



Notes on PLC Sensor Applications

The following is a collection of notes pertaining to questions from customers regarding PLC Multipoint's sensors.

- 1) Why does the signal from the PLC Multipoint sensor not agree with the value given by my light meter?

There are actually many reasons why this may be true, including differences in orientation of the two "sensors" and relative fields of view.

If the meter is not placed in such a way that it effectively "sees" the same lighting conditions, there likely will be differences in the readings. One method for ensuring that the conditions are the same is to locate the meter next to the sensor; however, in many situations, once the sensor is installed, it may be difficult to get a meter to the same location.

Additionally, even when the orientation is the same, there will probably be differences in field of view. Most hand-held light meters tend to have a very wide field of view (> 100 degrees). PLC Multipoint's sensors tend to have narrower fields of view (<60 degrees). Care must be taken to ensure that the lighting conditions within the full field of view of both units are known.

Once the orientation and field of view for the two devices are known, then it should be straight forward to make relative adjustments of the controller setpoints to achieve the desired outcome. For example, when using a standard outdoor sensor CES/O-24-0-10, a 10V signal corresponds to 250 Fc of light being detected by the sensor. Therefore, due to its linear response, if a hand-held light meter is used to validate the settings and it is reading 125 Fc, the sensor is expected to return a signal value of 5V. If the signal value is only 4.25V, then the CES/O sensor is only "seeing" 106.25 Fc. If this is the light level necessary to trigger the desired outcome, then the control system should be programmed to switch when the signal value from the CES/O sensor is 4.25V rather than 5V.

- 2) When I look into a PLC Multipoint sensor, sometimes I can see the components clearly and sometimes it is dark and I can see nothing. Why is this?

Some PLC Multipoint sensors have clear lenses and some have dark lenses. The dark neutral density lenses extend the useful sensitivity range of the photo elements in the sensor. For example, a CES/O (outdoor sensor) has a clear lens and can be calibrated as high as 750 Fc while a CES/OD (outdoor dark) has a dark lens that allows the same electronics to be calibrated as high as 7500 Fc.



This should not be confused with the effect that damage to the sensor may have on the condition of the lens. In rare cases, the housing of the lens may be damaged and water or condensation will cloud the lens. If this is the case, the sensor should be replaced. In even rarer instances, customers have had their sensors painted or tarred over by irresponsible maintenance or contractors. Again, if this is the case, the sensor should be replaced.

3) What is the recommended orientation of PLC Multipoint's outdoor sensors?

PLC Multipoint's outdoor sensors are most often used to switch exterior lighting on and off at dusk and dawn. For these applications, it is recommended that the sensor be oriented to the north (in the northern hemisphere) so that it will not "see" the sunrise or sunset, nor be aware of the sun's position in the sky. There are, however, special applications where it may be desirable to orient a sensor to specifically "see" the sun (e.g. to close shades on east-facing windows as the sun rises). In these cases, there should be engineering recommendations to follow.