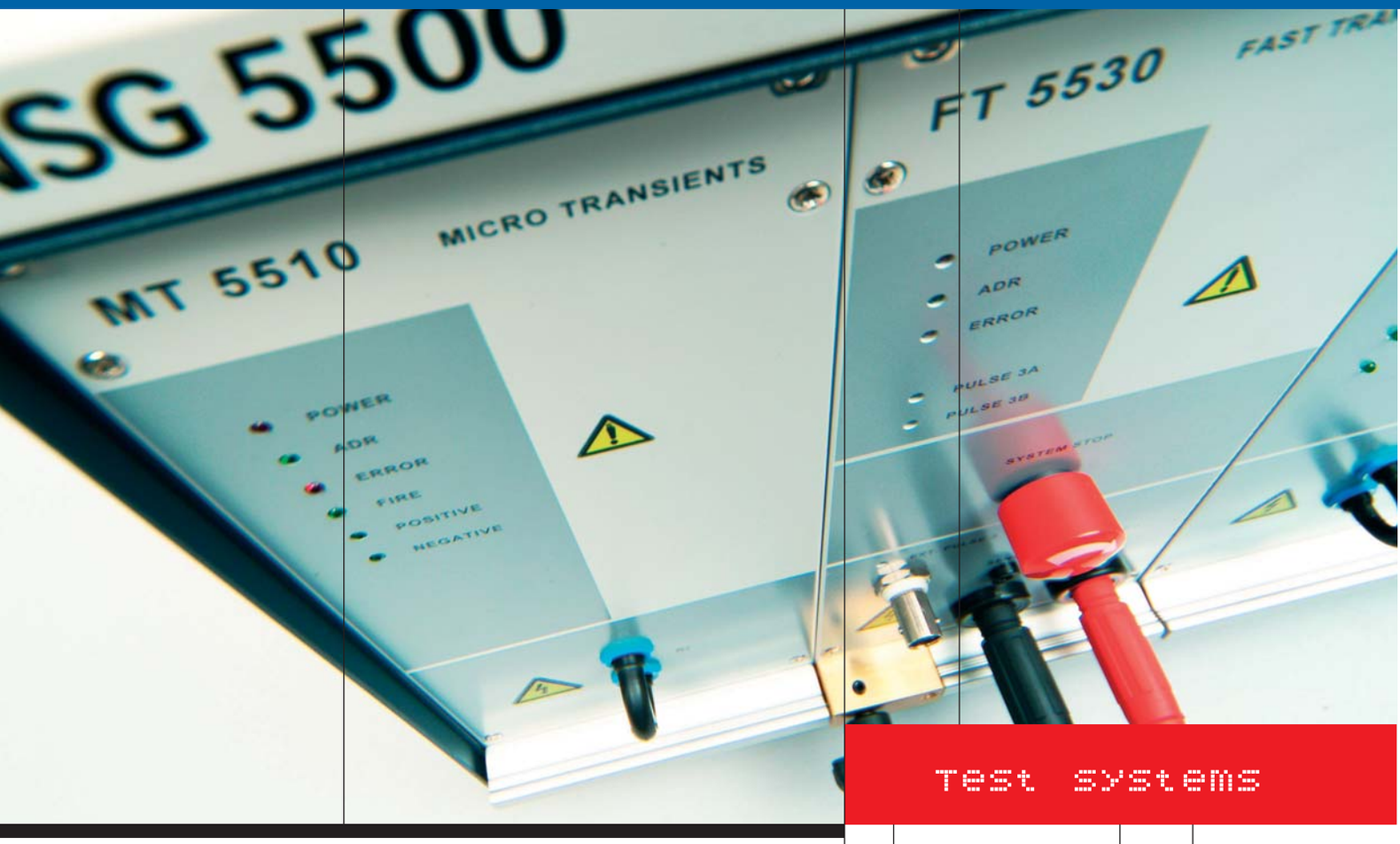


NSG 5500
Automotive transient immunity tests

SCHAFFNER
safety for electronic systems

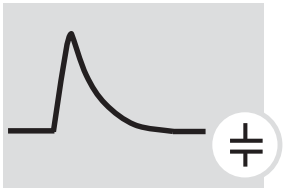
NSG 5500
Automotive transient immunity tests

The compact and modular NSG 5500 solution offers the generators necessary for tests with capacitive discharge pulsed interference as called for by ISO, SAE, DIN and JASO, and others. The established test specifications for passenger cars together with the new standards for commercial vehicles published by these international and other bodies are fully covered, as are the most company-specific standards from vehicle manufacturers.

