

ELECTROSTATIC DISCHARGE SIMULATORS

Series 900

Generates ESD pulses for susceptibility testing of electronics and explosive devices.

Features

- ❑ Bench, gun and firing test set simulators
- ❑ Voltage ranges: ± 20 to 26,000 V
- ❑ Plug-in R/C networks
 - Mil Std. 883E (Std.)
 - ESD S5.1, S5.2
 - IEC 1000-4-2/801-2
 - Mil Std. 1512, 1576
 - Custom networks
- ❑ Manual/Automatic modes
- ❑ Optional IEC 1000-4-2/801-2 Test Target
- ❑ Custom systems



Model 910



Model 930D

Applications

Electrostatic discharge (ESD) is a significant factor in both the premature failure of electronic equipment and the ignition of explosive devices. ESD has become a common cause of microelectronic circuit failure, with many devices being sensitive to less than 30 Volts. Since it is not always possible to control the environment where electronic or explosive devices are used, the burden of product reliability falls upon the manufacturer to design and build equipment that will reduce its susceptibility to ESD.

Most standards regulating the ESD susceptibility of electronic devices reference Mil Std. 883E, ESD S5.1 & 5.2 and IEC 1000-4-2/801-2; and, for explosive devices, Mil Std. 1512 & 1576. In addition, other standards specifically targeted for automotive, telecommunications and ordnance applications specify other R/C discharge networks.

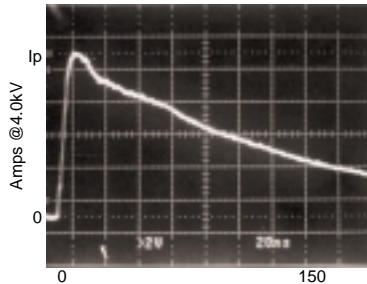
ETS Series 900 ESD Simulators are available in bench, gun and firing test set configurations that feature plug-in R/C networks, accessories and customization to meet virtually any ESD susceptibility test system requirement.

Series 900

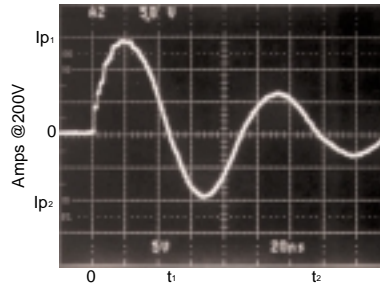


ESD WAVEFORMS

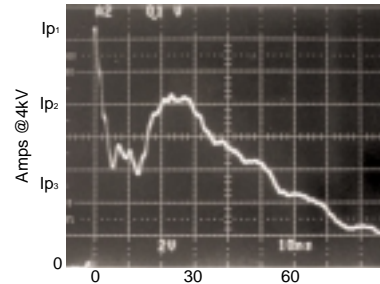
The basic ESD simulator consists of a variable high voltage power supply, a high voltage switch and an R/C discharge network to simulate a specific electrostatic discharge from a human body (Mil Std. 883E Method 3015.7, ESD S5.1, Mil Stds. 1512 & 1576), from a person holding a metal object (IEC 1000-4-2/801-2) and from a machine (ESD S5.2). Each specification describes a unique waveform characteristic resulting in different ESD susceptibility levels for each model.



Human Body Model
Mil Std. 883E Method 3015.7, ESD S5.1
(1500Ω/100 pf)



Machine Model
ESD S5.2
(0Ω/200 pf)



IEC 1000-4-2/801-2
(330 Ω/150 pf)

ELECTROSTATIC DISCHARGE SIMULATOR - Model 910

Features

- Voltage range: ± 20 to 8,000 V
- 3 $\frac{1}{2}$ -digit LED readout
- Plug-in R/C networks
1500Ω/100pf HBM (Std.)
0Ω/200 pf MM (Opt.)
Custom networks
- Manual/Automatic modes
- Tests most device configurations
- Meets Mil Std. 883E & ESD S5.1



Description - The Model 910 Electrostatic Discharge Simulator is a completely integrated system used to determine the ESD susceptibility level of electronic devices up to $\pm 8,000$ Volts in accordance with Mil Std. 883E, Method 3015.7 and ESD S5.1. Plug-in R/C networks enable the Model 910 to simulate other specified Human Body Models. The optional Machine Model tests devices in accordance with ESD S5.2.

The Model 910 features a fully adjustable, dual polarity 20 to 10,000 Volt power supply with safety inhibit switch, a 3 $\frac{1}{2}$ -digit LED voltage readout, manual and automatic test modes and the necessary controls to perform all test functions.

In the MANUAL operating mode the Charge/Discharge function is controlled by the operator. In the AUTOMATIC mode, the number of discharges (1-9) and the interval (0.5-30 sec.) selected are automatically controlled.

The output section consists of a mercury high voltage relay, plug-in R/C networks and a switched output for connecting the Device Under Test (DUT) to a curve tracer during the charge cycle.

The Simulator interfaces with the DUT via a pair of miniature test leads and a plug-in universal DUT module which consists of a DUT clamp that enables virtually all discrete, DIP, flat pack or hybrid packages to be tested. Optional test socket modules are available for dedicated testing of the device packages listed in the Accessories section.

