BSG 200

BURST AND SURGE GENERATOR

Burst and surge generator BSG 200

- ✓ Predefined waveforms (pulse 1, 2a, 3a, 3b) according to automotive standards
- ✓ Arbitrary surge pulse parameters
- ✓ Frequency sweep for burst pulses
- ✓ Storage for user defined pulse profiles
- ✓ High current capability up to 200 A
- ✓ Pulse amplitude up to 600 V
- ✓ Direct pulse coupling on EUT supply
- ✓ Coaxial output for external coupling
- ✓ Trigger output for easy monitoring
- ✓ Generator control via webinterface and interface commands
- ✓ Test and evaluation software available

The relating standards:*
ISO 7637-2
ISO 7637-3
ISO 16750-2
ISO 21848
LV124
VDA320 (LV148)
BMW GS 95002
BMW GS 95002-2
BMW GS 95003-2
BMW GS 95024-2-2
BMW GS 95026
FCA CS.00054
Fiat 9.90111-01
Ford FMC1278
GMW 3097
GMW 3172
JLR EMC-CSv1.0A4
MAN M 3285
MBN LV 124-1
MBN 10567
Mitsubishi ES-X82114
Mitsubishi EX-X82115
Nissan 28401NDS02
PSA B21 7110
Renault 36-00-808/--M,N
SAE J 1113-11
Volvo 31822854
Volvo 31850329
VW 80000
VW 82148
VW TL 81000
Magnetic field test

** The BSG 200 can be used for certain tests within these standards. Additional equipment might be required. For detailed information, please contact sales@spitzenberger.de.*

Schematic overview and characteristic

The BSG 200 allows to generate burst and surge pulses as required in many automotive test standards. The internal switches enable to bypass certain functionalities and allow to generate surges and bursts, either negative or positive.

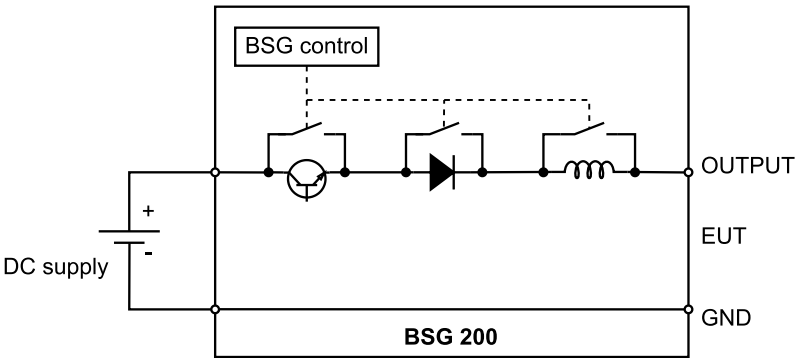

Fig. 1: Schematic overview BSG 200

The voltage drop between DC supply input and EUT output is shown in Figure 2.

