

# Light Meter Recommendations

(2/11/2017)

Light meters capable of down to 0.01 Lux can be found for around \$20 and up.

Examples of 0.01 Lux light meters are:  
HYELEC MS6612 Digital Lux Meter 3%  
MASTECH MS6612 Digital Lux Meter 3%  
TES1330A Digital Lux Meter  
TES1334A Digital Lux Meter

Or you can make a useable very sensitive light meter from digital volt meter that will measure to at least 2 or 20 meg-ohms and a good photo resistor. Like the GL5528 LDR Light Dependent Resistor at 5mm in size. Harbor freight sells digital volt meter (Cen-Tech 61593) for under \$30 or the Cen-Tech 92020 that sells for under \$10. This approach will measure relative intensive and will not be calibrated unless one has a calibrated Lux meter to compare to.

Now if one adds a 270nm Short Pass 12.5 mm uv filter (found on eBay) then one can measure the range of UVC or ultraviolet light that is normally used for germicidal and water purification lamps. It is as close to the 297 nm needed for the body to make Vitamin-D that was able to be found at a reasonable (price around \$30). The Idea is this might be useful for testing light sources to make sure that they can produce D and for determining when the sun comes back enough to use for this purpose.



This UVC light sensor (shown on the right above) was made using (front to back) a fender washer with a ¼" hole in it, then the UV pass ban filter then the photo resistor. This was embedded in black foam rubber. Enough black tape was used on the outside to keep light from coming in form the side. Sun light being very high intensity parallel waves from one direction was used to test for leakage by slowing turning the sensor to different direction and watching the ohm meter.

See the following curves for typical values for full sunlight pre-pole sift day and the resistance found when testing for UVC using the same photo resistor light sensor and a 270 nm pass ban filter.

It was found that during days just after a rain where the sun was brightest that the UVC band of light frequency gave a maximum light intensity of about 87,000 ohms and at time would range to a lower intensity of about 110,000 ohms. So 90 to 100 k-ohms was about

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average for a average maximum intensity of UVC light from the sun. The following shows the resulting calibration curve for the GL5528 and GL5506 LDR Light Dependent Resistors and ohm meter when compared to several off the shelf Lux meters. One measured the full spectrum maximum light of the sun at 156000 Lux and the other showed 126000 Lux.

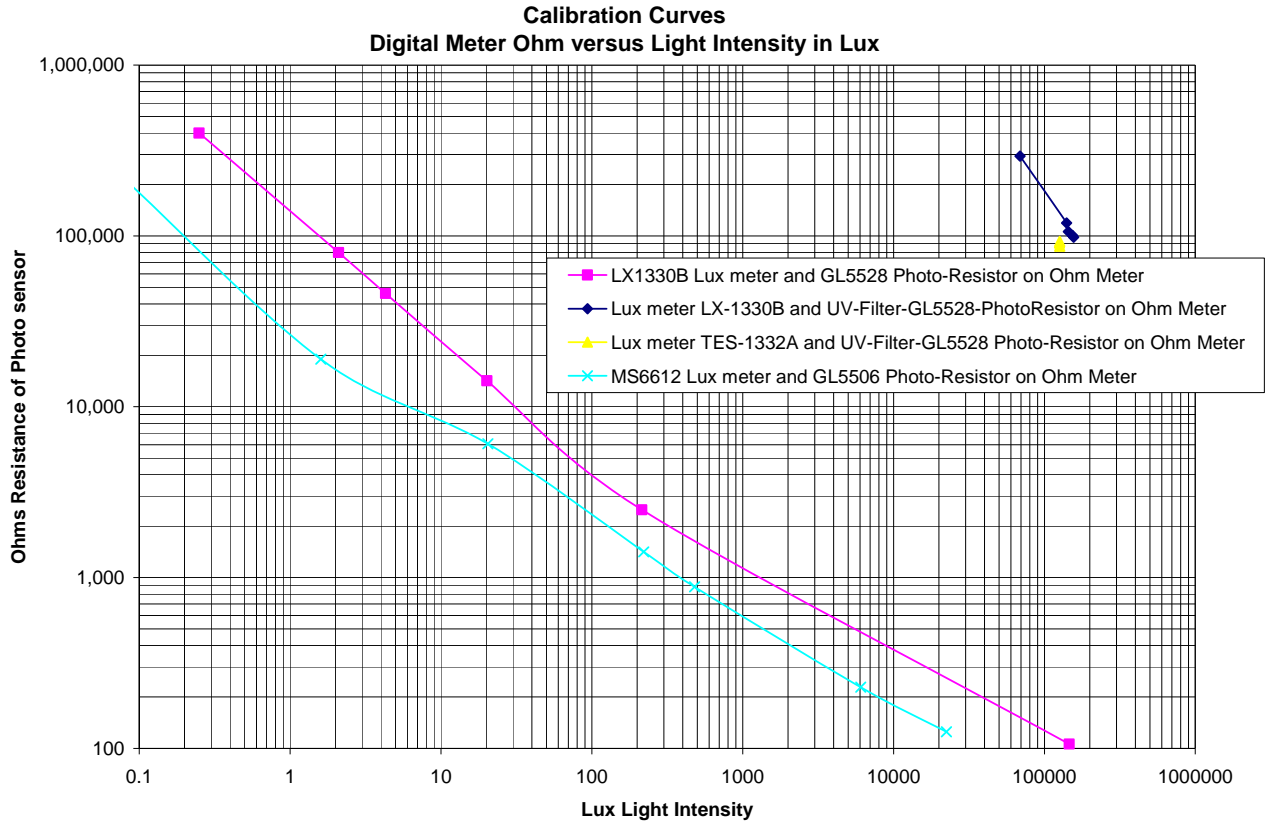


Photo resistor GL5506 works better for measuring low light intensities. For accuracy one needs to do ones own testing. For there is a wide range of different ohm values for the same model photo resistors, with each individual having a different calibration results.

See the following file for details on how to produce vitamin-D.

“UV\_Light\_Needed\_for\_Vitamin-D\_Production\_to\_Keep\_Bones\_Healthy-2017.pdf”