

CAR - Arbitrary-Waveform-Generator

CAR - AWG 1200/3000/6000

EMC-Test Equipment for electrical installation of vehicles

- Battery simulator
- Bandwidth DC-200kHz
- Signal Bandwidth DC-1MHz (small signal -3dB)
- 4 quadrant amplifier
- Fast rise time up to 70V/ μ s
- Sense lines
- Arbitrary waveform up to 16MSa / 20MSa/s
- Selectable output impedance 0-200m Ω
- Over voltage protection

| | |
|---------------------|------------------------------------|
| CAR-AWG 1200 | • Max. 75V Vpeak / 40A (80A peak) |
| CAR-AWG 3000 | • Max. 70V/-30V Vpeak / 100A |
| CAR-AWG 6000 | • Max. 70V/-30V Vpeak / 200A |



According to

ISO 7637: 2011

ISO 7637-4:2020

ISO 16750-2

ISO 21848-2

SAE J1113

LV124 (VW80000)

LV148

VDA 320

ISO 21780

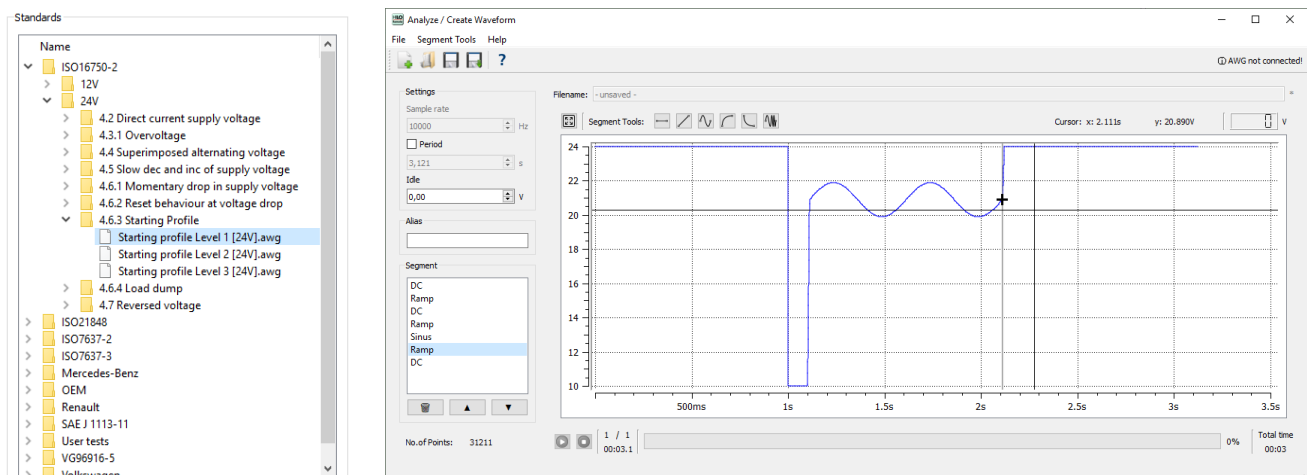
... many manufacturer standards, GM, Ford, Chrysler, Mercedes, BMW, VW, PSA, Renault, Fiat

The CAR arbitrary waveform generator 1200/ 3000 /6000 is a compact EMC testing system for performing voltage variations on supply lines of vehicles. The system strictly complies with the international standards and manufacturer standards that describe phenomena on the power supply of vehicles.

Thus, the CAR arbitrary waveform generator 1200 / 3000 / 6000 is the optimal voltage power source for battery simulation up to 70V. It can simulate pulse 2b, pulse 4, starting profile, superimposed alternating voltage and others, up to a battery current of 40A/ 100A/ 200A.

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

The user can use the PC software to call up standard test procedures (ISO, VG, vehicle manufacturer specific) or define and execute individual test procedures on a point-by-point basis. Voltage curves up to 16MSa can be generated.



It is equipped with an Impulse Recording Function (IRF) to record definite impulses (with oscilloscope).

| Control | Description |
|----------------|---|
| CAR-REMOTE-AWG | Remote software with Impulse Recording Function (IRF) (XP, WIN7, WIN10) incl. Ethernet switch |

Optionally it can be expanded to fulfil further international and manufacturer standards:

