PECO
AUTOMATION AND CONTROLS

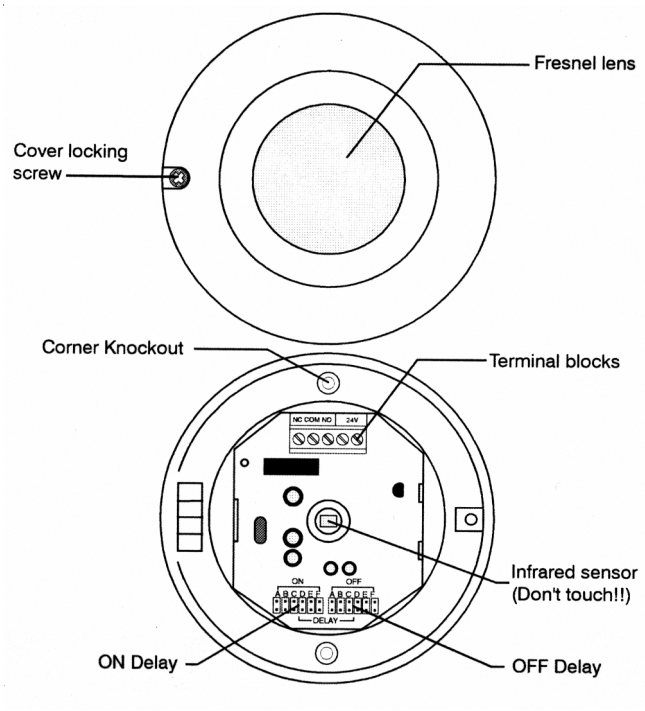
SA200-001
HVAC Occupancy Sensor

Installation Instructions

GENERAL

The SA200-001 is a ceiling mount 360° occupancy sensor designed for automatic HVAC system control. This sensor provides a changeover (form C) output for fan coil controller to activate/deactivate the operation of fan coil automatically.

DESCRIPTION

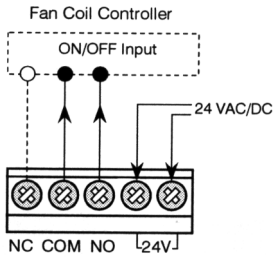


INSTALLATION & WALK TEST

Installation

1. Open the cover by loosening the screw. Bend the clip and remove the PCB module.
2. Route the cable into the unit base and mount the base on the ceiling.
3. Replace the PCB module. Connect the cable to the corresponding terminals according to the following instructions.

Wiring Diagram



- **NC-COM-NO**: Output for ON-OFF control of fan coil operation.
- **24 V**: Power supply (non-polarity)

4. Replace the front cover and perform the walk test.

Walk Test

Apply power, allowing 25 seconds for sensor to warm up. The LED will blink (long and short) during warm up period. Ensure the jumper head connectors of ON & OFF delays are placed at “A” position (shortest delay). After the warm up expires, walk across the (invisible) detection zones at normal pace. The LED will light whenever sensor detects the motion. *Note: The LED will blink if any jumper connector is not properly placed.*

OPERATION

Operation Diagram

A. Standby

After warm up period expires, the sensor enters into standby mode. Sensor will check if delay jumpers are properly placed. If not, the LED will flash.

B. Relay ON Delay

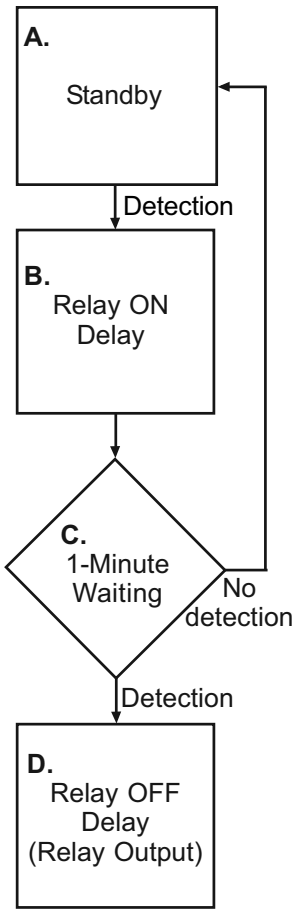
Relay ON delay is the time given to sensor to verify true occupancy before activating the relay output. Any further detection during ON delay will NOT reset the timer.

C. 1-minute Waiting

When Relay ON delay expires, the sensor enters into a 1-minute waiting time. If no detection within 1 minute, then sensor will return to standby mode. If any detection occurs, then relay output will be activated and Relay OFF delay will be started.

A. Relay OFF Delay

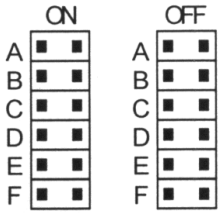
Relay OFF delay is the time of relay activating. Every detection during this period will reset the timer.



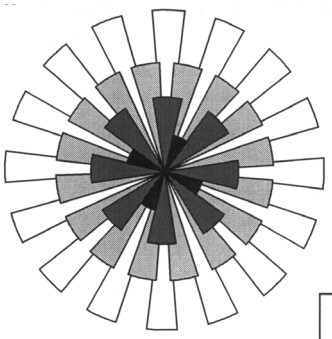
ON / OFF DELAY

The ON and OFF delays are designed to provide intelligent energy management of HVAC system. ON delay is the time given to the sensor to certify the occupancy, before it activates the fan controller. OFF delay is the time that relay is active. Both ON and OFF delays can be easily set by placing the jumper on the corresponding pins as follows:

	A	B	C	D	E	F
ON	0 sec.	10 sec.	30 sec.	1 min.	5 min.	10 min.
OFF	10 sec.	1 min.	5 min.	10 min.	20 min.	30 min.

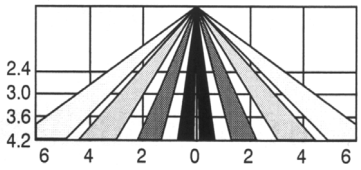


DETECTION PATTERN



Top View 360°

Side View



Mount height	2.4m	3.0m	3.6m	4.2m
Coverage(Dia.)	6.0m	7.5m	9.0m	10.5m

SPECIFICATIONS

Infrared sensor ..... Dual element
Power supply ..... 24 ± 2 V AC/DC
Detection range ..... Height x 2.5 at 25°C
Output format ..... Form C, 30 VDC, 0.2A max.
Current drain ..... 5 mA @24 VAC
Mounting height ..... 2.4~4.2 m
Detectable speed ..... 0.1~3.0 m/sec.
RFI immunity ..... Av. 20 V/m (10~1,000 MHz)
Temperature ..... -20°C~38°C (-4°F ~ 100°F)
Humidity ..... 95% RH max.
Dimensions ..... 110 (Dia.) x 44 (H) mm

WARNING

- READ THESE INSTRUCTIONS CAREFULLY BEFORE ATTEMPTING TO INSTALL, OPERATE OR SERVICE THIS DEVICE.
- Failure to observe safety information and comply with instructions could result in PERSONAL INJURY, DEATH AND/ OR PROPERTY DAMAGE.
- To avoid electrical shock or damage to equipment, disconnect power before installing or servicing.
- To avoid potential fire and/ or explosion do not use in potentially flammable or explosive atmospheres.
- Retain these instructions for future reference. This product, when installed, will be part of an engineered system whose specifications and performance characteristics are not designed or controlled by PECO, Inc. You must review your application and national and local codes to assure that your installation will be functional and safe.

CAUTION Use Copper wire only, insulate or wire nut all un-used leads.

PECO
AUTOMATION AND CONTROLS

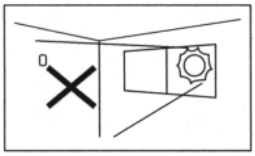
SB200-001
HVAC Occupancy Sensor

Installation Instructions

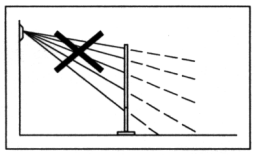
GENERAL

The SB200-001 is an occupancy sensor designed for automatic HVAC system control. This sensor provides a changeover (form C) relay signal output for fan coil controller to activate/deactivate the operation of fan coil automatically. This sensor can be wall or corner mounted with 110°, 50 ft (15m) detection range.

INSTALLATION HINTS

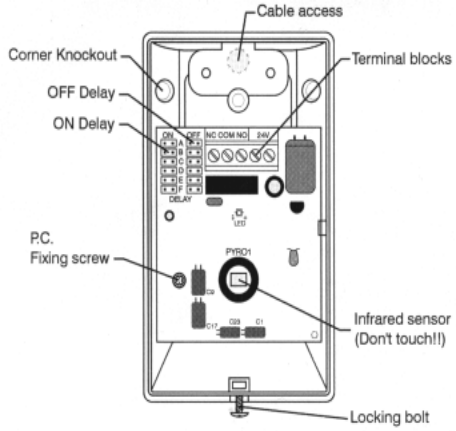


Do not install where unit is exposed to direct sunlight or directly above strong sourcesof heat.



Make sure the detection area does not have any obstruction (plants, large pieces of furniture, curtains etc.) which may block the detection.

DESCRIPTION

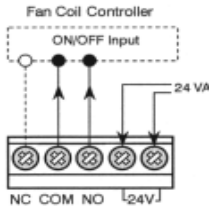


INSTALLATION & WALK TEST

Installation

1. Mount the base of mounting bracket on the selected position. Route the cable through the access tunnel of mounting bracket.
2. Open the front cover by loosening the locking screw at the bottom. Route the cable into the unit and assemble the mounting bracket with the unit.
3. Connect the cable to the corresponding terminals according to the following instructions.

Wiring Diagram



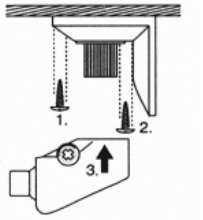
- **NC-COM-NO**: Output for ON-OFF control of fan coil operation. Dry contact signal.
- **24 V**: Power supply (non-polarity)

4. Replace the front cover and then perform the walk test.

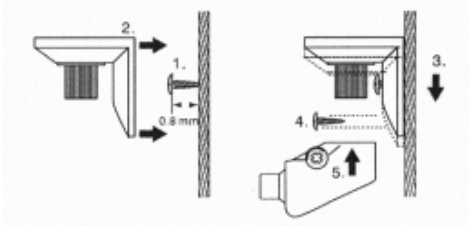
Walk Test

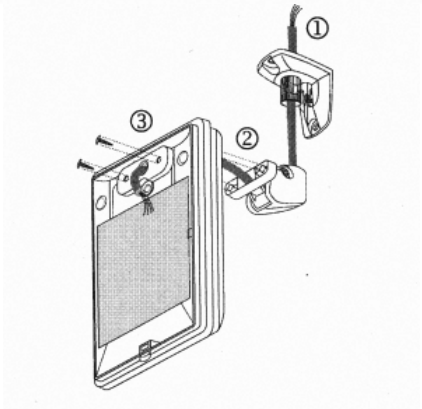
Apply the power supply to the sensor and wait for about 45 seconds to warm unit up. The LED will blink (long-short) during warm up period. Ensure the jumper head connectors of ON and OFF delays are placed on “A” position (shortest delay). Walk across the detection zones (invisible) at normal speed. The LED will light whenever the sensor detects the motion. *Note: If any jumper is not properly placed, the LED will blink.*

■ **Ceiling Mount**



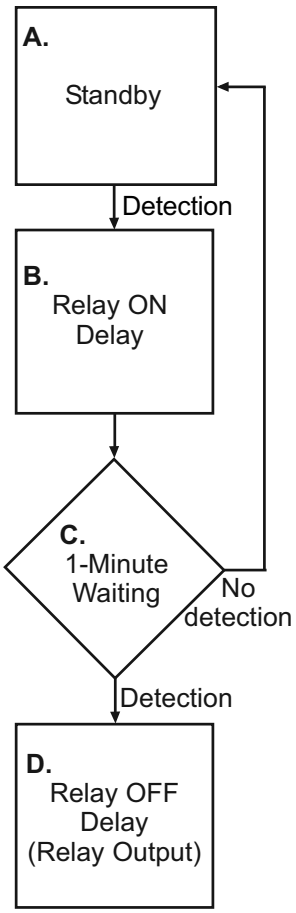
■ **Wall Mount**





OPERATION

Operation Diagram



A. Standby

After warm up period expires, the sensor enters into standby mode. Sensor will check if delay jumpers are properly placed. If not, the LED will flash.

B. Relay ON Delay

Relay ON delay is the time given to sensor to verify true occupancy before activating the relay output. Any further detection during ON delay will NOT reset the timer.

C. 1-minute Waiting

When Relay ON delay expires, the sensor enters into a 1-minute waiting time. If no detection within 1 minute, then sensor will return to standby mode. If any detection occurs, then relay output will be activated and Relay OFF delay will be started.

D. Relay OFF Delay

Relay OFF delay is the time of relay activating. Every detection during this period will reset the timer.

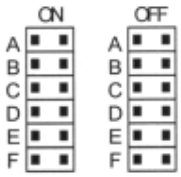
RANGE ADJUSTMENT

In order to suit different rooms or areas, the detection range of SB200-001 can be adjusted by changing the direction of the sensor. To change the sensor direction, release the screw on the mounting bracket and then carefully move the sensor to the direction desired.

