



# NSG 3040 THE SMART 4 KV SOLUTION FOR CE APPLICATIONS



- **Modular, expandable system**
- **Surge voltage to 4.4 kV**
- **EFT/Burst to 4.8 kV / 1 MHz**
- **PQT to 16 A / 270 VAC & DC**
- **Easy to use 7" color touch screen**
- **Parameters can be changed while test is running**
- **Wide range of optional test accessories**

**Teseq's new NSG 3040 is an easy-to-use multifunction generator** that simulates electromagnetic interference effects for immunity testing in conformity with international, national and manufacturers' standards including the latest IEC/EN standards. The NSG 3040 system is designed to fulfill conducted EMC test requirements for CE mark testing, which generally include combination wave surge, Electrical Fast Transient (EFT) pulses and Power Quality Testing (PQT). Extensive expansion capabilities enable the system to be configured for a much broader range of applications.

**Featuring an innovative, modular design**, the NSG 3040 is a versatile system that can be configured for basic testing needs and expanded to meet the needs of sophisticated test laboratories.

**Using state-of-the-art components**, the self-contained modules set new standards with respect to switching and phase accuracy and exceed the existing standards' requirements.

**A 7" touch panel display with superb contrast and color** makes controlling the NSG 3040 easy. For fast and efficient data entry, input devices include an integrated keyboard and a thumbwheel with additional keys for sensitivity adjustment. To achieve quick, reliable results in a development environment a standardized test can be initiated with just a few "clicks" using the integrated Test Assistance (TA) function.

**Convenient touch input buttons** make each parameter's value highly visible and allow the user to quickly select and modify all settings. A stylus is not necessary, and ramp functions can be programmed quickly and easily. Multi-step test procedures can be created and their sequence or parameter values can be changed easily.

**With expert mode users can make manual parameter changes** using the thumbwheel while a test is under way, providing an effective and fast method for identifying critical threshold values.

**The NSG 3040 has an Ethernet port for external PC control.** The Windows-based control software simplifies test programming and compilation of complex test sequences with various types of tests. Test reports can be generated during the test operation, allowing the operator to enter observations as the test progresses and increasing the efficiency of long-term tests.

# **NSG 3040**

## **THE SMART 4 KV SOLUTION FOR CE APPLICATIONS**

The NSG 3040 performs tests according to the following specifications:

### **Combination wave pulse 1, 2/50 - 8/20 $\mu$ s (Hybrid-Surge pulse)**

Pulse conforms to IEC/EN 61000-4-5

<b>Parameter</b>	<b>Value</b>
Pulse voltage (open circuit):	$\pm$ 200 V to 4.4 kV (in 1 V steps)
Pulse current (short circuit):	$\pm$ 100 A to 2.2 kA
Impedance:	2/12 $\Omega$
Polarity:	positive / negative / alternate
Pulse repetition:	10 s, up to 600 s (in 1 s steps)
Test duration:	1 to 9999 pulses, continuous
Phase synchronization:	asynchronous, synchronous 0 to 359° (in 1° steps)
Coupling:	IEC/external

### **Burst (EFT) 5/50 ns**

Pulse conforms to IEC/EN 61000-4-4

<b>Parameter</b>	<b>Value</b>
Pulse amplitude:	$\pm$ 200 V to 4.8 kV (in 1 V steps) - open circuit $\pm$ 100 V to 2.4 kV (50 $\Omega$ matching system)
Burst frequency:	100 Hz to 1000 kHz
Polarity:	positive / negative / alternate
Repetition time:	1 ms to 4200 s (70 min)
Burst time:	1 $\mu$ s to 1999 s, single pulse, continuous
Test duration:	1 s to 1000 h
Phase synchronization:	asynchronous, synchronous 0 to 359° (in 1° steps)
Coupling:	IEC/external

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### Dips & Interrupts

conforms to IEC/EN 61000-4-11, IEC/EN 61000-4-29

Parameter	Value
Dips & Interrupts:	From EUT voltage input to 0 V, 0% <sup>(1)</sup>
Uvar with optional variac:	depending on model (VAR 3005)
Uvar with step transformer:	0, 40, 70, 80% (INA 650x)
Peak inrush current capability:	500 A (at 230 V)
Switching times:	1 to 5 $\mu$ s (100 $\Omega$ load)
Event time (T-Event):	20 $\mu$ s to 1999 s, 1 to 99'999 cycles
Test duration:	1 s to 70'000 min, 1 to 99'999 pulse, continuous
Repetition time:	40 $\mu$ s to 35 min, 1 to 99'999 cycles
Phase synchronization:	asynchronous, synchronous 0 to 359° (in 1° steps)

(1) In combination with VAR 3005, effective minimal dip voltage ~8 V. As specified in IEC 61000-4-11, chapt. 5.1 a test voltage level from 0% to 20% of the rated voltage is considered as a total interruption.

