

DOUBLE-MOT ULTRACOLD ATOM CELL

Related Products

The Double-MOT is frequently used in conjunction with:

| | |
|------------------|--------------------------|
| AR Coated cells | SAR-2016 |
| 3-axis coils | MAG-3000 |
| 2D MOT magnets | MAG-2000 |
| Physics Platform | PP-1000 |
| Physics Station | PP-2000 |

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

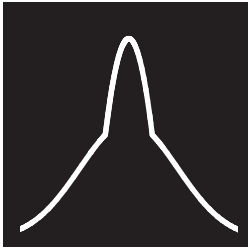
External Dimensions

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

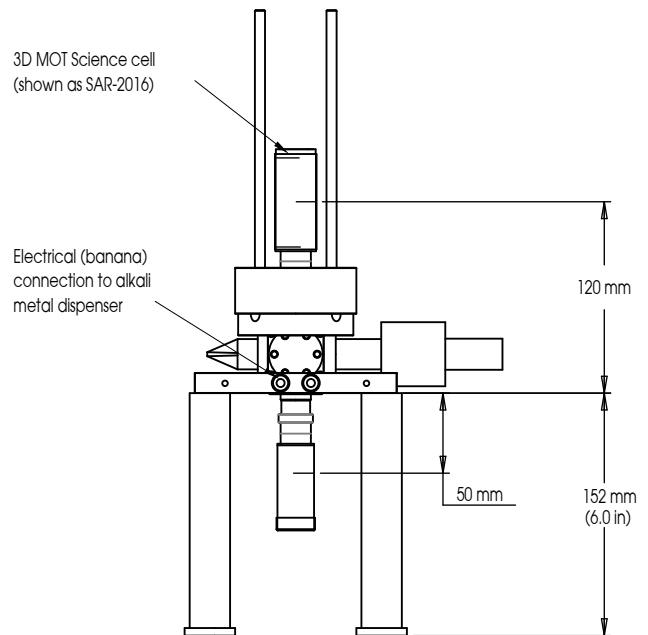
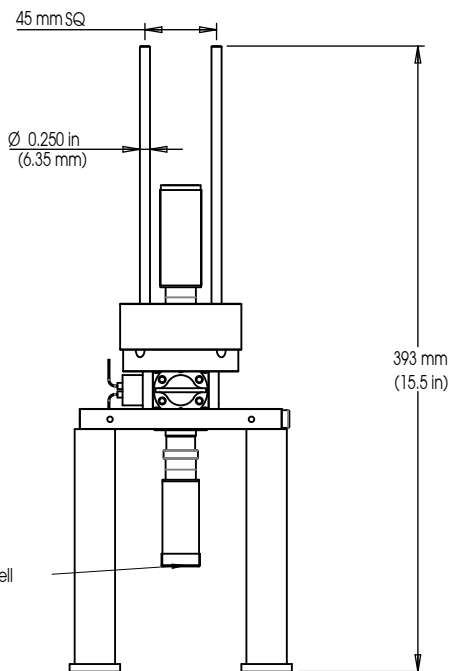
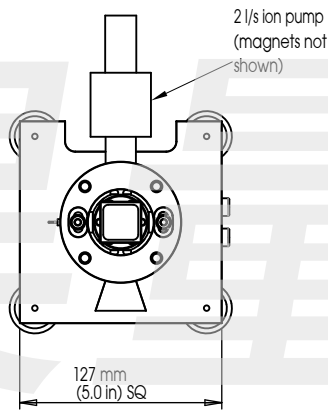
Alkali metal source:

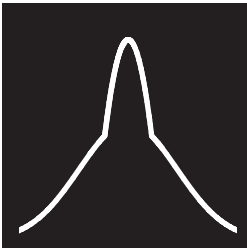
| | | | |
|------------|-------------|-----------------------|----------------|
| Rubidium: | UAC-2000-RB | Rubidium + Cesium: | UAC-2000-RB/CS |
| Cesium: | UAC-2000-CS | Rubidium + Potassium: | UAC-2000-RB/K |
| Potassium: | UAC-2000-K | Cesium + Potassium: | UAC-2000-CS/K |

Science cell:

Includes a ColdQuanta UCC-2016 science cell.
This may be upgraded to an AR coated SAR-2016, or RAR-1013 cell.

Mechanical Drawing (shown with SAR-2016 upgrade)





Double-MOT ULTRACOLD ATOM CELL

Double-MOT

Pictured with
3 - Axis Coils
& 2D Magnets