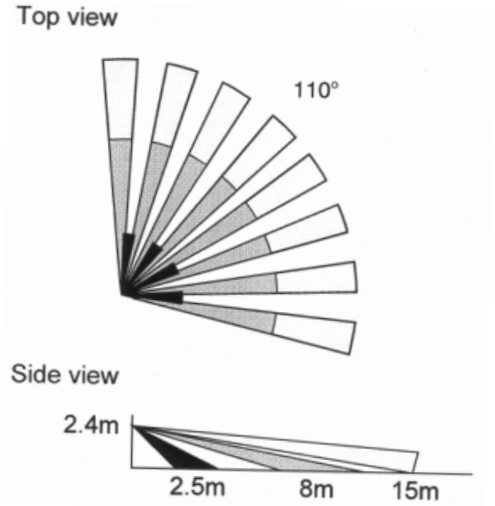
ON / OFF DELAY

The ON and OFF delays are designed to provide intelligent energy management of the HVAC system. ON delay is the time given to the sensor to certify the occupancy, before it activates the fan controller. OFF delay is the time that relay is active. Both ON and OFF delays can be easily set by placing the jumper on the corresponding pins as follows:

	A	B	C	D	E	F
ON	0 sec.	10 sec.	30 sec.	1 min.	5 min.	10 min.
OFF	10 sec.	1 min.	5 min.	10 min.	20 min.	30 min.



DETECTION PATTERN



SPECIFICATIONS

Power supply……..24 ± 2 V AC/DC

Detection range……..110°, 15 x 15 m at 25°C

Output format……Form C, 30 VDC, 0.2A max.

Current drain.....Standby: 5 mA Active: 18 mA

Mounting height……1.8~3.6 m

Mounting bracket……..MB-99

Detectable speed……..0.1~3.0 m/sec.

RFI immunity……Av. 20 V/m (10~1,000 MHz)

Temperature……-20°C~38°C (-4°F ~ 100°F)

Humidity…….....95% RH max.

Dimensions.....112 x 66 x 45 mm

WARNING

- READ THESE INSTRUCTIONS CAREFULLY BEFORE ATTEMPTING TO INSTALL, OPERATE OR SERVICE THIS DEVICE.
- Failure to observe safety information and comply with instructions could result in PERSONAL INJURY, DEATH AND/ OR PROPERTY DAMAGE.
- To avoid electrical shock or damage to equipment, disconnect power before installing or servicing.
- To avoid potential fire and/ or explosion do not use in potentially flammable or explosive atmospheres.
- Retain these instructions for future reference. This product, when installed, will be part of an engineered system whose specifications and performance characteristics are not designed or controlled by PECO, Inc. You must review your application and national and local codes to assure that your installation will be functional and safe.

CAUTION Use Copper wire only, insulate or wire nut all un-used leads.

CE

PECO
AUTOMATION AND CONTROLS

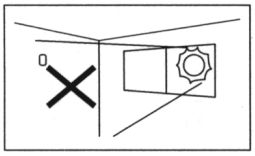
SD200-002
HVAC Occupancy Sensor

Installation Instructions

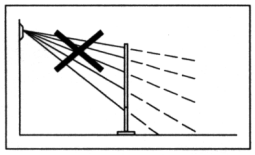
GENERAL

The SD200-002 is the master sensor for SK200-002 Guestroom HVAC Energy Management System. This sensor provides a changeover relay contact output for SF200-001 to control the operation of HVAC device according to the occupancy status of the guestroom. Its high/low temperature limit setbacks help to prevent the room getting too hot or cold during an unoccupied period. An optional door or window switch can be connected to shut off the HVAC operation, should any door/window be left open longer than 5 minutes. This sensor can be mounted on wall or ceiling with the provided mounting bracket.

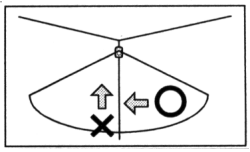
INSTALLATION HINTS



Do not install where unit is exposed to direct sunlight or directly above strong sources of heat.

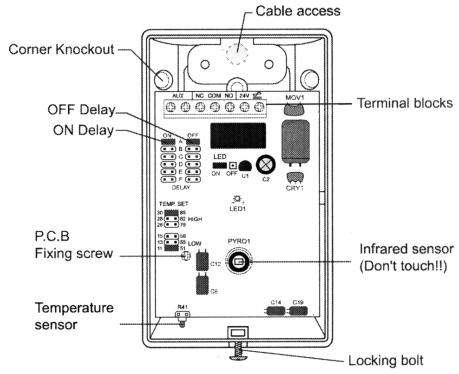


Make sure the detection area does not have any obstruction (plants, large pieces of furniture, curtains etc.) which may block the detection.



PIR detector is more sensitive to the motion “across” the detection zones than “toward” the sensor.

DESCRIPTION



INSTALLATION & WALK TEST

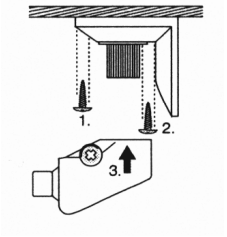
Installation

1. Mount the base of mounting bracket on the selected position. Lead the cable through the access tunnel of mounting bracket.
2. Open the front cover by loosening the locking screw at the bottom. Route the cable into the unit and assemble the mounting bracket with the unit.
3. Connect the cable to the corresponding terminals according to the following instructions.
4. Replace the front cover and then perform the walk test.

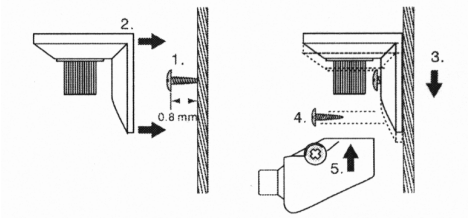
- **NC-COM-NO**: Connect to the on-off control input of fan coil controller or SF200-001 Power Pack.
- **24 V**: For 24 V power supply input.
- **AUX**: For connection with auxiliary door/window switch (N.O. type). <u>If multiple-switch connection is required, please connect all switches **in series**.</u>

Note: If any door/window switch is connected, the SD200-002 will shut off the HVAC when the associated door/window is open longer than 5 minutes.

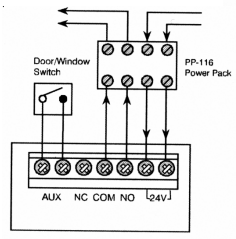
■ **Ceiling Mount**

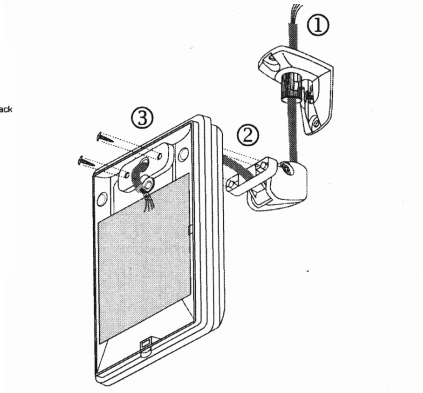


■ **Wall Mount**



Wiring Diagram





Walk Test

Apply the power supply to the sensor and wait about 1.5 minutes for sensor to warm up. The LED will blink (long-short) during warm up period. Ensure the jumper head connectors of ON and OFF delays are placed on “A” position (shortest delay). Walk across the (invisible) detection zones at normal walking pace. The LED will light whenever the sensor detects the motion.

Note: If any jumper is not properly placed, the LED will blink.

OPERATION

Operation Diagram

A. Standby

After warm up period expires, the sensor enters into standby mode. Sensor will check if delay jumpers are properly placed. If not, the LED will flash.

B. Relay ON Delay

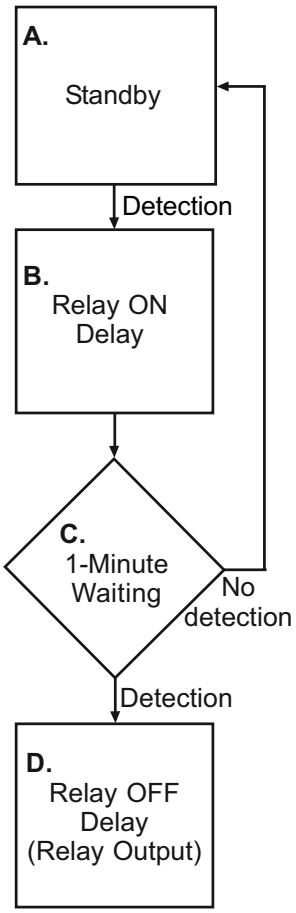
Relay ON delay is the time given to sensor to verify true occupancy before activating the relay output. Any further detection during ON delay will NOT reset the timer.

C. 1-minute Waiting

When Relay ON delay expires, the sensor enters into a 1-minute waiting time. If no detection within 1 minute, then sensor will return to standby mode. If any detection occurs, then relay output will be activated and Relay OFF delay will be started.

D. Relay OFF Delay

Relay OFF delay is the time of relay activating. Every detection during this period will reset the timer.

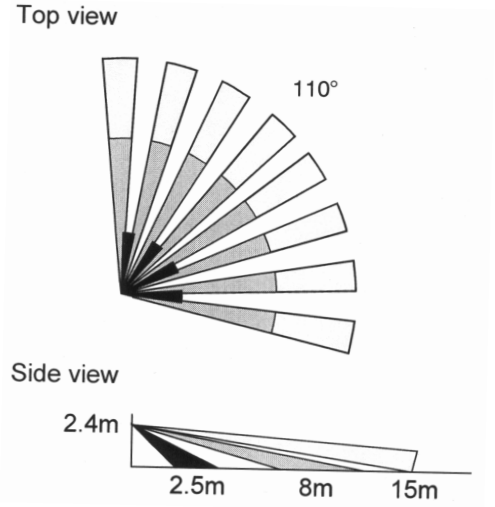


ON / OFF DELAY

The ON and OFF delays are designed to provide intelligent energy management of the HVAC system. ON delay is the time given to the sensor to certify the occupancy, before it activates the fan controller. OFF delay is the time that relay is active. Both ON and OFF delays can be easily set by placing the jumper on the corresponding pins as follows:

	A	B	C	D	E	F
ON	0 sec.	10 sec.	30 sec.	1 min.	5 min.	10 min.
OFF	10 sec.	1 min.	5 min.	10 min.	20 min.	30 min.

DETECTION PATTERN



SPECIFICATIONS

Infrared sensor ..... Dual element
Power supply ..... 24 ± 2 V AC/DC
Detection range ..... 110°, 15 x 15 m at 25°C
Relay output ..... Form C, 5A/NO, 3A/NC resistive
Current drain ..... Standby: 7 mA Active: 23mA
Door switch ..... N.O. open when door is opened.
Temperature limit .. H: 26°/28°/30°C, L:11°/13°/15°C
Mounting height .... 1.8 ~ 3.6 m
Mounting bracket .. MB-99
Detectable speed .. 0.1~3.0 m/sec.
RFI immunity ..... Av. 20 V/m (10~1,000 MHz)
Temperature ..... -10°C~38°C (14°F ~ 100°F)
Humidity ..... 95% RH max.
Dimensions ..... 112 x 66 x 45 mm

WARNING

- READ THESE INSTRUCTIONS CAREFULLY BEFORE ATTEMPTING TO INSTALL, OPERATE OR SERVICE THIS DEVICE.
- Failure to observe safety information and comply with instructions could result in PERSONAL INJURY, DEATH AND/ OR PROPERTY DAMAGE.
- To avoid electrical shock or damage to equipment, disconnect power before installing or servicing.
- To avoid potential fire and/ or explosion do not use in potentially flammable or explosive atmospheres.
- Retain these instructions for future reference. This product, when installed, will be part of an engineered system whose specifications and performance characteristics are not designed or controlled by PECO, Inc. You must review your application and national and local codes to assure that your installation will be functional and safe.

CAUTION Use Copper wire only, insulate or wire nut all un-used leads.

PECO
AUTOMATION AND CONTROLS

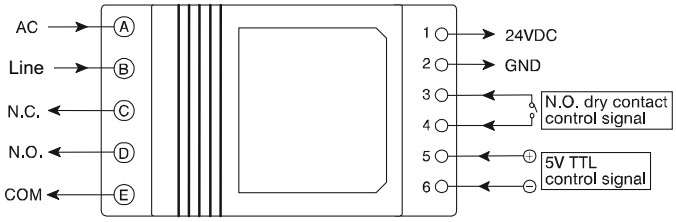
SF200-001
Power Pack & Controller

Installation Instructions

GENERAL

The SF200-001 is a 24 VDC power pack and controller designed for automatic control of various applications. This device provides not only 24 VDC power up to 200 mA, but also form C power switching relay up to 10 Amp. Control signal input can be either dry contact or 5V TTL electronic switching. To assure optimum control of this device, please read the following instruction thoroughly before connecting the wires.

WIRING DIAGRAM



Two rows of terminal blocks are available for wiring connections. Terminals 1 through 6 are for 24 VCD power and control signal inputs. Terminals A through E are for AC mains input and power switching relay contacts.

DC Power Supply and Control Signals

1 Positive polarity of 24 V DC power.
2 Ground of 24 V DC power.
3 For N.O. dry contact control signal input.
4 For N.O. dry contact control signal input.
5 For positive (H) of 5V TTL control signal input.
6 For negative (L) of 5V TTL control signal input.

AC Line Voltage Input and Relay Contacts

A,B 100~240 VAC line voltage input
C N.C. relay contact output
D N.O. relay contact output
E Common port of relay contact

WARNING

• Switch OFF main power before wiring to avoid electric shock.