### Variation test (with VAR 3005 only)

conforms to IEC/EN 61000-4-11

Parameter	Value
Uvar with optional variac:	up to 265 V (in 1 V steps) or up to 115% U <sub>in</sub> (in 1% steps)
Repetition time:	1'000 ms to 35 min, 1 to 99'999 cycles
Decreasing time T <sub>d</sub> :	1 ms to 5 s, 1 to 250 cycles for 50 Hz 1 to 300 cycles for 60 Hz, abrupt
Time at reduced voltage T <sub>s</sub> :	10 ms to 10 s, 1 to 250 cycles for 50 Hz 1 to 300 cycles for 60 Hz
Increasing time T <sub>i</sub> :	10 ms to 5 s, 1 to 250 cycles for 50 Hz 1 to 300 cycles for 60 Hz
Test duration:	1 s to 99'999 s, 1 min. to 70'000 min. 1 to 99'999 pulse, Continuous
Phase synchronization:	asynchronous, synchronous 0 to 359° (in 1° steps)

### Pulsed magnetic field in conjunction with INA 753 and INA 701 or 702

conforms to IEC/EN 61000-4-9

Parameter	Value
Field:	1 to 1200 A/m (in 1 A/m steps)
Polarity:	positive / negative / alternate
Repetition time:	5 s to 10 min (in 1 s steps)
Impedance:	2 $\Omega$
Coil factor:	0.01 to 50.00
Test duration:	1 to 9'999 pulses, continuous
Phase synchronization:	asynchronous, synchronous 0 to 359° (in 1° steps)

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**Power magnetic field in conjunction with MFO 6501 / MFO 6502 and INA 701, 702 & 703**  
conforms to IEC/EN 61000-4-8

Field:	1 to max. 40 A/m (in 1 A/m steps)
Frequency:	50/60 Hz
Coil factor:	0.01 to 99.99
Test duration:	1 to 9'999 pulses, continuous

### Internal coupling network

Parameter	Value
Instrument supply:	85 to 265 VAC, 50/60 Hz
Decoupling attenuation:	Remanent pulse 15% max. Mains side crosstalk 15% max.
Mains decoupling:	1.5 mH 0% + 35%
Connections:	Back panel: EUT supply: Harting connector Additional ground connector Instrument supply 230/115 VAC Front panel: EUT connector IEC 320 HV coaxial Connector surge high & low
EUT supply:	1-phase
EUT VAC:	Up to 270 Vrms *, 50/60 Hz (phase - neutral)
EUT VDC:	Up to 270 VDC
EUT current	1 x 16 Arms continuous (over heat protected) 1 x 25 Arms for 15 min
EFT (Burst)	Standard coupling all lines to ref ground (GND) IEC/EN 61000-4-4 L, N, PE           ⇒ ref GND
	Any lines and combinations to ref GND: L                    ⇒ ref GND N                    ⇒ ref GND PE                  ⇒ ref GND L, N                ⇒ ref GND L, PE              ⇒ ref GND N, PE              ⇒ ref GND
PQT:	Dips & interrupts to phase L

\* Below 24 VAC synchronisation not guaranteed, asynchronous mode only

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### Dimensions/weight

Dimensions NSG 3040:	449 (17.7") x 226 (8.9"; 5 HU) x 565 mm (22.2") (W x H x D)
Weight NSG 3040:	approx. 29 kg (64 lbs)

### Options

Type	Description
CDN 3043-x32	Three phase automatic coupling decoupling networks, 480 V/32 A
CDN 3425	Burst EFT capacitive coupling clamp for data line coupling per IEC 61000-4
CDN 117/118	Coupling networks for signal-/data lines (surge)
CDN HSS-2	Coupling network for 2 kV surge pulse 1.2/50 $\mu$ s IEC/EN 61000-4-5 on unshielded symmetrical high speed telecom lines (Ethernet)
CAS 3025	Burst/EFT verification set
MD 200/200A	Voltage differential probe 3.5 kV/7 kV
MD 300	Current probe 5 kA
INA 166	Brackets 5 HU for rack mounting

### Accessories for IEC/EN 61000-4-11

Type	Description
INA 6501	Manual step transformer, 16 AAC, 0/40/70/80%
INA 6502	Automatic step transformer, 16 AAC, 0/40/70/80%
VAR 3005-S16	Automatic single variable transformer, 1 x 16 A
VAR 3005-D16	Automatic double variable transformer, 2 x 16 A

### Accessories for IEC/EN 61000-4-8/-4-9

Type	Description
MFO 6501	Manual magnetic field option -4-8
MFO 6502	Automatic magnetic field option -4-8
INA 701	Magnetic field coil 1 x 1 m; with MFO max. 3.6 A/m -4-8; Surge* max. 1200 A/m -4-9
INA 702	Magnetic field coil 1 x 1 m, with MFO max. 40 A/m -4-8; Surge* max. 1200 A/m -4-9 *) Pulse shape adapter INA 753 needed to surge generator
INA 703	Magnetic field coil 1 x 1 m; max. 330 A/m -4-8
INA 753	Pulse shape adapter for IEC 61000-4-9

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