

Pulse Generator Burst / Surge type HILO CAR-TEST-SYSTEM 14

Optional CAR-Transient Emission TE14
for testing according to ISO 7637

The relating standards:

ISO 7637
ISO 16750
ISO 21848
FMC1278
JLR-EMC-CSv1.04A

Test pulse waveforms

#1

1-5/2000 μ s, 600V ISO

1-5/1000 μ s, 600V ISO/SAE

#2a

1/50 μ s, 600V ISO

Ri = 2/4/10/20/30/

50/90/150 Ω

#3

5/100ns, 800V ISO

Ri = 50 Ω

Vehicle voltages:

12 / 24 / 48 V



The modular system concept allows realisation of different test requirements:

- power supply voltages of 12V, 24V, 42V and 48V
- different power supply currents, nominal power supply current of 50A, 100A and 200A

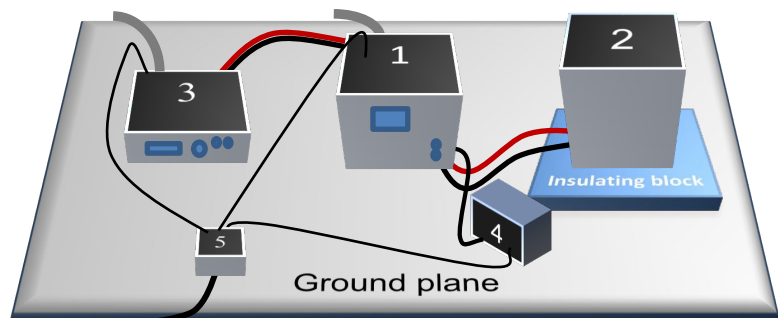
The CAR-TEST-SYSTEM 14 is designed for testing the immunity of the electrical installation of vehicles and components against supply line transients. It allows generation of transient immunity test pulses, pulse #1, #2a and #3 of the ISO 7637-2.

The basic configuration contains the above pulses, a triggerable load switch and an Ethernet interface board.

A fast pulse voltage divider to measure the pulse in the electrical system is also integrated.

A microprocessor-controlled 5" touch screen display permits an easy operation of the generator.

The software program CAR-remote permits the PC control of the generator via Ethernet and fiber optic and allows the standardized documentation according to IEC 17025 and the evaluation of test results.



TECHNICAL DATA CAR-TEST-SYSTEM 14

Control:	
Microprocessor controlled touch-panel	7", capacitive
Optical Ethernet interface for remote control of the generator	optional
Interface for saving reports	USB
External trigger input/output	10V at 1k Ω
Connector for external safety interlock loop	24V _{DC}
Connector for external red and green warning lamps according to VDE 0104	230V, 60W
Mains power	230V, 50Hz/60Hz
Housing:	
Rack mount 7U	
Dimensions (mm) W * H * D:	450x310x500
Weight (kg):	35
Surge pulse acc. to #1, #2a ISO 7637-2:2011	
Charging voltage	$\pm (0V \dots 600V) \pm 10\%$ adjustable
Max. stored energy	18J
Max. charging time	0.5sec ... 5.0sec
Switchable Polarity	positive, negative
Switchable Source resistance	2 Ω , 4 Ω , 10 Ω , 20 Ω , 50 Ω or 90 Ω ,
Only with negative pulse polarity:	
Power supply disconnection time, t_2	3 ... 200ms $\pm 20\%$
Trigger delay, t_3	< 100 μ s
ISO 7637-2: 5.6.1 Test Pulse 1 (1b SAE)	
Waveform 1-5/2000 μ s or 1-5/1000 μ s	
Impulse voltage U_s	0 ... -600V $\pm 10\%$
Rise time, t_r	1.0 μ s + 0/-0.5 μ s; 3.0 μ s +0/-1.5 μ s
Pulse duration, t_d	2000 μ s / 1000 μ s $\pm 20\%$
ISO 7637-2: 5.6.2 Test Pulse 2a	
Waveform 1-5/2000 μ s or 1-5/1000 μ s	
Impulse voltage U_s	0 ... +600V $\pm 10\%$
Rise time, t_r	1.0 μ s +0 μ s/-0.5 μ s
Pulse duration, t_d	50 μ s $\pm 20\%$
Burst pulse #3a / #3b acc. to ISO 7637-2:2011:	
Amplitude of burst output voltage	$\pm (25V \dots 800V) \pm 10\%$ adjustable
Waveform	
Rise time, t_r	5.0ns $\pm 30\%$
Pulse duration, t_d	100ns + 100ns/-0ns
Source resistance	$R_s=50\Omega$
switchable Polarity	pos./neg.
Pulse period t_1	1.0 μ s ... 1.0ms adjustable
Burst duration t_4	0.1ms ... 25ms adjustable
Burst period t_5	10ms ... 1000ms adjustable
Max. continuous burst frequency	20kHz