NSG 5500 system. This compact mainframe houses the common system components and accommodates the standard pulse generators. All testing is available from one output connector. An electronic switch to connect and disconnect the battery supply is incorporated in the NSG 5500. Additional inputs and outputs are located on the rear panel for test execution control purposes and the monitoring of error signals, oscilloscope triggers, gate start/stop commands, etc. Overall control is via a PC running AutoStar™ under Windows.

NSG 5500 modules. The NSG 5500 offers unprecedented flexibility for transient testing. Schaffner has designed a solution with various transients in one modular and upgradeable chassis. The basic ISO 7637 tests for pulse 1, 2a, 3, 5, 6 and 7 and variants are integrated into the same chassis. Optional pulse 4 and pulse 2b control is available, however, use with the NSG 5600 offers several benefits over this budget solution. Additionally, when standards change, as they do every year, the NSG 5500 system may be upgraded with different modules so that your new and old modules may both be retained, either exchanged with new Gemini modules or loaded into an optional expansion chassis. Based on our exclusive Gemini technology, Schaffner offers the most flexible and upgradeable system in the world to protect the users' investment in test equipment.

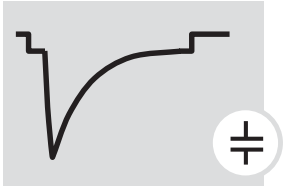
All NSG 5500 generators are calibrated in accordance with ISO 7637-2:2004 or manufacturer-specific standards. Schaffner continues to maintain backwards compatibility and yet push the state of the art for EMC immunity testing.



Based on our exclusive Gemini technology, Schaffner offers the most flexible and upgradeable system to protect the users' investment.

Technical specifications NSG 5500

Instrument power supply:	100 - 120VAC ±10%, 47 - 63Hz
	220 - 240VAC ±10%, 47 - 63Hz
Dimensions:	19" desktop housing (rack mountable),
	height 330mm (13"), depth 510mm (20")
EUT supply:	From an external source, e.g. battery or PA 5840
	power amplifier/battery simulator
Computer interface:	IEEE 488 (recommended) or RS232
Auxiliary input signals:	DUT FAIL / START-STOP
Auxiliary output signals:	CRO-TRIG / TEST-END
Input DC voltage range:	60V max.
DC current:	100A (250A for 200ms)
Switch On/Off time:	2µs



