VDS 200Q SERIES
4-QUADRANT VOLTAGE DROP SIMULATOR - BATTERY SIMULATOR AND DC VOLTAGE SOURCE

The VDS 200Q series is used to simulate the various battery supply waveforms recommended by international standards and by car manufacturer requirements. Especially the manufacturer requirements are an important area covered by the VDS 200Q series as there is a large variety of requirements. Secondly, the VDS 200Q series serve as powerful DC voltage supplies for the DUT during the tests with automotive transients. The VDS 200Q series covers all three supply voltage categories (48 V, 24 V and 12 V). Their current capability ranges up to 100 A or more depending on the model and your application.

HIGHLIGHTS

- Voltage up to 80 V
- Current up to 200 A (600 A peak)
- Four quadrant, bipolar amplifier
- Fast rise time
- Very Low Ri, <10 mOhm; 10 - 200 mOhm selectable
- High Bandwidth up to 250 kHz
- Temperature-controlled air cooling

APPLICATION AREAS

- AUTOMOTIVE
- MILITARY
- AVIONICS

FOR TESTS ACCORDING TO ...

- LV 124
- LV 148
- Audi (Reference vehicles)
- BMW - (Airbag ECU)
- BMW 600 13.0 (Part 1)
- BMW 600 13.0 (Part 2)
- BMW GS 95002 (2010)
- BMW GS 95003-2
- BMW GS 95024-2-1
- ISO 21848:2005
- ISO 16750-2
- ISO 7637-2:2004
- ISO 7637-2:2011
- MBN LV 124-1
- SAE J1113-11
- VW 80000
# Available VDS 200Q-Models

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Output Range</th>
<th>Output Current</th>
<th>Bandwidth (-3dB)</th>
<th>Supply Voltage</th>
<th>Dimensions</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>VDS 200Q10</td>
<td>Voltage Drop Simulator, 60 V / 10 A</td>
<td>-60 V to +60 V</td>
<td>0 A - 10 A, continuous</td>
<td>DC - 180 kHz full signal</td>
<td>1-phase 100/120/230 V ±10%, L, N, PE</td>
<td>19”/6 HU</td>
<td>37 kg</td>
</tr>
<tr>
<td>VDS 200Q25.2</td>
<td>Voltage Drop Simulator, 60 V / 25 A, 80 V / 20 A extended</td>
<td>-20 V to +80 V</td>
<td>0 A - 25 A, continuous</td>
<td>DC - 150 kHz full signal</td>
<td>1-phase 100/120/230 V ±10%, L, N, PE</td>
<td>19”/25 HU*</td>
<td>230 kg</td>
</tr>
<tr>
<td>VDS 200Q50.2</td>
<td>Voltage Drop Simulator, 60 V / 50 A, 80 V / 40 A extended</td>
<td>-20 V to +80 V</td>
<td>0 A - 50 A, continuous</td>
<td>DC - 150 kHz full signal</td>
<td>1-phase 100/120/230 V ±10%, L, N, PE</td>
<td>19”/25 HU*</td>
<td>275 kg</td>
</tr>
<tr>
<td>VDS 200Q100.2</td>
<td>Voltage Drop Simulator, 60 V / 100 A, 80 V / 80 A extended</td>
<td>-20 V to +80 V</td>
<td>0 A - 100 A, continuous</td>
<td>DC - 150 kHz full signal</td>
<td>1-phase 100/120/230 V ±10%, L, N, PE</td>
<td>19”/25 HU*</td>
<td>120 kg</td>
</tr>
<tr>
<td>VDS 200Q200.2</td>
<td>Voltage Drop Simulator, 60 V / 200 A, 80 V / 160 A extended</td>
<td>-20 V to +80 V</td>
<td>0 A - 200 A, continuous</td>
<td>DC - 150 kHz full signal</td>
<td>1-phase 100/120/230 V ±10%, L, N, PE</td>
<td>19”/25 HU*</td>
<td>160 kg</td>
</tr>
</tbody>
</table>
### TECHNICAL DETAILS

#### VDS 200Q100.2
- **Output Range**: -20 V to +80 V
- **Output Current**: 0 A - 100 A, continuous
- **Peak Current**: 300 A for 200 ms
- **Bandwidth**: DC - 150 kHz full signal
- **Extended Envelope**: -20 V - +80 V (80 A max.), 150 - 250 kHz (40 Vpp max.)
- **Supply Voltage**: 3-phase 200/400 V ±10%, L1, L2, L3, PE
- **Dimensions**: 19"/38 HU**)
- **Weight**: 450 kg

