

Pulse Generator type CAR – TESTER

EMC-Test Equipment
for electrical installation of vehicles :
Test pulses according to
DIN/ISO 7637

The relating standards:
ISO 7637
Test pulse 1
Test pulse 2
Test pulse 3

Pulse	Waveform
#1	1/2000 μ s, 600V 3/1000 μ s, 600V 3/2000 μ s, 600V
#2a	1/50 μ s, 600V Ri = 2 Ω /4 Ω /10 Ω / 20 Ω /50 Ω /90 Ω /
#3	5/150ns, 800V Ri = 50 Ω



Three different types are available:

CAR-TESTER I

35 A_{DC}= continuous mode
50 A_{DC} short time, duty cycle 5%

CAR-TESTER II

100 A_{DC}= continuous mode
150 A_{DC} short time, duty cycle 5%

CAR-TESTER III

200 A_{DC}= continuous mode
360 A_{DC} short time, duty cycle 5%

The CAR-TESTER is an EMC test system designed for testing the electromagnetic immunity of the electrical installation of vehicles and components against supply line transients. It includes a set of pulse generators which supply the test pulses listed above, a triggerable power switch (to isolate the DC supply when testing with negative pulses) and the artificial network. A fast voltage probe, ratio 100:1, for capturing transient waveforms is also included.

CAR-TESTER features a microprocessor controlled user interface and display unit for ease of use. The microprocessor allows the user to either execute standard test routines, or a 'user defined' test sequence. The test parameters, which are shown on the built-in display, are easily adjusted by means of the rotary encoder. A standard parallel interface provides the ability to print a summary of the test parameters whilst testing is being carried out.

As well as manual control, the CAR-TESTER and all additional modules may be remotely controlled by a fibre optic computer interface. Software packages for generator control, documentation & test result evaluation are available.

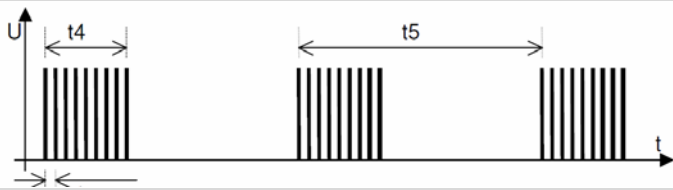
The CAR-TESTER impresses by its compact design, simple handling and precise reproducibility of test impulses. High-voltage switching is accomplished by means of maintenance-free semiconductor switches.



TECHNICAL DATA CAR-TESTER

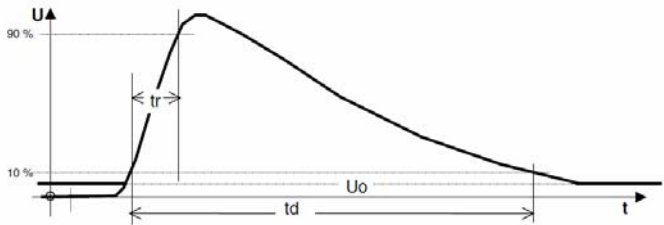
Control:	Microprocessor control, LCD module	8*40 characters
	Optical-interface for remote control of the generator	Built-in
	Parallel printer interface for on-line documentation	25-way 'D' connector
	External trigger input	10V at 1k Ω
	Diagnostic input for monitoring of the test device	4 channels, 5V-Level
	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:	Plug in unit, 7U	
	Dimensions (mm): W * H * D	483x311x520
	Weight	45kg

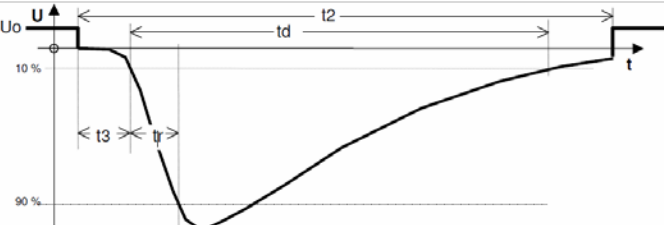
	CAR Tester I	CAR Tester II	CAR Tester III
Power supply switch:			
<i>Max. Output current:</i>			
<i>Continuous mode</i>	35A _{DC}	100A _{DC}	200A _{DC}
<i>Short time, duty cycle 5%</i>	50 A _{DC}	150 A _{DC}	360 A _{DC}
<i>Max. Reverse voltage</i>	800V		
<i>Trigger-input</i>	Built-in (connectable to external modules)		
Artificial Network:			
<i>Nominal operating voltage</i>	0V ... 56V		
<i>Series inductance</i>	5 μ H, 35A _{DC}	5 μ H, 100A _{DC}	5 μ H, 200A _{DC}
<i>Load impedance</i>	0.1 μ F + 50 Ω		
<i>Load resistor R_s, switchable</i>	10 Ω , 20 Ω , 40 Ω		
<i>Connector for external load resistor, 2Ω</i>	Built-in		
Measurement probe:	Transient immunity test:		
<i>Impulse voltage divider 4.95kΩ/50Ω</i>	100:1, 1kV _p		
<i>Impulse current measuring resistor</i>	Impulse current measuring resistor		

