



DCS 500 Domed Cooling Stage

The DCS 500 Domed Cooling Stage from Anton Paar extends the specification range for heating and cooling samples on four-circle goniometers and XYZ stages.

“Cool stuff” on a cradle!

The first of its kind

DCS 500 is an upgraded and unique attachment for in-situ X-ray diffraction studies at temperatures between -180 °C and 500 °C. It is a compact and low-weight instrument and can be attached to most common four-circle goniometers and XYZ stages.

Precise temperature control

The sample is heated by resistance heating and is cooled with liquid nitrogen. A Pt100 temperature sensor in the sample holder is used for high-precision temperature measurement. The combination of liquid nitrogen flow, induced by the underpressure of a venturi nozzle, and a temperature control unit provides for an exact temperature control.

Clever design

The clever design guarantees a high temperature uniformity and good position stability of the sample over the whole temperature range. Samples are mounted with springs and are easily exchangeable.

The DCS 500 housing is temperature-controlled with water to avoid condensation at low temperatures and heat transfer to the cradle. The layout of the supply hoses provides the best possible flexibility.

Innovative components

The X-ray transparent dome, made of graphite, allows samples to be investigated in controlled atmospheres. Vacuum or inert gas prevents chemical reactions of the sample at high temperatures or condensation at low temperatures. Cooling or heating of the dome is not necessary.

Features and benefits

- Applicable for a variety of non-ambient X-ray studies in reflection geometry like stress analysis, phase transition investigations, profile analysis and many more
- Measurements over the whole orientation space
- High temperature uniformity
- Compact design and low weight
- Investigations in air, inert gas or vacuum
- Easy sample exchange
- Fits to most common four-circle goniometers, replacing the standard sample holder
- Free of poisonous materials, such as Beryllium
- For flat samples and powder samples



Technical Specifications

Operating temperature

- in air, inert gas Ambient to 500 °C
- in vacuum -180 °C to 500 °C

Temperature measurement Pt100 acc. to DIN 43760

Temperature control CCU 100 Combined Control Unit

Atmospheres vacuum ($<5 \times 10^{-1}$ mbar), air, inert gas

Max. operating pressure 0.3 bar above atmospheric pressure

Dimensions/Weight

Diameter 115 mm

Height (without dome) 36.5 mm

Weight 850 g

Sample size Max. 25 mm diameter

Materials

Housing Nickel-plated aluminum alloy

Sample holder Nickel-plated copper alloy

Dome Graphite

Your distributor: