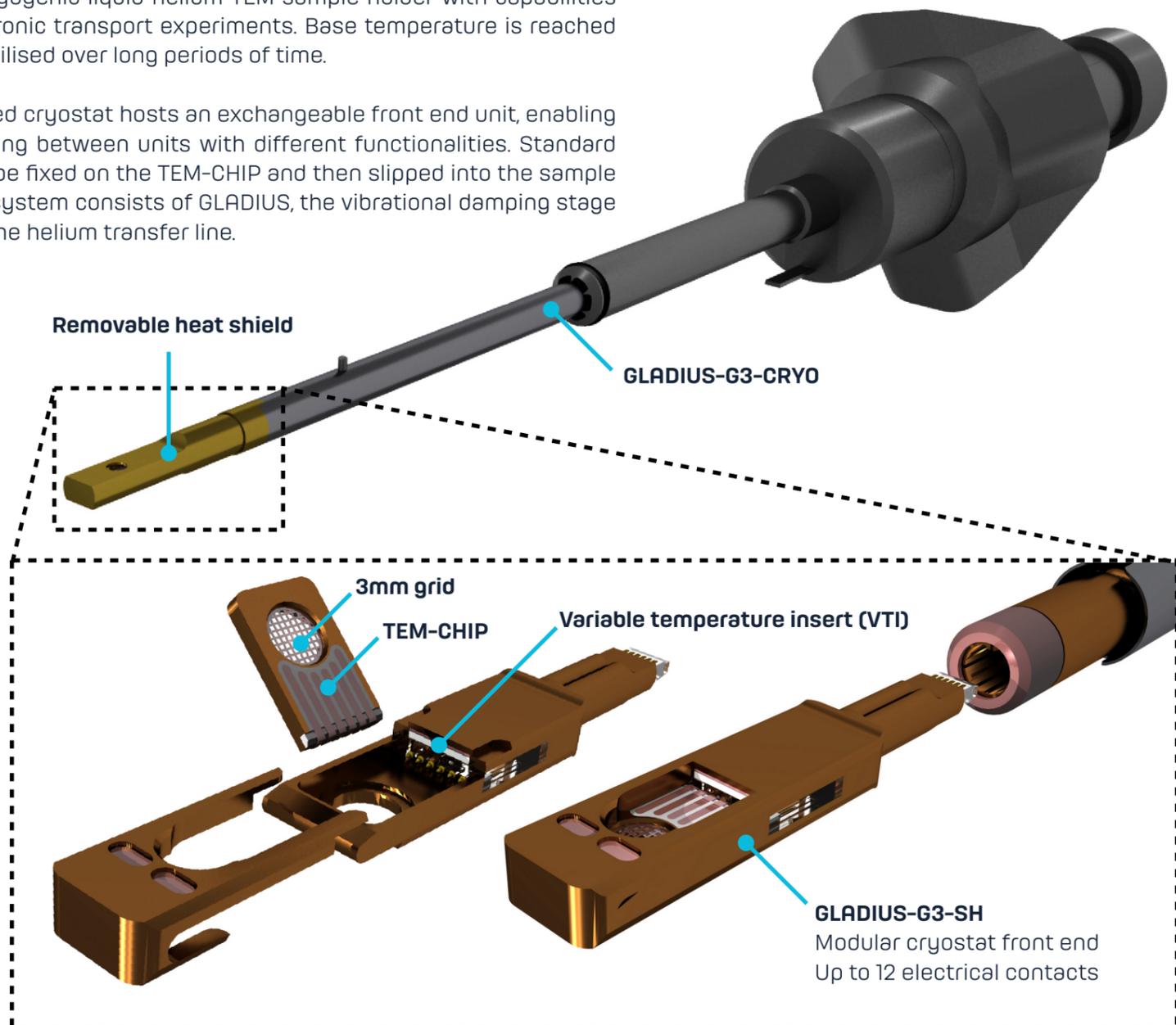


GLADIUS-G3

GLADIUS is a cryogenic liquid helium TEM sample holder with capabilities for in situ electronic transport experiments. Base temperature is reached swiftly and stabilised over long periods of time.

The fully shielded cryostat hosts an exchangeable front end unit, enabling modular switching between units with different functionalities. Standard 3mm grids can be fixed on the TEM-CHIP and then slipped into the sample holder. The full system consists of GLADIUS, the vibrational damping stage (CORVUS) and the helium transfer line.



Variable temperature insert (VTI)

The internal temperature control unit operates with a Cernox[®] sensor and a $\sim 25\Omega$ NiCr MEMS heating element, from room temperature down to cryo conditions. We recommend a Lakeshore temperature control unit, e.g. the Model 350.

Vibrational damping (CORVUS)

There are three main sources of vibrations that are damped with CORVUS. (1) Externally induced vibrations, e.g. through the ground floor to the dewar, are absorbed by a damped stage on which the dewar is placed. (2) Helium flowing through the transferline and back to the recovery line creates subtle vibrations that are absorbed by a suspension assembly. (3) Bubble formation of boiling liquid helium is frustrated by a copper-sponge construction inside the cryostat.

Liquid helium dewar

Continuous supply of liquid helium has to be provided by a helium dewar, with a capacity of at least 100 litres. Capability to increase the internal helium gas pressure is important to adjust the liquid helium flow and cool-down time. The cryogenic state can be stabilised for more than 24 hours. We recommend a STRATOS 100SL from Cryotherm as a helium dewar.

Liquid helium recovery

Helium is a limited and nonrenewable resource on planet earth and has to be treated as such. We strongly recommend usage of a helium recovery system. If your research facility is not equipped with such a system, we can help you with possible solutions.

Specifications

Base temperature	< 10K
Cool-down time	~ 15 min
Holding time	24+ hours
Electrical leads VTI	6
Electrical leads free	6
Drift rate	TBA 2021
Resolution	TBA 2021
Materials (UHV compatible)	Sapphire, Ruby, Al_2O_3 , $AlMgSi_{0.5}$, OFHC Cu, $CuBe_2$, 1.4404, 1.4301, NiCr, CoCr, Au, ZrN, Ti-6Al-4V, AlN, Mo