DRS Models

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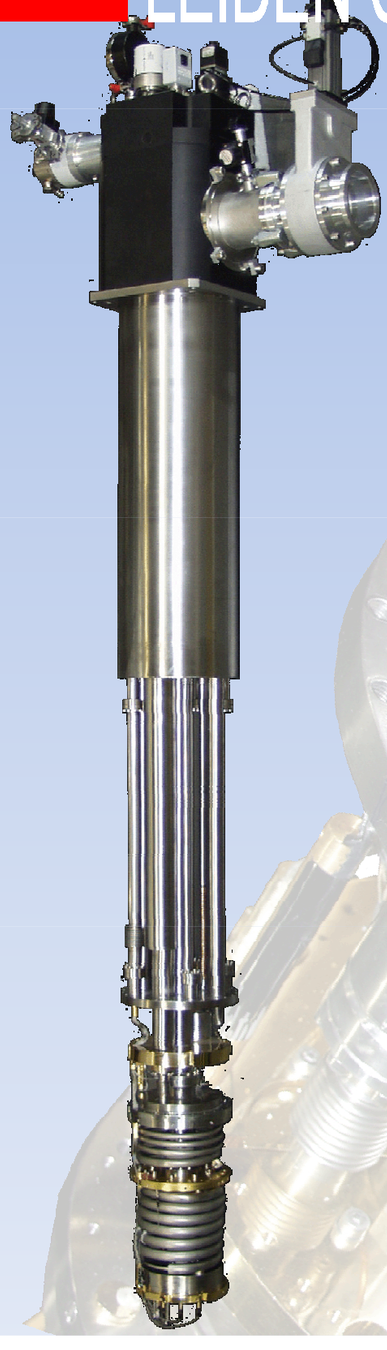

DRS Models:

- DRS-1000
- DRS-2000
- DRS-4000

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DRS Models	T_{min} (mK)	Q @120mK (μW)
DRS1000	5	1300
DRS2000	4	2500
DRS4000	3	4000

Technical specifications of the DRS Models 1000/2000/4000

- Dilution refrigerator insert ϕ 220 mm with ϕ 200 mm IVC
- Silver heat-exchangers dilution refrigerator unit with 174 mm gold-plated copper bottom mixing chamber
- Cooling power outside the mixing chamber is 8 μW @ 12 mK, 100 μW @ 34 mK and 1mW @ 120 mK (values can vary from one system to the other by ~ 10%.
- Minimum typical temperatures are ~3 mK (5 mK guaranteed)
- Central 50 mm clear shot access to outside the mixing chamber.
- Three ϕi = 25 mm clear shot tubes to the Helium bath, one of which extends into the IVC, and is partially used by the wiring. If required the other two can also be extended to the IVC
- 48 shielded phosphor bronze wires in twisted pairs (two Fischer 24 pin connectors) anchored at 50 mK plate or mixing chamber (10 wires are used for mixing chamber, still and 1 K pot thermometers).
- 10 flexible coaxial cables anchored to the still (2 used to measure the still level)
- 6 phosphor bronze wires in twisted pairs on Fischer connector, for the still and MC heaters
- Capacitance level gauge inside the still.
- Resistance thermometer at the still and the 1 K pot with typical calibration. Heater and calibrated resistance thermometer outside the mixing chamber.
- 1 K pot bypass valve and double condensing circuit
- Gold-plated shields at 700 mK and 50 mK
- Radiation shields at the still and 50 mK plate, (gold plated)

Oil-free compact Gas Handling System (GHS)

- Two ceramic bearing turbo-molecular pumps and dry backing pump.
- Two external nitrogen cold traps with 25 liter dewar
- Two helium traps inside insert.
- Vacuum gauges (1 Pirani and 1 Penning/Pirani)
- Flowmeter.
- Triple power supply (for still and mixing chamber heaters plus one extra heater), provided with LabView drivers
- Microprocessor controlled electrical valves with manual and automatic operation. Automatization under Labview is optional.
- Dry 4He gas handling system for 1 K pot including scroll pump
- IVC vacuum system with turbomolecular pump backed by 1 K pot pump (or leak detector)
- Stainless steel pumping cabinet mounted on wheels with mixture dump and containing electronics and valves, necessary to operate the refrigerator, plus external 600 l tank.
- Electropneumatic gate valve for insert with flanges
- ^{3}He-^{4}He mixture included

Performance

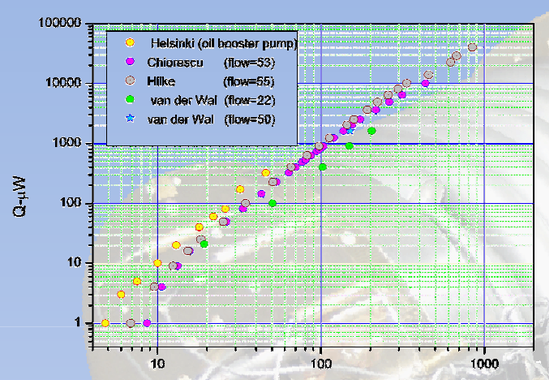

Figure 1 Cooling Power

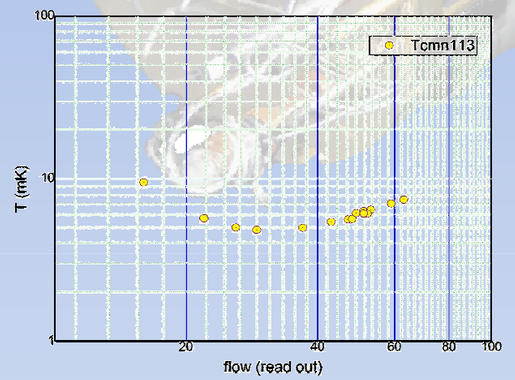

Figure 2 Flow vs temperature

Options

- Vapor shielded dewar for DRS model, 150 liter reservoir
- Copper nuclear demagnetization stage with superconducting switch and provision for silver cold finger above the nuclear stage. Low field region above the stage .
- Pomeranchuk cell for measurements in liquid 3He down to 1 mK –Ideal for cooling electrons
-AC Resistance Bridge model AVS-47 with LabView drivers
- AVS-47 IB Opt Isolated IEEE computer interface
- Add 24 shielded phosphor bronze wires anchored at the 50 mk
- Add 12 coaxial cables in MCX connectors anchored at the 1K pot
- Stainless steel flange with sliding seal including radiation shields, 4 x 13 mm ports and exhaust port (for order without magnet)
- Flexible transfer line in two parts, with bayonet coupling and valve.
- Helium level gauge model HLG 200 and 2 m probe (for order without magnet)
- Top-loading probe
- Demagnetization magnet