• The unit should be installed with a protective cover.

WARNING

·READ THESE INSTRUCTIONS CAREFULLY BEFORE ATTEMPTING TO INSTALL, OPERATE OR SERVICE THIS DEVICE.
·Failure to observe safety information and comply with instructions could result in PERSONAL INJURY, DEATH AND/OR PROPERTY DAMAGE.
·To avoid electrical shock or damage to equipment, disconnect power before installing or servicing.
·To avoid potential fire and/ or explosion do not use in potentially flammable or explosive atmospheres.
·Retain these instructions for future reference. This product, when installed, will be part of an engineered system whose specifications and performance characteristics are not designed or controlled by PECO, Inc.. You must review your application and national and local codes to assure that your installation will be functional and safe.

CAUTION Use Copper wire only, insulate or wire nut all un-used leads.

CE

PECO
AUTOMATION AND CONTROLS

SK200-001
Installation Instructions

Guestroom
HVAC Energy Management System

GENERAL

INTRODUCTION

The S200 series hospitality HVAC Energy Management (HEM) System is specially designed to provide automatic operation control of HVAC (Heater, Ventilation and Air Conditioner) units in hotel guestrooms.

By utilizing proven passive infrared (PIR) sensing technology and intelligent logic control software, the S200 series devices are able to verify the occupancy status of guestrooms. If the guestroom is physically occupied, the HEM system will allow the guest to control the HVAC operation as usual. Once the guestroom is vacant, the HEM system will automatically shut off the HVAC to reduce energy consumption and equipment wear.

CAUTIONS

- The SD200-001 contains sensitive electronic components, please handle with care.
- Handle by the terminal block or circuit board edges only. Do NOT touch the leads or surface of electronic components to prevent electrostatic discharge damaging the unit.
- Do NOT touch the surface of the infrared sensor (the component with square dark window).
- Do NOT attempt to adjust or repair the Master Sensor/ Controller. Unauthorized modifications or repairs will void the warranty.

WARNINGS

- HVAC units may contain AC line power of 110 VAC, 230 VAC or 277 VAC. To prevent electric shock, ensure that AC line power is disconnected before connecting the S200-001 system with the HVAC unit.
- All electrical connections and wirings MUST conform to the National Electrical Code and applicable local codes.
- The HEM system should be handled and installed by qualified electrical service personnel only.
- Do NOT take shortcuts when connecting the HVAC power circuits.

MAINTENANCE

The SK200-001 system requires very little maintenance. End-user's maintenance is limited to the cleaning of dust on front lens surface on the sensor. If any abnormal or faulty condition occurs, call the installer for local service.

SYSTEM COMPONENTS

STANDARD COMPONENTS

SD200-001 Master Sensor/Controller

SD200-001 is the master sensor/controller of the HEM system. It consists of a high sensitivity passive infrared (PIR) motion sensor and sophisticated microprocessor with intelligent logic control software in an aesthetically pleasing housing. It should be mounted on the wall or ceiling (corner mount recommended) to detect human presence by sensing the movement of body heat energy. In addition to the guest presence detection and verification, the unit also provides various operation settings and component connections of the system.

To avoid the room becoming too hot or too cold during an unoccupied period, thus requiring excessive time and energy to cool down or warm up, the SD200-001 also features a programmable secondary thermostat with various high and low temperature limit settings. The HVAC unit will be activated if room temperature exceeds the set range.

SE200-001 Door Switch

The SE200-001 is a door switch to be recess mounted on the frame of entry door. It should be connected between the GND and DSW terminals of SD200-001 Master Sensor/Controller to report the open/closed status of the door. Once the door is opened, the system will enter into "standby" mode to detect the guest presence. If motion is detected, the SD200-001 will verify the room as "occupied" status and allow guest to operate the thermostat and set the temperature of HVAC unit by themselves. If no motion is detected within a period of time, then the SD200-001 will verify the room "vacant" and then shut off the HVAC operation.

Note: The HEM system will automatically shut off the HVAC operation if any sensor connected door or window is left open for more than 5 minutes.

SF200-001 Power Pack

The SF200-001 power pack not only provides 24 VDC power supply for SD200-001, but also controls the operation of HVAC unit.

SYSTEM COMPONENTS cont.

OPTIONAL COMPONENTS

SE200-002 Window Switch (optional)

The SE200-002 is a pair of magnetic contacts to verify open/ closed status of window or sliding door to the balcony or patio. If optional door/window switches are installed, all switches, including the primary door switch, must be connected in series and connected between the GND and DSW terminals on the DS200-001 terminal block.

The system will shut off the HVAC if any connected door/window is left open for more than 5 minutes.

Slave Sensor (optional)

The SA200-001 and SB200-001 are optional sensors designed for additional rooms of hotel suites.

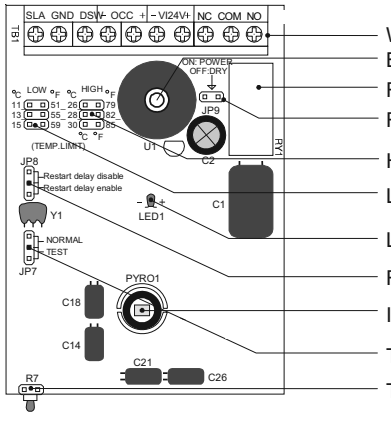
The SA200-001 is ceiling mountable occupancy sensor incorporating a full 360° detection pattern.

The SB200-001 is a wall mountable occupancy sensor, which mounts in the same manner and has the same 110° detection pattern as the SD200-001.

Both sensors are designed to verify occupancy of a room or open area, thus allowing control the associated HVAC device based on the occupancy status. Each provides a Form-C relay output for automatic control of a fan coil. An LED is provided under the lens to verify detection and proper operation.

DESCRIPTION & CONFIGURATION

SD200-001 Description



Wiring terminal block
Buzzer
Relay
Relay output format selection
High-temp Limit setting
Low-temp Limit setting
LED indicatior
Restart delay disable/enable
Infrared sensor (DO NOT Touch)
Test/Normal switch
Temperature sensor (DO NOT BLOCK)

Jumper Setting

Low temperature limit

This jumper allows the selection of 3 different low temperature limits in which the HEM system will automatically operate the HVAC when room temperature is lower than the set value. The sensor measures room temperature once every 5 minutes. To disable the low temperature limit, remove the jumper. This function will only operate when room is unoccupied

High temperature limit

This jumper allows the selection of 3 different temperature limits in which the HEM system will automatically operate the HVAC when room temperature is higher than the set value. The sensor measures room temperature once every 5 minutes. To disable the high temperature limit, remove the jumper. This function will only operate when room is unoccupied.

Relay output format selection

This jumper allows the selection of relay output format. Placing the jumper on both pins will make the relay contact with 24V power output. If dry contact (no load) output is required, remove the jumper off the pins (disconnect the pins).

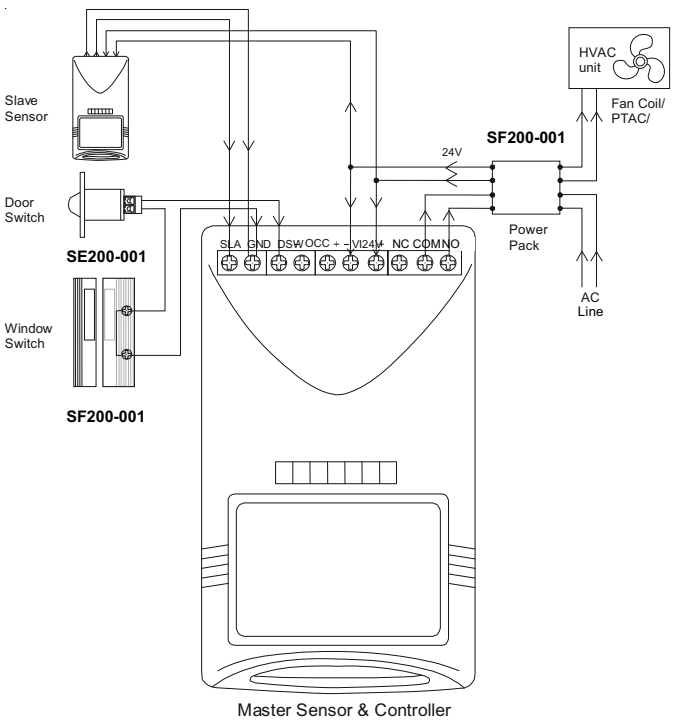
Restart delay enable/disable

This jumper enables/disables the 2-minute short start cycle protection. With this restart delay enabled, the HVAC will start operating after 2 minutes. This restart delay is generally required by the individual Packaged Terminal Air Conditioner (PTAC) units to protect the compressor from being damaged from frequent cycling. To disable short start protection, place the jumper at disable position.

Test/normal mode selection

This jumper enables/disables the LED and buzzer indication. When jumper is placed at "**TEST**" position, the LED will light for approximately 2 seconds whenever the motion is detected and the buzzer will beep. If jumper is placed at "**NORMAL**" position, the LED will NOT light when sensor detects the motion. But it will blink about 10 seconds after the SD200-001 activates the HVAC. This indication helps the maintenance staff to check if the HEM system is working normal

Typical System Configuration



INSTALLATION INSTRUCTIONS

HVAC System Introduction

The typical HVAC systems used in today's hotel/motel rooms are generally one of the following two types:

Type A: Individually Packaged Terminal Air Conditioner (PTAC)

The PTAC is commonly known as "through-the-wall" HVAC unit. The PTAC types are electrically operated by various AC voltages and contain the guest operated controls on the unit or via a remote control device.

Type B: Centrally Chilled and Heated Water Fan-Coil HVAC Unit

This type of HVAC unit is typically located in the dropped ceiling of entry foyer of the room. It consists a coil (radiator) assembly and fan (blower). Chilled or heated water is pumped through the coil from a central source. The fan operation and/or water valves are controlled by the wall-mounted thermostat in each room.

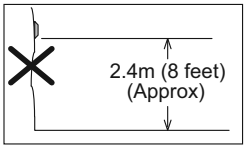
The HEM system can be used to control any electrically or pneumatically operated HVAC units.

NOTE: Certain models of HVAC units contain a built-in energy management interface. The HEM system is designed to directly connect to these units without the use of the SF200-001Power Pack, if 24 VAC power supply is available. Please refer to the instructions of HVAC units to make the wiring connection correctly. A no voltage, "dry" contact output format is generally required to turn "OFF" the unit.

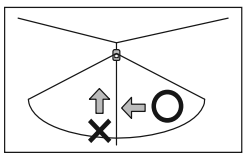
The system installation consists of mounting and wiring of each component. The following diagrams and instructions provide some useful references for ease of installation.

INSTALLATION HINTS

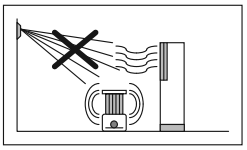
Selection a proper mounting location of the SD200-001 Master Sensor/Controller is very important in assuring optimum performance of the system. Improper sensor location may result in poorer performance.



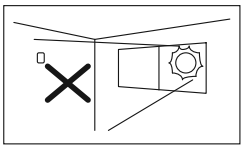
The sensor should be mounted at 8 ft. above the floor, preferably in a corner that has a good field of view to the movements of hotel guest.



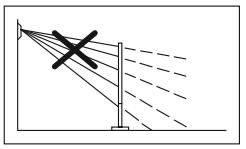
The sensor is more sensitive to the movements across the detection zones than those toward or away the sensor.



AVOID facing the sensor toward any object likely to change temperature rapidly, such as electric heater or fireplace.



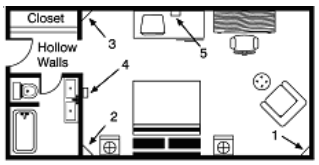
AVOID mounting the sensor where it will receive direct sunlight or direct draft of heating/cooling vents.



AVOID locating the sensor where its detection zones may be blocked by doors, draperies or curtains.

Recommended sensor locations

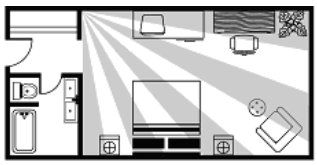
The numbers indicated represent order of preference.

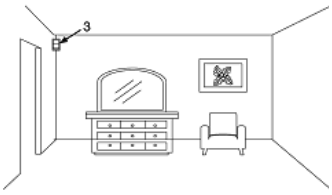


Recommended Mounting Locations in order of Preference

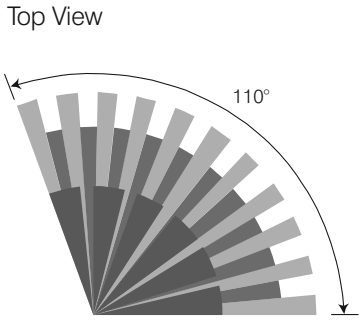
CAUTION

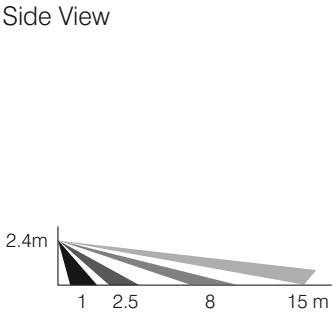
Make sure that hot or cold air from HVAC vents does not blow directly on Sensor, especially in location 1.





