



DOUBLE-MOT ULTRACOLD ATOM CELL

Product

Ultrahigh vacuum system

Active and passive pumps to maintain vacuum

Two MOT operation for improved vacuum and control

Assembled without epoxies or frits

Product Description

The Double-MOT is a self-contained, tabletop, ultrahigh vacuum system designed to enable the easy production of cold matter. The system can be used for a wide variety of projects, ranging from basic research in quantum physics to the development of sensors and new technologies that are based on cold atoms. The Double-MOT utilizes two chambers, isolated by a silicon pinhole disc: a lower chamber to achieve high atom number, and an upper chamber to maintain an ultra-high vacuum. A rail system allows for easy integration of ColdQuanta's magnetics management products. The Double-MOT is shipped permanently under vacuum and ready to be placed into an appropriate apparatus such as the ColdQuanta Physics Station or Physics Platform.



Product Specifications

Typical Flux

Rb > 1 x 10⁸ atoms / sec
Cs > 1 x 10⁸ atoms / sec
³⁹K > 1 x 10⁸ atoms / sec
⁴¹K 2-3 x 10⁷ atoms / sec

Typical MOT Size

Rb > 5 x 10⁸ atoms
Cs > 5 x 10⁸ atoms
³⁹K 2-3 x 10⁸ atoms
⁴¹K 5 x 10⁷ atoms

Typical MOT Lifetime

100s 1/e

Science Cell Vacuum

< 0.8 nTorr

Ion Pump Speed

2 l/s

Alkali Source Resistance

< 1 Ohm

External Dimensions

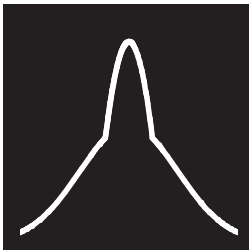
12.5 x 12.5 x 24 cm (4.9 x 4.9 x 9.5 inches)

0.9 kg (2 lbs), vacuum chamber only
3.9 kg (8.6 lbs), with all mounting hardware

Related Products

The Double-MOT is frequently used in conjunction with:

AR Coated cells	CCS-2060-A16X
3-axis coils	CAM-C3A
2D MOT magnets	CAM-F2D
Physics Platform	CPX-XXX
Physics Station	CPS-XXX



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Product Options

Alkali metal source:

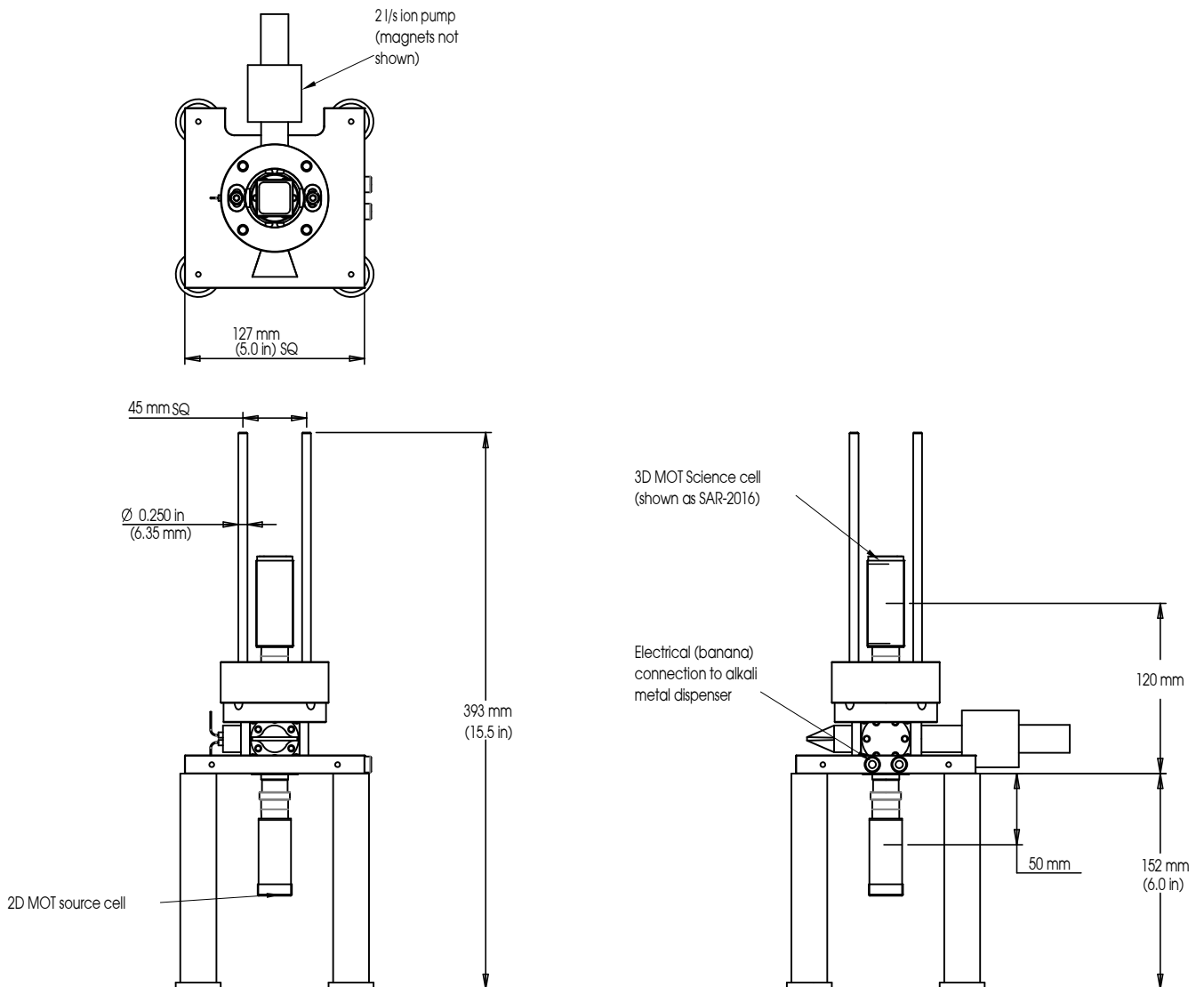
Rubidium: CUD-F20U-R0X
 Cesium: CUD-F20U-C0X
 Potassium: CUD-F20U-K0X

