WALL SWITCH DECORATOR SENSOR
LINE VOLTAGE • PASSIVE DUAL TECHNOLOGY (PDT)

SPECIFICATIONS

OVERVIEW
The WSD PDT Series is a Wall Switch Decorator style Passive Dual Technology (PDT) occupancy sensor. The combination of Passive Infrared and patented Microphonics™ detection allows this sensor to literally see & hear occupants. It is ideal for restrooms with stalls, private offices where occupant turns their back to the sensor, or rooms with obstructions.

SENSOR OPERATION
Sensors with Passive Dual Technology (PDT) first see motion using 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 to a sensor to its environment by filtering out constant background noise and detecting only noises typical of human activity. When occupancy is detected, the relay switch(es) is connected load on as dictated by the sensor’s operational settings.

An internal timer keeps the lights on during brief periods of inactivity and turns the lights off when it expires. The default time delay is 10 minutes. This timer is programmable from 30 seconds to 20 minutes, and is reset every time occupancy is re-detected. Patented LampMaximizer technology is also present in this sensor, providing an additional minimum on time (disabled by default) to be used if desired. Finally, as a “safe” measure, a 10 second grace period allows the lights to be voice-activated after initially shutting off. This state-of-the-art design requires no field calibration or sensitivity adjustments.

ON MODES
AUTOMATIC ON (default) - Lights come on when occupancy is detected.
MANUAL ON - Requires the occupant manually turn on lights via the push-button.
REDUCED TURN ON - Sensor is initially set to only detect large movements, effectively ignoring PIR signals reflected off of surfaces, while still sensing occupants when they enter the room. Once lights are on, the sensor returns to maximum sensitivity.

SWITCH MODES
PREDICTIVE OFF MODE (default) - This mode allows occupants to turn lights off via the switch without losing the convenience of having the lights automatically turn on when they re-enter the room. Pressing the switch turns the lights off and temporarily disables the occupancy detection in the sensor. After a short exit time delay, the occupancy detection reactivates and monitors for an additional grace period, if no occupancy is detected, the zone will remain in Automatic On operation. If occupancy is detected, the zone will go to a Permanent Off mode, requiring the switch to be pressed again in order to turn the lights on and restore the sensor to Automatic On operation.
PERMANENT OFF - Pressing the switch turns the lights and the sensor off. Lights will not come on until switch is pressed again.
SWITCH DISABLE - Prevents user from manually turning off the lights via the push-button. Button can still be utilized for programming.

OPTIONS
VANDAL-RESISTANT LENS (V)
- Ideal for high abuse or public areas
- Decreases detection range by 50%

INHIBIT PHOTOCELL (P)
- Auto set-point calibration
- Photocell prevents lights from turning on if adequate daylight is available, but does not turn lights off

347 VAC (347)
- Allows sensor to be powered from 347 Vac
- Wall plate provided (Ivory & White only)

COLOR
- White, Ivory, Gray, Lt. Almond, Black
- Wall plate provided
- Must be specified when ordered

LOW TEMP/HIGH HUMIDITY (LT)
- Sensor electronics are coated for corrosion resistance
- Operates down to -4°F (-20°C)
- Required for bathroom & cooler/freezer applications

ORDERING INFO

<table>
<thead>
<tr>
<th>LENS</th>
<th>PHOTOCELL</th>
<th>VOLTAGE</th>
<th>COLOR</th>
<th>TEMP/HUMIDITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blank = Standard</td>
<td>Blank = None</td>
<td>Blank = 120/277 VAC</td>
<td>WH = White</td>
<td>Blank = Standard</td>
</tr>
<tr>
<td>V = Vandal Resistant</td>
<td>P = Photocell</td>
<td>347 = 347 VAC</td>
<td>IV = Ivory</td>
<td>LT = Low Temp</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>GY = Gray</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>AL = Lt Almond</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>BK = Black</td>
<td></td>
</tr>
</tbody>
</table>

