

# VDS 200Q SERIES

## 4-QUADRANT VOLTAGE DROP SIMULATOR - BATTERY SIMULATOR AND DC VOLTAGE SOURCE



### 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



### VDS 200Q - FOUR QUADRANT BATTERY SUPPLY 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
- › Sense lines for voltage drop correction

### APPLICATION AREAS

-  AUTOMOTIVE
-  MILITARY
-  AVIONICS

## TECHNICAL DETAILS

### BENEFITS

#### BEST TO SIMULATE BATTERY SUPPLY WAVEFORMS

The VDS 200Q is specifically designed to cope with almost every requirement of international and national as well as car manufacturer standards world-wide. Its integrated DC amplifier with a frequency range up to 150 kHz allows to generate dips and drops, short interruptions and many kind of voltage variation representing various phenomena being measured on a wiring harness.

The VDS 200Q Series battery simulators are all four quadrant bipolar amplifiers able to absorb energy fed back from the DUT up to nominal current.

The VDS 200Q offers the QuickStart with parameters being adjustable during test to evaluate the susceptibility level of a DUT. Pulse 4 and 2b as per ISO 7637-2 and many more car manufacturer specific waveforms are pre-programmed. Together with an external signal generator (e.g. AutoWave) the VDS 200Q can generate most complex waveforms. All models feature the lowest source impedance (Ri) on the market. VDS 200Qxxx.2 models have the ability to program the Ri up to 200 mOhms.

### OPERATION

#### EASY TO OPERATE

Front panel menu and function keys enable the user to program his test routines quickly and accurately. The cursor allows fast control of all test parameters of the programmed routine, thus test procedures are simplified and confidence is generated that every step is carried out correctly.

### SOFTWARE

#### ISO.CONTROL SOFTWARE FOR CONTROL AND DOCUMENTATION

Outstanding user convenience, clearly structured windows and operation features and the EM TEST standards library along with the flexibility to generate user specific test sequences very easily are the main features of iso.control software. The software is automatically configured according to the connected EM TEST generators. iso.control software covers international/national standards and most of the manufacturer standards and is continuously updated. Extensive reporting capabilities help the user to create test reports that meet international requirements. iso.control is supported by Windows 2000, Windows XP, Windows Vista and Windows 7. Remote control is achieved either via USB or GPIB. iso.control supports a wide range of GPIB cards of National Instruments.

### MODEL OVERVIEW

#### AVAILABLE VDS 200Q MODELS

VDS 200Q10.1 - Voltage Drop Simulator, 60 V / 10 A

VDS 200Q25.2 - Voltage Drop Simulator, 80 V (60 V) / 20 A (25A)

VDS 200Q50.2 - Voltage Drop Simulator, 80 V (60 V) / 40 A (50 A)

VDS 200Q100.2 - Voltage Drop Simulator, 80 V (60 V) / 80 A (100 A)

VDS 200Q150.2 - Voltage Drop Simulator, 80 V (60 V) / 120 A (150 A)

VDS 200Q200.2 - Voltage Drop Simulator, 80 V (60 V) / 160 A (200 A)

## TECHNICAL DETAILS

## MODEL OVERVIEW

AVAILABLE VDS 200Q-MODELS	
VDS 200Q10.1	Voltage Drop Simulator, 60 V / 10 A
VDS 200Q25.2	Voltage Drop Simulator, 60 V / 25 A, 80 V / 20 A extended
VDS 200Q50.2	Voltage Drop Simulator, 60 V / 50 A, 80 V / 40 A extended
VDS 200Q100.2	Voltage Drop Simulator, 60 V / 100 A, 80 V / 80 A extended
VDS 200Q150.2	Voltage Drop Simulator, 60 V / 150 A, 80 V / 120 A extended
VDS 200Q200.2	Voltage Drop Simulator, 60 V / 200 A, 80 V / 160 A extended

## TECHNICAL DETAILS

VDS 200Q10.1	
Output Range	-60 V - +60 V
Output current	0 A - 10 A, continuous
Bandwidth (-3dB)	DC - 180 kHz full signal
Supply Voltage	1-phase 100/120/230 V ±10%, L, N, PE
Dimensions	19"/6 HU
Weight	37 kg

VDS 200Q25.2	
Output Range	-20 V to +80 V
Output Current	0 A - 25 A, continuous
Peak current	75 A for 200 ms
Bandwidth	DC - 150 kHz full signal
Extended Envelope	-20 V - +80 V (20 A max.), 150 - 250 kHz (40 Vpp max.)
Supply Voltage	1-phase 100/120/230 V ±10%, L, N, PE
Dimensions	19"/25 HU*)
Weight	230 kg

VDS 200Q50.2	
Output Range	-20 V to +80 V
Output Current	0 A - 50 A, continuous
Peak current	150 A for 200 ms
Bandwidth	DC - 150 kHz full signal
Extended Envelope	-20 V - +80 V (40 A max.), 150 - 250 kHz (40 Vpp max.)
Supply Voltage	3-phase 200/400 V ±10%, L1, L2, L3, PE
Dimensions	19"/25 HU*)
Weight	275 kg

## 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

## TECHNICAL DETAILS

VDS 200Q150.2	
Output Range	-20 V to +80 V
Output Current	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
	**Rack mounted, prepared to also include AutoWave

