# MINI-D2T Miniature Deuterium Tungsten Light Source

The **MINI-D2T MINIATURE DEUTERIUM TUNGSTEN LIGHT SOURCE** combines the continuous spectrum of an RF-coupled deuterium UV light source and a tungsten halogen VIS/Shortwave NIR light source in a single optical path. The combined-spectrum light source produces a peak-to-peak stability of 0.3% from ~200-1100 nm.

## Parts Included

- MINI-D2T Miniature Deuterium Tungsten Light Source
- Power cord for connecting the MINI-D2T to outlet
- 15-pin accessory cable for software control of the MINI-D2T

## Caution!

- The beam emerging from the MINI-D2T produces ultraviolet radiation. Direct eye contact could cause eye injury. Safety eyewear is recommended.
- Never look directly into the light source or stare at the diffuse reflected beam.
- Dangerous voltages present. NO serviceable parts inside unit. To replace bulbs, contact Ocean Optics.
- This instrument should not be used for any clinical or diagnostic purposes.
- Handle with care. Dropping the instrument may cause permanent damage.

## Operation

### Setting Up the MINI-D2T

1. Attach an optical fiber (the illumination fiber) to the SMA connector on the front of the MINI-D2T and attach the other end of this fiber to the SMA connector on your sampling chamber. Connect the second optical fiber (the read fiber) from the sampling chamber to the spectrometer. If you have a direct-attach cuvette holder on the MINI-D2T, simply attach an optical fiber from the cuvette holder to the spectrometer.
2. Plug the wall transformer into a standard 110 V outlet. Plug the 12 V output into the back of your MINI-D2T above the 12V label. For users of European-version wall transformers, plug the transformer into a standard 220 V outlet. At this time, the green LED indicator light on the front of the lamp will be lit. This indicator light only means that the lamp is receiving power, not that the deuterium and tungsten bulbs are on.

### Operating the MINI-D2T Manually

1. Find the switch on the back of the MINI-D2T.
2. There are three positions: On, Off, and Remote. For Manual operation, move the switch to the On position. There can be up to a 1.5 second delay between switching the lamp to on and the bulbs igniting. If the lamp has not been used recently, the deuterium bulb may take up to 60 seconds to ignite.
3. For 0.3% peak-to-peak stability, allow 30 minutes warm-up time before taking your measurements.

### Operating the MINI-D2T through Software

1. Take the 15-pin accessory cable and plug one end into the spectrometer. Connect the other end of the accessory cable into the back of the MINI-D2T.
2. Find the switch on the back of the MINI-D2T. There are three positions: On, Off, and Remote. For Software operation, move the switch to the Remote position. Moving the switch to the Remote position enables you to control the lamp through the software, whether the software you are using is OOIChem or OOIBase32.
3. When using OOIChem, select **Spectrometer | Enable Strobe** from the menu to turn the MINI-D2T on and off.

4. When you want to control the MINI-D2T through OOIBase32 Spectrometer Operating Software, select or deselect the **Strobe Enable** box in the Acquisition Parameter dialog bar above the graph area to turn the light source in the MINI-D2T on and off.
5. There can be up to a 1.5 second delay between turning the bulbs on via the software and the bulbs igniting. If the lamp has not been used recently, the deuterium bulb could take up to 60 seconds to ignite.
6. For 0.3% peak-to-peak stability, allow 30 minutes warm-up time before taking your measurements.

## Disabling the Tungsten or Deuterium Bulb

It is possible to disable the deuterium or the tungsten bulb in the MINI-D2T. Both bulbs are enabled at the time of manufacture. In order to disable the deuterium or tungsten bulb, you must remove the casing of the MINI-D2T.

### Disabling the Deuterium Bulb

It is possible to enable or disable the deuterium lamp. Jumper block JA of the MINI-D2T's circuit board controls the deuterium bulb. Short pins 2-3 (that is, place a jumper over pins 2-3 of JA) to enable the deuterium bulb. Short the pins 1-2 (that is, place a jumper over pins 1-2 of JA) to disable the deuterium bulb.

### Disabling the Tungsten Bulb

It is possible to enable or disable the tungsten lamp as well. Jumper block JB of the MINI-D2T's circuit board controls the tungsten bulb. Short pins 2-3 (that is, place a jumper over pins 2-3 of JB) to enable the tungsten bulb. Short pins 1-2 (that is, place a jumper over pins 1-2 of JB) to disable the tungsten bulb.

## Using Solarization-resistant Fibers

Our 300-µm Diameter Solarization-resistant Optical Fiber consists of a silica core, surrounded by a silica cladding material. The fiber is then coated in aluminum. Our solarization-resistant fibers are best used for regions below 250 nm, or for applications where exposure to long-term UV light occurs. Solarization is the loss of transparency in glass due to exposure to ultraviolet radiation. If you are using a UV light source, the UV radiation degrades the silica in a standard patch cord fiber over time, resulting in increased overall absorption values and invalid data.

## Replacing the Bulbs

The deuterium and tungsten bulbs cannot be replaced by unauthorized personal. To replace a bulb in the MINI-D2T, contact Ocean Optics.

## Specifications

| | |
|---|---|
| Wavelength range: | 200-1100 nm |
| Deuterium bulb life: | 800 hours |
| Tungsten bulb life: | 2,000 hours |
| Ignition delay: | ~1.5 seconds to 60 seconds |
| Peak-to-peak stability: | 0.3% in 30 minutes<br>1.0% in 10 minutes |
| Connector: | SMA 905 |
| Power input: | 12 V |
| Power requirement: | 12 VDC/420 mA |
| Power consumption: | 5 watts (deuterium 3.8 watts, tungsten 1.2 watts) |