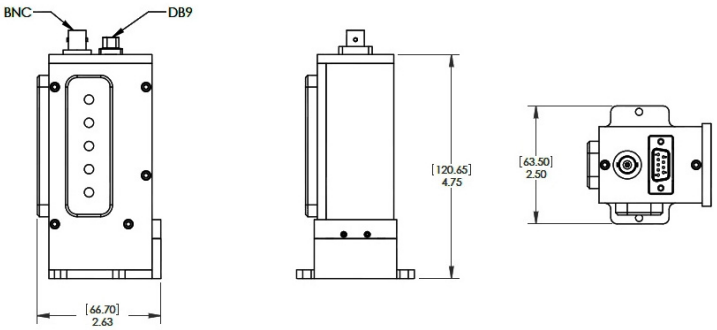
Photomultiplier Detector System

This turnkey detector is a low noise, high sensitivity system that exceeds the performance of silicon photodiode systems over the wavelength range of 185 to 800 nm. It has a superior combination of a large, eight mm diameter, aperture and fast response of ten microseconds. The convenient controller provides eleven gain settings over an amplification range of $10^2$to 10^6 and includes a detector overvoltage protection circuit in case the impinging light beam is too bright.

The housing includes a manual shutter and a filter tray for any one-inch diameter optic of thickness less than 0.4 inches. The entrance aperture is threaded to accommodate C-mount optics and accessories including a fiber adapter, a field limiting tube and a manual iris. The tube is threaded internally and includes two retaining rings for mounting one-inch diameter optics. The housing has 1/4 - 20, 8 - 32, and M6 threaded mounting holes along two sides for post mounting and bulkhead mounting tabs with clear holes for 8 - 32 screws near the entrance aperture.

The controller includes a protection circuit that turns off the high voltage when too much light reaches the photocathode. The detector housing contains an amplifier near the anode output of the photomultiplier tube to minimize noise. All high voltage for the tube is produced inside the housing with only low control voltage of fifteen volts present on the cable from the controller to the housing. The zero to eight volt detector output is accessed by a BNC connector on the housing. A half meter coaxial cable is included to connect this output to a digital voltmeter or A/D converter.