DETECTION PATTERN





MOUNT THE SENSOR

1.Remove the sensor cover by releasing the locking screw at the bottom of the housing.
2.Carefully remove the circuit board by removing the screw.
3.For corner mount (recommended), use the mounting holes on both 45° slopes to mount the base.
4.Lead the cable into the base. Replace the circuit board on the base and install the screw.

INSTALL THE DOOR SWITCH

1.Carefully select the location on the doorframe to mount the door switch.
2.Drill a 3/4" hole in the frame.
3.Using the spacer or switch as a guide, drill two holes for POP rivets or screws.
4.Drill a small hole just above the carpet for wire entry into the door frame.
5.Route the wires and connect with the switch.
6.Insert the switch into the hole and mount it firmly with the doorframe. If the gap between door and frame is too big, use a spacer to ensure proper operation of the switch.

WIRING CONNECTION

To connect the wires between the sensor and other components of the system, the terminals should be connected with correct wire to ensure optimum performance. Each terminal block of the SD200-001 are described as follows in the left to right sequence.

- **SLA**: This terminal and terminal "**GND**" are for connection with the N.O. output of slave sensor. If multiple slave sensors are used, the connection should be made in parallel.
- **GND**: This terminal normally goes together with terminal "**SLA**" or "**DSW**" for connection with slave sensor or door switch.
- **DSW**: This terminal and terminal "**GND"** are for connection with the door switch. If multiple door/window switches are used, the connection should be made in series.
- **OCC**: These terminals provide an output for accessory devices that indicate guestroom occupancy status.
- **–VI24V+**: These two terminals are for the input of 24V power supply from power pack.
- **NC**: This terminal and terminal "**COM**" form the Normally Closed (NC) output of SD200-001.
- **COM**: This terminal is the common pole of relay output.
- **NO**: "**NO**" and terminal "**COM**" form Normally Open (NO) output of SD200-001.

SYSTEM OPERATION TEST

1.After wiring connection is completed, ensure the jumper JP7 is placed at "**TEST**" mode. Replace and fasten the front cover with the locking screw.
2.Whenever power is applied to the SD200-001, please wait for about 25 seconds for sensor to warm-up. During warm-up period, the buzzer will sound beep-beep (each beep lasts 1 second). Both LED and relay will be activated.
*The activated SD200-001 means the HVAC unit will NOT operate due to its fail-safe design.
3.When warm-up period expires, the buzzer stops sounding, LED light is off, but relay will still be active.
4.DOOR SWITCH TEST - Open the door, the buzzer should sound constantly until the door is closed.
*If the buzzer does not sound while door is opened, check the door switch and ensure correct wiring connection between door switch and SD200-001.
5.SLAVE SENSOR TEST - If a slave sensor is NOT installed,skip this test. The sensor should be tested after the door switch function is tested and verified. Walk across the room of slave sensor installation, the LED of the slave sensor will light whenever it detects the movement. The buzzer of SD200-001 will sound one long beep (1 sec.) and - one short beep (0.2 sec.) when the slave sensor is activated.
*If the buzzer does not sound when the slave sensor detects movement, but the LED of slave sensor is working, check the wiring between slave sensor and SD200-001.
6.MASTER SENSOR TEST – Walk across the room of master sensor installation, within the detection zone. The LED will light and the buzzer will sound beep-beep (0.2 sec.) whenever master sensor detects movement. The HVAC unit will operate at least 30 seconds for every detection.
*If no further movement is detected within 30 seconds after the last detection, the HVAC unit will stop operating.

NORMAL SYSTEM OPERATION

After the system operation test is completed, place the jumper JP7 to "**NORMAL**" position for normal operation of the system.
The normal operation of HEM system is quite sophisticated. Many different operation modes and statuses are carefully managed and controlled by the microprocessor. Various modes and statuses are described as follow;

Standby Mode

If the room is vacant, the system will enter into "standby" mode after the warm-up time expires. Under standby mode, the HVAC unit will not operate.

Temp-control Status

While room is unoccupied, the temperature sensor of SD200-001 will measure the room temperature every 5-minute. When room temperature becomes higher or lower than the high/low temperature limit setting, the HVAC unit will automatically operate until the room temperature is back within the setting range. Once the room temperature returns to the setting range, the system will return to "standby" mode. This function will operate only if jumpers are set in place and HVAC unit is"ON".

Occupied Mode

If the master or any slave sensor detects movement during standby mode, the system will enter into "occupied" mode. Under the "occupied" mode, the hotel guests can manage or set the room temperature using the wall or unit thermostat.

Door-open Status

Whenever the door is opened, the system will detect it and enter into "door-open" status. The HVAC unit will operate and LED will flash for 10 seconds. The LED flash indicates that the system functions are normal.

If the door is left open for more than 5 minutes, the system will shut off the HVAC unit until the door is closed.

Delay Status

Once the door is closed, the system will enter into "delay" status. During this 10-second period, the system will remain in its original mode.

Waiting Mode

The system will enter into "Waiting" mode after the 10-second delay status expires.

If the master or any slave sensor detects movement during waiting mode, the system will enter into "occupied" mode.

If no movement is detected within 5 minutes, then system will enter into "standby" mode.

INSTALL THE SLAVE SENSOR

For the additional rooms of hotel suites or condominiums, the system may require slave sensors SA200-001 or SB200-001 to be connected with the SD200-001. Install according to instructions included with slave sensor unit. Select the location where the slave sensor has a good view of the additional room.

INSTALL ADDITONAL DOOR/ WINDOW SWITCHES

For multiple entry/exit doors to the room, additional SE200-001 door switches may be required to connect with the SD200-001. A pair of surface mount magnetic switches can be installed on the sliding door/window to inhibit the operation if the door/window is left open for a period of time. The additional switches should be connected in series with SE200-001 door switch, between the DSW and GND terminals.

SPECIFICATIONS

SD200-001Master Sensor/Controller

Power supply.....24 ± 2 VAC/DC
Current drain.....Standby: 20 mA, Operating: 10 mA
Relay output.....Form C (NC-COM-NO),24v power or dry contact selectable
Max. switching current.....NO: 5A, NC: 3A, resistive load
Max. switching voltage.....AC: 250V, DC: 30 V
High temperature limit.....26/28/30°C (79/82/85°F) programmable
Low temperature limit.....11/13/15°C (51/55/59°F) programmable
Detection coverage.....110° wide, 15m (50ft) long @25°C(77°F)
Warm-up period.....25 ± 2 seconds
Restart cycle protection.....2 minute, can be disabled
Test indication.....Buzzer (audible) and LED (visible) , can be disabled
Housing material.....ABS
Operating temperature.....-10°C ~ 38°C (14°F ~ 100°F)
Operating humidity.....Max. 95% RH non-condensated
Dimensions.....112 x 66 x 45 mm (4.4 x 2.6 x 1.8 inch)

SF200-001Power Pack

Input power.....110~240 VAC 50/60hz
Power output.....24 VDC, 200 mA max.
Relay output.....Form C (NC-COM-NO)
Max. switching current.....NO: 16A, NC: 10A, resistive load
Max. switching voltage.....AC: 250V
Housing material.....ABS
Operating temperature.....-10°C ~ 60°C (14°F ~ 140°F)
Operating humidity.....Max. 95% RH non-condensated
Dimensions.....110 x 52.5 x 33 mm (4.3 x 2.1 x 1.3 inch)

SB200-001 Slave Sensor

Power supply.....24 ± 2 VAC/DC
Current drain.....Standby: 5 mA, Operating:18 mA
Relay output.....Form C (NC-COM-NO) dry contact only, 0.2A max.
Detection coverage.....110° wide, 15m (50ft) long @25°C(77°F)

Warm-up period.....25 ± 2 seconds
Operating temperature.....-10°C ~ 38°C
(14°F ~ 100°F)
Operating humidity.....Max. 95% RH
non-condensated
Dimensions.....112 x 66 x 45 mm
(4.4 x 2.6 x 1.8 inch)

SA200-001 Slave Sensor

Power supply.....24 ± 2 VAC/DC
Current drain.....5mA @ 24VAC
Relay output.....Form C (NC-COM-NO)
Max. switching current.....0.2A max
resistive load
Max. switching voltage.....DC: 30 VDC
Detection pattern.....360°
(see table below for details)

Mount height	2.4m	3.0m	3.6m	4.2m
Coverage (Dia.)	6.0m	7.5m	9.0m	10.5m

Warm-up period.....25 ± 2 seconds
Housing material.....ABS
Operating temperature.....-10°C ~ 38°C
(14°F ~ 100°F)
Operating humidity.....Max. 95% RH
non-condensated
Dimensions.....110(DIA) x 44(H)cm.
(4.33 x 1.73) inch

WARNING

- READ THESE INSTRUCTIONS CAREFULLY BEFORE ATTEMPTING TO INSTALL, OPERATE OR SERVICE THIS DEVICE.
- Failure to observe safety information and comply with instructions could result in PERSONAL INJURY, DEATH AND/ OR PROPERTY DAMAGE.
- To avoid electrical shock or damage to equipment, disconnect power before installing or servicing.
- To avoid potential fire and/ or explosion do not use in potentially flammable or explosive atmospheres.
- Retain these instructions for future reference. This product, when installed, will be part of an engineered system whose specifications and performance characteristics are not designed or controlled by PECO, Inc. You must review your application and national and local codes to assure that your installation will be functional and safe.

CAUTION Use Copper wire only, insulate or wire nut all un-used leads.

PECO
AUTOMATION AND CONTROLS

SK200-002

Guestroom HVAC Energy Management System

Installation Instructions

GENERAL

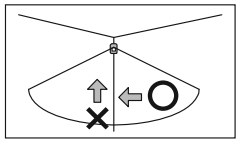
Thank you for choosing Sunne Controls' Hospitality Energy Management (HEM) system. This system is an occupancy activated, automatic control for hotel guestroom HVAC systems. With this system in control, guestroom HVAC energy costs are significantly reduced.

The SK200-002 system utilizes occupancy sensing technology and sophisticated logic control software to verify the occupancy status of guestrooms. When a guestroom is physically occupied, the system will allow the occupant to operate the HVAC system according to the guest's preference. When vacant, the SK200-002 system will automatically shut off unnecessary HVAC operation to reduce energy consumption.

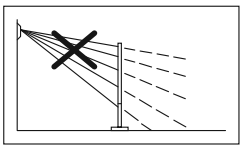
To ensure optimum performance, please read the following instructions before installing.

CAUTION: HVAC units may contain exposed AC line voltage. Make sure that power to the unit is turned OFF.

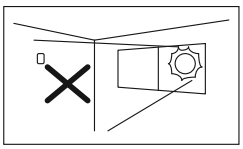
INSTALLATION HINTS



PIR sensor is more sensitive to the motion "across" the detection zones than "toward" the sensor.



Ensure the detection area does not have any solid obstruction (plants, large furniture, curtains).



Do not install where the sensor will face to direct sunlight or strong air flow.

SYSTEM COMPONENTS

SD200-002 Master Sensor

The SD200-002 is the master sensor of the SK200-002 system. It should be wall or ceiling mounted, preferably in a corner, to detect and verify room occupancy.

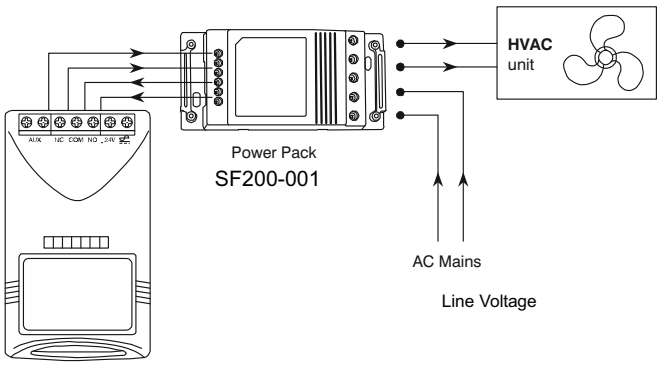
SF200-001 Power Pack

The SF200-001 is a line voltage to 24VDC switching power supply combined with a SPDT relay, inside a plastic housing. It provides 24VDC power for system operation and also switches power to the HVAC unit.

SE200-001 Door Switch

The SE200-001 is an optional door switch to be recess mounted in the guestrooms entry door frame.

SYSTEM CONFIGURATION



INSTALLATION

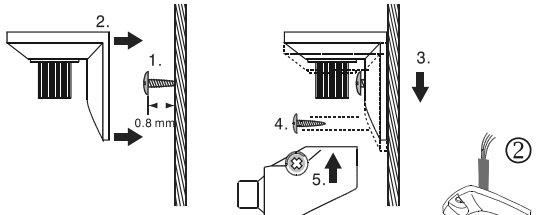
Mount the sensor with bracket

1. Mount the base of mounting bracket on the selected position as the following drawings show.

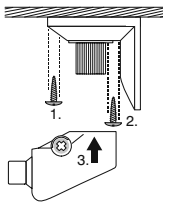
2. Lead the cable through the central tunnel of the mounting bracket.

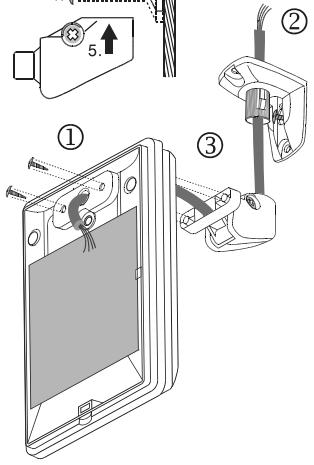
3. Loosen the locking bolt and remove the front cover. Lead the cable into the case and attach the mounting bracket to the bottom of the sensor.

