kiutra

S-Type Optical

The New Platform for Optical Quantum Technologies and Material Science

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Compact Sub-Kelvin Cryostat with Free-beam Access

Optical access
Large free-beam access down to the mK stage in a vertical direction.

Proprietary cryogenic interface
Allowing simple integration of experiments prepared outside the cryostat.

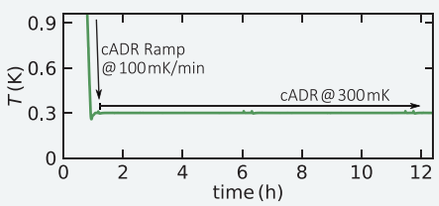
Continuous and cryogen free operation
Continuous operation at 300 mK independent of helium-3 supply.

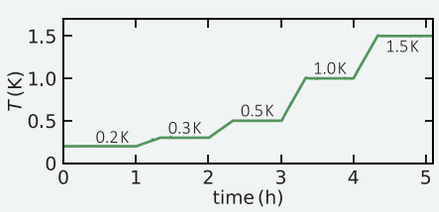
Compact platform
The cryostat and all control equipment can be mounted in a 19" rack.

- Continuous Cooling at **300 mK**
- Free-beam Access **ø > 20 mm**
- Vibration Level **< 200 nm**
- Sample Magnet **3 T || optical axis**

Cryogen-free continuous operation through cADR

In its standard configuration, the S-Type Optical uses two ADR units to generate continuous magnetic cooling (cADR). The top figure shows the temperature of the ADR units running in continuous mode at 300 mK. While the assisting ADR unit cycles between the 4 K main heat bath (provided by the cryocooler) and a temperature below the target temperature, the second unit controls the sample temperature. As a result, the sample stage can maintain a constant temperature of 300 mK with a typical temperature stability of less than 0.1%, and slightly reduced stability of 4% when activating its heat switch (HS) to initialize the regeneration. The bottom figure shows the temperature control, stepping the sample stage temperature between 200 mK and 1.5 K.





Specs

System size (w x l x h)	cryostat & electronics	94 x 94 x 208 cm	**Temperature stability**	typical	< 0.1%
	compressor	54 x 45 x 50 cm		while switching HS	< 4%
Weight	cryostat & electronics	< 600 kg	**Cooling power**	@300 mK @1 K	15 µW 250 µW
Cooldown time	cryostat	32 hrs	**Free-beam access**	diameter	> 20 mm
Available sample space	diameter height	47 mm 100 mm	**Vibration**	@1500 Hz switching HS	< 200 nm < 1.5 µm

See all specs ▸
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Options

▸ **3 T sample magnet** smooth bipolar operation to study magnetic properties

▸ **Wiring**
40 DC and up to 4 RF to the sample stage