

SAMPLE HOLDERS WITH “HECTOR” VECTOR MAGNET ENDSTATION

1. SH-ST-LONG (sample holder, standard, long)

Characteristics:

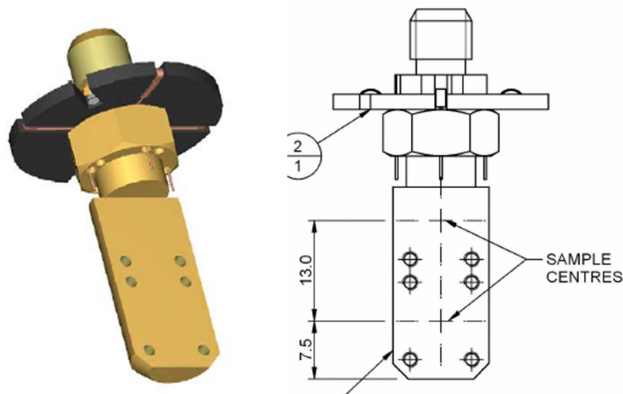
- Standard for lowest temperature, electron yield sample holder, “double” size
- Made of copper, with gold plating

Sample fixing method: soft sticking directly on sample holder or hard fixation on plates

- Aluminum plates and titanium fixing screws available for sample mounting
- Double side carbon UHV tape (conducting)
- Silver paint (conducting, drying at low temp 50-100C for half or one hour)
- Hard silver epoxy on plates (recommended for scrapping, filing, cleaving). This is not allowed in sample holders directly, it damages the gold plating and it is laborious to remove.

Quantity available: 3 (checked on Jan. 17th, 2013); one missing

Drawing&Dimmensions:



Typical sample size, samples fitted on one sample holder:

Two samples of up to 1.0 cm on the front, other two on the back. Up to three or four small size samples on each side have been mounted by users. When using many samples a drawing, photo is recommended. The samples mounted in the back have a bit more risk of being touched or get loose during sample transfers, and they cannot be too thick (again they cannot exceed the diameter of the “nut” when mounted).

Sample/mounting thickness should not be more than 2-3 mms. Thicker samples can be mounted on the central part (they should be within the dimension of prolonging the “nut”).

2. SH-ST-TS-SHORT (sample holder, temperature sensor, short)

Characteristics:

- Standard for lowest temperature, electron yield sample holder, double size
- Made of copper with gold plating
- With Cernox temperature sensor on the back

Nota bene:

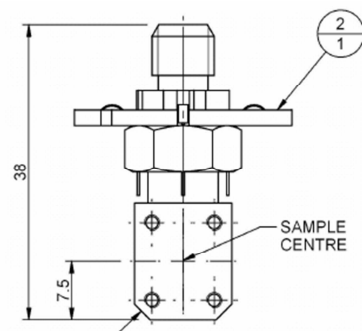
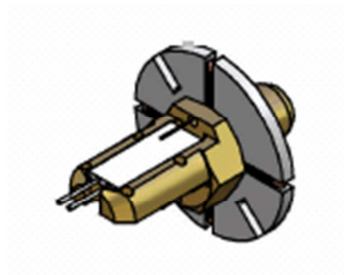
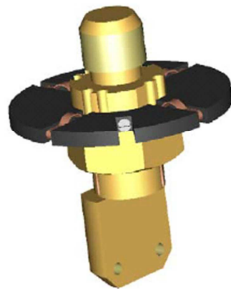
- sensor sample holder may lead to increased noise in the TEY detected signal compared to nude sample holder
- only front of sample holder available for samples

Sample fixing method: soft sticking directly on sample holder or hard fixation on plates

- Aluminum plates and titanium fixing screws available for sample mounting
- Double side carbon UHV tape (conducting)
- Silver paint (conducting, drying at low temp 50-100C for half or one hour)
- Hard silver epoxy on plates (recommended for scrapping, filing, cleaving)

Quantity available: 1 (checked on Jan. 17th, 2013); (recently we were having some problems and think is fixed, but if you need this please request and ask for that).

Drawing&Dimmensions:



3. SH-ST-FS-SHORT (sample holder, magnetic field hall-probe sensor, short)

Characteristics:

- Standard for lowest temperature, electron yield sample holder, double size
- Made of copper with gold coating
- With magnetic field hall/probe sensor on the back

Nota bene:

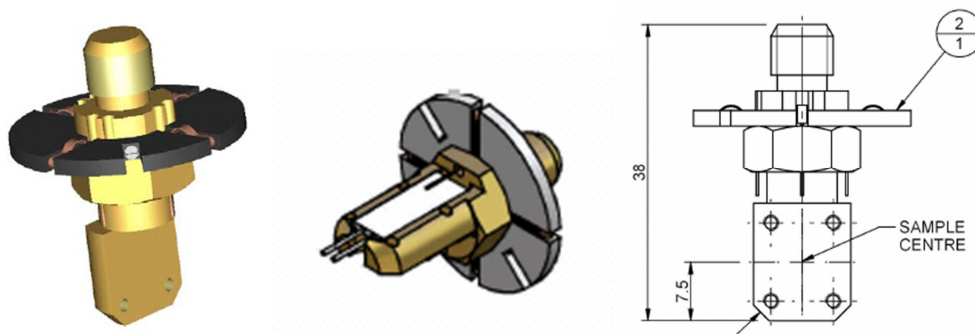
- sensor sample holder may lead to increased noise in the TEY detected signal compared to nude sample holder
- only front of sample holder available for samples