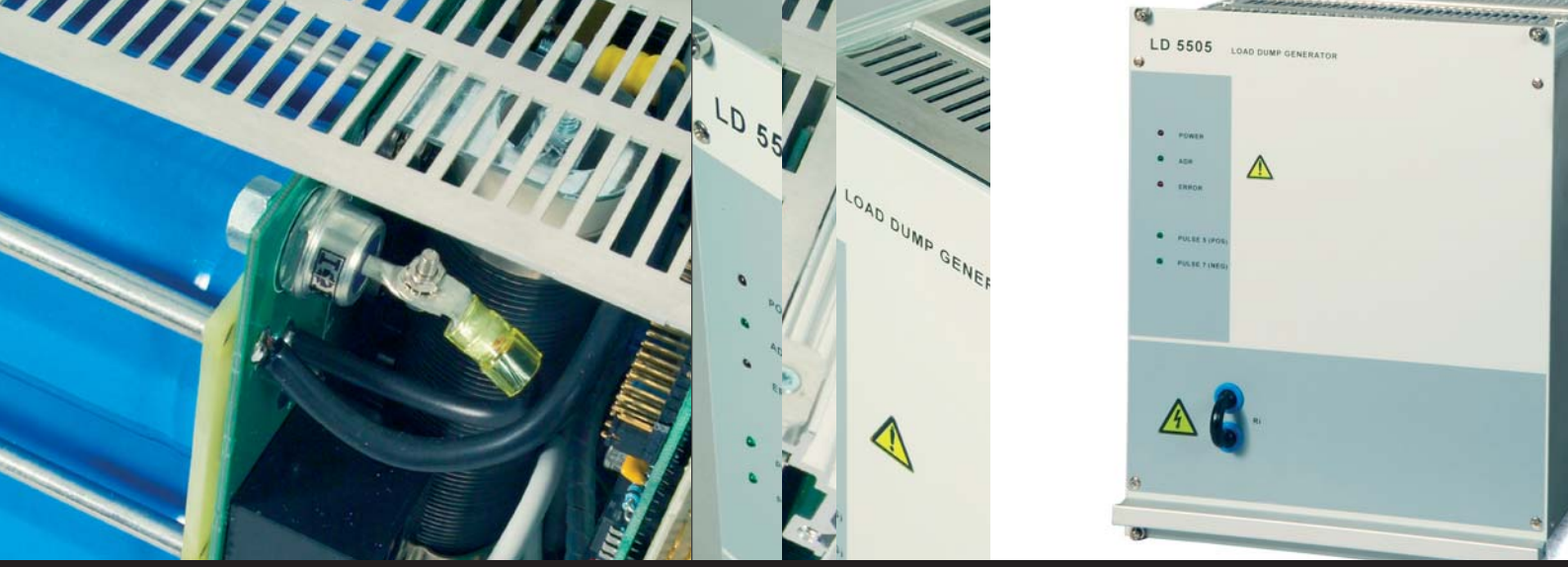
MT 5510

Transient generator
ISO pulse 1, 2, 6 and variants

Switching actions with inductive and other loads influenced by complex inductances of the wiring harness all create disturbances that must be simulated. ISO and SAE have defined these tests as pulse 1, 2 and 6. The MT 5510 produces these test pulses in conformance with the relevant standard. In order to be able to cope with a company's own test methods, the generator module also provides a much greater range of selectable parameters, considerably higher test voltages, additional impedances and pulse widths.

Technical specifications MT 5510

Pulse	Amplitude [V]	Impedance [Ω]	Rise time [µs]	Pulse duration	Repetition [s]
Pulse 1	-20 to -200	10, 20, 50	1 or 3	2ms	0.5 - 5
	-150 to -600	20	1	1ms	0.5 - 5
	-12 to -220	2, 10, 50	1	50µs	0.2 - 5
Pulse 1 (24V)	-150 to -600	50	3	1ms	0.5 - 5
Pulse 2	12 to 220	2, 10, 20, 50	1	50µs	0.2 - 5
Pulse 6	-10 to -350	30	<60	300µs	0.5 - 15
CI 220	-20 to -110	10	1	2ms	0.5 - 5
	-30 to -300	4	1	50µs	0.2 - 5
	20 to 150	4	1	50µs	0.2 - 5



LD 5505
Load dump generator

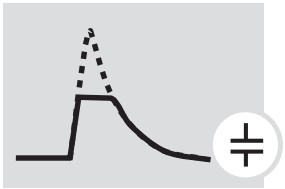
The only load dump generator capable of the full range of pulses required by most standards.

Alternators produce a high-energy (load dump) pulse on a vehicle's power harness when the battery is disconnected. The LD 5505 simulates the corresponding pulse 5 specified by numerous standards, and the clamped load dump pulse 5b. Some vehicle manufacturers have expanded upon these specifications - in most cases by making them more stringent. The generator takes this into account.

Contrary to the classic concept, the unit is built around an active pulse shaping circuit. While still compliant with ISO 7637-2 Annex E, this is the best and most cost-effective method to reach the full range of pulse requirements. For example, ISO 7637-2 requires 40 - 400ms, which the LD 5505 meets easily. Other manufacturer may utilize older technology, take shortcuts and do not allow the full range as required by the standards. Schaffner's advanced technology also enables much greater variability of the pulse parameters to be achieved and facilitates better reproducibility. The RM 5505 impedance box is available, which sets up the generator impedance using a bank of power resistors.