Wall Mount

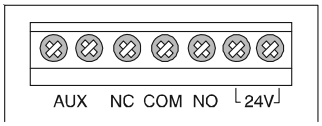


Ceiling Mount





WIRING INSTRUCTIONS



To ensure optimum performance of the system, all devices must be connected correctly. Connect the wires between the sensor and power pack as follows:

SENSOR

AUX This pair of terminals are for connecting with the optional door/window sensor (N.C. type). **If door/ window sensor is connected, the jumper wire between aux. terminals should be removed.**

Note: When door/window is connected, the system will shut off the HVAC operation if the door/window is open longer than 5 minutes.

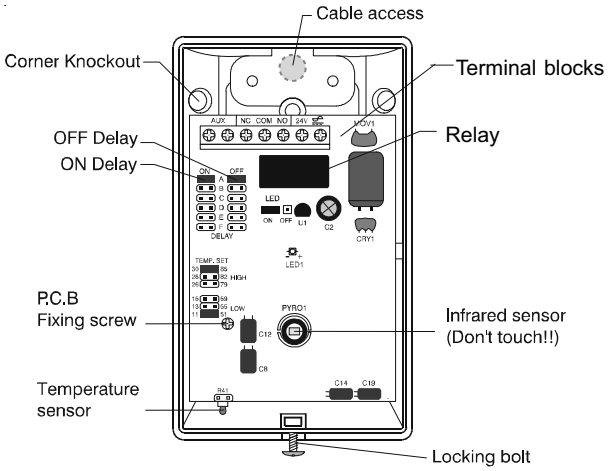
NC This terminal forms Normally Closed contact output with **COM**. No connection is needed for SK200-002 system.

COM Common pole of relay output. Connect this with one N.O. dry contact control terminal of SF200-001.

NO This terminal forms Normally Open contact output with **COM**. Connect this with the other dry contact input terminal of SF200-001.

24V Connect these two terminals with the 24V power supply.

DESCRIPTIONS



SETTINGS

1. High/Low Temperature Setbacks

   The SD200-002 provides high/low temperature setbacks to prevent room temperature from getting too high or low while vacant. Setback is selectable. To disable the setback, remove the jumper.

2. LED on/off setting

   This jumper enables/disables the LED indicator light of the SD200-002. Removing the jumper disables the LED.

3. ON delay setting

   ON-delay is the delay time between the first motion detection during standby mode, and activation of the HVAC unit. If immediate activation is desired, set the ON-delay at “A” position.

4. OFF delay setting

   OFF delay is the amount of time between the last detected motion and shut off of the HVAC unit. Longer delay times (20 to 30 minutes) are recommended for typical hotel guestroom applications.

SYSTEM TEST

It is important to test system operation after installation is completed. Before testing, ensure that all wires are correctly and properly connected.

1. Apply power to the system. The LED of the SF200-001 power pack should be on, indicating normal operation.
2. The LED of the SD200-002 will blink (long-short) during a 90 second warm up period.
3. Walk in front of the sensor at a normal pace. The LED will light when it detects motion. Adjust the sensor direction until it can detect motion of a person lying on the guestroom bed.
4. Once the system test is completed, remove the jumper of LED ON/OFF switch of SD200-002 to disable the LED indication.

Note: If any delay or temperature setting jumper is not properly placed, the LED will blink.

SYSTEM OPERATION

The SK200-002 System operates in the following modes:

A. Standby Mode

When the room is vacant, the system will enter into "**standby**" mode. The HVAC unit will not operate under this mode.

B. ON-delay mode

Once the sensor detects the motion during standby mode, the system will enter into "**ON-delay**" mode. This delay allows the system to verify the occupancy status before activating the HVAC. If ON-delay is not needed, place the jumper at "**A**" position to disable.

C. 1-minute waiting

After the ON-delay expires, the system will enter into an 1-minute waiting period to wait for further detection. If no detection within 1 minute, the system will return to "**standby**" mode. If sensor detects the motion, the system will enter into "**occupied**" mode and the OFF-delay starts.

Note: If ON-delay is disabled, the system will immediately enter into "occupied" mode when sensor detects the first motion.

D. OFF-delay mode

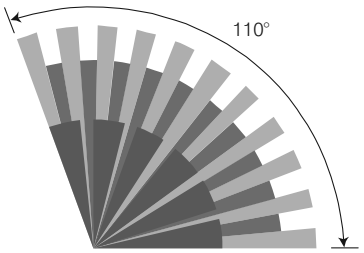
OFF-delay is the time that HVAC remains operating. During this period, any further motion detection will reset the timer.

E. Automatic temperature control mode

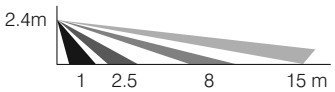
During standby mode, the temperature sensor built-in the SD200-002 will measure room temperature. When room temperature exceeds the setbacks, the HVAC device will be automatically activated to maintain the room temperature within the setback range.

DETECTION PATTERN

Top View



Side View



SPECIFICATIONS

SD200-002 Master Sensor

Power supply.....24 ± 2 VAC/DC
Current drain.....Standby: 7, Operating: 23 mA
Relay output.....Form C (NC-COM-NO)
Max. switching current.....NO: 5A, NC: 3A, resistive load
High temperature setback.....26/28/30°C (79/82/85°F) programmable
Low temperature setback.....11/13/15°C (51/55/59°F) programmable
Detection coverage.....110° wide, 15m (50ft) long @25°C(77°F)
Detection LED.....Red, can be disabled.
Warm-up period.....Approximately 90 seconds
ON-delay.....0 (disabled)/10 sec./30sec./ 1 min./5 min./10 min.
OFF-delay.....10 sec./1 min./5 min./ 10 min./20 min./30 min.
Housing material.....ABS
Operating temperature.....-10°C ~ 38°C (14°F ~ 100°F)
Operating humidity.....Max. 95% RH non-condensated
Dimensions.....112 x 66 x 45 mm (4.4 x 2.6 x 1.8 inch)

SF200-001 Power Pack

Power supply..... 110 ~ 240 VAC
Power output.....24 VDC, 200 mA max.
HVAC Relay output.....Form C
Max. switching current.....10A, resistive load
Max. switching voltage.....250V AC
Housing material.....ABS, flame-proof
Operating temperature.....-10°C ~ 60°C (14°F ~ 140°F)
Operating humidity.....Max. 95% RH non-condensated
Dimensions.....110 x 52.5 x 33 mm (4.3 x 2.1 x 1.3 inch)

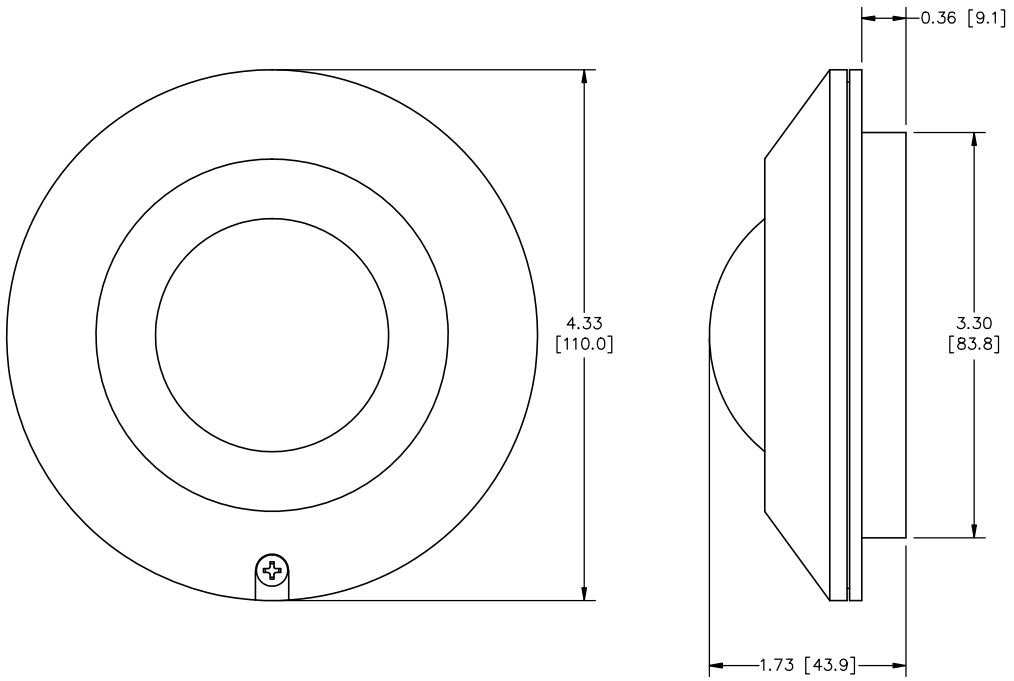
⚠ WARNING

- READ THESE INSTRUCTIONS CAREFULLY BEFORE ATTEMPTING TO INSTALL, OPERATE OR SERVICE THIS DEVICE.
- Failure to observe safety information and comply with instructions could result in PERSONAL INJURY, DEATH AND/ OR PROPERTY DAMAGE.
- To avoid electrical shock or damage to equipment, disconnect power before installing or servicing.
- To avoid potential fire and/ or explosion do not use in potentially flammable or explosive atmospheres.
- Retain these instructions for future reference. This product, when installed, will be part of an engineered system whose specifications and performance characteristics are not designed or controlled by Sunne Controls. You must review your application and national and local codes to assure that your installation will be functional and safe.

CAUTION ⚠ Use Copper wire only, insulate or wire nut all un-used leads.

CE

DATE	REV	DESCRIPTION	DR.	CK.
12/19/07	4	ECN 7680 ADD METRIC DIMENSIONS	SEM	SR



NOTES:

1. FEATURES: THIS IS A CEILING MOUNT 360° OCCUPANCY SENSOR FOR AUTOMATIC CONTROL OF A GUEST ROOM HVAC SYSTEM. THE SENSOR INCORPORATES AN INNOVATIVE DUAL DELAY PROCESSOR. THIS MAKES THE SENSOR SMART ENOUGH TO VERIFY THE NATURE OF OCCUPANCIES. THE SENSOR IS CAPABLE OF ELIMINATING UNNECESSARY ACTUATIONS OF THE HVAC DEVICE DUE TO UNINTENTIONAL PASSAGES OR SHORT TIME OCCUPANCIES. THIS SENSOR MAY ALSO BE USED AS A SLAVE UNIT IN CONJUNCTION WITH A HEM-1 SYSTEM. THE OUTPUT IS DRY CONTACT IN A FORM-C CONFIGURATION.
2. MATERIALS: THE BASE AND COVER ARE MOLDED OF WHITE ABS PLASTIC.
3. MOUNTING: THE SENSOR IS MOUNTABLE DIRECTLY TO A FLAT CEILING. THE SENSOR MAY ALSO BE RECESSED ~3/8" [9.5] INTO A 3.5" [88.9] CUTOUT.
4. PACKAGING: THE SENSORS ARE INDIVIDUALLY BOXED WITH AN INSTALLATION INSTRUCTION SHEET.
5. DIMENSIONS: THE DRAWING DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.
6. ASSEMBLIES TO BE PERMANENTLY MARKED ON BACK OF ENCLOSURE. MARKING TO INCLUDE:
   SA200-001
   PECO INC.
   FOUR DIGIT DATE OF MANUFACTURE (YEAR WEEK)
7. THE SENSOR SHALL CONFORM TO THE SPECIFICATIONS AND RATINGS LISTED BELOW.

