# sensor**switch**®

# CM PDT 9

## STANDARD RANGE 360º SENSOR
### CEILING MOUNT • LOW VOLTAGE • DUAL TECHNOLOGY (PDT)

## SPECIFICATIONS

### FEATURES
100% Digital PIR Detection, Excellent RF Immunity
360º Coverage Pattern
Patented Dual Technology with PIR / Microphonics Detection
Push-Button Programmable
Adjustable Time Delays
Convenient Test Mode
No Field Calibration or Sensitivity Adjustments Required
100 hr Lamp Burn-in Timer
Green LED Indicator

LAMPMAXIMIZER® TECHNOLOGY
• Protects Lamp Life while Maximizing Energy Savings
• Minimum On Timer (15 min default)
• Occ. Time Delay (10 min defatult)
• LampMaximizer+ Mode - Optimizes Lamp Life & Energy Savings (disabled by default)
• Switch Counter (in 1000's)
• Total Lamp On Time (in khrs)

### PHYSICAL SPECS
SIZE 4.55" Dia. (11.56 cm)
1.55" Deep (3.94 cm)
WEIGHT 6 oz
MOUNTING
Ceiling Tile Surface
3.5" Octagon Box
Single Gang Handy Box
COLOR White

### ELECTRICAL SPECS
OPERATING VOLTAGE
12-24 VAC/VDC
CURRENT DRAW
Standard, 4 mA
w/ **R** option, 16 mA
DIMMING LOAD Sinks < 20mA;
~40 Ballasts @ .5mA each
RECOMMENDED POWER PACK
PP20

### ENVIRONMENTAL SPECS
OPERATING TEMP
14º to 160º F (-10º to 71º C)
STORAGE TEMP
-14º to 160º F (-26º to 71º C)
RELATIVE HUMIDITY
20 to 90% non-condensing
SILICONE FREE
ROHS COMPLIANT

## OVERVIEW
Open area office lighting control is made cost-effective with the use of the **CM PDT 9** Series Standard Range 360° occupancy sensor. This sensor provides line-of-sight PIR detection of small motion in a circular pattern, and combines overlapping Microphonics™ coverage for detection of occupants working in their cubical space. By installing multiple **CM PDT 9**s on 30 ft (9.14 m) centers, large control zones are created (typically one per circuit of lighting). The lighting is then controlled in blocks similar to manual switching. Restrooms with stalls, large storage areas with shelving, and libraries with study carrels are also easily and cost-effectively controlled by the **CM PDT 9**.

## SENSOR OPERATION
Sensors with Passive Dual Technology (PDT) first see motion using 100% digital Passive Infrared (PIR) detection and then engage Microphonics™ to hear sounds that indicate continued occupancy. This patented technology uses Automatic Gain Control (AGC) to dynamically self adapt a sensor to its environment by filtering out constant background noise and registering only noises typical of human activity. When occupancy is detected, a DC output goes high and can drive up to 200 mA of connected load. If needed, a 10 second grace period also allows the lights to be voice reactivated after shutting off. The sensor is powered with 12-24 VAC/VDC and typically operates with a **PP20** or **MP20** power pack, enabling complete 20 Amp circuits to be controlled.

## LAMPMAXIMIZER®
This sensor also contains patent pending LampMaximizer technology that allows users to aggressively target energy savings while still protecting lamp life. A minimum on timer, factory set at 15 minutes, helps preserve lamp life by eliminating all lamp cycles shorter than lamp warranties specify. A standard occupancy time delay is also present that ensures lights turn off (assuming minimum on timer has elapsed) if no occupancy is detected. This timer is factory set at 10 minutes to promote energy savings, but is adjustable between 30 seconds and 20 minutes. These adjustments can be done manually, through the units push-button, or automatically every two weeks through an advanced mode, called LampMaximizer+, that determines the optimum time delay in order to maximize both lamp life and energy savings. Additionally, this sensor maintains statistics on total lamp on time and number of cycles.

## OPTIONS

### LOW VOLTAGE RELAY (R)
• Enables sensors to interface with other systems (e.g., BMS, lighting panels)
• Provides dry contact closure via a SPDT, 1 Amp, 40 Volt relay
• Only one relay needed per zone
• Changes state when all connected sensors register unoccupied
• Relay requires sensor power to function

### OCCUPANCY CONTROLLED DIMMING (D)
• Provides dimming output to control 0-10 VDC dimmable ballasts
• Provides a second occupancy time-out period that enables the lights to go to a dim setting before turning off
• Adjustable max/min dim setting
• Only one sensor per zone needs to have dimming output

### PHOTOCELL (P)
• Auto set-point calibration
• Two selectable modes of operation
• On/Off mode: Photocell has full control during periods of occupancy
• Inhibit mode: Photocell can prevent lights from turning on if adequate daylight is available, but cannot turn lights off

### PHOTOCELL W/ DIMMING (ADC)
• Photocell within sensor maintains total room light level by controlling levels of 0-10 VDC dimmable ballasts
• Photocell also has full on/off control during periods of occupancy
• Provides a second occupancy time-out period that enables the lights to go to a dim setting before turning off

Note: LampMaximizer+ features not available with ADC option

### LOW TEMP/HIGH HUMIDITY (LT)
• Sensor is corrosion resistant to moisture
• Operates down to -4º F (-20º C)

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**TITLE 24**
**MADE in U.S.A.**
**5 YEAR WARRANTY**