Burst:	Designed for generation of test pulses #3a / #3b according to ISO 7637-2
<i>Amplitude of burst output voltage</i>	$\pm (25V \dots 800V) \pm 10\%$ adjustable
<i>Waveform</i>	
<i>Rise time, t_r</i>	5.0ns \pm 30%
<i>Pulse duration, t_d</i>	150ns \pm 30%
<i>Source resistance</i>	R ₁ =50 Ω
<i>Polarity</i>	pos./neg./alt (switchable)
<i>Pulse period t₁</i>	1.0 μ s ... 1.0ms adjustable
<i>Burst duration t₄</i>	0.1ms ... 25ms adjustable
<i>Burst period t₅</i>	10ms ... 1000ms adjustable
<i>Max. continuous burst frequency</i>	20kHz



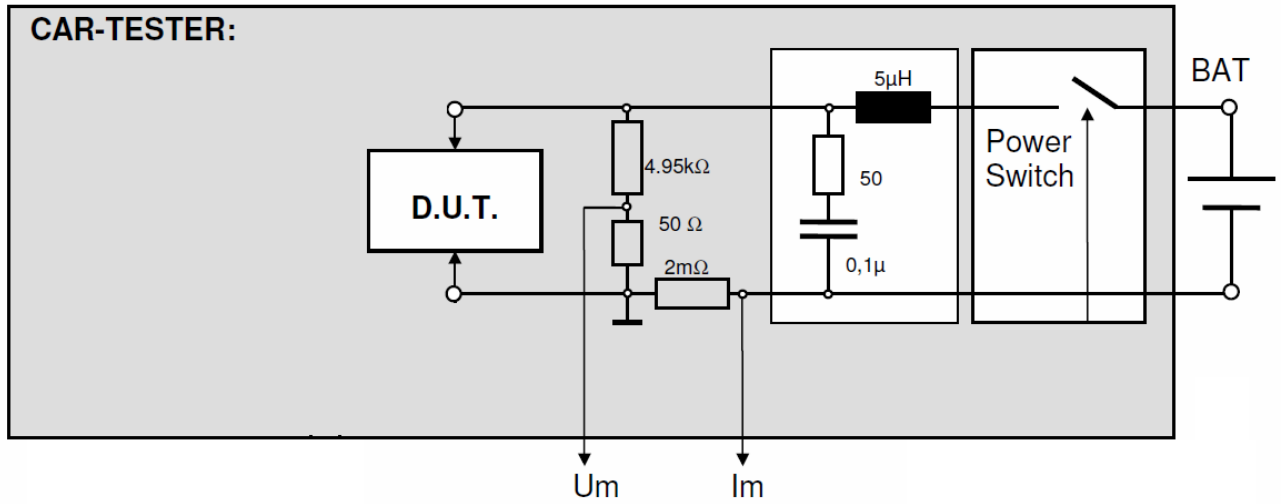
Surge	Designed for generation of test pulses #1, #2a
Charging voltage	$\pm (0V \dots 600V) \pm 10\%$ adjustable
Max. stored energy	18J
Max. charging time	0.5sec ... 5.0sec
Polarity	positive, negative switchable
Source resistance	2 Ω , 4 Ω , 10 Ω , 20 Ω , 50 Ω or 90 Ω , switchable
<i>Only with negative pulse polarity:</i>	
Power supply disconnection time, t_2	3 ... 200ms $\pm 20\%$
Trigger delay, t_3	< 100 μ s

PFN 1	
Waveform 1/2000μs Pulse # 1	
Rise time, t_r 1.0 μ s +0 μ s/-0.5 μ s	
Pulse duration, t_d 2000 μ s $\pm 20\%$	
Waveform 3/2000μs or 3/1000μs Puls # 1	
Rise time, t_r 3.0 μ s +0 μ s/-1.5 μ s	
Pulse duration, t_d 2000 μ s/1000 μ s $\pm 20\%$	

PFN 2a	
Waveform 1/50μs Puls # 2a	
Rise time, t_r 1.0 μ s +0 μ s/-0.5 μ s	
Pulse duration, t_d 50 μ s $\pm 20\%$	



SCHEMATIC DIAGRAM CAR-TESTER



OPTIONS:

CDN 500	Capacitive coupling clamp for capacitive coupling of BURST pulses to screened cables
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