

HVLR – High-Voltage Lab Rig

HV test system for validation tasks of power electronics

OVERVIEW OF HVLR

Bosch Engineering's High-Voltage Lab Rig (HVLR) offers a fast, efficient and, above all, safe solution for testing the electric vehicle power electronics of the drive in the development lab. The HV test system integrates a high-voltage power supply and electronic safety functions for the circuit of the component under test in a compact 19-inch test equipment cabinet.

Many of the tests on the power electronics of electric vehicles can therefore be shifted from the test bench to the high-voltage laboratory. This frees up valuable bench capacity for other testing and validation tasks, thereby reducing development time and costs.

Thanks to its modular design, the HV test system can be flexibly adapted to individual customer requirements. For example, different voltage levels of up to 1,200 volts as well as different communication interfaces can be selected.

Functions

- ▶ Safe switching and monitoring of high-voltage up to 1,200 Volt / 200 Ampere
- ▶ Isolation and operation monitoring
- ▶ HV interlock
- ▶ Safety PLC
- ▶ Precharge and active fast discharge function
- ▶ Emergency shut-off
- ▶ Touchscreen or external monitor as central operating and display unit
- ▶ Remote controllability
- ▶ Integration into test automation
- ▶ Modular design

A key focus in the design of the HVLR was safety in everyday test operations. The protection concept covers potential causes of accidents and reduces the risks when working on the high-voltage circuit. Another resulting advantage is the protection of the test object from damage during testing. This is particularly advantageous for prototype components that are only available in small quantities.

The HV test system is conveniently operated via a touchscreen display or external monitor, which provides a clear-cut overview of all operating parameters such as status messages, information on system settings, and any error warnings.

The safety functions are implemented in the High-Voltage Safety Box (HVSB). This offers isolation monitoring, an interlock circuit, integration into a laboratory emergency stop shut-off concept and a PLC interface with which the HVLR can be integrated application-specific into the test automation of the respective environment and operated remotely. The HVSB is included with the HVLR, but is also available as a separate module, for example to retrofit the safety functions and the PLC interface to existing high-voltage power supplies.



High-Voltage Lab Rig (HVLR)

TECHNICAL FEATURES

HVLR – High-Voltage Lab Rig	
Dimensions (H x W x D)	2,150 *1 x 620 x 1,150 mm 19", 42 RU
Weight	650 kg (config. dependent)
Supply voltage	400 V AC / 63 A (CEE)
HV output voltage *2	e.g. 1,200 V DC / 33 A
Power consumption *2	e.g. 32 kW
NV output voltage *3	e.g. 24 V DC (optional)
HVSB current carrying capacity	200 A
HVSB dielectric strength	1,200 V
Max. discharge capacity DUT	1,200 V, 10 mF, ~9 s
Isolation monitoring	✓ (HVSB)
Interlock	✓ (HVSB)
Safety PLC	✓ (HVSB)
Emergency shut-off	✓ (HVSB)
Precharge function	✓ (HVSB)
Active fast discharge function to below 60 V	✓ (HVSB)
Signal light	✓
HV support capacitor	✓ (optional)
3-phase dummy load	max. 600 A (optional)
Perm. ambient temperature	5 °C - 40 °C
HV-connector	Stäubli 10BV
Automation and remote-control interfaces	2 x digital input for switching requirements HV relay 2 x digital output for switching status HV relay
Communication interfaces	1 x DVI (monitor) 1 x USB 1 x safety relay (DSUB9) 1 x CAN 2.0B
External control and emergency shut-off interface	analog and digital in-/output
Peripheral interface	climate/test chamber (OSSD)
Control and operation module	touchscreen or external monitor
Developed according to standards	DIN EN ISO 13849 DIN EN 61010 DIN EN 61326 (EMC)
Devices under test (DUT)	e.g. inverter, DC/DC, converter

Order data

Article description	Item number
HVLR – High-Voltage Lab Rig	F037.B00.680-0x
HVSB – High-Voltage Safety Box	F037.B00.681-0x

Price and delivery time

upon request

Individual solutions

We offer individual customization according to your requirements

contact us

*1 Dimensions without signal light

*2 Depending on high-voltage source; Standard: "Regatron TC.P.32.1200.400.PV"; Alternative high-voltage sources upon request

*3 Dependent on low-voltage source; low-voltage source optional upon request

Bosch Engineering GmbH

Engineering Testing Solutions (BEG/EOR3)
Bergfeldstraße 2
83607 Holzkirchen
Deutschland

TestingTechnology.BEG@de.bosch.com
www.bosch-engineering.com