Power supply switch	
<i>Output current, depending on system type</i>	50A, 100A, 200A
<i>Max. reverse voltage</i>	800V
<i>Transient over voltage protection</i>	>1000V
<i>High short circuit current capability</i>	900A
<i>Protection with automatic circuit breaker</i>	50A, 100A, 200A
<i>Amplifier sense line decoupled from output</i>	built-in
<i>Trigger input, connectable to external modules</i>	built-in
Measurement equipment	
<i>Impulse voltage divider, 4.95 kΩ / 50 Ω</i>	100:1, 1kV _{peak}
PC interface Ethernet 3G	
	built-in

Option CAR-Transient Emission TE14 slow and fast pulse

Triggerable load switch
50/100/200 A, 800 V

Shunt resistors integrated,
switchable 10 Ω / 20 Ω / 40 Ω
The TE14 is used to check the
transient transition behaviour
while switching loads on the
vehicle electrical system. It
consists of two trigger able
circuit breakers (electronically
or mechanically), an artificial
network, a control unit for
operating the device, and
optionally an external power
supply.



The TE14 can perform the "Transient Emission Test" for "slow pulses" and "fast pulses" according to ISO 7637-2. It features a microprocessor-controlled user interface and a display unit. The operator can define his own test sequences.

The test-parameters are set and displayed via a 5" touch screen display and can be recorded during the test on an USB stick. The device can be operated individually or in conjunction with the CAR-TEST-SYSTEM 14 and can be controlled by PC software.

TECHNICAL DATA CAR-TRANSIENT-EMISSION TE14

Control:	
<i>Microprocessor controlled touch panel</i>	5", 800X480, 24bit
<i>Optical Ethernet Interface for remote control of the generator</i>	Optional
<i>Interface for saving reports</i>	USB
<i>External trigger input /output</i>	10V at 1k Ω
<i>Connector for external safety interlock loop</i>	24V _{DC}
<i>External red and green warning lamps acc. to VDE 0104</i>	230V, 60W
<i>Mains power</i>	230V, 50/60Hz
Housing:	
<i>Dimensions (mm) W * H * D:</i>	desk top case 450x320x180
<i>Weight (kg):</i>	35
Transient Emission Test, Power Switch Transients:	
	acc. to ISO 7637-2
<i>Max. operating voltage</i>	70V
<i>High short circuit current capability</i>	900A
<i>Voltage drop over switch at 25A</i>	< 0,2V
<i>Switching time</i>	< 300ns
<i>Transient over voltage protection</i>	> 500V
<i>Nominal voltage</i>	0 ... 100%
<i>Turn off time</i>	1 ... 1000s
<i>Turn on time</i>	5 ... 1000ms
<i>Number of tests</i>	1 ... 1000
Artificial network:	
<i>Series inductance</i>	5 μ H, 100A
<i>Load impedance</i>	0.1 μ F + 50 Ω
<i>Load resistor R_s, switchable</i>	10/20/40 Ω
<i>Connectors for external load resistor, 2.0 Ω</i>	built-in
<i>Artificial network</i>	on/off
Power supply switch	
<i>Max. output current</i>	50/100/200A
<i>Max. reverse voltage</i>	800V
<i>Trigger input, connectable to external modules</i>	built-in
Measurement probes, Transient immunity test	
<i>Impulse voltage divider</i>	100:1, 10MHz, 1kV _{peak}