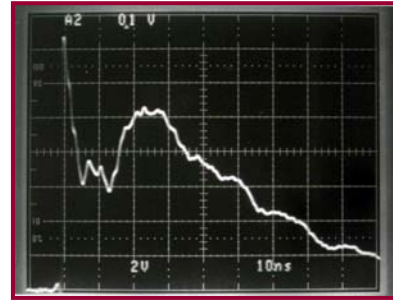
## Description:

The Model 930D Electrostatic Discharge Simulator simulates the discharge produced by a charged person touching an object (HBM). Additional R/C networks configure the Model 930D to simulate the effects of other types of discharge such as a person holding a metal object as defined in IEC 61000-4-2 or the discharge of a charged object (Optional CDM configuration).

The standard Model 930D is designed for testing systems, but can be easily configured to test devices in accordance with MIL STD 883, Method 3015.8, ESDA STM 5.1 (HBM) and 5.2 (MM). The optional ETS Model 949 Test Target is used for waveform verification as shown below.



Human Body Model (HBM)  
(100pf/1500Ω)



IEC 61000-4-2 Model  
(150pf/330Ω)

The Model 930D system shown below consists of a Control unit and either a gun or bench type (FTS) Discharge unit interconnected by a 12' (3.7m) cable. The Firing Test System version is configured for fixed mounting instead of being hand held. The Control unit contains the low voltage power supply with LED status indicators, control and timing circuits, LO/HI, VOLTAGE LEVEL INTERVAL, FREE RUN/AUTO COUNT, ARM and MANUAL/AUTO switches and controls plus 4½ -digit Charging Voltage level and 1-9 AUTO COUNT 0.5" (12mm) LED displays.

The Discharge unit contains a 30kV power supply, ± Polarity Reversing Module, HV Charge/Discharge relay, RELAY/AIR discharge switch plus plug-in capacitor and resistor networks. Duplicate controls provide ARM, AUTO/MANUAL select and discharge control functions.



Standard Model 930D  
(Shown with optional E & H-Field Probes.  
Tripod not included.)



Model 930D-FTS

The Model 930D plus R/C networks, cables, probe tips and accessories selected are contained in a sturdy polystyrene carrying case.

## Model 949 Test Target (Optional)

The Model 949 Test Target shown below is a 1:1 Volt-Amp current transducer with 50Ω output impedance and frequency response of 2 GHz. It is constructed in accordance with IEC 61000-4-2 specifications and can be used to measure all specified ESD current waveforms. The user must provide the 5' (1.5m) square ground plane, when verifying the IEC 61000-4-2 waveform.



Model 949 Test Target

### Specifications:

#### Model 930D and 930D-FTS:

##### Control Unit:

###### Range:

LO:  $\pm 100$ -6000V

HI:  $\pm 3$ -26,000V (30kV optional)

**HV Adjust:** Single-turn potentiometer

###### Displays:

Voltage Level: 4½-digit LED, 0.5" (12mm) numeric

AUTO mode: 1-digit LED, 0.5 (12mm) numeric

###### Resolution:

LO:  $\pm 1$ V

HI:  $\pm 10$ V

**Accuracy:** Better than 5%

###### AUTO Mode:

Discharges: 0-9

Interval: 0.3-10sec.

**Power:** 90-260VAC, 50/60Hz

**Interconnect Cable:** 12' (3.7m) 15-pin sub-D conn.

##### Discharge Unit:

###### Configurations:

Model 930D: Gun style

Model 930D-FTS: Bench style

**HV Switch:** Gas filled, 35kV, SPDT Relay

###### R/C Networks, $\pm 10\%$ (order separately):

HBM: 100pf Cap Module & 1500Ω Resistor Module

IEC: 150pf/330Ω Module & 0Ω Resistor Module

Automotive: 330pf/2000Ω Module & 0Ω Resistor Module

MM: 200pf Cap Module & 0Ω Resistor Module

MIL STDs: 500, 5000pf Cap Modules

0, 500, 5000Ω Resistor Modules

###### Custom R/C Networks:

Capacitor: 60-1000pf

Resistor: 100-10,000Ω

**Output/Gnd:** Standard 0.161" (4mm) Banana jack

###### Probe tips:

HBM, MM & IEC (Systems): 0.5" (12mm) Conical & Point

###### Cables:

IEC: 80" (2m) Gnd, Banana-Banana plug plus clip

HBM, MM (Devices): 18" (46cm), Banana-Minigrabber

MIL STDs: 36" (92cm), Banana-Banana plug plus clips

###### Options:

Bleeder resistor: 25 megohm across output and Gnd

CDM Module: Plug-in Module with 24" (61cm) HV wire terminated with banana plug plus clip

H-Field Probe: 6" (152mm) dia. loop

E-Field Probe: 6" (152mm) dia. disc

###### Mechanical:

Dimensions (Case): 19"Wx15"Dx10"H (48x38x25cm)

Weight: 15 lbs (6.8kg)

#### Model 949 Test Target:

**Transfer Ratio:** 1 Volt = 1 Amp

**Frequency response:** 2 GHz

**Load Resistance:** 2Ω

**Output Resistance:** 50Ω

**Finish:** Silver plate

**Dimensions:** 2.75" (70mm) dia.

**Cable:** 3' (92cm) RG58 with BNC termination

**Warranty:** One (1) Year