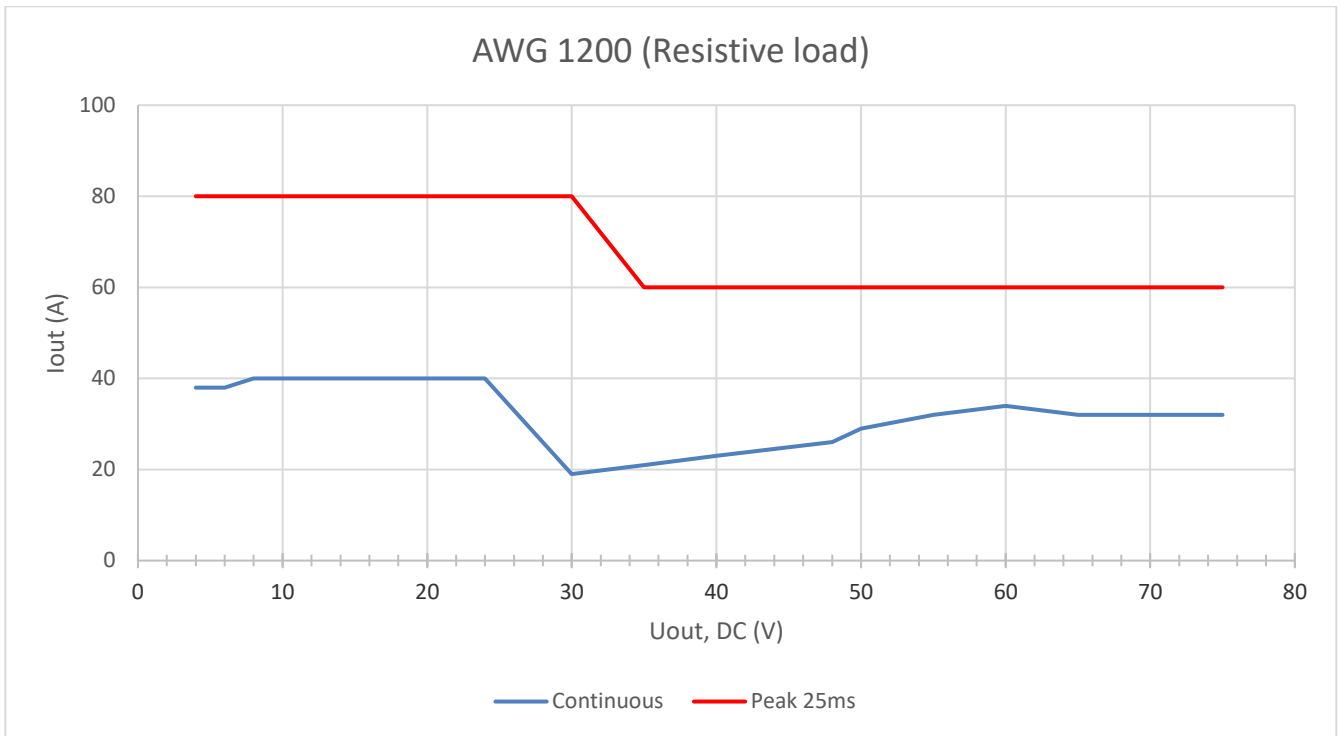
Configurations for the fulfilment of various standards:

| Setup | CAR-SYS + Battery | CAR-SYS + PS xx-xx | CAR-SYS + CAR-AWG | CAR-AWG |
|---------------------------------|-------------------|--------------------|-------------------|---------|
| ISO 7637 ²⁾ | ✓ ⁵⁾ | ✓ | ✓ | ✗ |
| ISO 16750 ¹⁾ | ✗ | ✓ ⁴⁾ | ✓ | ✓ |
| ISO 21848 | ✗ | ✓ | ✓ | ✓ |
| LV 124/148 ³⁾ | ✗ | ✗ | ✓ | ✓ |
| MBN 1028-4 | ✓ | ✓ | ✓ | ✗ |
| Renault 36.00.808 ¹⁾ | ✗ | ✗ | ✓ | ✗ |
| Nissan 280401ND02 | ✗ | ✗ | ✓ | ✗ |
| SAEJ 1113-111 ¹⁾ | ✗ | ✗ | ✓ | ✗ |
| VW TL81000 ¹⁾ | ✓ | ✓ | ✓ | ✗ |
| ...and many other standards | | | | |

- 1) + Load dump (PG2804 / PS-LD)
- 2) + CAR-TE 14 for 4.3. Transient Emission test
- 3) + CAR-PFS 80 for LV E-10, E-13 and E-14 Interruptions tests
- 4) without Superimposed alternating voltage test
- 5) without Puls 2b

| TECHNICAL SPECIFICATIONS: | CAR – AWG | | |
|--|-----------------------------|--|-------------|
| | 1200 | 3000 | 6000 |
| Mainframe | | | |
| Ethernet Interface for remote control of the generator | | Built-in | |
| Connector for external safety interlock loop | | 24 V= | |
| External red and green warning lamps acc. to VDE 0104 | | 24 V=, 40 mA | |
| Mains power | 230V, 50 Hz | 400V, 50 Hz | 400V, 50 Hz |
| Dimensions, case, W * H * D | 450*180*500 mm ³ | 20HE Rack | 34HE Rack |
| Weight | 15kg | 70kg | 120kg |
| Amplifier | | | |
| 4-quadrant voltage and current amplifier | | | |
| Power bandwidth | | 200kHz | |
| Frequency range (small signal -3dB) | | 1MHz | |
| Max. Voltage | ±75V | +70V/-30V | +70V/-30V |
| Max. Current | ±40A | +100A | +200A |
| Max. Current /500ms | ±80A | +200A | +400A |
| Max. Power | 1200W | 3000W | 6000W |
| selectable output impedance | 0-200mΩ | 0-200mΩ | 0-200mΩ |
| Overvoltage protection | ✓ | ✓ | ✓ |
| Slew Rate | | 70V/us | |
| Small Signal Bandwidth | | DC-600kHz | |
| Residual Noise Output | | <62dBV; 10Hz - 500kHz | |
| Signal / Noise Output | | >97dBV; 10Hz - 200kHz | |
| Cooling | | Controlled fans and heat sink | |
| Overcurrent Protection with CAR SYS | | Magnetic and Thermic | |
| Triggering with CAR SYS | | Software - Manual - Extern | |
| Trigger output with CAR SYS | | For Oscilloscope | |
| Arbitrary | | | |
| Resolutuion | | 14 Bit | |
| Samplerate | | 20MSa/s | |
| Max. Points | | 16MSa | |
| Segmenttyps | | DC, Sinus, Sinesweep, Ramp, Exponential function | |

AWG 1200:



AWG 3000:



Example configuration of HILO-TEST system:

CAR-TEST-SYSTEM 14 I Puls #1, #2 und #3, Build in 19" Rack
+ Option CAR-AWG 1200 (75V/40A)
+ Option PG2804

