NSG 3060
THE MODULAR SOLUTION FOR 6 KV APPLICATIONS

- **Modular, expandable system**
- **Surge voltage to 6.6 kV for over-testing**
- **Easy to use 7" color touch screen**
- **IEC and ANSI coupling methods**
- **TA (Test Assistance) provides fast standard test settings**
- **Parameters can be changed while test is running**
- **Wide range of optional test accessories**
- **High accuracy switching technology meets ANSI coupling requirements**

Teseq's new NSG 3060 conducted immunity generator takes the proven, user-friendly design of the highly successful Modula series to a new level. This innovative design uses modular architecture to provide a versatile system that can be configured for basic testing needs and expanded to meet the needs of sophisticated test laboratories.

Designed to fulfill requirements for CE mark and ANSI C62.41 testing, the NSG 3060 performs tests for Combination wave surge, Ring wave and Electrical Fast Transient (EFT) pulses as well as Power Quality Testing (PQT). Extensive expansion capabilities enable the system to be configured for a much broader range of applications.

New pulse generator modules can be added to the original system quickly and easily with the NSG 3060's unique "Master-Slave" concept. This technology allows individual pulse modules to be calibrated separately with the calibration data and correction factors stored on the slave controller. New modules can be 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. With its powerful processors, the NSG 3060 can completely fulfill the unique coupling requirements specified by ANSI C62.41. This standard requires that the pulse amplitude be adjusted for the phase position of the pulse on the AC mains, and for the amplitude of the mains voltage.

A 7" touch panel display with superb contrast and color is the most striking feature of the new NSG 3060. For fast and efficient data entry, input devices include an integrated keyboard and a thumbwheel with additional keys for sensitivity adjustment.

The user-friendly graphic display speeds test setup. Each parameter's value is highly visible and all settings can be quickly selected and modified with the generously sized touch input buttons. A stylus is not necessary, and ramp functions are programmed quickly and easily. Multi-step test procedures can be created and their sequence or parameter values 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 Test Assistance (TA) function allows users to initiate standardized test with just a few "clicks" to achieve quick, reliable results in a development environment.

An easily accessible SD memory card allows firmware downloads to be performed quickly and tests to be saved. In the rare case that 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.

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The NSG 3060 has an Ethernet port for external PC control. The Windows-based control software simplifies test programming and allows compilation of complex test sequences with diverse pulse types. 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.

The NSG 3060 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 and ANSI (IEEE) 62.41

Parameter	Value
Pulse voltage (open circuit):	±200 V to 6.6 kV (in 1 V steps)
Pulse current (short circuit):	±100 A to 3.3 kA
Impedance:	2/12 Ω
Polarity:	positive / negative / alternate
Pulse repetition:	5* to 20 s, up to 600 s (in 1 s steps) * derated depending on selected pulse voltage and EUT supply voltage
Test duration:	1 to 9999 pulses, continuous
Phase synchronization:	asynchronous, synchronous 0 to 359° (in 1° steps)
Coupling:	ANSI / IEC / external

Ringwave 0.5 µs/100 kHz
Pulse conforms to IEC/EN 61000-4-12 and ANSI (IEEE) C62.41

Parameter	Value
Pulse voltage (open circuit):	± 200 V to 6.6 kV (in 1 V steps)
Pulse current (short circuit):	±16.6 to ±550 A, ±10% ±6.6 to ±220 A, ±10% ±1 to ±33 A, ±10%
Impedance:	12/30/200 Ω
Polarity:	positive / negative / alternate
Pulse repetition:	5* to 20 s, up to 600 s (in 1 s steps) * derated depending on selected pulse voltage and EUT supply voltage
Test duration:	1 to 9999 pulses, continuous
Phase synchronization:	asynchronous, synchronous 0 to 359° (in 1° steps)
Coupling:	ANSI / IEC / external

Teseq AG
Nordstrasse 11F 4542 Luterbach Switzerland
T +41 32 681 40 40 F +41 32 681 40 48
sales@teseq.com **www.teseq.com**

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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 synchonization:	asynchronous, synchronous 0 to 359° (in 1° steps)
Coupling:	ANSI / IEC / external

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

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
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)

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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)

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

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Coupling networks CDN 3061

Parameter	Value
Instrument supply:	230/115 VAC
Decoupling attenuation:	Remanent pulse 15% max. Mains side crosstalk 15% max.
Mains decoupling:	1.5 mH 0% + 35%
Connections:	Pulse input from generator Cable connector for EUT supply Power inlet for CDN
EUT supply:	1-phase
EUT VAC:	24 to 270 Vrms, 50/60 Hz (phase - neutral), 400 Hz max.
EUT VDC:	0 to 270 VDC
EUT current	1 x 16 Arms continuous (temperature controlled) 1 x 25 Arms for 30 min
EFT (Burst)	Standard coupling all lines to ref ground (GND) IEC/EN 61000-4-4 and ANSI (IEEE) C62.41 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
Combination wave pulse:	IEC/EN 61000-4-5 Line to line (2 Ω) N ⇨ L / L ⇨PE / N ⇨ PE Lines to ground (12 Ω) L ⇨ PE / N ⇨ PE / L, N ⇨ PE
Combination wave & ring wave:	ANSI (IEEE) C62.41 Basic 1 & 2 L, N ⇨ PE & L ⇨ N Supplemetal 1 & 2 N ⇨ PE & L ⇨ PE Diagnostic 1 & 2 N, PE ⇨ L & L, PE ⇨ N
Ring wave:	IEC/EN 61000-4-12 12/30/200 Ω N ⇨ L / L ⇨ PE / N ⇨ PE L ⇨ PE / N ⇨ PE / L, N ⇨ PE
PQT:	Dips & drops to phase L

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Dimensions/weight	
Dimensions NSG 3060 W x H x D:	449 (17.7") x 328 (12.9"; 7 HU) x 565 mm (22.2")
Weight NSG 3060:	22 kg (48.5 lbs)
Dimensions CDN 3061-C16 WxHxD:	449 mm (17.7") x 226 mm (8.9"; 5 HU) x 565 mm (22.2")
Weight CDN 3061-C16:	20 kg (44 lbs)
Options	
CDN 3063-C32	Combined surge & burst coupling network for 480 VAC Ph-Ph, 32 A
CDN 3063-C63	Combined surge & burst coupling network for 480 VAC Ph-Ph, 63 A
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 200A	Voltage differential probe 7 kV
MD 300	Current probe 5 kA
Accessories for IEC/EN 61000-4-11	
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	
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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