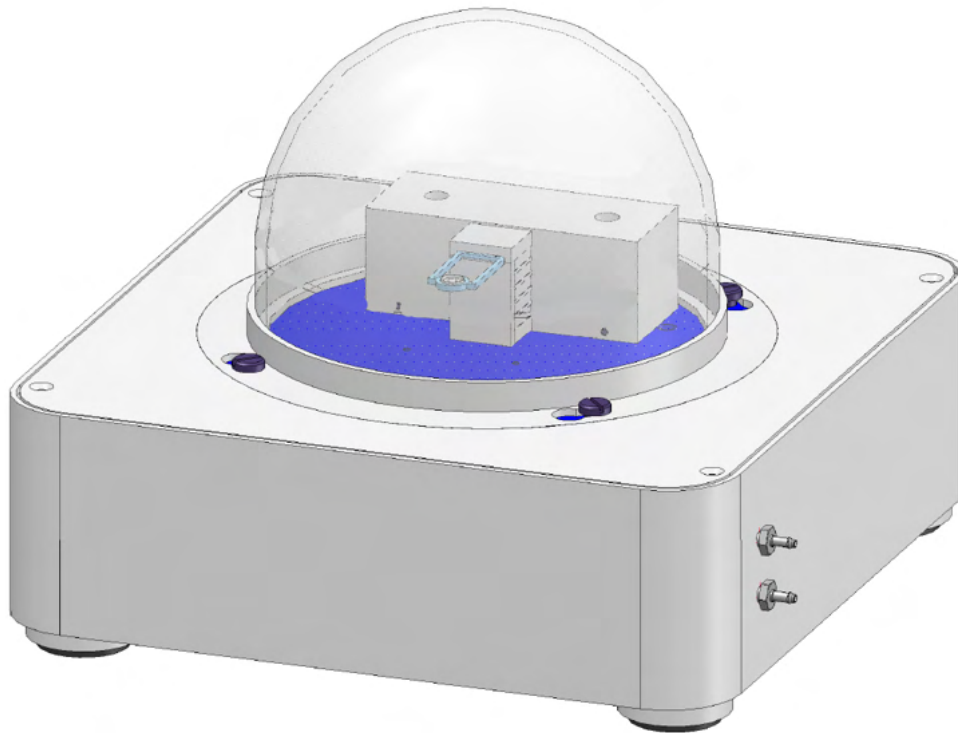


How To Low temperature measurements with Chip-DSC



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1. General information

This manual is a short description for handling measurements with the Chip DSC in combination with a cooling option to investigate subambient measurements. The presented options are the most common, that are usually used. However, due to continuously development changes and new options are possible. For more Information, read the other available instructions or specific manuals for the Chip DSC.

2. Preparation of the Chip-DSC 10 System

2.1 Peltier system

- Easy to use and continuous cooling option with thermo electric generators
- ΔT up to 30 K below ambient temperature is possible
- place the cooling block on the ready to use Chip-DSC 10
- tighten the screws at the blue main plate
- connect the Peltier cooler with power supply and turn on the cooling device