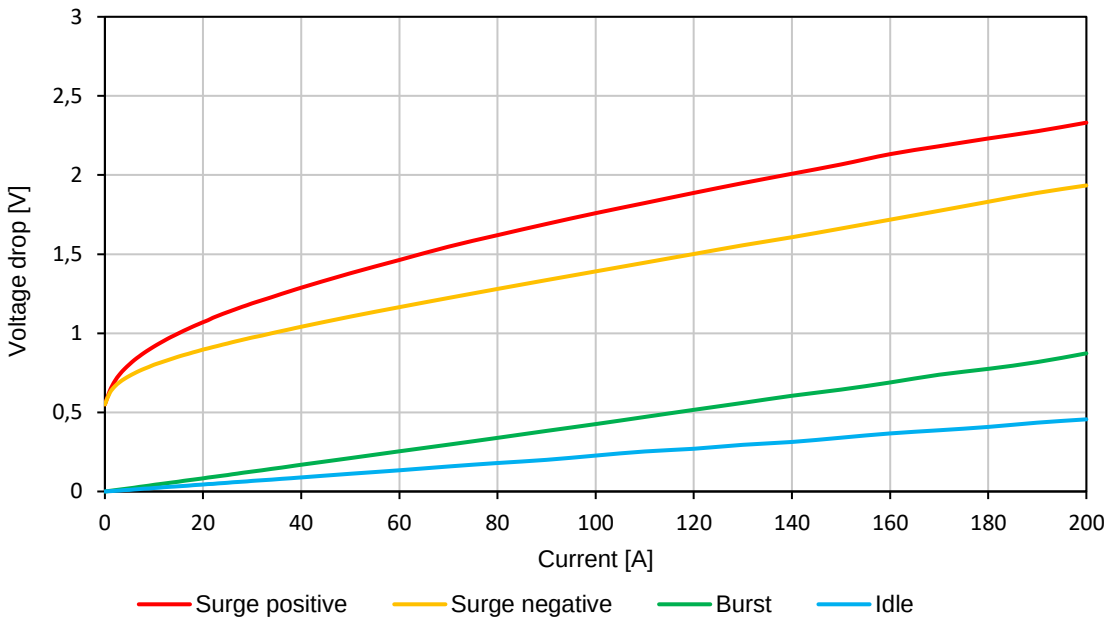

Fig. 2: Voltage drop across BSG 200

TOUCHSCREEN USER INTERFACE

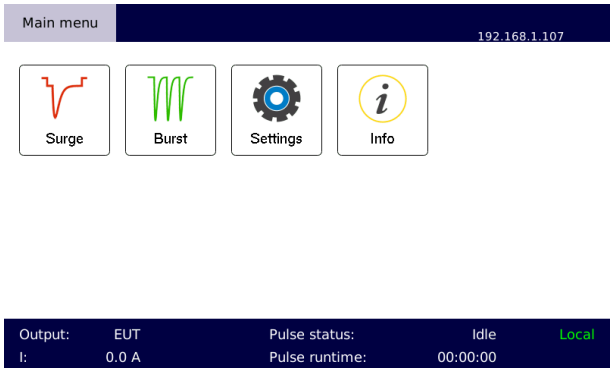

Fig. 3: Main menu

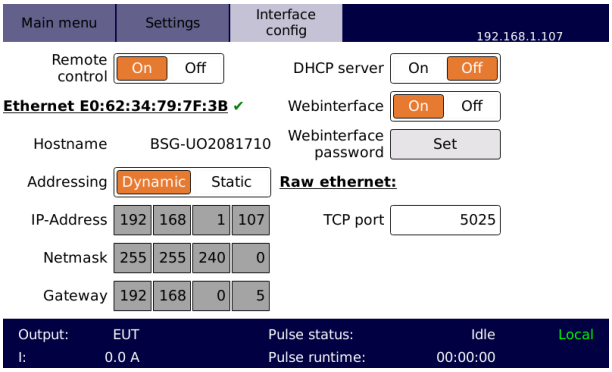

Fig. 4: Interface configuration

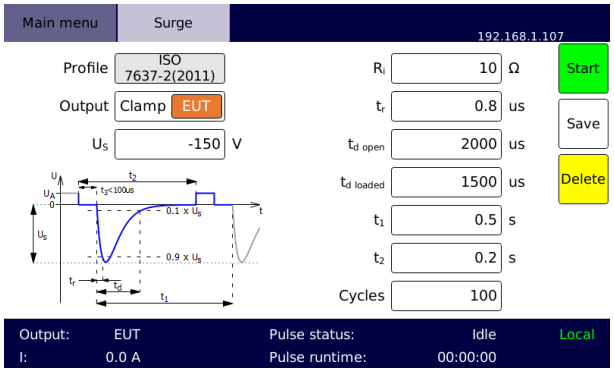

Fig. 5: Surge setting

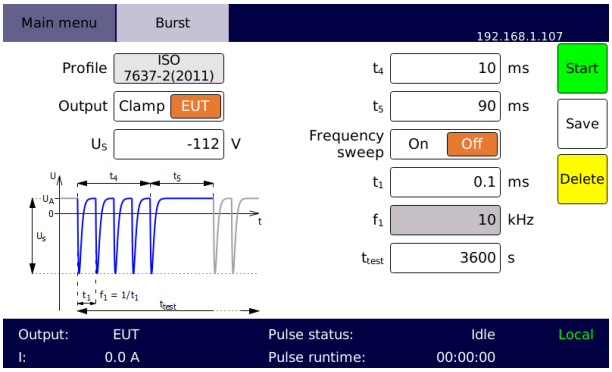

Fig. 6: Burst setting pulse 3a

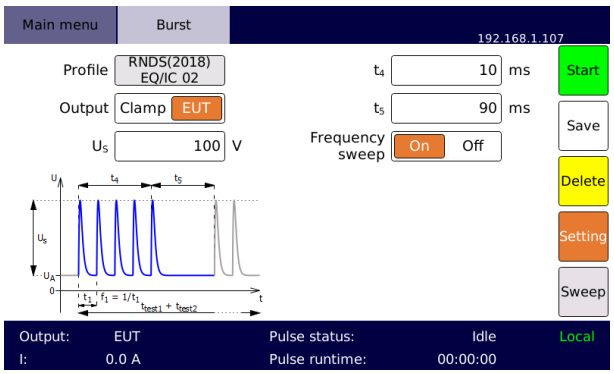

Fig. 7: Burst setting pulse 3b