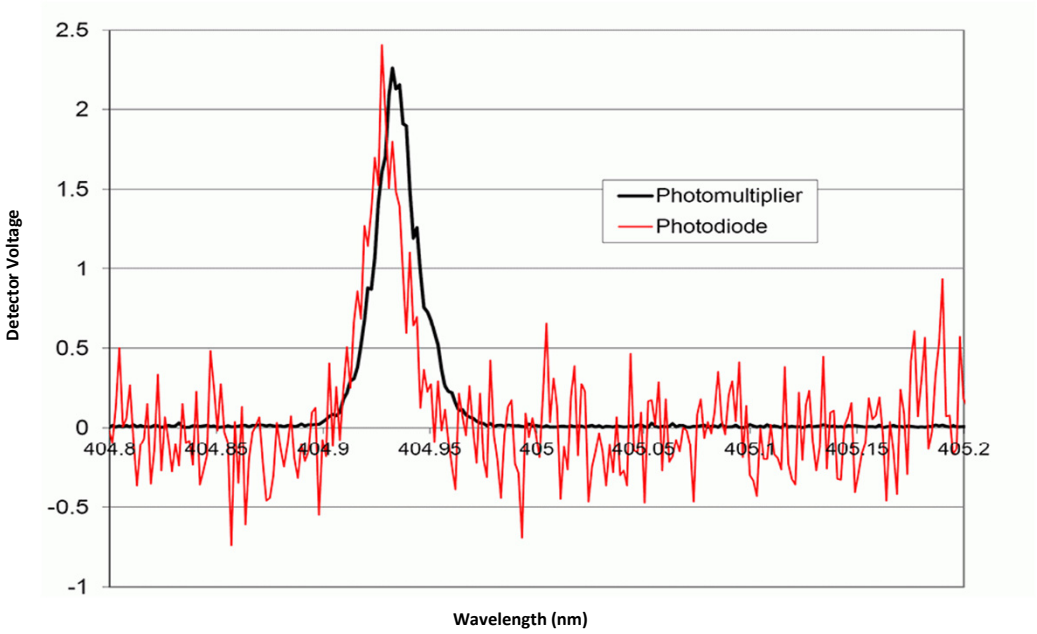


Mechanical Drawing of the Photomultiplier Tube

Key Features

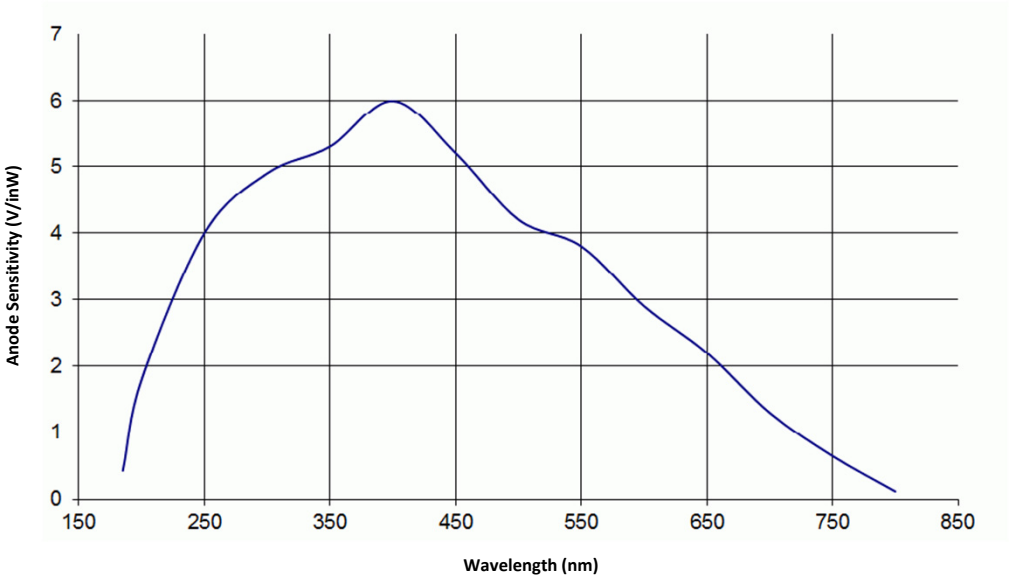
- UV sensitive to 185 nm
- Low noise, high sensitivity
- Eleven selectable gain settings between 10^2 and 10^6
- Protection Circuit with auto shutdown in case of over-voltage due to saturation
- Filter slot and manual shutter in tube housing

Meadowlark Optics' photomultiplier detector has a significant reduction in the amount of noise seen by the photomultiplier tube



Detector Sensitivity

Detector sensitivity as a function of wavelength for a gain of 10^5



SPECIFICATIONS	
Wavelength Range	185 – 800 nm
Clear Aperture Diameter	8 mm
Saturation Light level at 10^2 gain	1.5 mW at 400 nm
Cathode	
Typical Luminous Sensitivity **Radiant Sensitivity**	150 mA/lm 60 mA/W at 400 nm
Anode	
Typical Luminous Sensitivity **Radiant Sensitivity**	7.5 x 10^7 V/lm 30 V/nW at 400 nm
Operating Temperature Range	5˚C to 50˚C
Storage Temperature Range	-20˚C to + 50˚C
Power Requirements	90 – 264 Vac 47 – 63 Hz
Maximum Output Voltage	8V
Frequency bandwidth	DC to 20 kHz
Typical Offset Voltage	3 mV
Ripple noise (peak to peak)	2 mV
Controller Dimensions (L x W x H)	5.2 x 5.1 x 1.5 in.

In spite of protection circuit, the photomultiplier should not be exposed to room light when powered. Permanent damage may result.
Optimal performance is achieved when operated in darkness after thirty minutes of storage in darkness.

ORDERING INFORMATION	
Item	***Part Number***
Photomultiplier Tube	PMT
Tube Kit	PMT – TK
Fiber Adapter Kit	PMT – FK
Iris Diaphram Kit	PMT – IK
Neutral Density Filter	PMT – ND