UL LISTED
ASSEMBLED in U.S.A.
5 YEAR WARRANTY

TITLE 24
COVERAGE PATTERN

WALL SWITCH DECORATOR LENS W/ MICROPHONICS™
- Small motion (e.g. hand movements) detection up to 20 ft (6.10 m)
- Large motion (e.g. walking) detection up to 50 ft (15.24 m), ~3925 ft²
- Wall-to-Wall coverage
- Microphonics™ provides overlapping detection of human activity over the complete PIR coverage area
- Advanced filtering is utilized to prevent non-occupant noises from keeping the lights on

SIDE VIEW

1.2 m
4 ft
0 ft 10 20 30 40 50
Small motion detection to ~20 ft
Large motion detection to ~50 ft

WIRING (DO NOT WIRE HOT)

STANDARD WIRING
BLACK* - Line Input
BLACK* - Load Output
GREEN SCREW - Ground (required connection)
- BLACK wires can be reversed

347 VAC OPTION (347)
Black wires are replaced w/ Red wires

STANDARD CONFIGURATION

3-WAY WIRING CONFIGURATIONS
Travelers are used to wire sensors (or sensor and 3-way switch) in parallel.

Note: Connection to Ground required for sensor to function

PROGRAMMING
Refer to included instruction card IC2.002 for default settings and directions on programming the sensor via the push-button.

WARNING
Fire Hazard Caution: Maximum Lamps 1500 Watts, Type 347 VAC.
Attention: Risque d'incendie : Puissance Maximales Des Lampes 1500 Watts, Type 347 VAC.
Warning: The units are intended to be installed by a qualified person with properly rated branch circuit protectors as per applicable local and national regulations (CEC, NEC).

WARRANTY
Sensor Switch, Inc. warrants these products to be free of defects in manufacture and workmanship for a period of 60 months. Sensor Switch, Inc., upon prompt notice of such defect, will, at its option, provide a Return Material Authorization number and repair or replace returned product.

LIMITATIONS AND EXCLUSIONS: This Warranty is in lieu of all other representation and expressed and implied warranties (including the implied warranties of merchantability and fitness for use) and under no circumstances shall Sensor Switch, Inc. be liable for any incidental or consequential property damages or losses.
WALL SWITCH DECORATOR SENSOR
LINE VOLTAGE • 2-POLE • DUAL TECHNOLOGY (PDT)

SPECIFICATIONS

FEATURES
- Patented Dual Technology with PIR / Microphonics™ Detection
- Two Self Contained Relays - No Power Packs needed
- 1st Pole Auto-On, 2nd Pole Manual-On
- No Neutral Required / No Minimum Load
- Replaces Two Switches
- Interchangeable Hot & Load Wires - Impossible to Wire Backwards
- Compatible w/ Electronic & Magnetic Ballasts, CFLs, & Incandescents
- Small Motion Detection to 20 ft (6.10 m)
- Self Grounding Mounting Strap
- Adjustable Time Delay per Pole
- LampMaximizers™ Minimum On Time (disabled by default)
- Push-Button Programmable w/o Removing the Switch Plate
- Non-Volatile Settings Memory
- Green LED Indicator

PHYSICAL SPECS
- SIZE (not including mounting strap)
  2.74”H x 1.68”W x 1.63”D
  (6.96cm x 4.27cm x 4.14cm)
- WEIGHT 5 oz
- MOUNTING Single Gang Switch Box
- MOUNTING HEIGHT 30-48 in (76.2-121.9 cm)
- COLORS White, Ivory, Gray, Lt. Almond, Black

ELECTRICAL SPECS
- MAXIMUM LOAD / POLE
  (single phase power only)
  800 W @ 120 VAC
  1200 W @ 277 VAC
  1500 W @ 347 VAC
- MINIMUM LOAD None
- MOTOR LOAD 1/4 HP
- FREQUENCY 50/60 Hz
  (timers are 1.2x for 50 Hz)

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

OVERVIEW
The WSD PDT 2P Series is a Wall Switch Decorator style Passive Dual Technology (PDT) sensor designed to control two independent loads. Utilizing two isolated power relays, the WSD PDT 2P is factory set to automatically turn load 1 on when initial occupancy is detected, while holding load 2 off until its push-button is pressed. The combination of Passive Infrared (PIR) and patented Microphonics™ detection, allows this sensor to literally see & hear occupants. Although perfect for rooms wired for bi-level lighting, the WSD PDT 2P is also convenient for controlling multiple load types and/or voltages (for example a restroom light and fan). Additionally, the settings of the WSD PDT 2P Series sensors can be programmed, without removing the switch plate, by entering simple command sequences via the push-button.