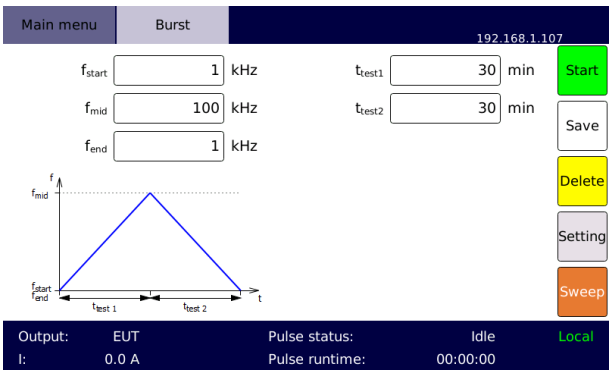

Fig. 8: Frequency sweep

SOFTWARE CONTROL

SPS TestManager

- ✓ Test and evaluation software for fully compliant emission and immunity tests
- ✓ Automated test run of various IEC and automotive standards

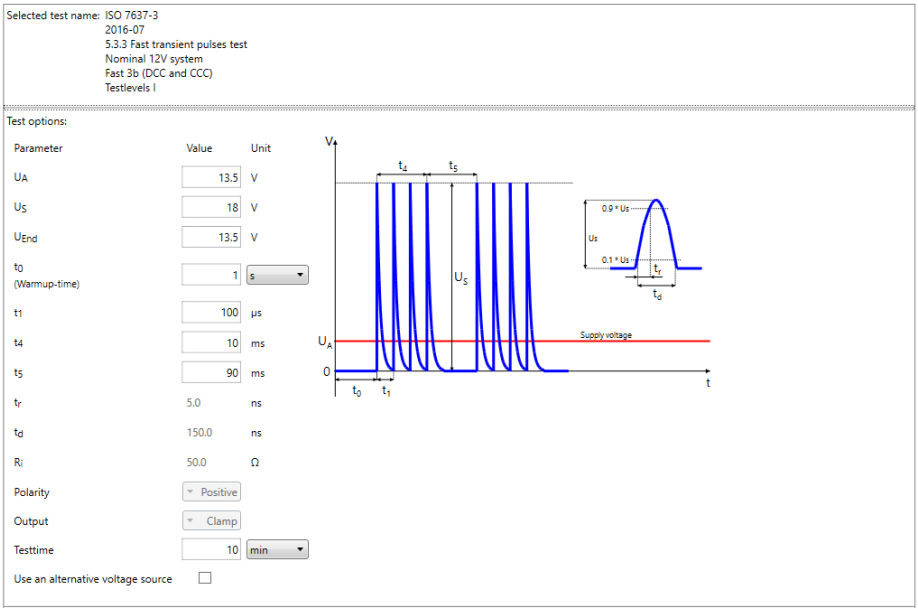

Fig. 9: SPS TestManager software

Command interface

- ✓ Easily integrate the device into your own software applications
- ✓ Remote control commands are based on the SCPI standard