Technical specifications LD 5505

Pulse amplitude:	20 - 200V in 0.5V steps
Clamping:	18 - 180V
Impedance:	According to resistor installed, the optional RM 5505 has available 0.5 - 10Ω in 0.25Ω steps
Pulse rise time:	0.1 - 10ms
Pulse duration:	30 - 700ms in 1ms steps
Pulse repetition:	15 - 600s in 0.1s steps
Pulse modes:	Single, continuous, programmed 1 to 99,999



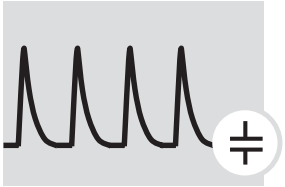
FT 5530
EFT generator
ISO pulse 3a/3b and variants

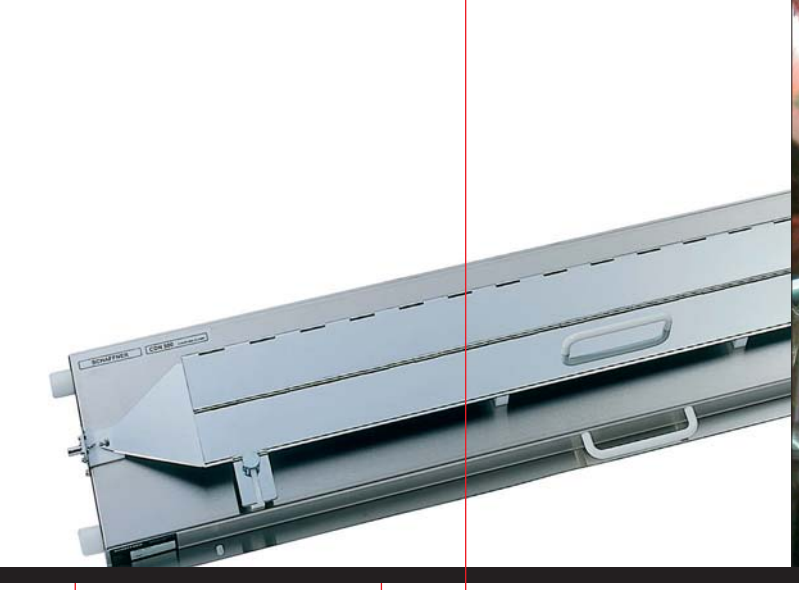
The only fast transient generator featuring both 100ns and 150ns pulse widths to cover the full range of standards.

The FT 5530 simulates fast transient interference injected onto a vehicle's electrical network through switching processes influenced by the wiring harness that can affect the correct operation of electronic units. The FT 5530 simulates EFT bursts with pulse widths of 100 or 150ns in conformance with the standards for pulse 3a/3b interference phenomena. The EFT generator more than meets the automotive industry's increasing demands with its technical properties exceeding the specifications laid down in the standards by several factors: higher pulse voltages, burst frequencies and pulse variations and other burst specifications including functions for weak spot analyses during long-term trials.

Technical specifications FT 5530

Pulse amplitude:	25 - 800V in 1V steps lower voltages also programmable
Impedance:	50Ω
Pulse rise time:	5ns
Pulse duration:	100ns ±10% and 150ns ±20%
Burst frequency:	1 - 100kHz in 0.1kHz steps
Pulse per burst:	1 - 200
Burst repetition:	90ms - 99.9s in 10ms steps
Pulse modes:	Single, continuous, programmed 1 - 99,999





CDN 500
Capacitive coupling clamp

Capacitive coupling clamp manufactured exactly in accordance with ISO 7637-3.

The coupling clamp CDN 500 is manufactured exactly in accordance with the drawings and specifications of ISO 7637-3 for capacitively coupling the transients onto cables and wiring harnesses. With its characteristic impedance of 50Ω, the CDN 500 coupling clamp is connected to the generator via a coaxial cable and terminated on the far side with a 50Ω load resistor. A suitable terminating load is available as an accessory under the type number INA 5030, which also provides a measurement output via a 40dB attenuator. The coupling clamp will accept ribbon cables as well as round cables of up to 40mm diameter. The effective coupling capacitance depends on the cross section and the material of the cable used; a typical value being around 100pF.

Technical specifications CDN 500

Typical coupling capacitance:	100pF approx. (200pF max.)
Active length:	1000mm (39.4”)
Diameter of round cables:	40mm (1.6”) max.
Breakdown voltage:	>500V
Characteristic impedance:	50Ω ±10%
Connectors:	50Ω BNC (1 each side)
Dimensions:	L x W x H 1300 x 300 x 106mm (51.2 x 11.8 x 4.2”)
Weight:	11.5kg (25lbs) approx.
Construction:	Brass with plated surface; coupling panel with roller hinges for precise positioning

safety for electronic systems

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