



MODEL NUMBER:  
**ESD16**

## ESD SIMULATOR 16.5 KV

- IEC 61000-4-2 (150 pF / 330 Ohm)
- Battery and mains operation
- 16.5 kV AIR / 10 kV CONTACT discharge
- Programmable automatic test runs
- Predefined test levels acc. to the standard
- Contact control for contact discharge
- Displaying of the real discharge voltage at air mode
- Counter mode with and without automatic polarity change

### INTRODUCTION

The ESD Simulator ESD16 is suitable for performing EMC tests on systems in accordance with the standard IEC / EN 61000-4-2 (ESD test). Higher test levels can be set far beyond the standard limits. Depending on the test object and test setup, two test methods are to be used:

#### 1. Air discharge

In this case, the pulse is triggered by approaching the ESD16 towards the DUT. The high voltage applied to the discharge electrode is discharged suddenly, resulting in a very broadband high-frequency interference spectrum. This in turn can lead to influences on the test specimens.

#### 2. Contact discharge

With this method, the probe of the generator is placed directly on the test object. The actual "impulse triggering" takes place via a relay contact and reduces the influencing factors such as approach speed, amplitude height, air humidity and temperature.

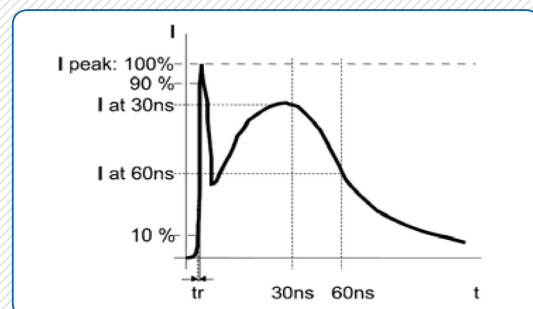
**Important:** In the case of non-contacting (e.g. painted or oxidized surface), the impulses are not triggered. The display shows "No contact". This ensures that when triggering a discharge actually takes place.

The contact discharge is the favourite test method since it is most reproducible. Air discharges are used when contact discharges are not possible - e.g. at plastic housings. The test voltages defined for each test method are shown in the table below:

### TEST LEVEL

Level	Voltage air discharge	Voltage contact discharge
1	2 kV	2 kV
2	4 kV	4 kV
3	8 kV	6 kV
4	15 kV	8 kV
x	max. 16.5 kV	max. 10 kV

### TYP. SHAPE OF THE DISCHARGE CURRENT



## ESD16 CARRYING CASE INCLUDES (3.2 KG):

- ESD simulator ESD16
- Battery charger incl. cable
- Discharge electrodes for air discharge (ESD3020) and contact discharge (ESD3021)
- Ground cable (ESD231)
- Manual



## TECHNICAL DATA

### GENERATOR:

Output voltage, adjustment via digital potentiometer:	
Test mode air discharge	0.2 kV to 16.5 kV, 100V steps
Test mode contact discharge	0.2 kV to 10.0 kV, 100V steps
Polarity of the output voltage	positive and negative
Test modes	air- and contact discharge
Repetition frequency of the discharge pulses:	
Air discharge	single pulse or repeated* *(frequency depends on the distance between the discharge electrodes and the examinant)
Contact discharge	single pulse, 0.1 Hz, 0.2 Hz, 1 Hz, 2 Hz, 5 Hz, 10 Hz, 20 Hz
Continuous operation	possible at air- and contact discharge
Holding time	≥ 5 sec
Pre selectable counter	1 - 9999
Discharge electrodes	in conformity to IEC / EN 61000-4-2
Energy storage capacity	150 pF ± 10%
Discharge resistor	330 Ohm ± 5%
Operation temperature range	0 - 40° Celsius
Relative humidity	0 - 60%
Weight app.	1260 g

## POWER SUPPLY:

## OPTIONS

• ESD30-FRT	Fast Rise Time Tip (.45 ns)
• ESD30-Arm	Support arm with balancer
• ESD30B-HBM	System with built in battery (same as ESD16/30)
• ESD-SPHERE-TIP	Test tip, 30 mm diameter, for Air discharge > 15 kV
• ESD-TIP-EXT	Test tip, 50 mm long with spring contact, for Contact discharge
• ESD 271	VCP – vertical coupling plate incl. Earth cable (2 x 470 kOhm)
• GRC-2M	Earth cable set incl. 2 x 470 kOhm resistor, 2m long
• CST2	ESD Verification Set 2 Ohm (4 GHz) for verification the ESD pulse
• VGP	Vertical Ground Plane for ESD Current Target Approx 4' by 4'
• ESD CONTROL	Optical set and remote software
• ESD TEST ENVIRONMENT	Turnkey setups for commercial or automotive ESD testing

Supply voltage

IN: 100-240 VAC / 47-63 Hz; OUT: 9 VAC /

## STANDARD DEFINITION ACC. IEC / EN 61000-4-2

Test-Level	Test voltage contact discharge	Rise time (± 25 %)	1. Peak current (± 15 %)	Current after 30 ns (± 30 %)	Current after 60 ns (± 30 %)
1	2 kV	0.8 ns	7.5 A	4 A	2 A
2	4 kV	0.8 ns	15.0 A	8 A	4 A
3	8 kV	0.8 ns	22.5 A	12 A	6 A
4	15 kV	0.8 ns	30.0 A	16 A	8 A