Webinterface

- ✓ Monitor and control the connected device via a web browser

TECHNICAL DATA – BSG 200

		BSG 200	
DC input voltage *(max.)*		70 V	
Current capability *(max.)*		200 A	
Max. peak current capability *(up to 500 ms)*		400 A	
Protection circuits		overcurrent / overtemperature / short circuit	
Internal control unit			
	Display	7.0" touchscreen (17.8 cm, resolution 800 x 480)	
	User interface	touchscreen / front panel button / incremental encoder webinterface	
Outputs *(GND connected to earth)*		EUT	Clamp
		winged terminals	50 Ω coaxial
EUT Monitoring		voltage	
	Scaling	1 : 100	
	Monitoring accuracy	±30 %	
Current measurement accuracy		±5 % of measurement range	
Interface		Ethernet 100 Mbit/s (HiSLIP SCPI) USB 2.0 Host	
Trigger output		5 V level at pulse start	
Cooling		temperature-controlled air forced cooling	
Ambient temperature		+10 °C up to +40 °C	
Storage temperature		-25 °C up to +60 °C	
Relative humidity		non condensing, max. 80 % for temperature < 31 °C, decreasing linearly to 50 % at 40 °C	
System of protection		IP20	
Power supply *(±10 %, 50/60 Hz)*		230 V	
Line protection, connection		T2A micro fuse, Schuko	
Housing		desktop unit or plug-in, colour light grey (RAL 7035)	
	Generator	19", 7 U	
	approx. dimension (H x W x D)	311 x 483 x 450 mm	
Weight	*Generator (approx.)*	30 kg	

Pulse specification – Surge

The burst and surge generator BSG 200 generates test pulses to simulate transients, which occur as a result of a supply disconnection from inductive loads. These pulse shapes and parameters can be adjusted to meet requirements for test pulses 1 and 2a in various automotive standards. The surge duration can be defined for open and loaded condition separately.

	Surge	
	Value [1)]	**Accuracy**
U_S	0 V … ±600 V	±(10 % of set value ±3 V)
R_i	0.5 Ω … 64 Ω 0.5 Ω steps adjustable	±10 %
t_r *(rise time 10 % - 90 %)* Clamp output: 5 V ... 600 V EUT output: 50 V ... 600 V	0.5 µs … 10 µs 0.05 µs steps adjustable	±20 %
$t_{d\ open}$ *(pulse duration 10 % - 10 %)*	10 µs … 10 ms 0.5 µs steps adjustable	±20 %
$t_{d\ loaded}$ *(pulse duration 10 % - 10 %)*	10 µs … 10 ms 0.5 µs steps adjustable	±20 %
t_1	0.1 s … 10000 s	±10 %
t_2	10 µs … 10000 s	±10 %
t_3	< 100 µs	
Cycles	1 … 2^{31} - 1	
Energy *(max.)*	72 J	±10 %