2.2 QuenchCooling system

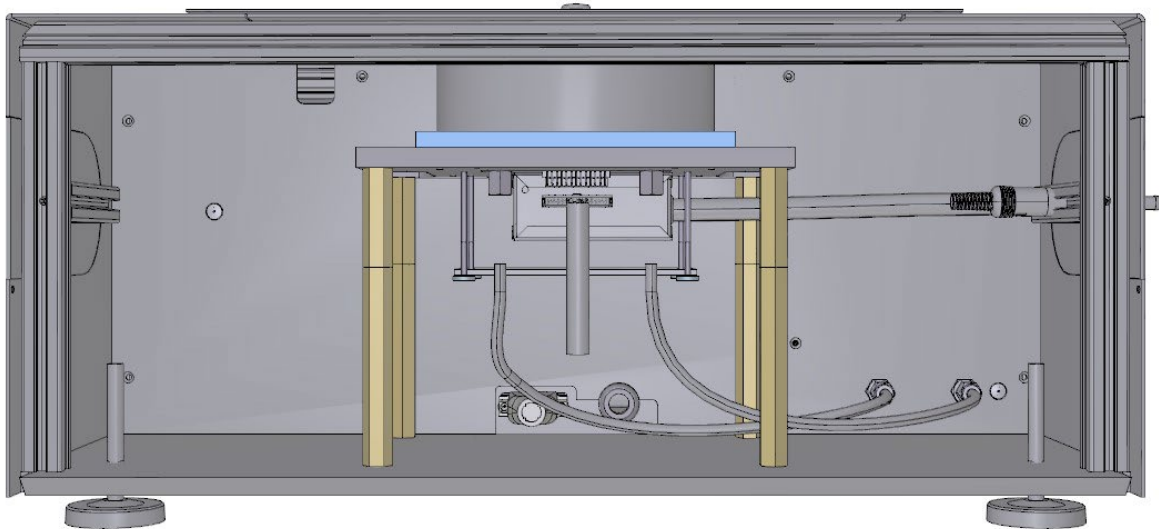
- Easy to use and efficient cooling option with liquid nitrogen for lowest temperatures
- Temperatures down to $-180\text{ }^{\circ}\text{C}$ are possible
- Place the cooling block on the ready to use Chip-DSC 10
- Tighten the screws at the blue main plate
- Fill the QC container with liquid nitrogen until you reach the required temperature
- Closing the measurement cell during cooling and measurement avoid condensation near the sensor

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3. Preparation of the Chip-DSC 100 System

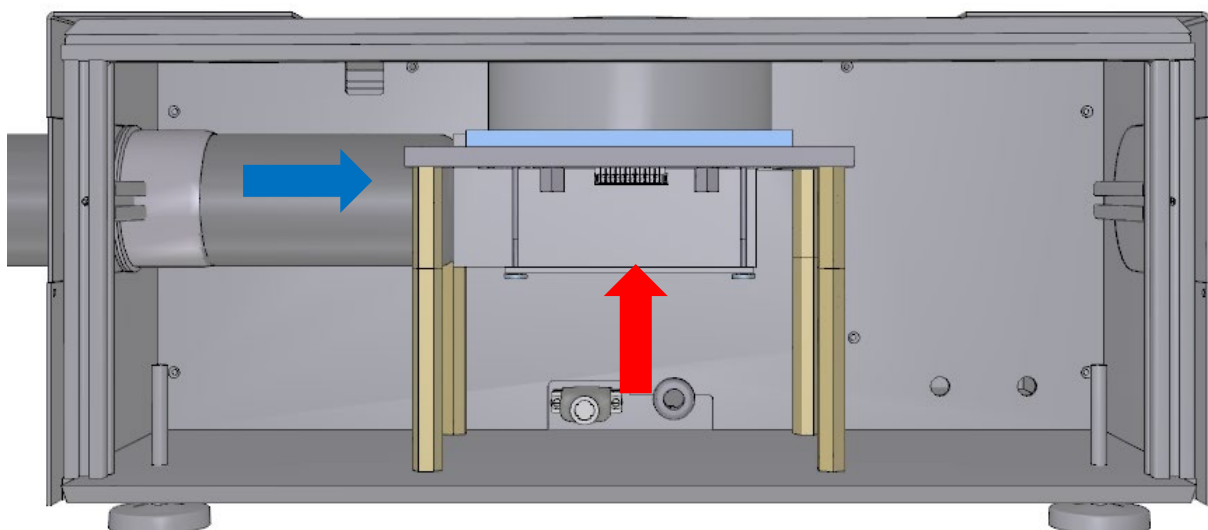
3.1 Peltier system

- Affordable and easy to use cooling option for investigations near room temperature
- ΔT up to 30 K below ambient temperature is possible
- The system is already installed and can be turned on by the switch at the side of your Chip-DSC 100



3.2 Intracooler System

- Closed system and easy to use cooling option for investigations at lower temperatures
- up to $-99\text{ }^{\circ}\text{C}$ at coolfinger is possible
- insert the coolfinger carefully in the hose of the adapter in your Chip-DSC 100
- Tighten the screw at the bottom of the cooling hose
- Turn on the Intracooler directly at the back of the cooling system (attend the instructions of your



