

HVLR – High-Voltage Lab Rig

1 200V | 200A | 32kW





Optimized lab safety for associates and DUTs

for the safe testing of power electronics in early development stages



Safe switching and monitoring of high-voltage

up to 1200V and 200A thanks to comprehensive integrated safety functions



Modular and customer-specific design

adaptable to the specific test case and expandable (e.g., with capacitor bank, low-voltage (LV) power supply unit, dummy load)

PRODUCT BENEFITS

The High-Voltage Lab Rig (HVLr) from Bosch Engineering is a fast, efficient, and – most importantly – safe solution for testing the power electronics of an electric vehicle's drive in a development lab. The high-voltage (HV) test system integrates a high-voltage power source along with electronic safety functions for the electric circuit of the component under test in a compact 19-inch test equipment cabinet.

This allows selected tests on the power electronics of electric vehicles to be performed in the high-voltage lab instead of on a test bench. System capacities can thus be used for other testing and validation activities, thereby reducing both the time and cost of development.

Thanks to its modular design, the HV test system is highly flexible and can be easily adapted to individual customer requirements. For example, voltage levels of up to 1200V can be selected as well as different communication interfaces.

Ensuring maximum safety in everyday test operations was a key focus when developing the HVLr. The resulting safety concept covers potential causes of accidents and minimizes risks when working on high-voltage circuits. In addition, the device under test is protected against damage during the testing procedure. This is particularly advantageous for prototype components that only exist in limited numbers.

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

The safety functions are implemented in the High-Voltage Safety Box (HVSb). Its many features include insulation monitoring, an interlock circuit, integration into a lab's emergency stop concept, and a programmable logic control (PLC) interface to enable application-specific integration into the test automation of the respective environment and remote operation of the HVLr. While the HVSb is included with the HVLr as standard, it is also available as a separate module so that the safety functions and the PLC interface, for example, can be retrofitted to existing high-voltage power sources.

SCOPE OF SERVICES

- Safe switching and monitoring of high-voltage up to 1200 volt / 200 ampere
- Insulation and operation monitoring
- HV interlock
- Safety PLC
- Precharge and active fast discharge function
- Emergency stop
- Touchscreen or external monitor as central control and display unit
- Communication interfaces
- Integration into test automation
- Modular design



TECHNICAL PROPERTIES

Dimensions (H×W×D)	19", 38HE/42HE 1800/2000 ¹ ×600×1000mm
Weight	300–650 kg (config. dependent)
Supply voltage ²	400VAC/63A (CEE)
HV output voltage ²	1200VDC/33A
Power consumption ²	32 kW
LV output voltage ³	12/24VDC (optional)
HVSB ampacity	200A
HVSB dielectric strength	1200V
Signal light	✓
Insulation monitoring	✓ (HVSB)
Interlock	✓ (HVSB)
Safety PLC	✓ (HVSB)
Emergency stop	✓ (HVSB)
Precharge function	✓ (HVSB)
Precharge resistor	47 Ohm, 300W, 7500J
Active DUT fast discharge function to under 60V	✓ (HVSB)
Discharge resistor DUT capacity	305 Ohm, 280W, 7200J
HV support capacitor	✓ (optional)
Discharge resistor support capacitor	204 Ohm, 300W, 7500J
3-phase dummy load	Config. dependent (optional)
Perm. ambient temperature	5–40°C
HV connector (DC)	Stäubli 10BV
Automation and remote control interfaces	Digital I/O + ext. emergency stop, CAN 2.0B
Communication interfaces	1×DVI (monitor) 1×USB
Peripheral interface	Climate/test chamber (OSSD)
Control and operation module	Touchscreen (PLC-compatible), external monitor + mouse
Developed acc. to standards	DIN EN ISO 13849 DIN EN 61010 DIN EN 61326 (EMC)
Devices under test (DUT)	E.g., inverters, converters (DC/DC)

ORDER DATA

Part designation	Part number
HVLR – High-Voltage Lab Rig	F037.B00.680-0x
HVSB – High-Voltage Safety Box	F037.B00.681-0x

Price and delivery time
On request

INDIVIDUAL CUSTOMIZATIONS

We offer individual customizations to suit your specific requirements
On request

¹ Height excl. signal light and casters;
alternative dimensions on request

² Dependent on high-voltage source; e.g., Regatron TC or G5;
alternative high-voltage sources on request

³ Dependent on low-voltage source;
alternative low-voltage sources optional on request