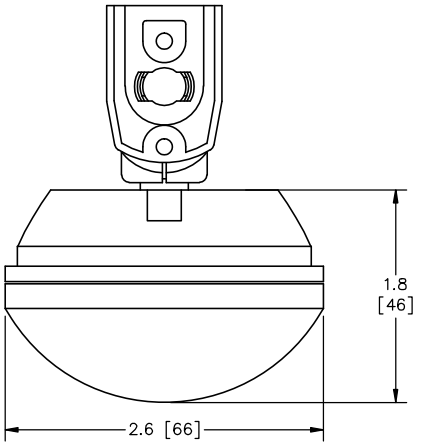
SPECIFICATIONS:

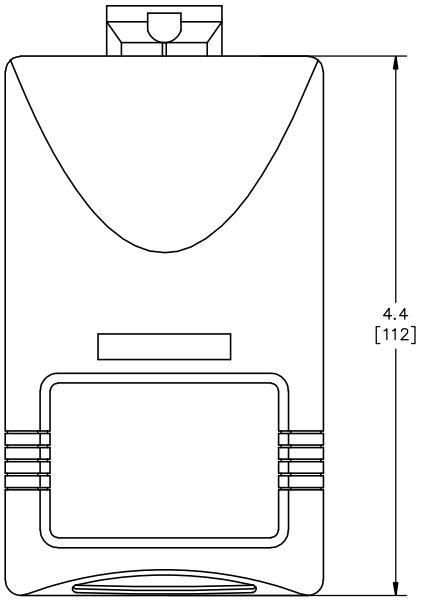
POWER SUPPLY	24 ±2V AC/DC
DETECTION RANGE	MOUNTED HEIGHT X 2.5 AT 77°F (25°C)
DETECTION PATTERN	360°
RELAY OUTPUT	FORM C, 30VDC, 0.2A MAX.
CURRENT DRAIN	5 mA, @ 24VAC
MOUNTING HEIGHT	7.9' ~ 13.8' (2.4 ~ 4.2M)
DETECTABLE SPEED	0.3 ~ 10 FT/SEC. (0.1 ~ 3 M/SEC.)
RFI IMMUNITY	AV. 20V/M (10 ~ 1,000 MHz)
HUMIDITY	95% RH MAX.
OPERATING TEMPERATURE	-4°F ~ 100°F (-20°C ~ 38°C)
DIMENSIONS	4.33 x 1.73 [110 x 44]
ON DELAY	SELECTABLE 0 - 10 sec- 30 sec - 1 min - 5 min - 10 min
OFF DELAY	SELECTABLE 10 sec - 1 min - 5 min - 10 min - 20 min - 30 min

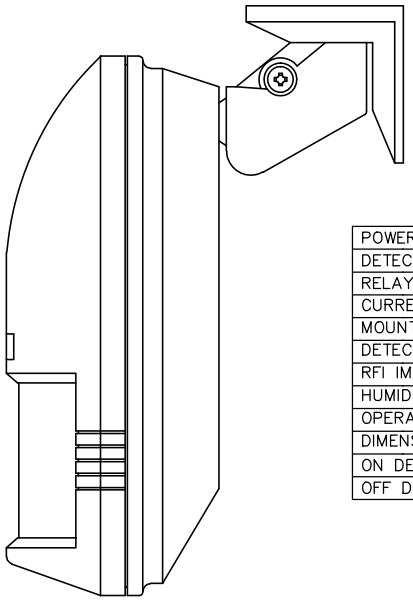
DIMENSIONS IN [ ] ARE IN MILLIMETER

TOLERANCES EXCEPT AS NOTED	PECO, INC. PORTLAND, OR. USA	
DECIMAL .X= .XX= .XXX=	PART NUMBER 68374	SCALE FULL
ANGULAR ±	TITLE SENSOR, OCCUPANCY, SA200-001	
ACAD FILE SA200001	SHEET SIZE B	DRAWING NUMBER SA200-001

DATE	REV	DESCRIPTION	DR.	CK.
12/19/07	3	ECN 7680 ADD METRIC DIMENSIONS	SEM	SR







NOTES:

1. FEATURES: THIS IS AN OCCUPANCY SENSOR FOR AUTOMATIC CONTROL OF A GUEST ROOM HVAC SYSTEM. THE SENSOR INCORPORATES AN INNOVATIVE DUAL DELAY PROCESSOR. THIS MAKES THE SENSOR SMART ENOUGH TO VERIFY THE NATURE OF OCCUPANCIES. THE SENSOR IS CAPABLE OF ELIMINATING UNNECESSARY ACTUATIONS OF THE HVAC DEVICE DUE TO UNINTENTIONAL PASSAGES OR SHORT TIME OCCUPANCIES. THIS SENSOR MAY ALSO BE USED AS A SLAVE UNIT IN CONJUNCTION WITH A HEM-1 SYSTEM. THE OUTPUT IS DRY CONTACT IN A FORM-C CONFIGURATION.

2. CONFIGURATION: THE UNIT IS SHOWN WITH THE OPTIONAL SWIVEL BRACKET ATTACHED. THE SWIVEL BRACKET IS INCLUDED, BUT IS NOT ATTACHED FOR SHIPPING.

3. MATERIALS: THE BASE, COVER, AND SWIVEL BRACKET ARE MOLDED OF WHITE ABS PLASTIC.

4. MOUNTING: THE SENSORS ARE MOUNTABLE AGAINST A FLAT WALL OR IN A CORNER USING TWO INCLUDED SCREWS AND AVAILABLE KNOCKOUTS IN THE BASE. THE SENSOR MAY ALSO BE MOUNTED TO EITHER A CEILING OR A WALL USING THE INCLUDED SWIVEL BRACKET.

5. PACKAGING: THE SENSORS ARE INDIVIDUALLY BOXED WITH INSTRUCTION SHEET AND A PLASTIC BAG INCLUDING MOUNTING HARDWARE AND THE SWIVEL BRACKET.

6. ASSEMBLIES TO BE PERMANENTLY MARKED ON BACK OF ENCLOSURE. MARKING TO INCLUDE:
   SB200-001
   PECO INC.
   FOUR DIGIT DATE OF MANUFACTURE (YEAR WEEK)

7. DIMENSIONS: THE DRAWING DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.

8. THE SENSOR SHALL CONFORM TO THE SPECIFICATIONS AND RATINGS LISTED BELOW.

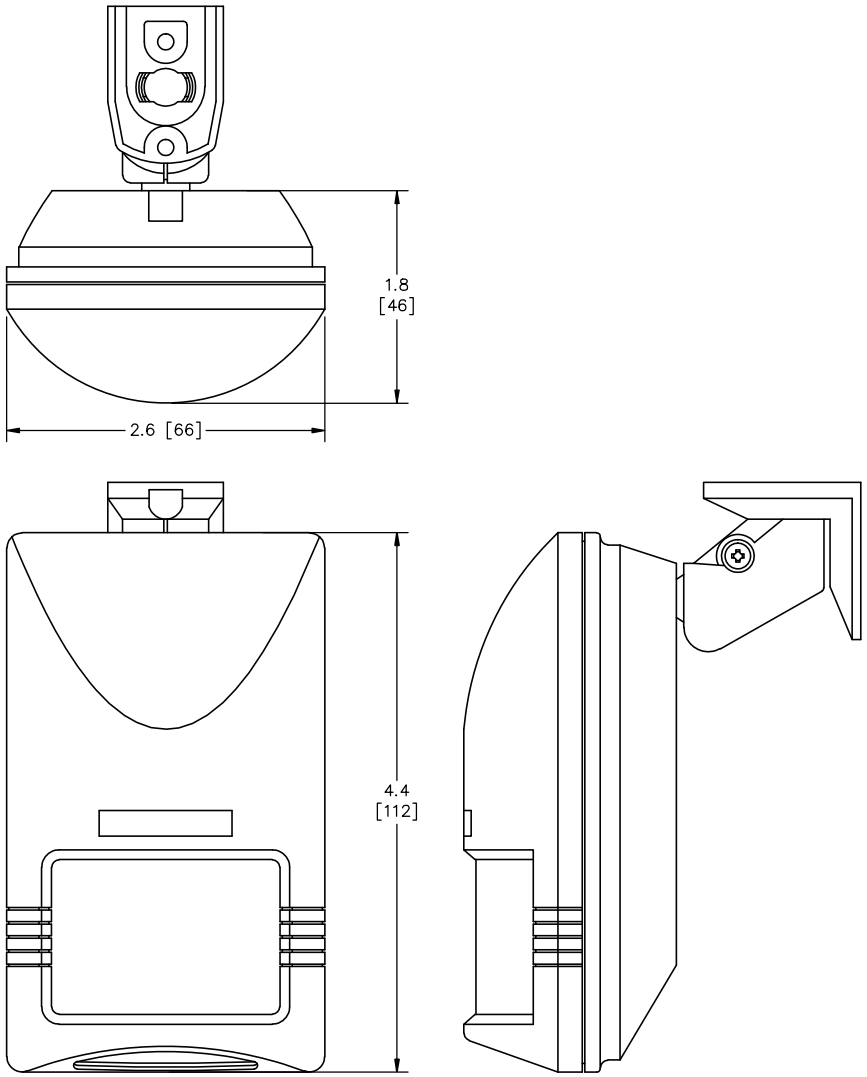
SPECIFICATIONS:

POWER SUPPLY	24 ±2V AC/DC
DETECTION RANGE	110°, 49' x 49' (15 x 15m) AT 77°F (25°C)
RELAY OUTPUT	FORM C, 30VDC, 0.2A MAX.
CURRENT DRAIN	STANDBY: 5 mA, OPERATING: 18mA
MOUNTING HEIGHT	5.9' ~ 11.8' (1.8 ~ 3.6M)
DETECTABLE SPEED	0.3 ~ 10 FT/SEC. (0.1 ~ 3 M/SEC.)
RFI IMMUNITY	AV. 20V/M (10 ~ 1,000 MHz)
HUMIDITY	95% RH MAX.
OPERATING TEMPERATURE	-4°F ~ 100°F (-20°C ~ 38°C)
DIMENSIONS	4.4 x 2.6 x 1.8 [112 x 66 x 46]
ON DELAY	SELECTABLE 0 – 10 sec – 30 sec– 1 min – 5 min – 10 min
OFF DELAY	SELECTABLE 10 sec – 1 min – 5 min – 10 min – 20 min – 30 min

DIMENSIONS IN [ ] ARE IN MILLIMETER

TOLERANCES EXCEPT AS NOTED	PECO, INC. PORTLAND, OR. USA	
DECIMAL .X= .XX= .XXX=	PART NUMBER 68375	SCALE FULL
ANGULAR ±	TITLE SENSOR, OCCUPANCY, SB200-001	
ACAD FILE SB200001	SHEET SIZE B	DRAWING NUMBER SB200-001

DATE	REV	DESCRIPTION	DR.	CK.
12/19/07	3	ECN 7680 ADD METRIC DIMENSIONS	SEM	SR



NOTES:

1. FEATURES: THIS SENSOR IS THE MASTER SENSOR FOR A GUEST ROOM HVAC MANAGEMENT SYSTEM. THE SENSOR PROVIDES CONTROL OF GUEST ROOM HVAC OPERATION ACCORDING TO OCCUPANCY STATUS. THE SENSOR PROVIDES DOOR/WINDOW SWITCH MONITORING, SELECTABLE HIGH–LOW TEMPERATURE SETBACK, FORM–C OUTPUT (24V/DRY SELECTABLE), INSTALLATION TEST MODE (AUDIO/VISUAL INDICATORS), SLAVE SENSOR CONNECTIVITY, 5–MINUTE DOOR–OPEN HVAC SHUT OFF.

2. CONFIGURATION: THE UNIT IS SHOWN WITH THE OPTIONAL SWIVEL BRACKET ATTACHED. THE SWIVEL BRACKET IS INCLUDED, BUT IS NOT ATTACHED FOR SHIPPING.

3. MATERIALS: THE BASE, COVER, AND SWIVEL BRACKET ARE MOLDED OF WHITE ABS PLASTIC.

4. MOUNTING: THE SENSORS ARE MOUNTABLE AGAINST A FLAT WALL OR IN A CORNER USING TWO INCLUDED SCREWS AND AVAILABLE KNOCKOUTS IN THE BASE. THE SENSOR MAY ALSO BE MOUNTED TO EITHER A CEILING OR A WALL USING THE INCLUDED SWIVEL BRACKET.

5. PACKAGING: THE SENSORS ARE INDIVIDUALLY BOXED WITH INSTRUCTION SHEET AND A PLASTIC BAG INCLUDING MOUNTING HARDWARE AND THE SWIVEL BRACKET.

6. ASSEMBLIES TO BE PERMANENTLY MARKED ON BACK OF ENCLOSURE. MARKING TO INCLUDE:
   SD200–001
   PECO INC.
   FOUR DIGIT DATE OF MANUFACTURE (YEAR WEEK)

7. DIMENSIONS: THE DRAWING DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.

8. THE SENSOR SHALL CONFORM TO THE SPECIFICATIONS AND RATINGS LISTED BELOW.

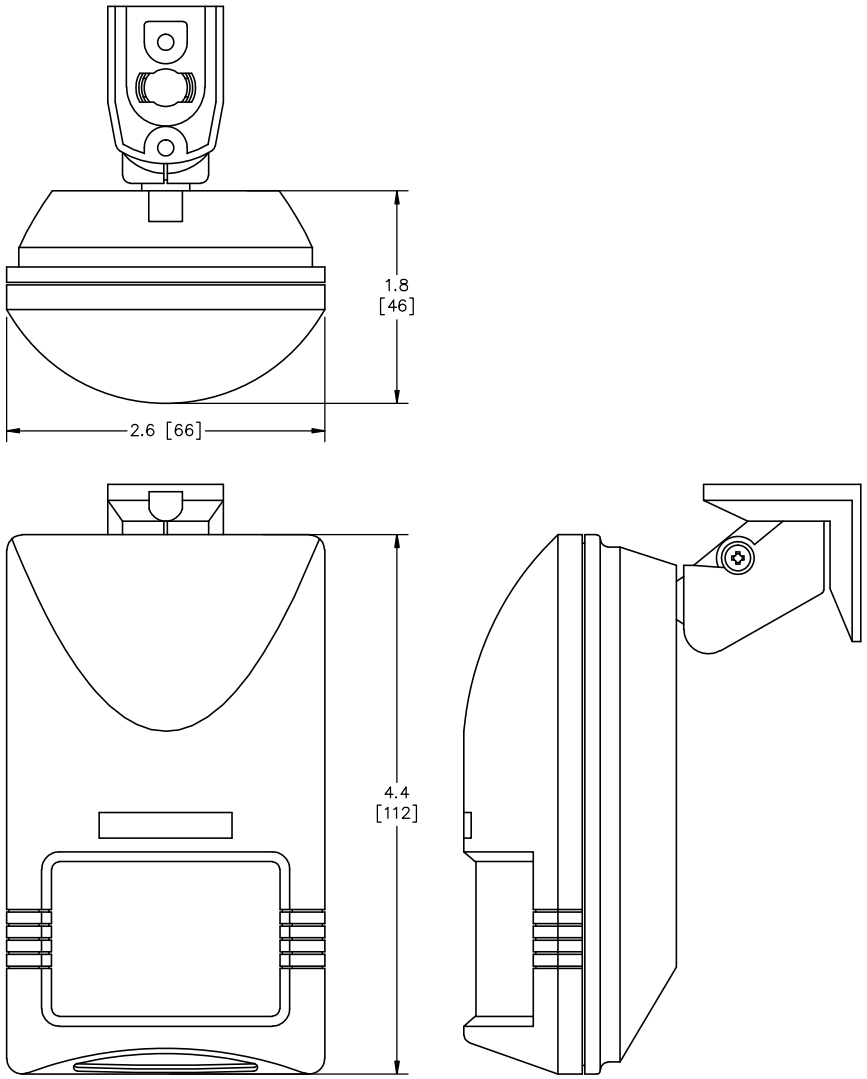
SPECIFICATIONS:

POWER SUPPLY	24 ±2V AC/DC
DETECTION RANGE	110°, 49' x 49' (15 x 15m) AT 77°F (25°C)
RELAY OUTPUT	FORM C, 24V/DRY CONTACT SELECTABLE
RELAY CONTACT	AC: 250V, DC: 30V, 5A RESISTIVE LOAD
CURRENT DRAIN	STANDBY: 20mA, ACTIVE: 10mA
HIGH–TEMP LIMIT	JUMPER SELECTABLE LIMIT 85°/82°/79°F (30°/28°/26°C)
LOW–TEMP LIMIT	JUMPER SELECTABLE LIMIT 59°/55°/51°F (15°/13°/11°C)
MOUNTING HEIGHT	5.9' ~ 11.8' (1.8 ~ 3.6M)
RESTART CYCLE	2 MINUTE, CAN BE DISABLED
TEST INDICATION	BUZZER AND LED, CAN BE DISABLED
DETECTABLE SPEED	0.3 ~ 10 FT/SEC. (0.1 ~ 3 M/SEC.)
RFI IMMUNITY	AV. 20V/M (10 ~ 1,000 MHz)
HUMIDITY	95% RH MAX.
OPERATING TEMPERATURE	14°F ~ 100°F (–10°C ~ 38°C)
DIMENSIONS	4.4 x 2.6 x 1.8 [112 x 66 x 46]

DIMENSIONS IN [ ] ARE IN MILLIMETER

TOLERANCES EXCEPT AS NOTED	PECO	PECO, INC. PORTLAND, OR. USA
DECIMAL .X= .XX= .XXX=	PART NUMBER 68376	SCALE FULL
ANGULAR ±	TITLE SENSOR, OCCUPANCY, SD200–001	
ACAD FILE SD200001	SHEET SIZE B	DRAWING NUMBER SD200–001

DATE	REV	DESCRIPTION	DR.	CK.
12/19/07	3	ECN 7680 ADD METRIC DIMENSIONS CORRECT NOTE 6, SHOULD BE SD200-002	SEM	SR



NOTES:

1. FEATURES: THIS SENSOR IS THE MASTER SENSOR FOR A GUEST ROOM HVAC MANAGEMENT SYSTEM. THE SENSOR PROVIDES CONTROL OF GUEST ROOM HVAC OPERATION ACCORDING TO OCCUPANCY STATUS. THE SENSOR PROVIDES DOOR/WINDOW SWITCH MONITORING, SELECTABLE HIGH-LOW TEMPERATURE SETBACK, FORM-C OUTPUT (24V/DRY SELECTABLE), INSTALLATION TEST MODE (AUDIO/VISUAL INDICATORS), SLAVE SENSOR CONNECTIVITY, 5-MINUTE DOOR-OPEN HVAC SHUT OFF.

2. CONFIGURATION: THE UNIT IS SHOWN WITH THE OPTIONAL SWIVEL BRACKET ATTACHED. THE SWIVEL BRACKET IS INCLUDED, BUT IS NOT ATTACHED FOR SHIPPING.

3. MATERIALS: THE BASE, COVER, AND SWIVEL BRACKET ARE MOLDED OF WHITE ABS PLASTIC.

4. MOUNTING: THE SENSORS ARE MOUNTABLE AGAINST A FLAT WALL OR IN A CORNER USING TWO INCLUDED SCREWS AND AVAILABLE KNOCKOUTS IN THE BASE. THE SENSOR MAY ALSO BE MOUNTED TO EITHER A CEILING OR A WALL USING THE INCLUDED SWIVEL BRACKET.

5. PACKAGING: THE SENSORS ARE INDIVIDUALLY BOXED WITH INSTRUCTION SHEET AND A PLASTIC BAG INCLUDING MOUNTING HARDWARE AND THE SWIVEL BRACKET.

6. ASSEMBLIES TO BE PERMANENTLY MARKED ON BACK OF ENCLOSURE. MARKING TO INCLUDE:
   SD200-002
   PECO INC.
   FOUR DIGIT DATE OF MANUFACTURE (YEAR WEEK)

7. DIMENSIONS: THE DRAWING DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.

8. THE SENSOR SHALL CONFORM TO THE SPECIFICATIONS AND RATINGS LISTED BELOW.

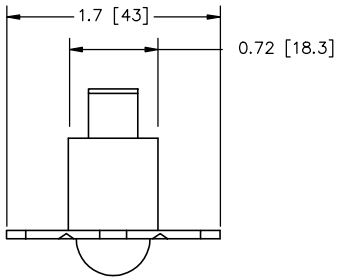
SPECIFICATIONS:

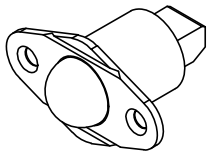
POWER SUPPLY	24 ±2V AC/DC
DETECTION RANGE	110°, 49' x 49' (15 x 15m) AT 77°F (25°C)
RELAY OUTPUT	FORM C, 24V/DRY CONTACT SELECTABLE
RELAY CONTACT	AC: 250V, DC: 30V, 5A RESISTIVE LOAD
CURRENT DRAIN	STANDBY: 20mA, ACTIVE: 10mA
HIGH-TEMP LIMIT	JUMPER SELECTABLE LIMIT 85°/82°/79°F (30°/28°/26°C)
LOW-TEMP LIMIT	JUMPER SELECTABLE LIMIT 59°/55°/51°F (15°/13°/11°C)
MOUNTING HEIGHT	5.9' ~ 11.8' (1.8 ~ 3.6M)
RESTART CYCLE	2 MINUTE, CAN BE DISABLED
TEST INDICATION	BUZZER AND LED, CAN BE DISABLED
DETECTABLE SPEED	0.3 ~ 10 FT/SEC. (0.1 ~ 3 M/SEC.)
RFI IMMUNITY	AV. 20V/M (10 ~ 1,000 MHz)
HUMIDITY	95% RH MAX.
OPERATING TEMPERATURE	14°F ~ 100°F (-10°C ~ 38°C)
DIMENSIONS	4.4 x 2.6 x 1.8 [112 x 66 x 46]

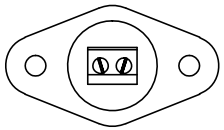
DIMENSIONS IN [ ] ARE IN MILLIMETER

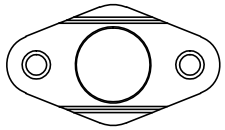
TOLERANCES EXCEPT AS NOTED	PECO	PECO, INC. PORTLAND, OR. USA
DECIMAL .X= .XX= .XXX=	PART NUMBER 68377	SCALE FULL
ANGULAR ±	TITLE SENSOR, OCCUPANCY, SD200-002	
ACAD FILE SD200002	SHEET SIZE B	DRAWING NUMBER SD200-002

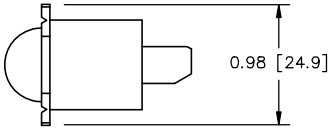
DATE	REV	DESCRIPTION	DR.	CK.
12/19/07	3	ECN 7680 ADD METRIC DIMENSIONS	SEM	SR

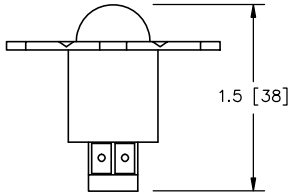












NOTES:
1. FEATURES: THIS SWITCH IS A DOOR SWITCH FOR USE AS AN INPUT TO A GUEST ROOM HVAC MANAGEMENT SYSTEM OR SIMILAR APPLICATION.
2. FEATURES: THE SWITCH IS A DRY CONTACT IN A NORMALLY OPEN CONFIGURATION.
3. MATERIALS: THE ENCLOSURE IS MOLDED WHITE PLASTIC.
4. MOUNTING: THE SWITCH IS DESIGNED TO BE RECESSED IN A 0.75" [19.0] HOLE IN THE DOOR JAM. THE SWITCH CAN ALSO BE PANEL MOUNTED USING A PROVIDED BACKING PLATE.
5. PACKAGING: THE SWITCH IS INDIVIDUALLY BAGGED WITH MOUNTING HARDWARE INCLUDING TWO SCREWS.
6. DIMENSIONS: THE DRAWING DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.
7. THE SWITCH SHALL CONFORM TO THE SPECIFICATIONS AND RATINGS LISTED BELOW.

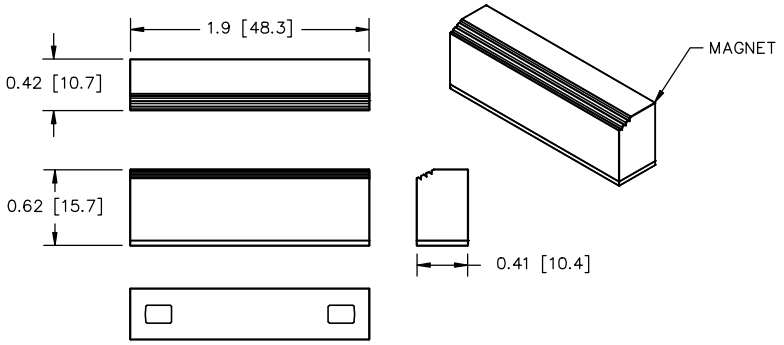
SPECIFICATIONS:

MAXIMUM VOLTAGE	30 VDC
MAXIMUM CURRENT	0.2 AMP
OPERATING TEMPERATURE	−40°F ~ 257°F (−40°C ~ 125°C)
SWITCH CONTACTS	FORM A, DRY CONTACTS
OPERATE HUMIDITY	95% RH MAX.

DIMENSIONS IN [ ] ARE IN MILLIMETER

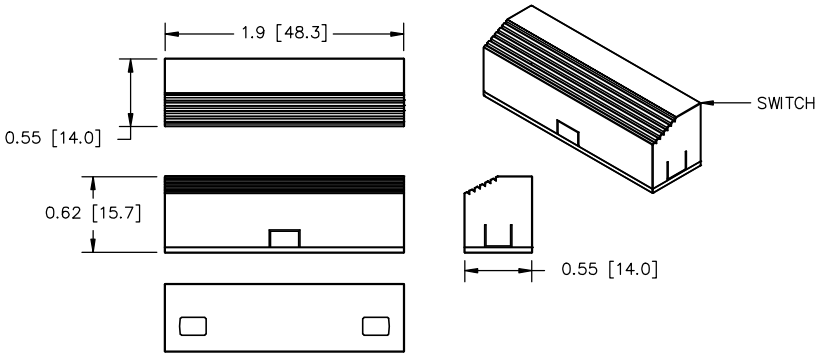
TOLERANCES EXCEPT AS NOTED	PECO, INC. PORTLAND, OR. USA	
DECIMAL .X= .XX= .XXX=	PART NUMBER 68379	SCALE FULL
ANGULAR ±	TITLE SENSOR, OCCUPANCY, SE200−001	
ACAD FILE SE200001	SHEET SIZE B	DRAWING NUMBER SE200−001

DATE	REV	DESCRIPTION	DR.	CK.
12/19/07	3	ECN 7680 ADD METRIC DIMENSION	SEM	SR



NOTES:

1. FEATURES: THIS SWITCH IS A DOOR/WINDOW SWITCH FOR USE AS AN INPUT TO A GUEST ROOM HVAC MANAGEMENT SYSTEM OR SIMILAR APPLICATION.
2. FEATURES: THE SWITCH IS A DRY CONTACT REED SWITCH IN A NORMALLY OPEN CONFIGURATION. A SEPARATE MAGNET IN CLOSE PROXIMITY TO SWITCH CLOSES CONTACTS.
3. MATERIALS: THE ENCLOSURES ARE MOLDED PLASTIC.
4. MOUNTING: THE SWITCH IS DESIGNED TO BE MOUNTED ON A DOOR OR WINDOW.
5. PACKAGING: THE SWITCH IS INDIVIDUALLY BAGGED WITH FOUR SCREWS.
6. DIMENSIONS: THE DRAWING DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.
7. THE SWITCH SHALL CONFORM TO THE SPECIFICATIONS AND RATINGS LISTED BELOW.