SENSOR OPERATION
Sensors with Passive Dual Technology (PDT) first see motion using 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 detecting only noises typical of human activity. When occupancy is detected, the relays switch the connected loads on as dictated by the sensor’s operational settings. By default the WSD PDT 2P will automatically close Pole 1’s relay upon occupancy and require Pole 2’s push-button (right hand button) be pressed in order to close Pole 2’s relay.

An internal timer keeps the lights on during brief periods of inactivity and turns the lights off when it expires. The default time delay is 10 minutes. This timer is programmable from 30 seconds to 20 minutes, and is reset every time occupancy is re-detected. Patent pending LampMaximizer technology is also present in this sensor, providing an additional minimum amount of time (disabled by default) to be used if desired. Finally, as an added safety measure, a 10 second grace period allows the lights to be voice reactivated after initially shutting off. This state-of-the-art design requires no field calibration or sensitivity adjustments.

OPTIONS

VANDAL-RESISTANT LENS (V)
- Ideal for high abuse or public areas
- Decreases detection range by 50%

PHOTOCELL (P)
- Auto set-point calibration
- Maintains two set-points, enabling separate control of both poles
- Photocell prevent lights from turning on if adequate daylight is available, but does not turn lights off

347 VAC (347)
- Allows sensor to be powered from and switch 347 VAC
- Wall plate provided (Ivory & White only)

COLOR
- White, Ivory, Gray, Lt. Almond, Black
- Wall plate provided
- Must be specified when ordered

LOW TEMP/HIGH HUMIDITY (LT)
- Sensor electronics are coated for corrosion resistance
- Operates down to -4° F (-20° C)
- Required for bathrooms w/showers and walk-in coolers/freezers

ORDERING INFO

<table>
<thead>
<tr>
<th>WSD PDT 2P [ON OPERATION] [LENS] [PHOTOCELL] [VOLTAGE] [COLOR] [TEMP/HUMIDITY]</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON OPERATION</td>
</tr>
<tr>
<td>Blank = P1-Auto</td>
</tr>
<tr>
<td>P2-Manual</td>
</tr>
<tr>
<td>2SA = Both Poles Manual</td>
</tr>
</tbody>
</table>

S. ULus listed TITL. 24 ASSEMBLED in U.S.A. 5 YEAR WARRANTY
COVERAGE PATTERN

WALL SWITCH DECORATOR LENS W/ MICROPHONICS™
- Small motion (e.g. hand movements) detection up to 20 ft (6.10 m)
- Large motion (e.g. walking) detection up to 50 ft (15.24 m), ~3925 ft²
- Wall-to-Wall coverage
- Microphonics™ provides overlapping detection of human activity over the complete PIR coverage area
- Advanced filtering is utilized to prevent non-occupant noises from keeping the lights on

CONTROL MODES

ON MODES (programmable per pole)
- AUTOMATIC ON (default Pole 1, unless ZSA option ordered) - Lights come on when occupancy is detected.
- MANUAL ON (default Pole 2) - Requires the occupant to manually turn on the lights via the push-button.

REDUCED TURN ON - Sensor is initially set to only detect large motions, effectively ignoring any reflected PIR signals while still sensing occupants when they enter the room. Once on, the sensor returns to maximum sensitivity.

SWITCH MODES (programmable per pole)
- PREDICTIVE OFF MODE (default Pole 1) - This mode allows occupants to turn lights off via the switch without losing the convenience of having the lights automatically turn on when they re-enter the room. Pressing the switch turns the lights off and temporarily disables the occupancy detection in the sensor. After a short exit time delay, the occupancy detection reactivates and monitors for an additional grace period. If no occupancy is detected, the zone will remain in Automatic On operation. If occupancy is detected, the zone will go to a Permanent Off mode, requiring the switch to be pressed again in order to turn the lights on and restore the sensor to Automatic On operation.
- PERMANENT OFF (default Pole 2) - Pressing the switch turns the lights and the sensor off. Lights will not come on until switch is pressed again.
- SWITCH DISABLE - Prevents user from manually turning off the lights via the push-button. Button can still be utilized for programming.