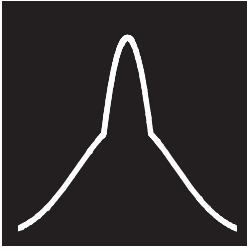
Rubidium + Cesium: CUD-F20U-RCX
 Rubidium + Potassium: CUD-F20U-RKX
 Cesium + Potassium: CUD-F20U-CKX

Science cell:

Includes a ColdQuanta CCS-20XX-A16N science cell.
 This may be upgraded to an AR coated CCS-2060, or CCR-MAGG-XXXX cell.

Mechanical Drawing (shown with CCS-2060-A16X upgrade)



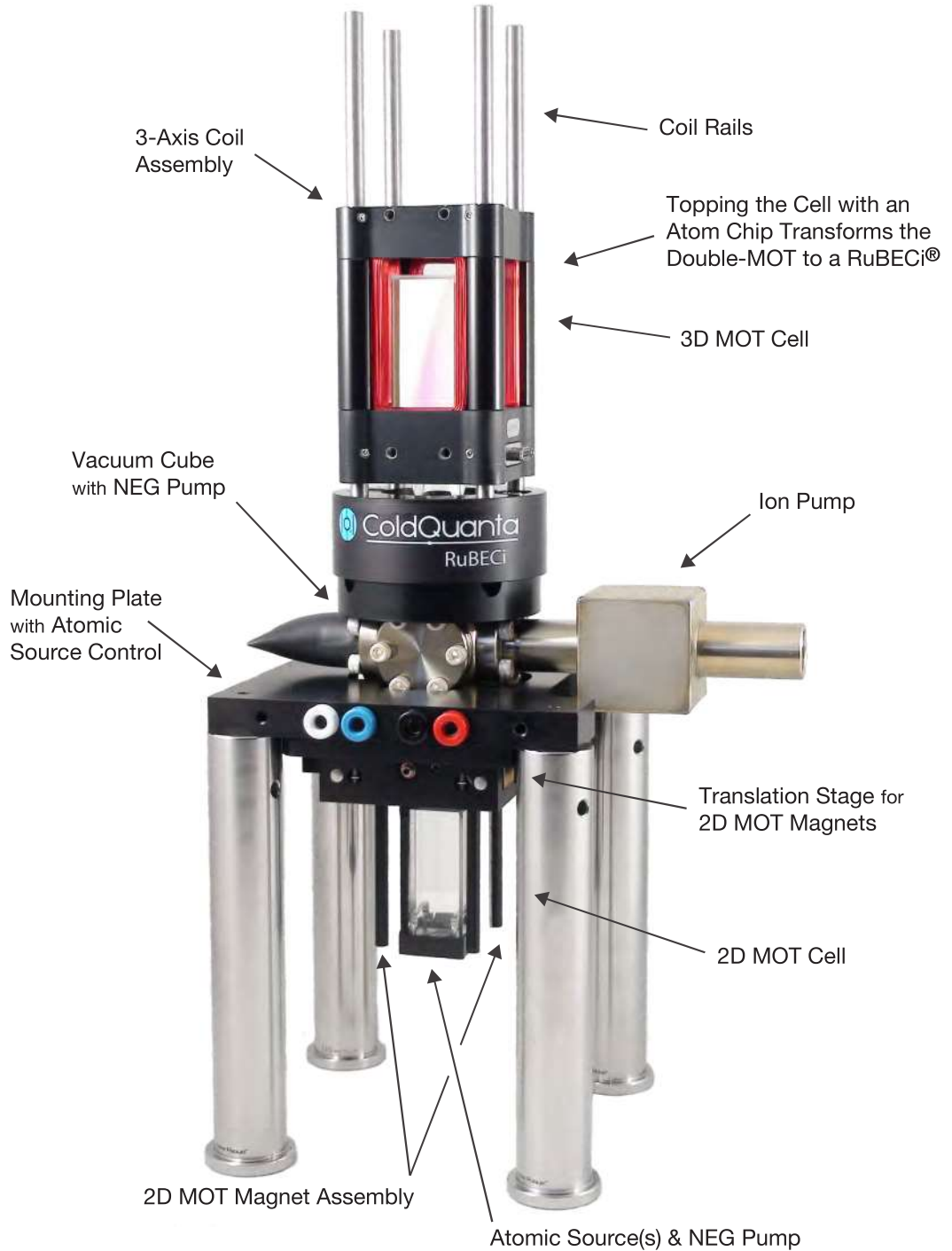


LASER 2000

Double-MOT ULTRACOLD ATOM CELL

Double-MOT

Pictured with
3 - Axis Coils
& 2D Magnets



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