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/260 VAC & DC**
- **Easy to use 7" color touch screen**
- **TA (Test Assistance) provides fast standard test settings**
- **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. Teseq's well proven "Master-Slave" architecture enables individual pulse modules to be calibrated separately, with calibration data and correction factors stored on the slave controller. New modules can be easily installed with no need to return the entire system for calibration.

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.

An easily accessible SD memory card allows firmware downloads to be performed quickly and tests to be saved. In the rare case that the storage space is not sufficient, the card can be replaced by a commercially available SD memory card and existing test files can be easily copied onto the larger SD card.

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.

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The NSG 3040 performs tests according to the following specifications:

Combination wave pulse 1, 2/50 - 8/20 µs (Hybrid-Surge pulse)
Pulse conforms to IEC/EN 61000-4-5

Parameter	Value
Pulse voltage (open circuit):	±200 V to 4.4 kV (in 1 V steps)
Pulse current (short circuit):	±100 A to 2.2 kA
Impedance:	2/12 Ω
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:	external / internal

Burst (EFT) 5/50 ns
Pulse conforms to IEC/EN 61000-4-4

Parameter	Value
Pulse amplitude:	±200 V to 4.8 kV (in 1 V steps) - open circuit ±100 V to 2.4 kV (50 Ω 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 µs to 1999 s, single pulse, continuous
Test duration:	1 s to 1000 h
Phase synchronization:	asynchronous, synchronous 0 to 359° (in 1° steps)
Coupling:	external / internal

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Dips & drops
conforms to IEC/EN 61000-4-11, IEC/EN 61000-4-29

Parameter	Value
Dips & drops:	From EUT voltage input to 0 V, 0%
Uvar with optional variac:	depending on model (VAR 650x)
Uvar with step transformer:	0, 40, 70, 80% (INA 650x)
Peak inrush current capability:	500 A (at 230 V)
Switching times:	1 to 5 µs (100 Ω load)
Event time:	20 µs to 1999 s, 1 to 99'999 cycles
Test duration:	1 s to 70'000 min, 1 to 99'999 events, continuous
Repetition time:	40 µs to 35 min, 1 to 99'999 cycles
Phase synchronization:	asynchronous, synchronous 0 to 359° (in 1° steps)

Variation test (with VAR 65xx only)
conforms to IEC/EN 61000-4-11

Parameter	Value
Uvar with optional variac:	0 to 265 V (in 1 V steps), 0 to 115% (in 1% steps)
Repetition time:	1 ms to 35 min, 1 to 99'999 cycles
Test duration:	1 ms to 5 s, 1 to 250 cycles (50 Hz); 1 to 300 cycles (60 Hz), abrupt
Repetition time:	10 ms to 10 s, 1 to 250 cycles (50 Hz), 1 to 300 cycles (60 Hz)
Test duration:	1 s to 99'999 min, 1 to 99'999 events, 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 Ω
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 70x
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**
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:	24 to 260 Vrms, 50/60 Hz (phase - neutral), 400 Hz max.
EUT VDC:	0 to 260 VDC
EUT current	1 x 16 Arms continuous (temperature controlled) 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 & drops to phase L

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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. 25 kg (55 lbs)

Options

Type	Description
CDN 8014/8015	Capacitive coupling clamp for burst
CDN 163	Burst coupling network 100 A per phase (coupling all to ref ground)
CDN 117/118	Coupling networks for signal-/data lines (surge)
CAS 3025	Burst/EFT verification set
MD 200	Voltage differential probe 7 kV
MD 300	Current probe 5 kA
INA 165	Conducted stand-off
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 6501	Automatic variable transformer, 7.5 A
VAR 6502	Automatic variable transformer, 2 x 16 A
VAR 6503	Manual variable transformer, 7.5 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 753	Pulse shape adapter

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