## ORDERING INFO    CM PDT 9 [RELAY] [DIMMING/PHOTOCELL] [TEMP/HUMIDITY]

| RELAY | DIMMING / PHOTOCELL *CHOOSE ONE ONLY* | TEMP/HUMIDITY |
|---|---|---|
| **Blank = None**<br>**R = Low Voltage Relay** | **Blank = None**<br>**D = Occupancy Controlled Dimming**<br>**P = Photocell**<br>**ADC = Photocell w/ Dimming** | **Blank = Standard**<br>**LT = Low Temp** |

## COVERAGE PATTERN

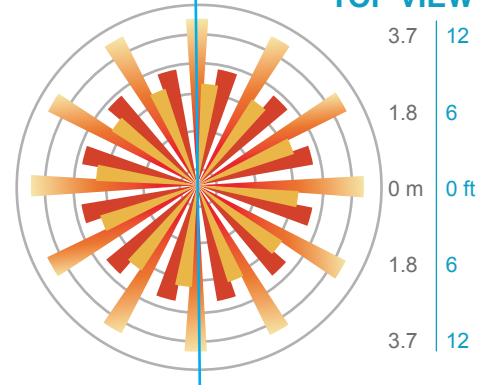**9** **STANDARD RANGE 360º LENS WITH MICROPHONICS**™

- Best choice for small motion (e.g. hand movements) detection
- Viewing angle of 56º in a 360º conical shaped pattern
- Provides 12 ft (3.66 m) radial coverage when mounted to standard 9 ft (2.74 m) ceiling
- 8 to 15 ft (2.44 to 4.57 m) mounting heights provide 10 to 20 ft (3.05 to 6.10 m) radial coverage
- Microphonics™ provides overlapping detection of human activity over the complete PIR coverage area. Advanced filtering is also utilized to prevent non-occupant noises from keeping the lights on.
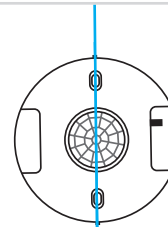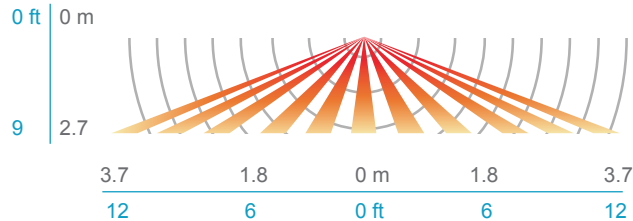
**Note:** Screw axis is aligned with a long detection segment

**TOP VIEW**

| 3.7 | 12 |
| 1.8 | 6 |
| 0 m | 0 ft |
| 1.8 | 6 |
| 3.7 | 12 |

**SIDE VIEW**

0 ft | 0 m

9 | 2.7

| 3.7 | 1.8 | 0 m | 1.8 | 3.7 |
| 12 | 6 | 0 ft | 6 | 12 |

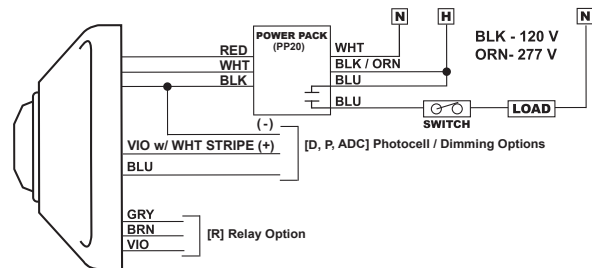## WIRING (DO NOT WIRE HOT)

### STANDARD WIRING
**RED** - Power Input (12-24 VAC/VDC)
**BLACK** - Common
**WHITE** - Occupancy State (high VDC for occupied)

### PHOTOCELL/DIMMING OPTIONS (D, P, ADC)
**BLUE** - Direct output to power pack for providing photocell control and/or secondary dim time out. Output is high VDC with occupancy & low light. Output also held high during secondary dim time out. For multi-level control, use two power packs and connect White wire to primary load and Blue to daylight load.
**VIOLET w/ WHITE STRIPE** - Connect to 0-10 VDC control wire (typically Violet) from 0-10 VDC dimmable ballast
**GRAY from Ballast** - Connect to sensor Black wire

RED
WHT
BLK

POWER PACK (PP20)
WHT
BLK / ORN
BLU
BLU

N  H  N
BLK - 120 V
ORN- 277 V

SWITCH  LOAD

(-)  [D, P, ADC] Photocell / Dimming Options
VIO w/ WHT STRIPE (+)
BLU

GRY
BRN
VIO  [R] Relay Option

### RELAY OPTION (R)
**GRAY / BROWN** - Connected during occupied state
**VIOLET / BROWN** - Connected during unoccupied state
**Note:** Relay is energized during unoccupied state

## INSTALLATION

- Mount sensor directly to a ceiling tile or a metallic grid (two self-tapping screws provided)
- Sensor's mounting holes also align with 3.5" octagon or single gang handy box (screws not provided)
- Sensor will detect motions crossing segments more effectively than motions parallel to beams
- For optimal detection, position sensor such that segments are crossed upon entrance and unable to view outside the space
- For maximum Microphonics™ sensitivity avoid locating sensor near HVAC air diffusers.
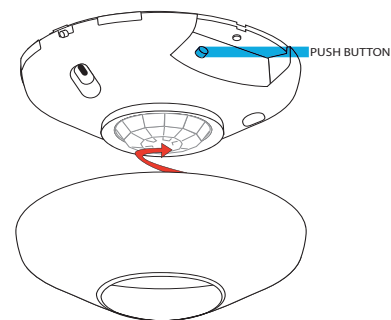
PUSH BUTTON

### PROGRAMMING
Refer to instruction card IC7.001 for default settings and directions on programming the sensor via the push-button.

**sensorswitch**

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**TS-CM-005A**