## TECHNICAL DETAILS

## COMMON DATA (ALL MODELS)

## GENERAL

Source impedance	Zi = Programmable <10 mOhm, 10 - 200 mOhm selectable*. *(not available for VDS 200Q10.1)
Operation	4 - quadrant, bipolar operation
Current limiter	3x I <sub>max</sub> : allows an inrush current of three times nominal current for 200 ms before the current limiter starts 3x I <sub>ctrl</sub> : allows an inrush current of three times the programmed current for 200 ms before the current limiter starts Peak OFF: no inrush current above the set current value *(not available for VDS 200Q10.1)
Compensation	STD: DC - 40 kHz HF: DC - ≥150 kHz CAP: DC - 3kHz
Recovery	>90% of excursion within 25 us
Output rise time	typ. <10 us, <3 us (high freq.)
Ripple voltage	Ur <10 mVp-p, frequency min. 400 Hz
Sense Lines	Available for voltage drop compensation, all models.
Control	Analog In
Cooling	temperature-controlled air cooling
Protection	Thermal-Magnetic Circuit Breakers Depending on VDS 200Q model

## 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 200Q10.1)

**TECHNICAL DETAILS**

**OPERATION**

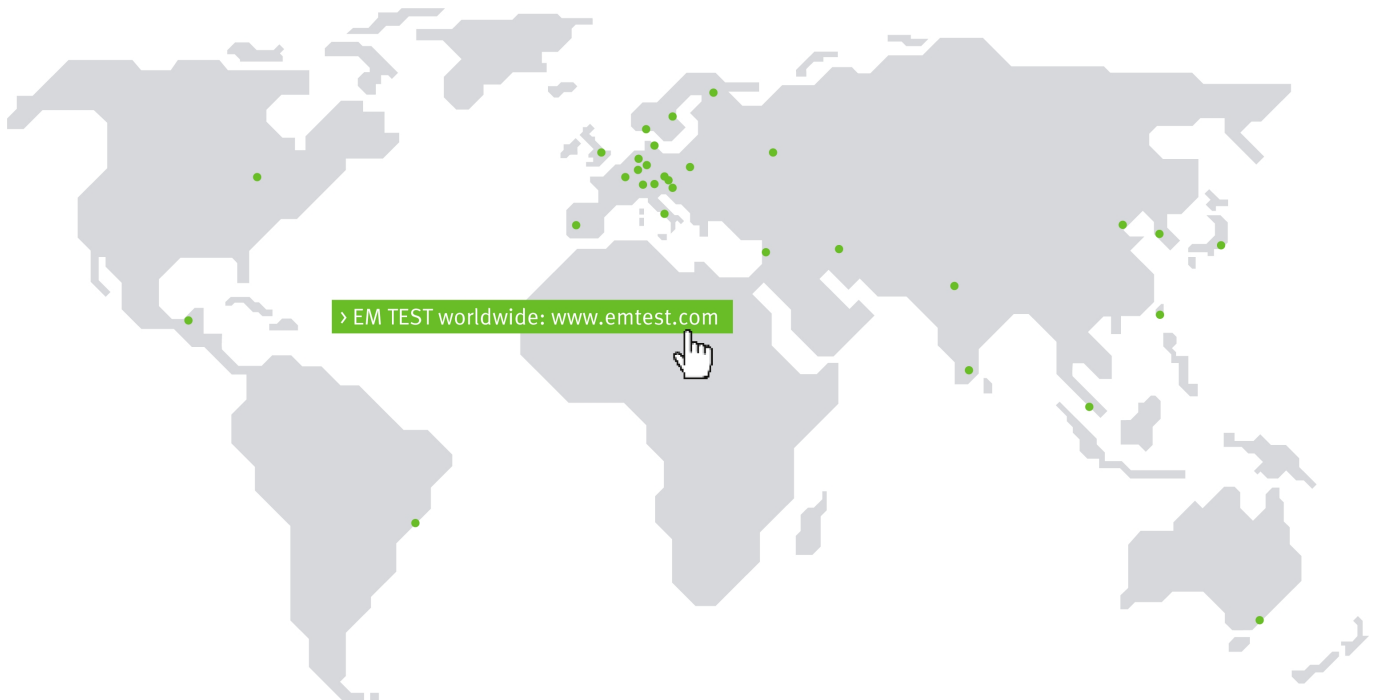
TEST ROUTINES FOR ARBITRARY WAVES	
DC source	Depending on VDS 200Q model
Functions	Sine Wave Sweep Sine Wave (Cranking) Clipped Load Dump Jump Start GM 9105P Pulse 4 Drop and Jump pulse External
Standard test routines	ISO 7637, Pulses 2b and 4 ISO 16750-2
Service	Service, Setup, Self test

**GENERAL DATA**

OPERATING ENVIRONMENT	
Temperature	10 - 40 °C
Rel. humidity	10 - 90 %, non-condensing
Atmospheric pressure	86 kPa (860 mbar) to 106 kPa (1,060 mbar)

OPTIONS	
AutoWave	2 or 4-channel arbitrary generator for automotive test applications
PFM 200N100.1	100A PowerFail simulator for test requirements as per LV 124: E-10 and E-13 and LV 148: E48-09. Controlled by AutoWave via Framebus interface.
PFM 200N200	200A PowerFail simulator for test requirements as per LV 124: E-10 and E-13 and LV 148: E48-09. Controlled by AutoWave via Framebus interface.
iso.control	Software to control the test, including standard library, test report facility and data conversion generator

# 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.