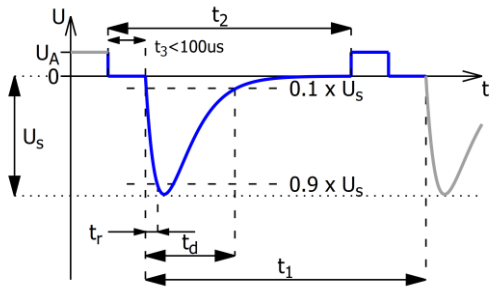

Fig. 10: Test pulse 1

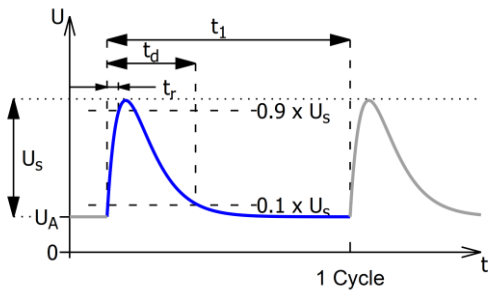

Fig. 11: Test pulse 2a

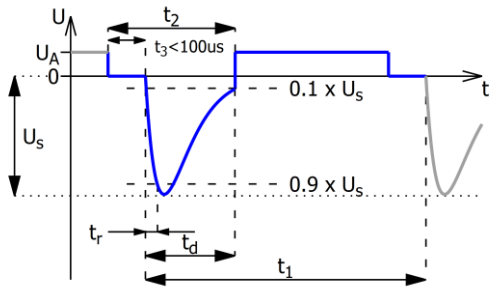

Fig. 12: Test pulse 6

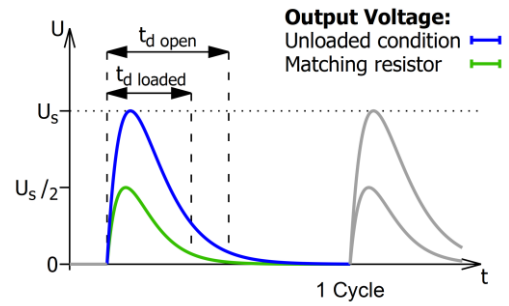

Fig. 13: Test pulse with $t_{d\ open}$ and $t_{d\ loaded}$

Pulse specification – Burst

The burst and surge generator BSG 200 generates test pulses to simulate transients, which occur as a result of a switching process. These pulse shapes and parameters can be adjusted to meet requirements for test pulses 3a and 3b in various automotive standards.

	Burst	
	Value [1]	**Accuracy**
U_S [2]	±10 V … ±600 V	±(10 % of set value ±3 V)
R_i	50 Ω	±10 %
t_r *(rise time 10 % - 90 %)*	5 ns	±30 %
t_d *(pulse duration 10 % - 10 %)*	150 ns	±30 %
t_4 [2]	5 µs … 10000 s	±10 %
t_5 [2]	50 µs … 1000 s	±10 %
t_1 [2]	5 µs … 4 ms	±10 %
f_1 [2] [3]	250 Hz … 200 kHz	±10 %
Test duration	55 µs … 30 h	

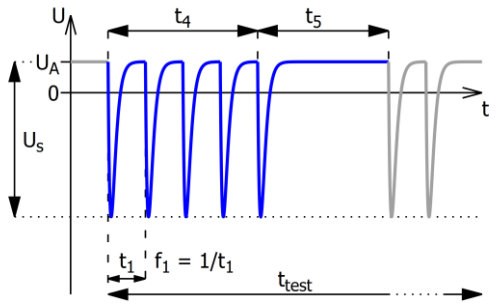

Fig. 14: Negative test pulse 3a

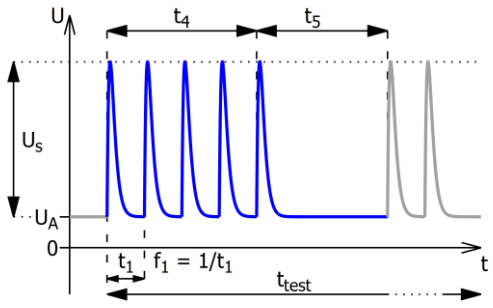

Fig. 15: Positive test pulse 3b

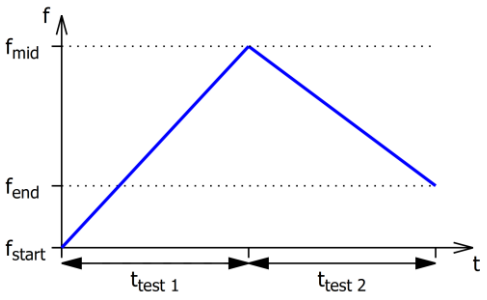

Fig. 16: Frequency sweep

Burst pulses can be generated with variable frequencies, durations, amplitudes and duty cycles. The duty cycle of a burst is defined as $\frac{t_4}{t_4+t_5}$. Figure 17 shows the maximum voltage as a function of the burst frequency for different duty cycles.