Sample fixing method: soft sticking directly on sample holder or hard fixation on plates

- Aluminum plates and titanium fixing screws available for sample mounting
- Double side carbon UHV tape (conducting)
- Silver paint (conducting, drying at low temp 50-100C for half or one hour)
- Hard silver epoxy on plates (recommended for scrapping, filing, cleaving)

Quantity available: 1 (checked on Jan.17th, 2013)

Drawing&Dimmensions:



4. SH-TR-LARGE (sample holder, transmission, large holes)

Characteristics:

- Standard for low temperature, transmission and also electron yield sample holder, double size and large holes
- Made of copper with gold coating

Nota bene:

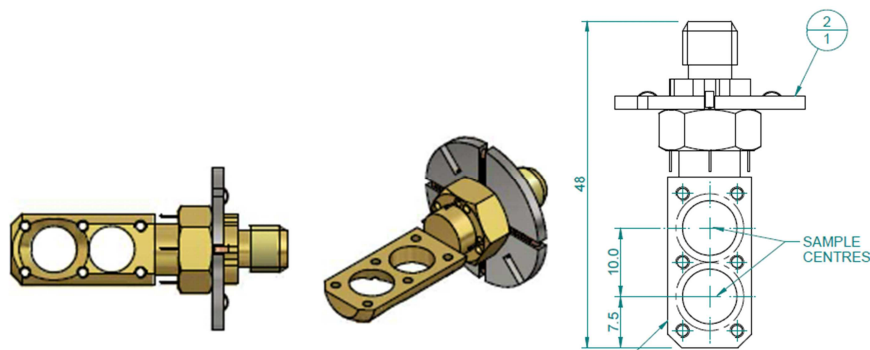
- less contact surface for TEY measurements
- less contact surface for lowest temperature measurements

Sample fixing method: soft sticking directly on sample holder or hard fixation on plates

- Aluminum plates and titanium fixing screws available for sample mounting
- Double side carbon UHV tape (conducting)
- Silver paint (conducting, drying at low temp 50-100C for half or one hour)
- Hard silver epoxy on plates (recommended for scrapping, filing, cleaving)

Quantity available:1; another one broken following intervention on November 2012 with the help of Nick Shaw from Sci.Magn. (checked on Jan.17th, 2013)

Drawing&Dimmensions:



5. SH-TR-SMALL (sample holder, transmission, small holes)

Characteristics:

- Standard for lowest temperature, electron yield sample holder, double size
- Made of copper with gold coating

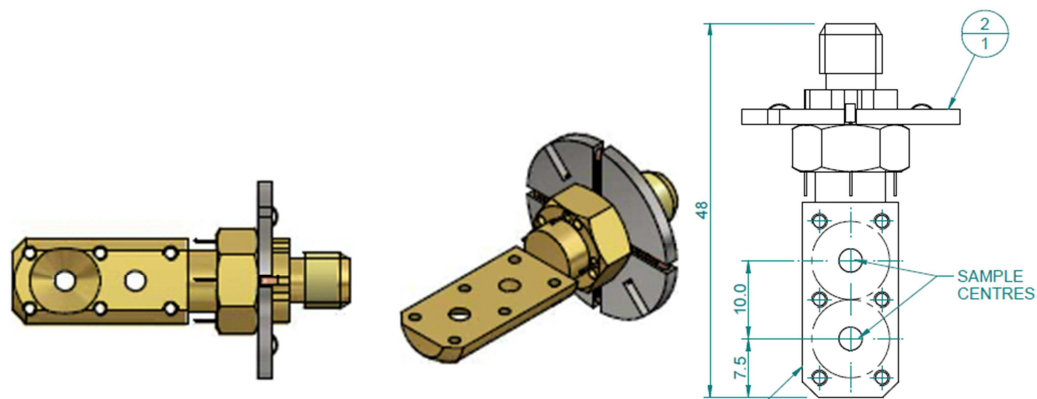
Nota bene:

- sensor sample holder may lead to increased noise in the TEY detected signal compared to nude sample holder
- only front of sample holder available for samples

Sample fixing method: soft sticking directly on sample holder or hard fixation on plates

- Aluminum plates and titanium fixing screws available for sample mounting
- Double side carbon UHV tape (conducting)
- Silver paint (conducting, drying at low temp 50-100C for half or one hour)

