No-Dark® Technology Occupancy Sensor Patent Solves the Classic Problem of Lights Timing Out

Have you ever been sitting at your desk, reading, but not moving… and the lights go out? The No-Dark® technology for occupancy sensing is a solution to this classic problem with occupancy sensor technology. If a sensor is located above a desk, and the desk occupant is extremely sedentary, traditional motion sensors think the room is empty and turn off the lights. The occupant has to frantically wave their hands back and forth to get the light to come back on. "No-Dark®" sensing technology can detect the person's tiny, micro-movements at a lower threshold and uses a proprietary algorithm to prevent the lights from turning off. No-Dark® sensing technology has been patented, and it is now available for commercial license.

No-Dark® sensing technology solves the unintended shutdown problem. The occupancy sensor has two modes of operation: (1) 'Vacant' - when nobody is in the field of view of the sensor; and (2) 'Occupied' - when somebody is sensed to be within the field of view. The sensor uses a dual mode lens, with the periphery portion of the lens sensing significant motion and the central portion of the lens sensing the occupant's 'micro-motion'. The periphery of the lens, which consists of large, high optical gain lenslets, detects when a person enters the room, and switches the sensor's operation from "vacant" to "occupied." Then, the central portion of the lens, which consists of smaller gain lenslets, responds to micro-motions. Once in the occupied mode, a higher amplification and wider frequency response is switched on. This extended gain and frequency response is more sensitive to small movements. Statistical Digital Signal Processing (DSP) methods can be used to adjust a 'hair trigger' detection threshold that is close to triggering on system noise to detect the micro-motions. This type of processing takes longer but is extremely accurate and sensitive for the detection of micro-motion. Since this processing takes longer, it is not quick enough to use when the room is vacant, but very effective when the room is occupied. Fast lamp turn-on is required, but slow turn-off is acceptable. This is why the two modes of operation are necessary to maximize efficiency and effectiveness.

No-Dark sensing technology also prevents a problem that occurs with traditional occupancy sensors. Often, individuals manually bypass the sensor (by flipping a switch on the wall) because they do not want the light to go off while they are working. However, this means that the sensor is not actually having the intended energy-saving benefits because it is no longer being used. Because No-Dark ® will not shut off on the occupant, the system will not be subject to a manually over-ride. This translates into the intended energy savings.

Many sensors use a costly dual system approach, blending a Doppler microwave or ultrasonic system with a PIR sensor. However, No Dark ® sensing technology uses only a PIR sensor, which means that it can be implemented into low-powered wireless occupancy sensing products, energized through the use of a long-life battery or a solar cell. This makes the product more cost effective and more versatile.

The patented No-Dark® sensing technology is available for license through Fred Katz Consulting, Inc. Contact Fred Katz at fred@fredkatzconsulting.com or (631) 724-7702 for more information and estimates.