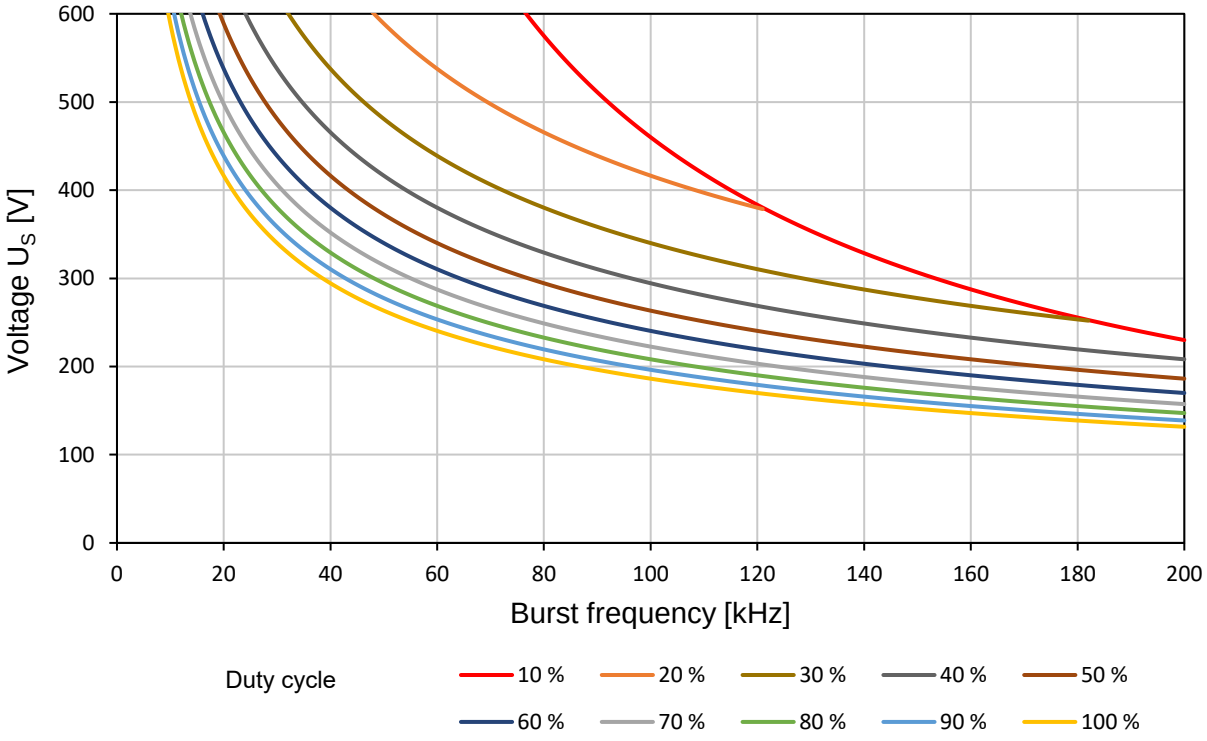

Fig. 17: Voltage as a function of the burst frequency

OPTIONS AND ACCESSORIES

Options		
OPT.01	IEEE488	Not in combination with OPT.02
OPT.02	RS232	Not in combination with OPT.01

Remarks:

1) Depending on the selected pulse configuration
2) Value depends on the duty cycle, see Figure 17
3) Spike frequency either as a constant value, or as frequency sweep with two time values and three frequency values adjustable