Drawing&Dimmensions: 2; (both @ ICN, Gambardella's group) (checked on Jan.17th, 2013)



6. SH-STM-1 (sample holder, for STM plates, 1st design)

Characteristics:

- Standard for adapting/receiving samples on STM plates
- Made of copper with gold coating
- With magnetic field hall/probe sensor on the back

Nota bene:

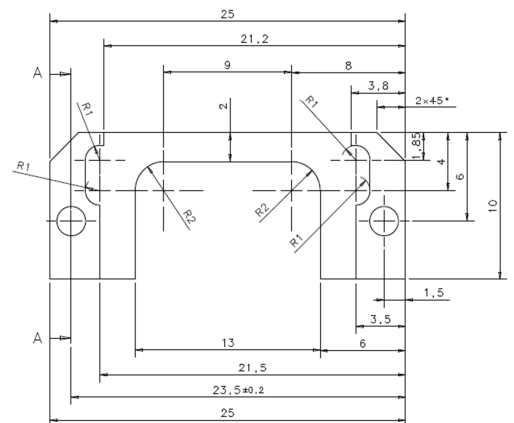
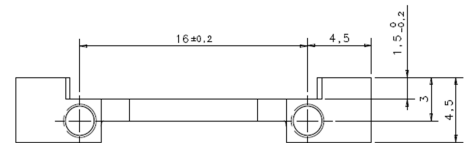
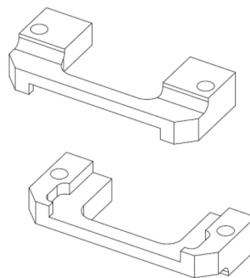
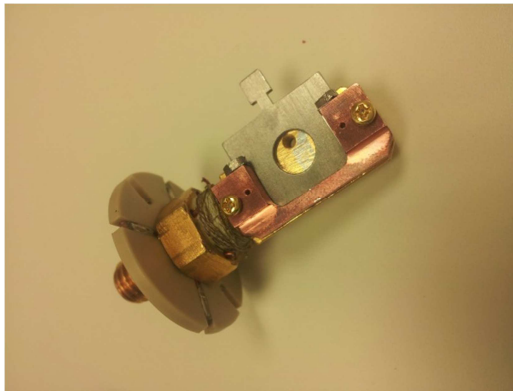
- required for experiments using the STM (when available)
- required for experiments using the heating stage
- check sample (single crystal,...) maximum dimensions and recommended dimensions and shape
- we recommend STM plate made of copper for best temperature conductivity (lowest temperature)
- we recommend STM plate made of molybdenum for high temperature annealing

Sample fixing method: soft or hard sticking directly on STM plates, clips and screws

- STM plates and titanium fixing screws available for sample mounting
- Double side carbon UHV tape (conducting)
- Silver paint (conducting, drying at low temp 50-100C for half or one hour)

Drawing&Dimensions: 1 (checked on Jan.17th, 2013)

STM plate drawing and dimensions:



7. SH-LEEDSTM-1 (sample holder, for LEED AND STM plates, 1st design)

To be completed with Pierluigi sample holder drawing and photos

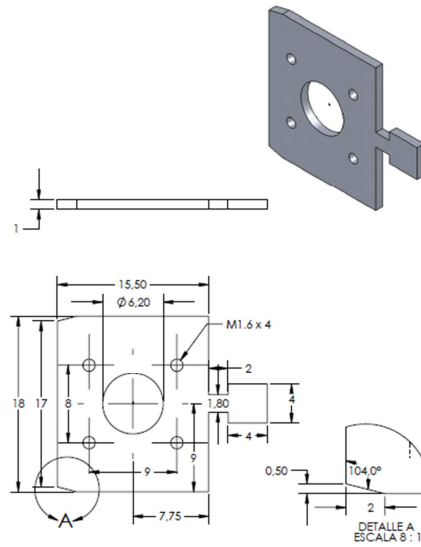
8. Some further examples (under elaboration)

8.1. Mounting STM plates for use of heating stage or STM



STM work (not available yet) will require to follow ICN STM compatible STM plates and sample dimensions. For reference, ICN stm plate (Ceballos) is shown below.

Heating stage (ferrovac) requires STM plates. Omicron and Spec and Ferrovac standard will work, as well as the ICN custom made plates. Platen material should be consistent with maximum annealing temperature.



8.2. Sample mounting examples

Left: NPs on double side adhesive Carbon tape, stick directly on the sample holder

Mid: Solid sample stick on Carbon tape, plus sample for scratching epoxy glue to plate, screw on the sample holder.

Right: spot welded hat shape single crystal fixed onto an omicron plate, sustained with clips on the copper sample holder.

None of these is using the available 4-contact wiring, and only the sample drain current connection.



Transmission setups. Membranes could be spot welded, silver paint stick (here below) or fixed with clips or plates, or others. Four contacts may be used or not as well, depending on sample mounting (i.e. if using an isolant plate stick)

