

ISSI

Manifold Iodine Cell

Operating Instructions (Version 1.0)



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Description

Iodine-vapor cells with a manifold are 3-in.-dia, 5-in.-long or 10-in.-long Pyrex cells. Standard cells are manufactured with 1/4 gm of iodine (actual pressure determined by temperature of water cooling jacket at the time of operation). In addition, transitions can be pressure broadened with buffer gas supplied by user through a fill-port.

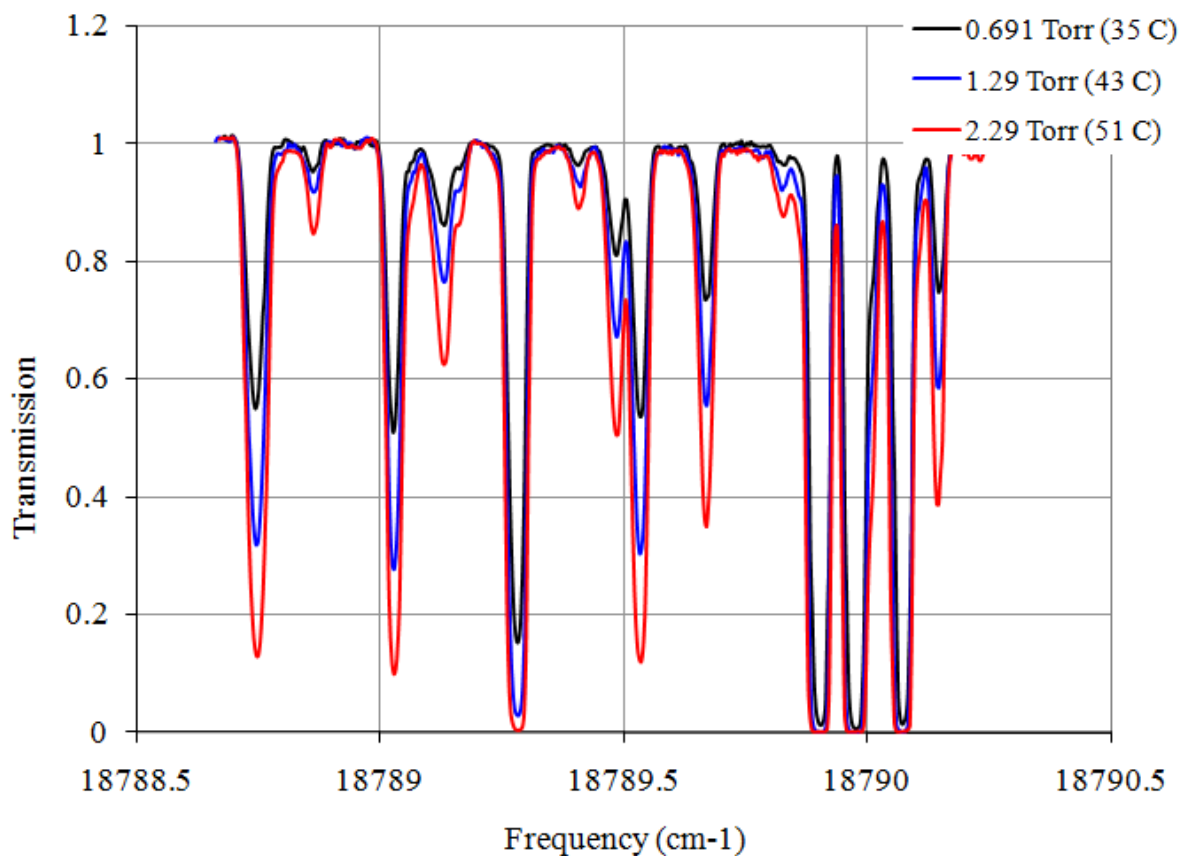


Specifications

| | |
|--------------------------------------|-------------------|
| Length | 125-mm or 250-mm |
| Diameter | 76-mm |
| Housing | Anodized Aluminum |
| Mounting | ¼"-20 |
| Maximum Operating Temperature | 130 °C |
| Set Point | 30°C - 50°C |
| Thermocouple | Type T |
| Temperature Controller | Optional add-on |
| Input Power | 110 VAC, 60 Hz |
| Warranty | 1 year |
| ECCN | EAR99 |

