

Safety Instructions

HV BM-Split evo



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.

These safety instructions apply to the HV BM-Split evo measurement system, which consists of the **HV SAM1 evo** measurement module and the breakout boxes for current and voltage measurement. The breakout boxes for current and voltage measurement are available in standard housings (**HV SBM_I evo** and **HV SBM_U evo**) and in larger housings (**HV SBML_I evo** and **HV SBML_U evo**) for connecting HV power cables made of aluminum. The designation **HV SBM(L) evo** includes all four breakout boxes.

WARNING!



The modules of an HV BM-Split evo measurement system are used in high-voltage applications. **Improper use may result in life-threatening electrical shocks.**

- ☞ Only use qualified and trained personnel (observe local guidelines/regulations).
- ☞ Do not modify the modules, neither mechanically nor electrically.
- ☞ Observe safety instructions.

WARNING!



The orange lids of the breakout boxes can be removed to mount or dismount the HV power cables. If the lids of the housings are not mounted and the HV cables are not de-energized, there is a risk of accidentally touching non-insulated contacts at high-voltage potential.

If the device is not de-energized, there is a risk of life-threatening electrical shocks.

- ☞ Only operate the HV SBM(L) evo modules with the lids mounted.
- ☞ Before removing the lids, make sure that the HV power cables and connected components (HV SBM(L) evo, K917) are de-energized.
- ☞ Remove the lids only to connect the HV power cables and then re-mount them properly.
- ☞ Only use ring terminals approved by CSM for the HV power cables.
- ☞ Only use the installation material supplied by CSM for mounting the HV power cables.
- ☞ Observe the mounting instructions in the user guide. It is particularly important that the lids and the cable glands are properly mounted in order to ensure the tightness of the housing.

WARNING!

If an HV SBM(L) evo or a K917 are connected to HV sources, HV potential will be applied to the pins of the HV connectors of the outgoing measurement cables.

If the HV connectors are not plugged in, there is a danger to life due to HV potential.

- ☞ Make sure that the HV connectors are properly insulated with their protective caps when they are not plugged in.
- ☞ Only use qualified and trained personnel (observe local guidelines/regulations).

WARNING!

Only ring terminals that match the conductor material of the HV power cables and the braided shields must be used. CSM provides suitable ring terminals for the inner conductors and the braided shields.

A high contact resistance between conductor and ring terminal can lead to a massive increase in temperature and, in the worst case, to the development of fire.

- ☞ When connecting the inner conductors and braided shields of the HV power cables, only use ring terminals provided by CSM.
- ☞ HV power cables with conductors made of aluminum must only be connected to HV SBML_I evo or HV SBML_U evo breakout boxes.

WARNING!

The temperature of the shunt module in an HV SBML_I evo or HV SBML_U evo must not exceed +120 °C. As soon as the shunt temperature exceeds this value, the HV SAM1 evo 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 the shunt drops below +115 °C again.

Exceeding the specified temperature impairs the operational safety of the 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 shunt to prevent a further temperature increase.
- ☞ Always monitor the temperature in order to make sure that the threshold value will not be exceeded.

WARNING!

The modules of an HV BM-Split evo measurement system have to be connected to the vehicle chassis 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 all modules to the vehicle's potential equalization or PE using suitable ground cables.
- ☞ Only use qualified and trained personnel (observe local guidelines/regulations).

CAUTION!

The modules can heat up considerably if they are operated in a specific working environment (e.g. engine compartment). The shunt installed in an HV SBML_I evo or HV SBML_U evo can also heat up considerably during operation under high load.

Touching the surfaces of the modules may cause serious burns.

- ☞ Let the modules cool down before handling, especially before removing the orange-colored lids.
- ☞ Wear appropriate safety gloves.



- ▶ Only use qualified and trained personnel for handling an HV BM-Split evo measurement system.
- ▶ Make sure that an HV BM-Split evo measurement system is 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 isolation test in accordance with the latest edition of EN 61010 has to be carried out on the entire HV BM-Split evo measurement system.
- ▶ The entire documentation that has been delivered with the HV BM-Split evo measurement system has to be read thoroughly before initial operation. The operating personnel has to be instructed accordingly. Please contact CSM GmbH with any further questions.



CSM GmbH Headquarters (Germany)

Raiffeisenstraße 36 • 70794 Filderstadt
☎ +49 711-77 96 40 ✉ sales@csm.de

CSM Office Southern Europe (France, Italy)

ArchParc • Immeuble ABC 1 • Entrée A
60, rue Douglas Engelbart • 74160 Archamps, France
☎ +33 4 50 95 86 44 ✉ info@csm-produits.fr

CSM Products, Inc. USA (USA, Canada, Mexico)

1920 Opdyke Court, Suite 200 • Auburn Hills, MI 48326
☎ +1 248 836-4995 ✉ sales@csmproductsinc.com

CSM (RoW)

Vector Informatik (China, Japan, Korea, India, Great Britain)

ECM AB (Sweden)

DATRON-TECHNOLOGY (Slovakia, Czech Republic)

Our partners guarantee you worldwide availability.

Feel free to contact us.

CSM GmbH Germany is certified.



All trademarks mentioned are property of their respective owners.
Specifications are subject to change without notice.
CANopen® and CiA® are registered community trademarks of CAN in Automation e.V.
EtherCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.