

DOUBLE-MOT ULTRACOLD ATOM CELL

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

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 10 ⁸ atoms / sec
Cs	> 1 x 10 ⁸ atoms / sec
³⁹ K	> 1 x 10 ⁸ atoms / sec
⁴¹ K	2-3 x 10 ⁷ atoms / sec

Typical MOT Size

Rb	> 5 x 10 ⁸ atoms
Cs	> 5 x 10 ⁸ atoms
³⁹ K	2-3 x 10 ⁸ atoms
⁴¹ K	5 x 10 ⁷ 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

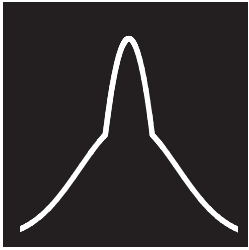
12.5 x 12.5 x 24 cm (4.9 x 4.9 x 9.5 inches)

Weight

0.9 kg (2 lbs), vacuum chamber only

3.9 kg (8.6 lbs), with all mounting hardware





Double-MOT ULTRACOLD ATOM CELL

Product Options

Alkali metal source:

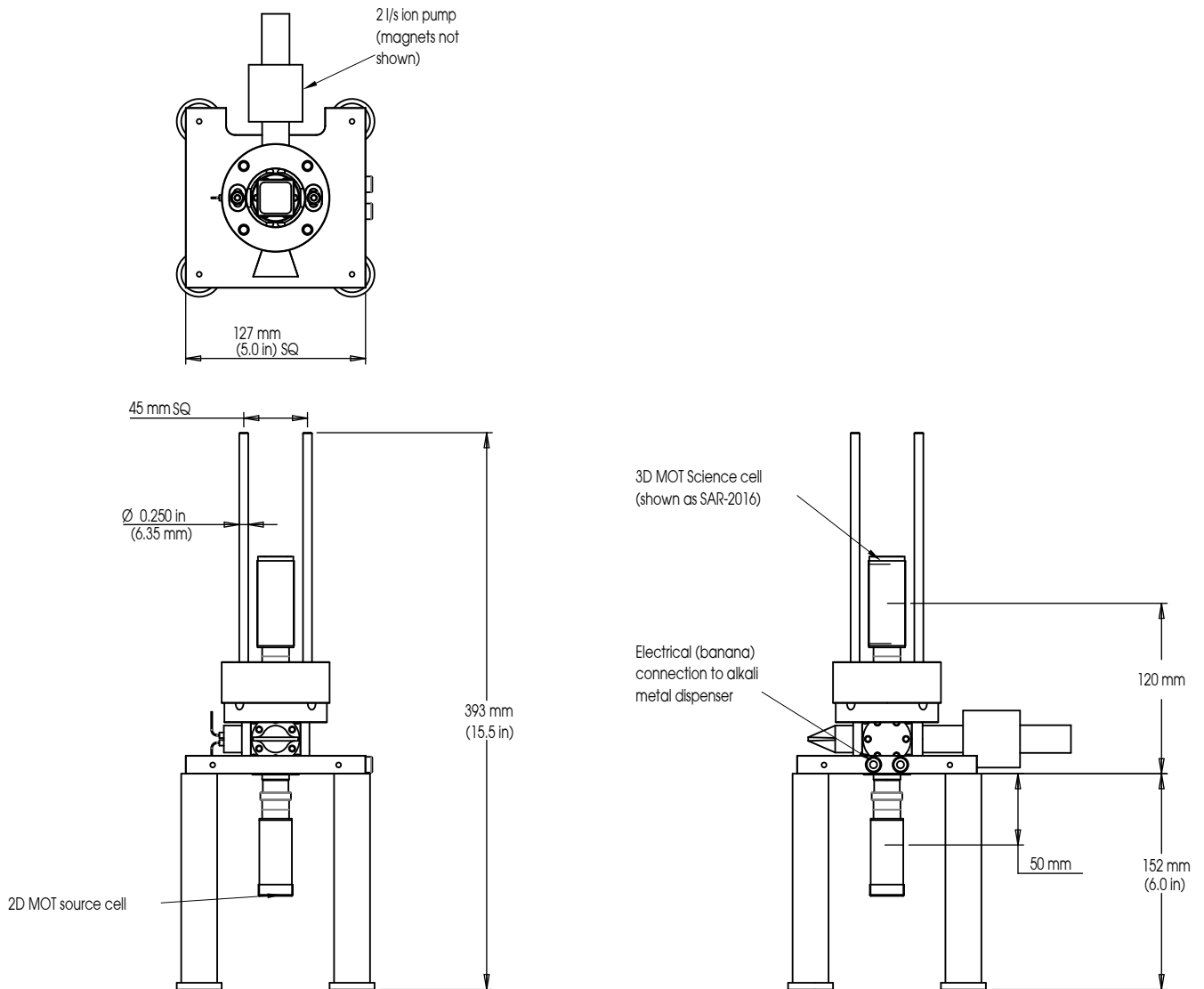
Rubidium: CUD-F20U-R0X
Cesium: CUD-F20U-C0X
Potassium: CUD-F20U-K0X

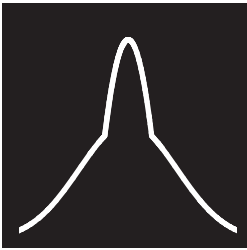
Rubidium + Cesium: CUD-F20U-RCX
Rubidium + Potassium: CUD-F20U-RKX
Cesium + Potassium: CUD-F20U-CKX

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)





Double-MOT ULTRACOLD ATOM CELL

Double-MOT

Pictured with
3 - Axis Coils
& 2D Magnets