Background

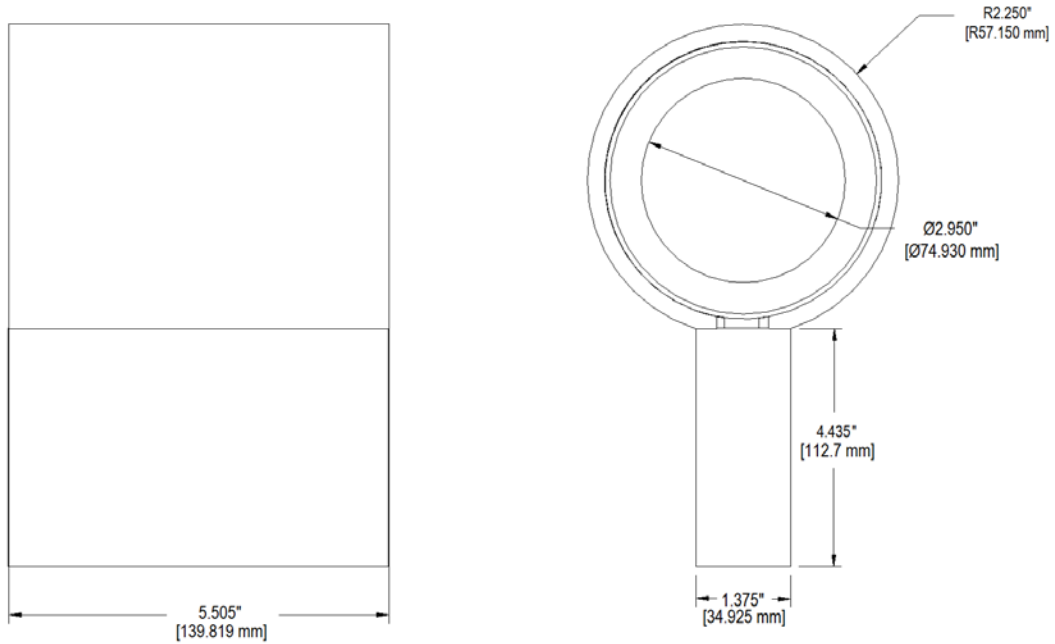
To create a sealed starved cell with a flexible set point, a glass cell with an attached cold-finger and vacuum port is constructed. The vacuum port and cold-finger include stopcocks. The cell is evacuated and cold-finger filled with iodine is brought to the desired vapor pressure (cold-finger operating temperature). The stem between the cold-finger and cell is then closed by closing the stopcock, isolating the iodine in the cell body and fixing the number density. The cell is then operated 10-20 °C above the cold-finger set temperature and the iodine in the cell is a super-heated vapor with a set number density. The result is a molecular cell with a very stable absorption spectra.



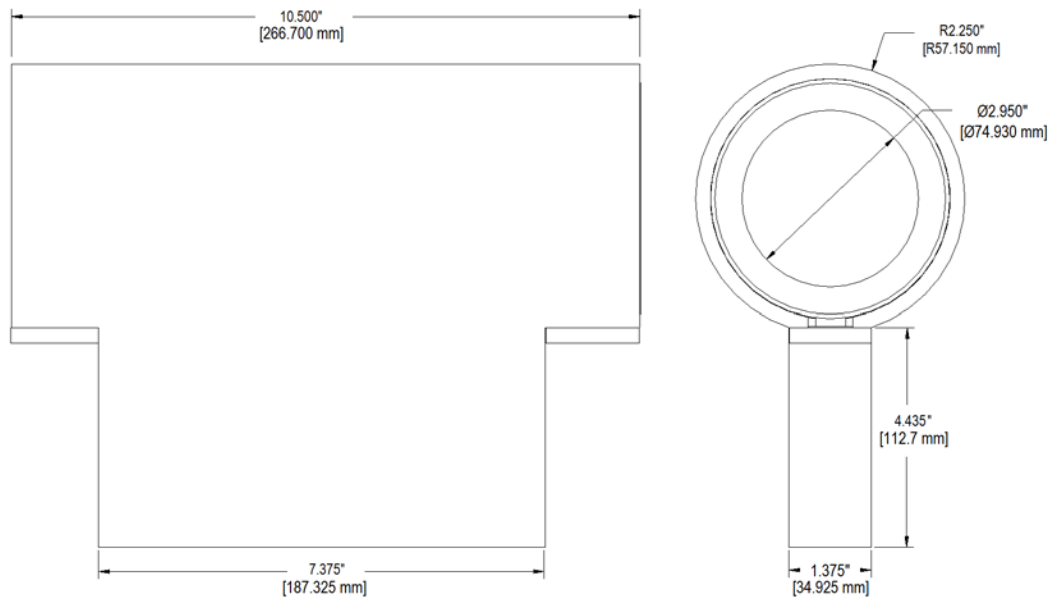
Procedure to Set Manifold Iodine Cell

- 1.) Close both stopcocks
 - Never open the vacuum and iodine stopcocks at the same time or you will drain the iodine from the cell
- 2.) Connect the temperature controlled water bath to the water bath connectors
 - This is used to set the iodine pressure/density
- 3.) Turn on the water bath
- 4.) Connect the vacuum pump connector to a vacuum pump
 - If using an oil based pump, make sure it has a sieve or trap to prevent oil from contaminating the cell
- 5.) Turn on the vacuum pump
- 6.) Turn on the cell heater, set temperature to at least 25 C above the water bath set point
 - A low cell temperature will result in iodine condensing on the cell windows
- 7.) Allow the cell body temperature, water bath temperature to reach steady state
 - give the system about 30 min
- 8.) Open the vacuum stopcock
 - Allow the pump to pull on the cell for 10-15 min with the cell heated
- 9.) Open the iodine stopcock and then close the vacuum stopcock
 - Allow the iodine to reach equilibrium (about 3-5 min)
- 10.) Close the iodine stopcock
- 11.) With both stopcock closed, system can be shut down and disconnected

Dimensions



5-inch, Manifold Iodine Cell (I2M-5)



10-inch, Manifold Iodine Cell (I2M-10)

Export Disclaimer

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