

# ESD Simulator System

Top Class ESD Simulation  
NSG 438



**SCHAFFNER**

EMC SYSTEMS

# NSG 438 ESD Simulator System

## Top class ESD simulation

- **Air and contact discharge 0.2 to 30 kV**
- **Touch panel display controlled**
- **Battery powered**
- **Compliant with all known standards (IEC, ANSI, SAE, ISO, Mil etc)**
- **Interchangeable network modules**
- **Discharge detector**



The simulation of electrostatic discharges is one of the most important tests necessary to ensure the electromagnetic compatibility of any type of electronic equipment. Several test standards call for elevated pulse voltages of up to 25kV. Furthermore, manufacturer-specific test procedures pursue the most severe degrees of testing, in order to determine and to raise the interference immunity limits of products and systems. The NSG 438 ESD system fulfils all these requirements comprehensively, and supports proposed future standards.

### 30 kV

The NSG 438 generates standard-conform discharge pulses of 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 instrument benefits from a tried and tested configuration. Being well-balanced and pistol-shaped ensures that it is natural and comfortable in use. The control elements and display can always be seen by the operator, current operating conditions are constantly displayed. When operated in battery mode, optimal autonomy and freedom of movement are provided.

### Conformity

The NSG 438 fulfils the requirements of all known ESD standards. The basic model is type approved and calibrated in conformity with IEC/EN 61000-4-2. By adding appropriate network modules, other standards can be accommodated such as ISO 10605, which calls for elevated pulse voltages of up to 25kV, as well as various MIL standards. Other applications can be accommodated through the use of special networks. Upon request, the instruments can be delivered with an individual calibration certificate from an accredited laboratory.

### Future Proofing

Industry specialists are currently working on a revision of the ESD standards and have sent recommendations for consideration to ANSI and the IEC. The proposals concern both, a more precise definition of the calibration methods, in addition to a tightening of the specifications pertaining to the pulse parameters themselves. The NSG 438 system already meets these proposed requirements.





**User Friendliness**



The instrument's design is based on a simple, convenient and safe to use concept. The touch-panel display, with its virtual thumbwheel for parameter setting, shows precisely the functional and parameter data that is required at any time, and all settings are

arranged in a hierarchical manner. The language used for the display can be selected by the user.

Pre-programmed settings for IEC 61000-4-2, ISO 10605 ensure that the correct settings are made automatically, including the choice of the appropriate discharge network. Other combinations of standard settings can be downloaded via the PC interface, according to need.



Conveniently, users can store self-created test conditions in the instrument's memory for subsequent re-use. The complete set of test conditions can be called up on the display 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. The NSG 438 comes packaged in a handy carrying case with room for all relevant accessories.

**Features**

A range of user-friendly technical features increases the usability of the instrument. The NSG 438 detects the occurrence of a

discharge thereby preventing the counter or pre-selection counter from delivering confusing information. This is a particular advantage especially in long-term 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 - irritating errors through stray discharges are consequently avoided.

For alternative interference immunity tests, a special random generator function is provided to give a controlled statistical pulse triggering which can be programmed in either pulse or time mode.

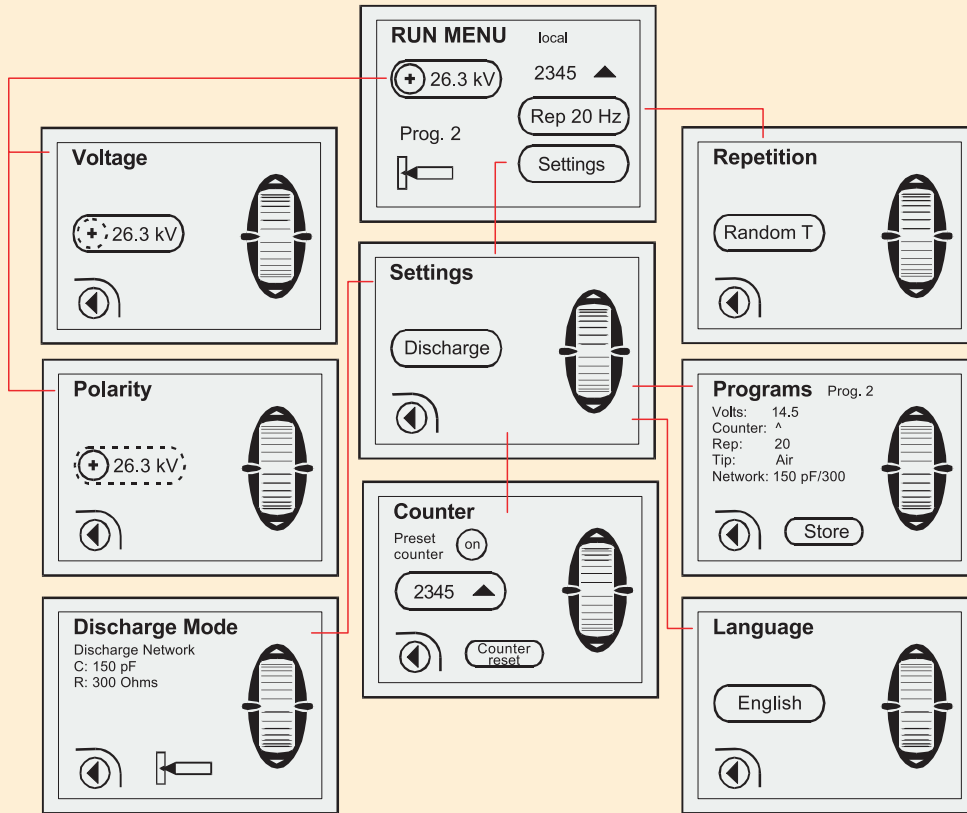
**Expansion Possibilities**

Applications and operation are expanded by accessories, such as 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 to boost portability.





## ESD User Interface



### Safety

The instrument's convenience of operation is enhanced through carefully designed safety elements. For example, it will only activate the high-voltage generator as a result of 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. The incorporation of an emergency stop switch completes the safety arrangements.

### Instrument Configuration

The standard NSG 438 system consists of:

- A base unit together 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 link cable to the base unit
- Test-pistol cradle
- Mains adapter/battery charger
- Instrument carrying case

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

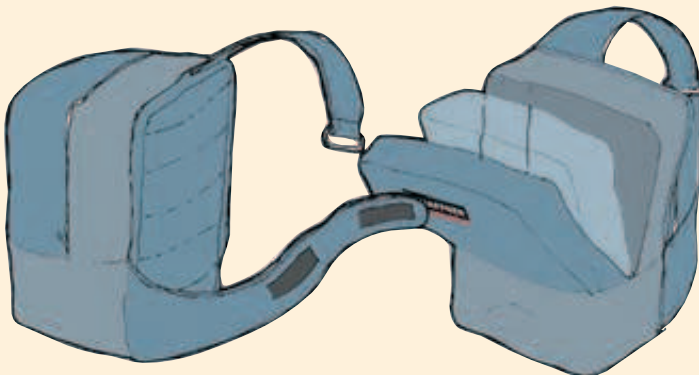
The language used for the display can be selected by the user.



## Technical specifications

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

**ESD Mobile case**



**NSG 438 secured in INA 4221 tripod support**



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## 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 Hand model**

**INA 4384**

**Discharge network ANSI Furniture model**

**xxx**

**Special discharge networks: specify standard and 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**

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