WIRING (DO NOT WIRE HOT)

STANDARD WIRING
BLACK* - Line Input (Hot) 1
BLACK* - Load Output 1
BLUE** - Line Input (Hot) 2
BLUE** - Load Output 2
GREEN SCREW - Ground (required connection)

347 VAC OPTION (347)
Black wires are replaced w/ Red wires.

PROGRAMMING
Refer to included instruction card IC11.001 for default settings and directions on programming the sensor via the push-button.

WARNING
Fire Hazard Caution: Maximum Lamps 1500 Watts, Type 347 VAC.
Attention: Risque d’incendie : Puissance Maximale Des Lampes 1500 Watts, Type 347 VAC.
Warning: The units are intended to be installed by a qualified person with properly rated branch circuit protectors as per applicable local and national regulations (CEC, NEC).

*WARNING*; Sensor Switch, Inc. warrants these products to be free of defects in manufacture and workmanship for a period of 50 months. Sensor Switch, Inc. open prompt notice of such defect, will, at its option, provide a Returned Material Authorization number and repair or replace returned product. 

LIMITATIONS AND EXCLUSIONS: This Warranty is in full lieu of all other representation and expressed and implied warranties (including the implied warranties of merchantability and fitness for use) and under no circumstances shall Sensor Switch, Inc. be liable for any incidental or consequential property damages or losses.
# EXTENDED RANGE 360° SENSOR
## CEILING MOUNT • LOW VOLTAGE • DUAL TECHNOLOGY (PDT)

## SPECIFICATIONS

### FEATURES
- 100% Digital PIR Detection, Excellent RF Immunity
- 360° Coverage Pattern
- Patented Dual Technology with PIR / Microphonic 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 default)
- LampMaximizer+ Mode - Optimizes Lamp Life & Energy Savings (disabled by default)
- Switch Counter (In 1000’s)
- Total Lamp On Time (In hrs)

### PHYSICAL SPECS
- SIZE: 4.65” Dia. (11.76 cm)
- 1.65” Deep (4.19 cm)
- WEIGHT: 0.7 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: P20

### ENVIRONMENTAL SPECS
- OPERATING TEMP: 14° to 180° F (-10° to 71° C)
- RELATIVE HUMIDITY: 20 to 90% non-condensing
- SILICONE FREE
- ROHS COMPLIANT

## OVERVIEW
Classrooms are ideal applications for the CM PDT 10 Series Extended Range 360° occupancy sensor. When mounted at 9 ft (2.74 m), this sensor provides line of sight Passive Infrared (PIR) detection of walking type motions up to 28 ft (8.53 m) in all directions. Additionally, the CM PDT 10 provides overlapping Microphonic Technology to detect smaller motions and occupant movements that occur behind obstructions. When comparing small motion detection, the CM PDT 10 far out performs dual technology sensors that are specified with 2,000 sq ft of coverage. Spaces with low ceiling heights are also best covered by the CM PDT 10.

## SENSOR OPERATION
Sensors with Passive Dual Technology (PDT) first see motion using 100% digital Passive Infrared (PIR) detection and then engage Microphonic Technology to hear sounds that indicate continued occupancy. This patented technology uses Automatic Gain Control (AGC) to dynamically adjust the 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 2000 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 20 Amp circuits to be controlled.

### LAMPMAXIMIZER®
This sensor also contains patented 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 manufacturers recommendations. 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 unit's push-button, or automatically every two weeks through an advanced mode, called LampMaximizer+ that determines the optimal 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 prevents 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 electronics are coated for corrosion resistance
- Operates down to -4° F (-20° C)
- Required for cooler/freezer applications

### UL LISTED
- TITLE24
- ASSEMBLED in U.S.A.
- 5 YEAR WARRANTY

## ORDERING INFO

### CM PDT 10 [RELAY] [DIMMING/PHOTOCELL] [TEMP/HUMIDITY]

<table>
<thead>
<tr>
<th>RELAY</th>
<th>DIMMING / PHOTOCELL</th>
<th>TEMP/HUMIDITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blank = None</td>
<td>D = Occupancy Controlled Dimming</td>
<td></td>
</tr>
<tr>
<td>R = Low Voltage Relay</td>
<td>P = Photocell</td>
<td></td>
</tr>
<tr>
<td>ADC = Photocell w Dimming</td>
<td>Blank = Standard</td>
<td></td>
</tr>
<tr>
<td>LT = Low Temp</td>
<td><strong>Note:</strong> LampMaximizer+ features not available with ADC option</td>
<td></td>
</tr>
</tbody>
</table>
COVERAGE PATTERN