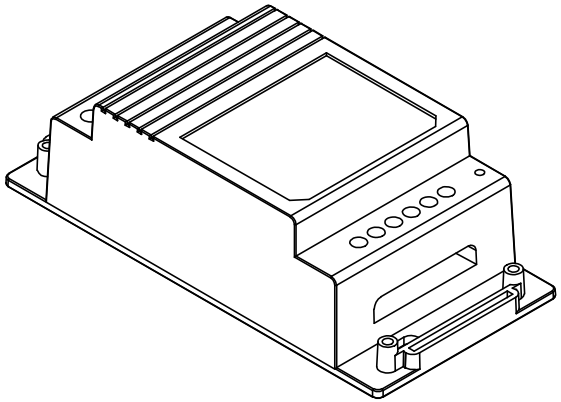
SPECIFICATIONS:

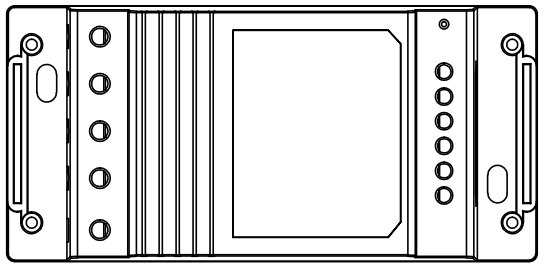
MAXIMUM VOLTAGE	30 VDC
MAXIMUM CURRENT	0.2 AMP
OPERATING TEMPERATURE	−40°F ~ 257°F (−40°C ~ 125°C)
SWITCH CONTACTS	FORM A, DRY CONTACTS
OPERATE HUMIDITY	95% RH MAX.

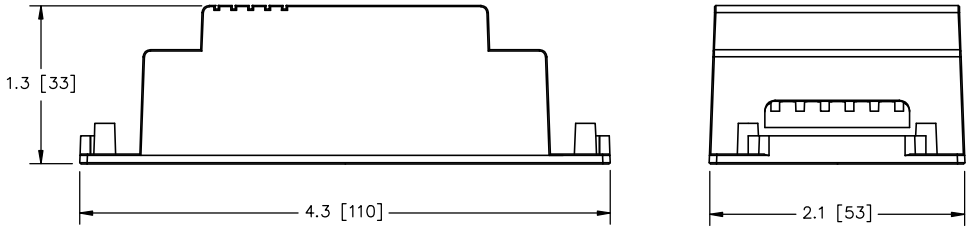
DIMENSIONS IN [ ] ARE IN MILLIMETER

TOLERANCES EXCEPT AS NOTED	PECO, INC. PORTLAND, OR. USA	
DECIMAL .X= .XX= .XXX=	PART NUMBER 68380	SCALE FULL
ANGULAR ±	TITLE SENSOR, OCCUPANCY, SE200−002	
ACAD FILE SE200002	SHEET SIZE B	DRAWING NUMBER SE200−002

DATE	REV	DESCRIPTION	DR.	CK.
12/19/07	3	ECN 7680 ADD METRIC DIMENSIONS	SEM	SR







NOTES:

1. FEATURES: THIS IS A 24 VDC POWER PACK AND CONTROLLER DESIGNED FOR CONTROL OF VARIOUS APPLICATIONS. THE INPUT POWER FOR THE SF200–001 MAY BE ANY VOLTAGE BETWEEN 110 VAC TO 240 VAC. THE POWER PACK PROVIDES UP TO 200mA OF 24 VDC POWER AND INCLUDES A 10 AMP FORM C SWITCHING RELAY. THE SWITCHING RELAY IS CONTROLABLE BY EITHER DRY SWITCH CONTACTS OR 5V TTL ELECTRONIC SWITCHING.

2. TWO STRAIN RELIEFS AND SECURING SCREWS ARE INCLUDED, BUT ARE NOT ATTACHED FOR SHIPPING.

3. MATERIALS: THE BASE, COVER, AND STRAIN RELIEFS ARE MOLDED OF WHITE ABS PLASTIC.

4. MOUNTING: TWO MOLDED SLOTS ARE PROVIDED WHICH ALLOW THE SUPPLY TO BE MOUNTED ON ANY FLAT SURFACE. TWO MOUNTING SCREWS ARE ALSO INCLUDED WITH THE UNIT.

5. ASSEMBLIES TO BE PERMANENTLY MARKED ON BACK OF ENCLOSURE. MARKING TO INCLUDE:
   SF200–001
   PECO INC.
   FOUR DIGIT DATE OF MANUFACTURE (YEAR WEEK)

6. THE POWER SUPPLY SHALL CONFORM TO THE SPECIFICATIONS AND RATINGS LISTED BELOW.

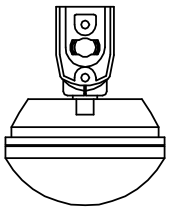
SPECIFICATIONS:

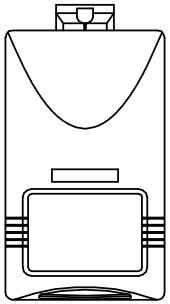
INPUT POWER	110 VAC – 240 VAC, 50/60 Hz
OUTPUT POWER	24 ±2 VDC, 200mA MAX.
RELAY CONTROL	N.O. DRY CONTACT CONTROL OR 5V TTL CONTROL
RELAY CONTACTS	10 AMP @ 250VAC
HOUSING MATERAIL	ABS, UL–94V0
OPERATING TEMPERATURE	–14°F ~ 144°F (–10°C ~ 60°C)
HUMIDITY	95% RH MAX. (NON–CONDENSING)
DIMENSIONS	4.3 x 2.1 x 1.3 [110 x 53 x 33]
APPROVALS/MARKINGS	CE, UL

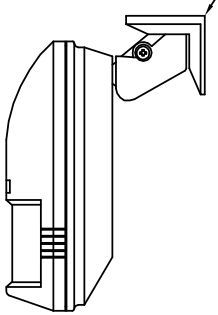
DIMENSIONS IN [ ] ARE IN MILLIMETER

TOLERANCES EXCEPT AS NOTED	PECO, INC. PORTLAND, OR. USA	
DECIMAL .X= .XX= .XXX=	PART NUMBER 68378	SCALE HALF
ANGULAR ±	TITLE POWER PACK AND CONTROLLER	
ACAD FILE SF200001	SHEET SIZE B	DRAWING NUMBER SF200–001

DATE	REV	DESCRIPTION	DR.	CK.
01/03/05	0	ECO 6438 INITIAL RELEASE	LS	SR
03-01-05	1	ECO 6473 ADDED NOTE 4.	LS	SR
07-24-05	2	ECO 6545 CHANGED FROM SUNNE TO PECO	LS	





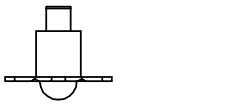


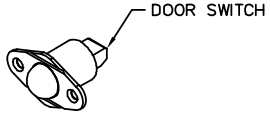
NOTES:
1. FEATURES: THIS SENSOR SYSTEM IS A GUEST ROOM HVAC MANAGEMENT SYSTEM. THE SYSTEM INCLUDES SENSING FOR CONTROL OF GUEST ROOM HVAC OPERATION ACCORDING TO OCCUPANCY STATUS. THE SYSTEM PROVIDES DOOR SWITCH MONITORING, SELECTABLE HIGH-LOW TEMPERATURE SETBACK, FORM-C OUTPUT (24V/DRY SELECTABLE), INSTALLATION TEST MODE (AUDIO/VISUAL INDICATORS), SLAVE SENSOR CONNECTIVITY, 5-MINUTE DOOR-OPEN HVAC SHUT OFF.

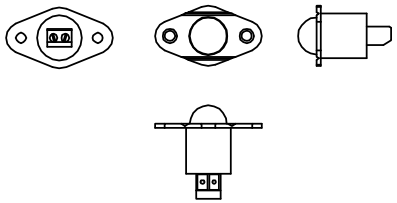
2. SYSTEM INCLUDES:
   SD200-001 OCCUPANCY SENSOR
   SE200-001 DOOR SWITCH
   SF200-001 POWER PACK

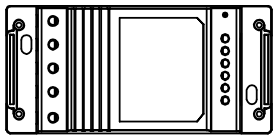
3. PACKAGING: EACH SYSTEM IS INDIVIDUALLY BOXED WITH INSTRUCTION SHEETS FOR OCCUPANCY SENSOR AND POWER PACK INCLUDED.

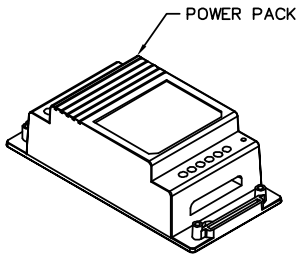
4. ASSEMBLIES TO BE PERMANENTLY MARKED ON BACK OF ENCLOSURE. MARKING TO INCLUDE:
   SK200-001
   PECO INC.
   FOUR DIGIT DATE OF MANUFACTURE (YEAR WEEK)

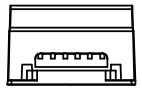






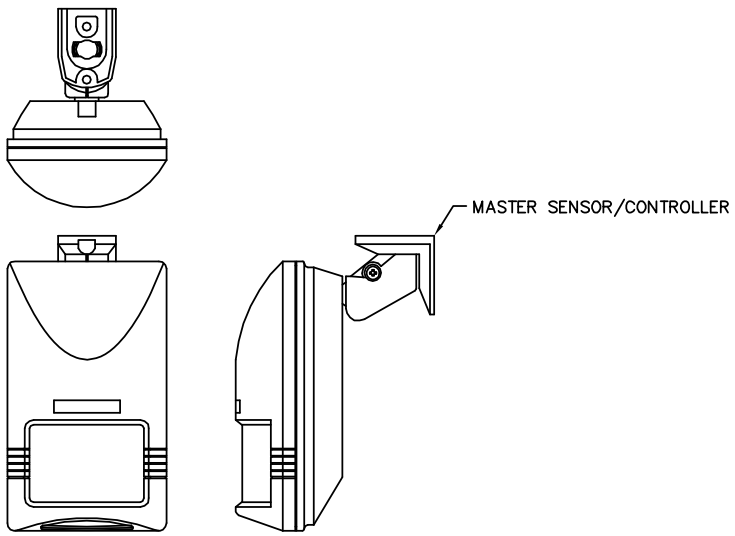


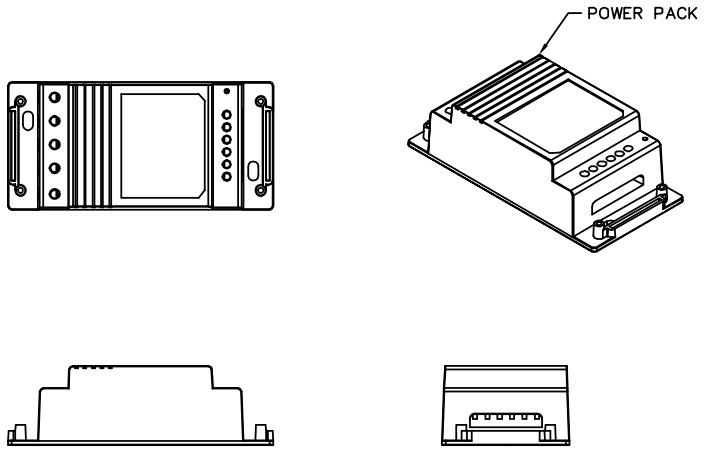




TOLERANCES EXCEPT AS NOTED	PECO, INC. PORTLAND, OR. USA		
DECIMAL .X= .XX= .XXX=	PART NUMBER 68381	SCALE HALF	
ANGULAR ±	TITLE SENSOR, OCCUPANCY, SYSTEM, SK200-001		
ACAD FILE SK200001		DRAWING NUMBER B SK200-001	DIST. CODE PC

DATE	REV	DESCRIPTION	DR.	CK.
01/03/05	0	ECO 6438 INITIAL RELEASE	LS	SR
03/02/05	1	ECO 6473 ADDED NOTE 4.	LS	SR
07/24/05	2	ECO 6545 CHANGED FROM SUNNE TO PECO	LS	





NOTES:
1. FEATURES: THIS SENSOR SYSTEM IS A GUEST ROOM HVAC MANAGEMENT SYSTEM. THE SYSTEM INCLUDES SENSING FOR CONTROL OF GUEST ROOM HVAC OPERATION ACCORDING TO OCCUPANCY STATUS. THE SYSTEM PROVIDES DOOR SWITCH MONITORING, SELECTABLE HIGH–LOW TEMPERATURE SETBACK, FORM–C OUTPUT (24V/DRY SELECTABLE), INSTALLATION TEST MODE (AUDIO/VISUAL INDICATORS), SLAVE SENSOR CONNECTIVITY, 5–MINUTE DOOR–OPEN HVAC SHUT OFF.

2. SYSTEM INCLUDES:
   SD200–002 OCCUPANCY SENSOR
   SF200–001 POWER PACK

3. PACKAGING: EACH SYSTEM IS INDIVIDUALLY BOXED WITH INSTRUCTION SHEETS FOR OCCUPANCY SENSOR AND POWER PACK INCLUDED.

4. ASSEMBLIES TO BE PERMANENTLY MARKED ON BACK OF ENCLOSURE. MARKING TO INCLUDE:
   SK200–002
   PECO INC.
   FOUR DIGIT DATE OF MANUFACTURE (YEAR WEEK)

TOLERANCES EXCEPT AS NOTED	PECO, INC. PORTLAND, OR. USA		
DECIMAL .X= .XX= .XXX=	PART NUMBER 68382	SCALE HALF	
ANGULAR ±	TITLE SENSOR, OCCUPANCY, SYSTEM, SK200–002		
ACAD FILE SK200002		DRAWING NUMBER B SK200–002	DIST. CODE PC