#### VDS 200Q150.2
- **Output Range**: -20 V to +80 V
- **Output Current**: 0 A - 150 A, continuous
- **Peak Current**: 450 A for 200 ms
- **Bandwidth**: DC - 150 kHz full signal
- **Extended Envelope**: -20 V - +80 V (120 A max.), 150 - 250 kHz (40 Vpp max.)
- **Supply Voltage**: 3-phase 200/208 or 400 V ±10%, L1, L2, L3, PE
- **Dimensions**: 2 x 19"/34 HU**)
- **Weight**: approx. 650 kg

#### VDS 200Q200.2
- **Output Range**: -20 V to +80 V
- **Output Current**: 0 A - 200 A, continuous
- **Peak Current**: 600 A for 200 ms
- **Bandwidth**: DC - 150 kHz full signal
- **Extended Envelope**: -20 V - +80 V (160 A max.), 150 - 250 kHz (40 Vpp max.)
- **Supply Voltage**: 3-phase 200/208 or 400 V ±10%, L1, L2, L3, PE
  connector: CEE 63 A
- **Dimensions**: 2 x 19"/34 HU**)
- **Weight**: approx. 900 kg

**Bolded notes:**

- **Rack mounted, prepared to also include AutoWave**
## COMMON DATA (ALL MODELS)

### GENERAL
- **Source impedance**: \( Z_i = \text{Programmable} < 10 \text{ mOhm}, \ 10 - 200 \text{ mOhm selectable.} \)
- **Operation**: 4 - quadrant, bipolar operation
- **Current limiter**: 3x \( I_{\text{max}} \): allows an inrush current of three times nominal current for 200 ms before the current limiter starts
- **Peak OFF**: no inrush current above the set current value

### Compensation
- **STD**: DC - 40 kHz
- **HF**: DC - 150 kHz
- **CAP**: DC - 3 kHz

### Recovery
- \( >90\% \) of excursion within 25 us

### Output rise time
- typ. <10 us, <3 us (high freq.)

### Ripple voltage
- \( U_r < 10 \text{ mV}_{\text{p-p}}, \text{frequency min.} \ 400 \text{ Hz} \)

### Control
- Analog In

### Cooling
- temperature-controlled air cooling

### Protection
- Thermal-Magnetic Circuit Breakers
- Depending on VDS 200Q model

## OPERATION

### TEST ROUTINES FOR ARBITRARY WAVES

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<th>DC source</th>
<th>Depending on VDS 200Q model</th>
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<td>Sine Wave Sweep</td>
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<tr>
<td>Sine Wave (Cranking)</td>
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<tr>
<td>Clipped Load Dump</td>
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<tr>
<td>Jump Start</td>
<td></td>
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<tr>
<td>GM 9105P Pulse 4</td>
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<tr>
<td>Drop and Jump pulse</td>
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<tr>
<td>External</td>
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</table>

<table>
<thead>
<tr>
<th>Standard test routines</th>
<th>ISO 7637, Pulses 2b and 4</th>
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</table>

| Service | Service, Setup, Self test |

## TRIGGER
- **Automatic**: Automatic release of the events
- **Manual**: Manual release of a single pulse
- **External**: External release of a single pulse

## OUTPUT
- **DUT Supply +/−**: Safety laboratory or high current connectors
- **Ext. trigger**: 5-15 V TTL, BNC connector
- **CRO Trigger**: 5 V TTL-signal for oscilloscope

## INTERFACE
- **Interfaces**: USB
- **Ethernet (for optional AutoWave)**
- **IEEE 488, addresses 1 - 30**

### Remote control
- To connect an external signal generator (10 kohm):
  -10 V - +10 V / 0 - 150 kHz (180 kHz for VDS 200Q10)
### TECHNICAL DETAILS

### GENERAL DATA

<table>
<thead>
<tr>
<th>OPERATING ENVIRONMENT</th>
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<tbody>
<tr>
<td>Temperature</td>
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<tr>
<td>Rel. humidity</td>
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<tr>
<td>Atmospheric pressure</td>
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<table>
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<tr>
<th>OPTIONS</th>
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<tbody>
<tr>
<td>AutoWave</td>
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<tr>
<td>PFM 200N100.1</td>
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<tr>
<td>iso.control</td>
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</tbody>
</table>
COMPETENCE WHEREVER YOU ARE

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Information about scope of delivery, visual design and technical data correspond with the state of development at time of release. Subject to change without further notice.

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