10 EXTENDED RANGE 360° LENS WITH MICROPHONICS™
- Best choice for large motion (e.g. walking) detection
- Viewing angle of 67° in a 360° conical shaped pattern
- Provides 28 ft (8.53 m) radial coverage when mounted to standard 9 ft (2.74 m) ceiling
- 7 to 15 ft (2.13 to 4.57 m) mounting heights provide 16 to 36 ft (4.88 to 10.97 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.

SIDE VIEW

0 ft 0 m
9 2.7
8.5 6.4 4.3 2.1 0 m 2.1 4.3 6.4 8.5
28 21 14 7 0 ft 7 14 21 28

NOTE: Sensor's screw axis is offset 7.5° from a long detection segment

TOP VIEW

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

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.

PROGRAMMING
Refer to instruction card IC7.002 for default settings and directions on programming the sensor via the push-button.

WARRANTY: Sensor Switch, Inc. warrants these products to be free of defects in manufacture and workmanship for a period of 60 months. Sensor Switch, Inc., upon prompt notice of such defect, will, at its option, provide a Returned Material Authorization number and repair or replace returned product.
LIMITATIONS AND EXCLUSIONS: This Warranty is in full lieu of all other representation and expressed and implied warranties (including the implied warranties of merchantability and fitness for use) and under no circumstances shall Sensor Switch, Inc. be liable for any incidental or consequential property damages or losses.
**TECHNICAL DATA**

**TYPICAL APPLICATIONS**
- Used with Low Voltage Sensors
- Multiple Sensors
- Multiple Loads

**POWER PACK HIGHLIGHTS**
- Dual Voltage Transformer
- Self-Contained Relay
- Powers up to 14 sensors

**SPECIFICATIONS**
- Size: (1/2” inch chase nipple not inc.)
  - MP-20 & MSP-20: 2 3/4” x 3” x 1 7/8”
  - Mounting: 1/2” inch chase nipple
  - Operating Voltage: 120, 240, or 277 VAC
  - Each Relay: 20 Amps
  - 1 HP Motor Load
  - Output Voltage: 15 VDC, 150 mA
  - Class II: 18 AWG, up to 2,000 ft.
  - Plenum Rated
  - Relative Humidity: 20 to 90% non-condensing
  - Operating Temp: 14° to 160° F
  - Storage Temp: -14° to 160° F
  - UL and CUL Listed
  - 5 Year Warranty
  - Made in U.S.A.

**LOW TEMP/HI HUMIDITY (-LT)**
- Conformally Coated PCB
- Operates down to -40° F
- Corrosion resistant from moisture

**PLENUM CONSIDERATIONS**
Most local codes allow for small plastic controls in Return Air Plenums. Some Do Not! To meet local code, the Power Pack can be mounted inside an adjacent (Deep) junction box as shown below.

---

**MP-20**

**MSP-20**

**Plenum Rated**

Mini Power Packs are the heart of the Low Voltage Sensor System. The MP-20 transforms 120, 240 or 277 Volts to Class II 15 VDC to power the remote sensors. Although Plenum Rated, the elongated mounting nipple allows for the MP-20 to be mounted either directly thru a 1/2” inch knockout in a junction box, or to be located inside an adjacent box for specific local code requirements. Up to 14 sensors may be connected to one MP-20. Multi-circuit control can be handled by multiple MP-20’s and Slave Packs (MSP-20) may be configured. MP-20’s can be wired continuously hot (line side), or on the switch leg (load side) without nuisance delays upon turn “On.”

**MINI POWER PACK OPERATION**
The Mini Power Pack consists of a transformer and a relay. The transformer has a dual primary high voltage input, accepting 120, 240, or 277 VAC. The secondary voltage provides power to Sensor Switch low voltage heads. When the sensor head detects motion, they electronically signal the power pack to close the relay(s) connected to the lighting system.