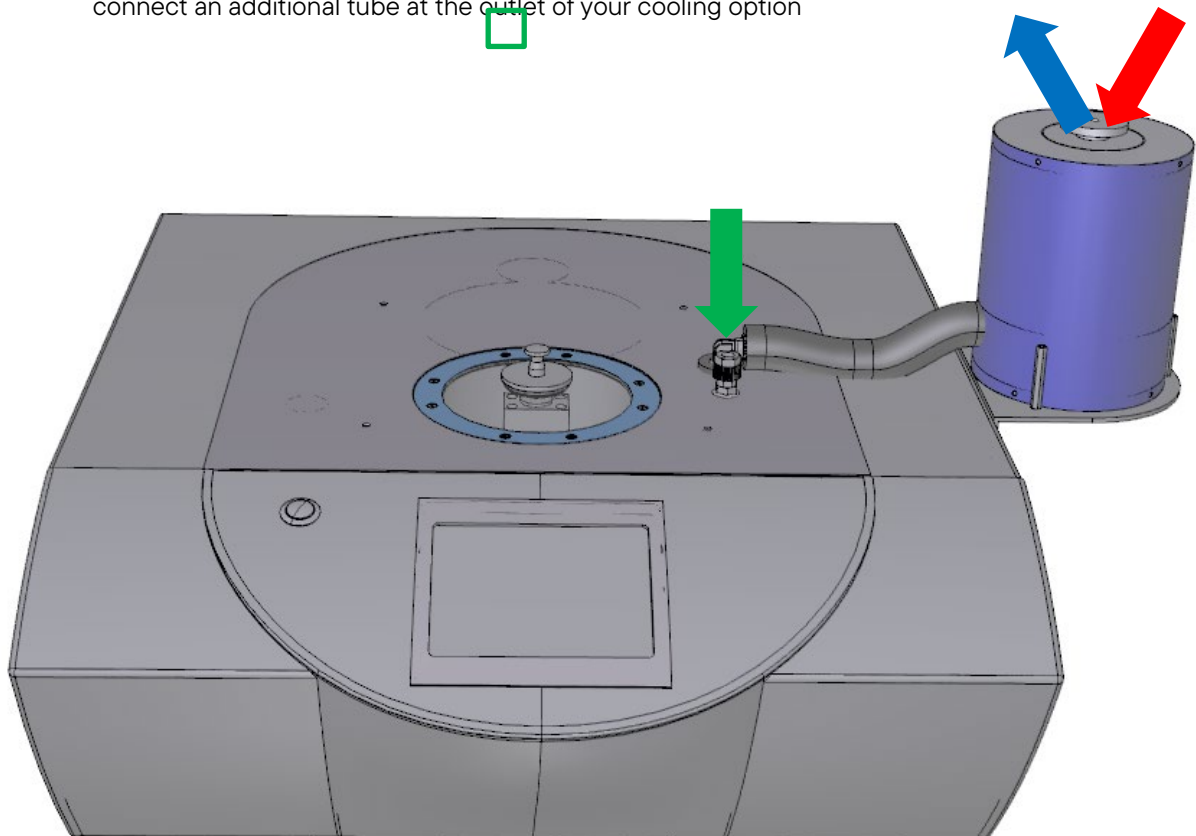
Intracooler)

3.3 manual LN2 system

- Liquid nitrogen powered and manual cooling option for investigations at lowest temperatures
- investigations from $-150\text{ }^{\circ}\text{C}$ are possible
- open the cap of your Quench cooling reservoir
- Fill the reservoir with liquid nitrogen until you reach the required temperature

