

# Cadmium Sulfide vs. Silicon

Utilities and other high volume photocontrol users have a choice between two distinct light sensors. Traditional cadmium sulfide (CdS) or silicon photo transistors (si). Although most major utilities specify silicon as the preferred sensor type, the choice of which sensor to use is based on application requirements and customer preference. The following describes the facts and issues to help you decide which sensor is best for your application.

## **Cadmium Sulfide Cell**

The cadmium sulfide cell or CdS is in actuality a light variable resistor which is made by depositing a small amount of doped cadmium sulfide on a ceramic substrate. This resistivity decreases with increasing illumination (daylight), thus allowing more (photo) current to flow. The end result is a sensing element that allows a specified amount of voltage/current to the input of the switching circuit during daylight hours, thereby holding the normally closed contacts open.

## **Silicon Sensor**

A silicon sensor is comprised of a small area or silicon junction that senses light and allows current to flow at a certain threshold. Silicon

is more resistant to high temperature applications and airborne contamination. Most if not all utilities now specify silicon as the preferred light sensor. This is, after taking into consideration such variables as cost of removing a failed photocontrol, the street lighting or highway application, air pollution and, in general, the hotter running fixtures used in street lighting applications.

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## **Filtered vs. Non-Filtered**

**Spectral Response** — It is true that the CdS photocells have excellent correlation with the human spectral response. In other words, it's well known that the cadmium sulfide cell sees and is sensitive to light in a very similar way to that of the human eye. In contrast, sili-

con sensors have peak sensitivity to infrared and the red light ranges. It's been said and reported that the silicon sensors can have their turn-on and turn-off levels effected by cloud cover and/or atmospheric pollution. However, years of rooftop testing under all weather conditions has shown insignificant changes in light levels. In addition, there are millions of silicon sensors in the field and there have been no customer complaints whatsoever, nor has there been a public outcry regarding "wandering light levels". There are infrared absorbent filters available that will make silicon sensors more consistent. However, in lieu of no customer complaints regarding non-filtered silicon sensors combined with the high cost for an optical filter, it's hard for utilities to justify the extra expense and use of such an option.

## **Conclusion**

If your specification says "silicon sensor" you can be sure of getting an accurate, electronic photocontrol with digitally set light levels that never vary over time. If there are additional considerations regarding your specific application, we would be more than happy to recommend a photocontrol and sensor best suited to your needs.