**LOW VOLTAGE OPERATION AND TEST**
The Low Voltage Wires are color coded Red (15 VDC), Black (Common), and White (Occupancy Signal). With no sensors connected, touch the Red wire to the White. The lights should turn “On”. Remove the connection and the lights should turn “Off”. With the sensors connected, the Red and Black wires provide DC power to the remote sensors, and when there is occupancy detected, the White wire produces a 15 VDC signal from the sensor to the power pack initiating the lights to “On”. Upon initial power up, the Sensors automatically send an “On” signal until the sensors have stabilized and “Timed Out”.

**SIZING OF THE SYSTEM - VARIOUS COMBINATIONS**
Combining Power Packs provides for additional power to drive remote devices. Maximum numbers of remote sensors are shown below based on the Power Pack/Slave Pack being used. Maximum number of “Relays” is 30.

<table>
<thead>
<tr>
<th>Sensors</th>
<th>Sensors with Relay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 MP-20</td>
<td>14</td>
</tr>
<tr>
<td>1 MP-20 w/MSP-20</td>
<td>7</td>
</tr>
<tr>
<td>2 MP-20</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>16</td>
</tr>
</tbody>
</table>

**Note 1:** Only three relays may be controlled with one Mini Power Pack. If more than three circuits are required, multiple Mini Power Packs must be used.

**Note 2:** Only one “Sensor with Relay” is required in most cases. See Technical Data on Low Voltage Sensors and SPDT EMS Interface Option.

**SYSTEMS CONSIDERATIONS**
The local override switch may be upstream or downstream of an MP-20. However, if an MSP-20 Auxiliary Relay controller is being used, the switch(es) should be downstream on the load side of the relay. If power is disconnected to the Power Pack all subsequent relays will open, turning off all of the loads. If wiring the local switches before the Power Pack and Slave Pack, use multiple MP-20’s, one for each circuit. This will allow for one circuit to remain powered, keeping the system operational when the other is turned off. When controlling a dimming circuit, MP-20 must be wired before dimmer, or MSP-20 may be wired after dimmer.

---

**CATALOG INFORMATION**

<table>
<thead>
<tr>
<th>MODEL#</th>
<th>DESCRIPTION</th>
<th>OUTPUT VOLTAGE</th>
<th>OUTPUT CURRENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP-20</td>
<td>Power Pack with 20 Amp Relays</td>
<td>15 to 24 VDC</td>
<td>70 to 110 mA</td>
</tr>
<tr>
<td>MSP-20</td>
<td>Slave Pack with 20 Amp Relays</td>
<td>N/A</td>
<td>40 mA (consumption)</td>
</tr>
</tbody>
</table>

**Add suffix -LT for Low Temp/Hi Humidity**
TYPICAL WIRING DIAGRAMS - DO NOT WIRE HOT

NOTE: The Power Pack must be connected to a single phase Hot and Neutral System. For 120 VAC, connect the Black wire to Hot, White wire to Neutral, and Cap off the Orange wire. For 240-277 VAC, connect the Orange to Hot, White to Neutral, and Cap off the Black wire. Never connect both the Black and Orange wires! Low Voltage wire can be 18 to 22 AWG; shielding is not necessary.

Multiple Sensors Controlling One Circuit

Wiring Multiple Mini Power Pack Units Together

One Sensor Controlling One Circuit

WARRANTY: Sensor Switch, Inc. warrants these products to be free of defects in manufacture and workmanship for a period of sixty months. Sensor Switch, Inc., upon prompt notice of such defect will, at its option, provide a Returned Material Authorization number and a replacement product.

LIMITATIONS AND EXCLUSIONS: This Warranty is in full lieu of all other representation and expressed and implied warranties (including the implied warranties of merchantability and fitness for use) and under no circumstances shall Sensor Switch, Inc. be liable for any incidental or consequential property damages or losses.

SENSOR SWITCH, INC.
900 Northrop Rd., Wallingford, CT 06492
(203) 265-2842 info@ensorswitch.com
www.ensorswitch.com

revised 7/8/2005
copyright Sensor Switch, Inc. 2005