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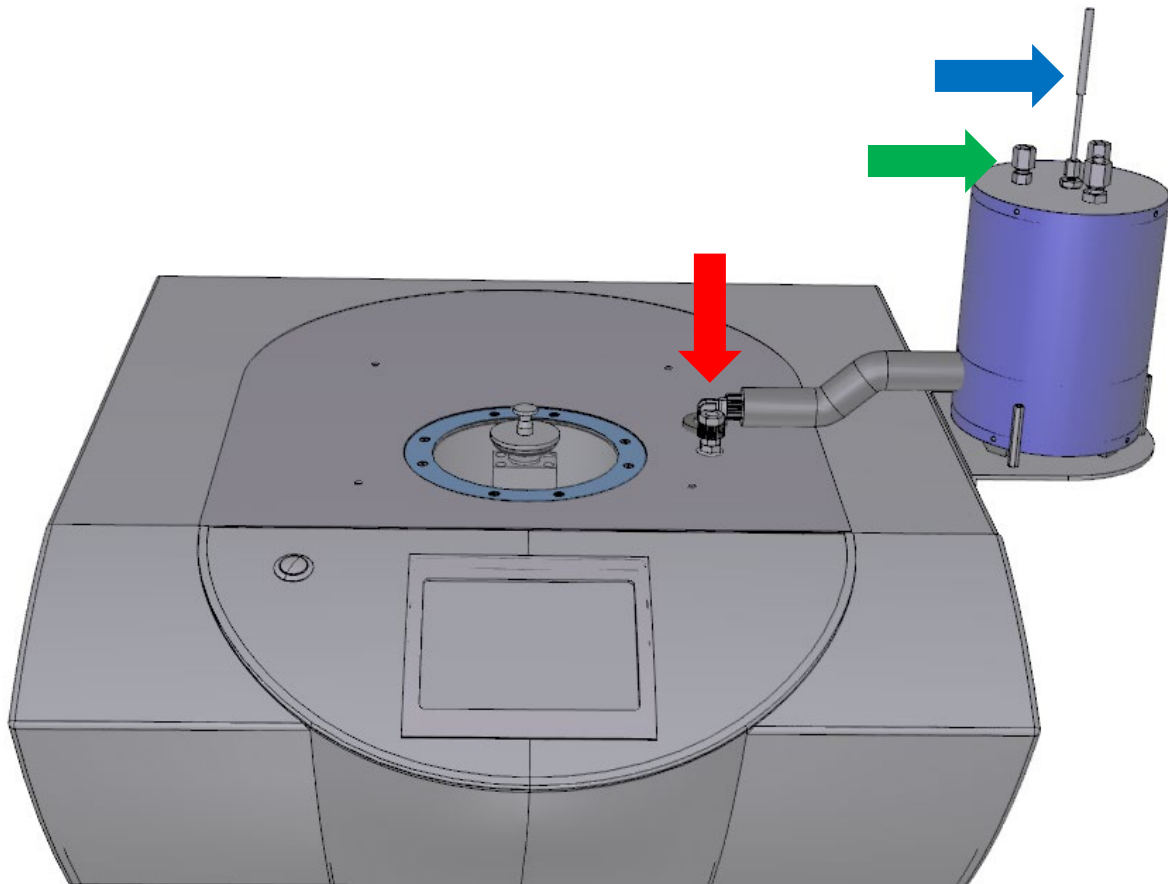
- To avoid evaporated liquid nitrogen in your lab it is possible to connect an additional tube at the outlet of your cooling option



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3.4 Automatic LN2 system

- Liquid nitrogen powered and automatic cooling option for investigations at lowest temperatures
- investigations from -150 °C are possible
- adjust the level of the temperature sensor in your liquid nitrogen reservoir
- Connect the tube of your Dewar bottle with the inlet of your Chip-DSC 100
- To avoid evaporated liquid nitrogen in your lab it is possible to connect an additional tube at the outlet of your cooling option



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4. Calibration hints

- Calibrate the device starting from room temperature
- Please follow the instructions of *HowTo calibrate Chip-DSC*
- You can also combine different calibration measurements as described in the previously mentioned instructions
- For liquid calibration samples make sure they don't evaporate when you put them from balance to the precooled measurement cell e.g. by using closed crucibles

5. Measurement hints

- Make sure the measurement cell is closed properly to avoid convection and condensation
- Using dry gas also helps to avoid condensation, also purge while changing the sample
- For liquid samples make sure they don't evaporate when you put them from balance to the precooled measurement cell e.g. by using closed crucibles
- Different investigations require different cooling options to achieve the best version
- Make sure the heating-pad (General Settings – Instrument) is turned on while you cool the device to avoid condensation.

