

# APPLICATION NOTE

## M6-UV-QED: ULTRAVIOLET DIFFUSER ACCESSORY



### SPECIFICATIONS

1. Spectral Range: 193 to 355 nm
2. Designed for use with:
  - M6-6-Si
  - M6-6-Si-L
3. Replaces the integrating sphere to extend the probe's spectral range

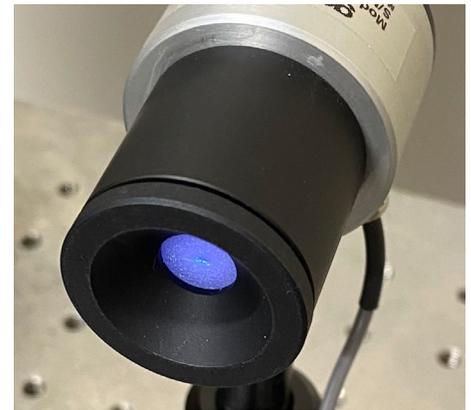
### HOW TO SET UP AND USE THE M6-UV-QED ACCESSORY



The standard M6-6-Si Joulemeter probe, shown here, includes a small 1 inch integrating sphere attached to the silicon detector cylindrical housing.



To attach the M6-UV-QED to the M6-6-Si probe, start by unscrewing the integrating sphere body from the detector body. They are held together by an SM1 thread. Then thread the M6-UV-QED diffuser into the detector body.

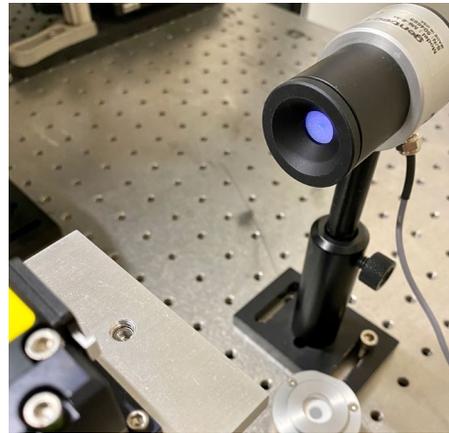
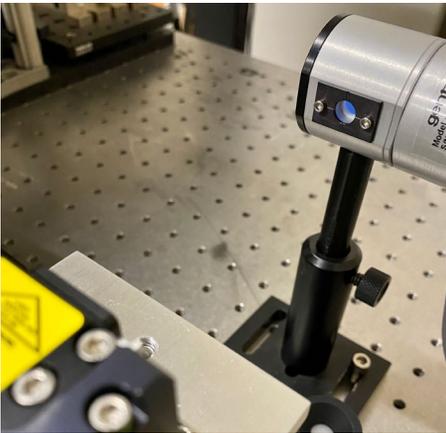


Now you're ready to set up and align the probe to your UV laser. For the highest throughput make sure the laser beam is centered on the diffuser surface as shown.

# APPLICATION NOTE

## HOW TO CALIBRATE THE SET UP

1. Prior to replacing the integrating sphere on the M6 probe, align it to your UV laser and measure (briefly) the average or median pulse energy.



2. Now remove the sphere and attach the M6-UV-QED.
3. Center the laser beam and measure the pulse energy again.
4. Calculate the effective attenuation factor:

$$\text{Attenuation Factor} = \text{Energy per pulse with M6-UV-QED} / \text{Energy per pulse with integrating sphere}$$

5. Enter this attenuation factor using the MACH 6 software.
6. The software will now display the calibrated energy measurements.

NOTE: If the beam diameter changes then the attenuation factor will have to be measured again.

# APPLICATION NOTE

Let's look at an example of how we were able to calibrate a set up using the M6-UV-QED.

## EXAMPLE 1.

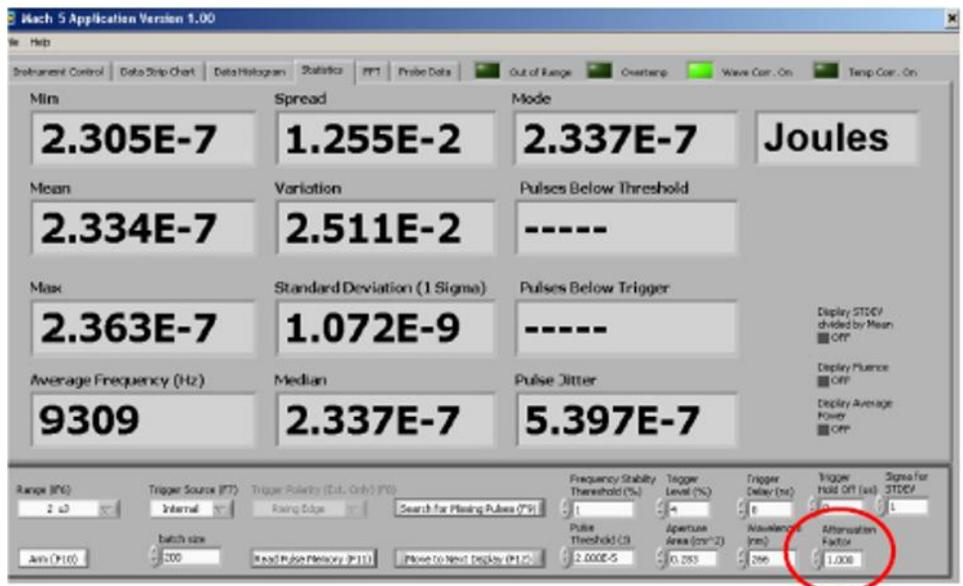
With the integrating sphere on the M6-6-Si probe, we measured 630 nJ at 266 nm.

Statistics screen showing our measurement with the M6-UV-QED in place: 233.4 nJ.

Default attenuation factor is at 1.000.

Calculated effective attenuation factor:

$$\text{Attenuation Factor} = 233.4 \text{ nJ} / 630 \text{ nJ} = 0.370$$



To correct the energy measurement we entered the calculated attenuation factor 0.370.

We now measure 630.5 nJ.

