

Safety Instructions

HV Breakout Module Type 3.3



General safety instructions

Please observe the following safety instructions and signs provided with the measurement modules as well as the safety-specific information in the accompanying technical documentation.

WARNING!



HV Breakout Modules of type HV BM 3.3 are used in high-voltage applications.
Improper use may result in life-threatening electrical shocks.
 ☞ Only use qualified and trained personnel.
 ☞ Observe safety instructions.

WARNING!



The orange lid of the device housing can be removed to mount or dismount the HV power cables.
 ☞ Before removing the lid, make sure that the HV power cables are de-energized.
 ☞ Fix the HV power cables with the ring terminals and nuts supplied or with suitable equivalents.
 ☞ Observe the mounting instructions in the user guide. It is particularly important that lid and cable glands are properly mounted in order to ensure the tightness of the housing.

WARNING!



If the HV power cables cannot be disconnected from the power supply, there is danger to life due to electrical shocks!
 ☞ Make sure that the work is only carried out by trained, qualified electricians, e.g. in accordance with DIN VDE 1000-10 or an equivalent local/national standard.

WARNING!



When using HV power cables made of aluminum in combination with ring terminals for HV power cables made of copper, the contact resistance between the two components increases.
This can lead to a massive increase in temperature and in the worst case to the development of fire.
 ☞ Use ring terminals for copper cables only in combination with HV power cables made of copper! HV power cables made of aluminum require a specific connection technology. Please contact our technical support for further information.

WARNING!

HV Breakout Modules of type HV BM 3.3 are not integrated into the interlock loop. The improper opening of the device housing compromises the operational safety of the HV measurement module and entails the risk of life-threatening electrical shocks.

If the lid is not mounted, there is danger to life by accidentally touching non-insulated contacts at high-voltage potential.

- ☞ Remove the lid only to connect the HV power cables and then re-mount it properly.
- ☞ Do not modify the HV measurement module in any way, neither electrically nor mechanically.
- ☞ Only operate the high-voltage measurement module with the lid closed.

WARNING!

The internal temperature of the measurement module and the temperature of the shunts must not exceed +120 °C. As soon as the temperature of a shunt exceeds this value, the HV breakout module sends the error code "0x8001" instead of the measured values for U and I. The user usually does not see this error code but the error message "THERMAL_OVERLOAD" that has been generated from the DBC or A2L file. This data is sent until the temperature of all shunts drops below +115 °C again.

Exceeding the specified temperature impairs the operational safety of the HV measurement module. There are risks including life-threatening electrical shocks and fire hazards.

- ☞ Tighten the nuts for fastening the ring terminals with the specified torque to keep the contact resistance low (observe the installation instructions in the user guide).
- ☞ Reduce or interrupt the current flow through the shunts to prevent a further temperature increase of the module.
- ☞ Always monitor the temperatures in order to make sure that the threshold value will not be exceeded.

WARNING!

The measurement module has to be connected to ground or protective earth (PA/PE) in order to ensure user safety.

In the event of a fault, there is danger to life due to high-voltage potential if the ground connection is not established.

- ☞ Connect the measurement module to ground/PE using a suitable ground cable.
- ☞ Only use qualified and trained personnel.

CAUTION!

The measurement module can heat up considerably if it is operated in a specific working environment (e.g. engine compartment). The shunts integrated in the measurement module can also build up heat during operation under high load.

Touching the surface of the module may cause serious burns.

- ☞ Let the measurement module cool down before handling, especially before removing the orange-colored lid.
- ☞ Wear appropriate safety gloves, if required.



- ▶ Only use qualified and trained personnel for handling HV Breakout Modules.
- ▶ Make sure that HV Breakout Modules are only operated within an operating temperature range of -40 °C to +120 °C and at a relative humidity of max. 95 % (non condensing).
- ▶ To ensure operational safety, an HV Breakout Module has to undergo an isolation test in accordance with the latest edition of EN 61010 at least once per year.
- ▶ Before initial operation, read the entire documentation that has been delivered with the HV Breakout Module thoroughly. The operating personnel has to be instructed accordingly. Please contact CSM GmbH with any further questions.

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