Top Class ESD Simulation
NSG 438
The simulation of electrostatic discharges is an important part of electromagnetic compatibility testing for any type of electronic equipment. Several test standards call for elevated pulse voltages of up to 25kV. Furthermore, demanding manufacturer-specific test procedures are often used in design to determine immunity limits. The NSG 438 ESD system fulfills all these requirements comprehensively, and supports proposed future standards.

30 kV
NSG 438 generates standard discharge pulses from 200V to 30kV, in both air discharge and contact discharge operation. The full range of parameter setting possibilities for polarity, pulse repetition, counter functions, breakdown detection, etc., remains fully available, all the way up to the maximum discharge voltage setting.

Handy and ergonomic
The pistol-shaped instrument is designed to sit comfortably in the hand, with the display always clearly visible to the operator and current operating conditions constantly displayed. When NSG 438 is in battery mode, the operator has complete freedom of movement.

Conformity
NSG 438 fulfills the requirements of all known ESD standards. The basic model is type-approved and calibrated to IEC/EN 61000-4-2. A range of additional network modules is available for testing to other standards including ISO10605 and various MIL standards. An individual calibration certificate from an accredited laboratory is available on request.

Future proofing
Revisions of the ESD standards, including a more precise definition of the calibration methods and tighter specifications for the pulse parameters are being discussed by ANSI and in the IEC. NSG 438 already meets the proposed requirements.
NSG438 is simple, convenient and safe to use. The touch-sensitive display panel features a virtual thumb wheel for parameter setting. All necessary functional and parameter data are displayed, and language is user-selectable for convenient and safe operation world-wide.

Pre-programmed settings for IEC 61000-4-2 / ISO 10605 ensure that the instrument is automatically set up correctly and that the appropriate discharge network is installed. Settings can also be downloaded from a PC.

Conveniently, users can create and store test conditions in the instrument’s memory for subsequent re-use. A list of saved test conditions can be called up at any time.

Test probes can be readily exchanged with a simple twist and the various network modules simply push into place. Probes and discharge networks are coded and generate an error indication in the event of incorrect usage with a defined test.

NSG 438 comes packaged in a handy carrying case with space for accessories.

**Features**

NSG 438 detects the occurrence of a discharge and automatically updates the counter and pre-counter displays - a particularly useful feature for long test runs. The detector threshold for a valid discharge can be adjusted to suit the application. In the case of air discharges, the effective pulse voltage present at the moment of the discharge, is measured and shown on the display. This avoids the possibility of irritating errors caused by stray discharges.

For non-standard interference immunity tests, a special random generator function is provided. The controlled statistical pulse trigger can be programmed in either pulse or time mode.

**Expansion possibilities**

A wide range of accessories is available for NSG 438 including special network modules for all current standards, downloadable sets for standard tests, tripod supports for long-term tests, and a carrying bag for the base station.
Safety
The high-voltage generator can only be activated as a result of a deliberate action by the user. In all other cases, the instrument switches itself off automatically.

An integral interlock system allows for setting up accessibility and safety configurations even in combination with other test instruments, and there is an emergency stop switch.

Instrument configuration
The standard NSG 438 system consists of:

- A base unit with high-voltage generator and microprocessor-based control unit
- A pistol-shaped test head with exchangeable test probes and network modules, touch-panel display and base unit link cable
- Test-pistol cradle
- Mains adapter/battery charger
- Instrument carrying case

The touch-panel display with its virtual thumbweel for parameter setting shows precisely the functional and parameter data that is necessary at any moment, all arranged in a hierarchical manner.

The language used for the display can be selected by the user.
### Technical specifications

<table>
<thead>
<tr>
<th>Instrument type</th>
<th>ESD generator consisting of a base unit, discharge pistol, mains adapter and battery charging unit</th>
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</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>Battery or mains operation (100 - 240Vac)</td>
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<tr>
<td>Base unit</td>
<td>High voltage generator; microprocessor-based controller, optical PC interface, interlock, input/outputs for end of test, EUT-fault</td>
</tr>
<tr>
<td>Discharge pistol</td>
<td>Operating unit with touch-sensitive display panel, exchangeable test probes and networks, trigger button</td>
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</tbody>
</table>
| Pulse specifications    | IEC/EN 61000-4-2 with standard network (150pF/330Ω)  
ISO 10605 with network INA 4381 (150pF/2kΩ) and INA 4382 (330pF/2kΩ)  
Others according to requirements |
| Discharge voltage       | 200V to 30kV for air discharge and contact discharge, programmable in 100V steps               |
| Pulse polarity          | Positive, negative, automatic switching                                                         |
| Pulse repetition        | Single pulse; continuous at 0.5, 1, 5, 10, 20 & 25Hz; statistical distribution in 2 modes       |
| Voltage measurement     | Dynamic discharge voltage measurement in air discharge mode                                       |
| Discharge detection     | With adjustable threshold                                                                       |
| Pulse counter           | Forward pulse counter or backward as a preset counter, up to 9999 pulses                       |
| Pulse triggering        | Trigger-button, or remote control signal                                                        |
| Touch-panel display     | Back-lit display with touch-sensitive control surfaces and a virtual thumbweel, used to monitor and set up all the instrument's functions:  
Discharge voltage, type of discharge, polarity, repetition rate, counter/preset counter, memory, language, instrument status, detector threshold, etc. |
| Test program memory     | Preset test data to IEC, ISO or other standards.  
Store and recall of 8 complete user defined tests                                             |
| Weight                  | Base unit: 6.5 kg; Discharge pistol (w/o cable) 1.2 kg                                          |
| Environmental conditions| 5 to 40°C (40 to 105°F); 20 to 80% rh (non condensing); 68 to 106kPa                           |
| Certification           | To EN 61326-1, EN 61000-6-2, EN 61000-6-3                                                       |

**ESD Mobile case**

**NSG 438 secured in INA 4421 tripod support**
Ordering Information

NSG 438  Basic equipment set consisting of:
Base unit
Discharge pistol with 2 test probes, discharge network complying with
IEC/EN 61000-4-2
Cradle for discharge pistol
Mains adapter / charging unit, 80-240Vac
Carrying case
User manual

Accessories
INA 4381  Discharge network ISO 10605, 150pF/2kΩ
INA 4382  Discharge network ISO 10605, 330pF/2kΩ
INA 4383  Discharge network ANSI C63.16,150pF/330Ω
INA 4384  Discharge network ANSI C63.16,150pF/75Ω
INA 4385  Discharge network ANSI C63.16,150pF/15Ω
xxx  Special discharge networks: specify standard and/or values of R & C
INA 4411  Fast risetime test tip
INA 4421  Tripod support
INA 4422  Carry-bag for the base unit
INA 417  Opto-link to a PC with 5m opto-cable
MD 101  ESD measurement target conforming to IEC 61000-4-2