ELECTROSTATIC DISCHARGE SIMULATOR - Model 930D



Features

- ❑ Voltage range: ± 500 to 26,000 V
- ❑ Plug-in R/C networks available
 - 1500 Ω /100 pf HBM (Mil Std. 883E)
 - 330 Ω /150 pf (IEC 1000-4-2/801-2)
 - Custom networks
- ❑ Contact & air discharge
- ❑ Remote discharge capability
- ❑ Optional E & H-Field Probes
- ❑ Optional IEC 1000-4-2/801-2 Test Target

Description - The Model 930D Electrostatic Discharge Simulator is a complete system that produces ESD pulses from ± 500 to 26,000 Volts. The plug-in R/C network feature allows the user to configure the Simulator to meet virtually all military, industry and custom ESD test requirements.

The Model 930D system is composed of a controller and a gun interconnected by a detachable 12 foot cable. The controller contains the low voltage power supply with LED status indicators, system timing electronics, controls and displays for the AUTO MODE event counter, high voltage controls and a 4 $\frac{1}{2}$ " digit LED charging voltage meter. In addition, a complete set of Charge/Discharge controls is provided for remote gun operation.

The gun contains the high voltage power supply and high voltage relay plus the plug-in resistor and capacitor networks. It also incorporates high voltage ON/OFF, MANUAL/AUTO and RELAY/AIR discharge mode controls along with LED status indicators. A $\frac{1}{4}$ -20 threaded hole enables the gun to be mounted to a tripod.

The system has four modes of operation: AUTO COUNT, FREE RUN, MANUAL and AIR DISCHARGE. In AUTO COUNT, a fixed number of discharges from 1-9 at a variable rate of 3 per second to 1 every 20 seconds can be selected. In FREE RUN, continuous discharges at the selected rate are generated. AIR DISCHARGE and MANUAL operation are controlled by the switches on the gun.

The Model 930D plus 0.50" diameter elliptical and conical point probe tips (per IEC 1000-4-2/801-2), standard banana jack adapter and a 2 meter ground cable are contained in a sturdy polystyrene carrying case.

ELECTROSTATIC DISCHARGE SIMULATOR - Model 930D-FTS



Features

- ❑ Model 930D capabilities PLUS
- ❑ Plug-in R/C networks
 - 0 Ω /500 pf Mil Std. 1576 (Std.)
 - 5000 Ω /500 pf Mil Std. 1512 (Std.)
 - Custom networks
- ❑ Universal discharge unit

Description - The Model 930D-FTS tests the ESD susceptibility level of ordnance and explosive devices such as automotive airbag and seat belt pretensioner initiators, pyrotechnic release systems, etc. This instrument incorporates the same versatile features as the Model 930D, except the FTS features a discharge unit instead of a gun and includes Mil Std. 1512 & 1576 R/C networks plus a discharge output inhibit module.

The Model 930D-FTS can be customized to meet virtually any ESD or high voltage pulse generator application.

Accessories

TEST SOCKET MODULES

For dedicated testing of most IC types. Features zero insertion force sockets. Connects to Model 910 via .080" pins. Custom modules are also available.

DIP: For .3 to .6" DIP packages up to 40 pins.

16 PIN FLAT PACK: For 14 & 16 pin flat packs.

68 PIN & 84 Pin CLCC & PLCC: Sockets for either ceramic or plastic packages.

SOIC: For SOIC packages up to 28 pins.

E & H-FIELD PROBES: Connects to 930D to generate electrostatic (E) and magnetic (H) field pulses.

TEST TARGET - Model 949 (Fig. 1): An IEC 1000-4-2/801-2 current transducer with frequency response to 2 GHz for measuring all specified ESD current waveforms.



Figure 1

Specifications

	Model 910	Model 930D	FTS
ELECTRICAL			
Voltage Range	LO: ± 20 to 1,999 V HI: $\pm .02$ to 8000 V	LO: $< \pm 500$ to > 3000 V HI: ± 3 to ≥ 26.00 kV	
Display	3 $\frac{1}{2}$ -digit LED	4 $\frac{1}{2}$ -digit LED	
R/C Networks Standard	1500 Ω /100 pf (HBM)	Not included Order separately	0 Ω /500 pf 5000 Ω /500 pf
	Optional 0 Ω /200 pf (MM)	330 Ω /150 pf (IEC), 1500 Ω /100 pf (HBM)	
	Custom R ($\pm 5\%$)	150, 500, 750, 1k, 2k, 5k, 10k Ω	
	Custom C ($\pm 10\%$)	60, 150, 200, 250, 300, 1000 pf	
	Other values available on special order	Other values available on special order	
HV Switch	Mercury SPST Relay	Gas filled SPDT Relay	
Operating Modes			
Manual	1 Discharge/Operation	1 Discharge/Operation	
Auto	0-9 Discharges	0-9 Discharges	
Interval	0.5 - 30 sec.	0.3 - 10 sec.	
Free Run	No	Yes	
Air Discharge	No	Yes	
Outputs Standard	.162" Banana Jacks / 6" Minigrabber leads	IEC Probe Tips .162" Banana Jack	.162" Banana Jack
		80" (2m) Gnd Cable (IEC 1000-4-2/801-2)	
Optional	Test Socket Modules / 6" leads w/ .080" pins	E-Field and H-Field Probes	Discharge Output Inhibit Module
Power	100, 110, 220, 240 VAC, 50/60 Hz	115/230 VAC, 50/60 Hz	
MECHANICAL			
Size	16"W x 18"D x 7"H	19"W x 15"D x 10"H (Styrene case)	
Weight	20 lbs.	15 lbs.	
Warranty	One (1) Year		

In accordance with ETS policy to improve our product line, the specifications cited above are subject to change without notice.



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