

SECTION 260923 - LIGHTING CONTROL DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Passive Infrared Control Pro Presence Detectors.
2. Corner Mount Passive Infrared Control Pro Presence Detectors.
3. High Definition Passive Infrared Control Pro Presence Detectors.
4. Ultrasonic Control Pro Presence Detectors.
5. Ultrasonic Control Pro Occupancy Sensors.
6. Dualtech Control Pro Presence Detectors.
7. Corner Mount Dualtech Control Pro Presence Detectors.
8. Control Pro Accessories.
9. Passive Infrared Wall Switch Occupancy Sensors.
10. Ultrasonic Wall Switch Occupancy Sensors.
11. Dualtech Wall Switch Occupancy Sensors.
12. Passive Infrared Wall Switch Vacancy Sensors.
13. Ultrasonic Wall Switch Vacancy Sensors.
14. Dualtech Wall Switch Vacancy Sensors.
15. Passive Infrared Occupancy Sensors.
16. Occupancy Sensor Accessories.
17. Power Packs.
18. High Bay Sensors.
19. Fixture Integrated Sensors.

- B. Related Requirements:

1. Section 260500 "Common Work Results for Electrical."
2. Section 260519 "Low Voltage Electrical Power Conductors and Cables"
3. Section 260523 "Control Voltage Electrical Power Cables"
4. Section 262726 "Wiring Devices" for manual light switches.

1.3 REFERENCES

- A. National Fire Protection Association:

1. NFPA 70: National Electric Code.

- B. California Building Code:

1. CBC Title 20 & 24 compliant.
- C. Canadian Standards Association:
1. CSA C22.2 No. 14-05: Industrial control equipment - Outlet Boxes, Conduit Boxes, Fittings and Associated Hardware.
 2. CAN/CSA C22.2 No. 205: Standard for Signal Equipment
- D. International Standards Organization:
1. ISO 9001: Quality Management Systems-Requirements.
 2. ISO 14001: Environmental Management Systems-Requirements.
- E. Restriction of Hazardous Substances: RoHS Compliance.
1. Directive 2011/65/EU: The restriction of the use of certain hazardous substances in electrical and electronic equipment Text with EEA relevance.
- F. Underwriters Laboratories:
1. UL 244A: Solid-State Controls for Appliances.
 2. UL 508: Standard for Industrial Control Equipment.
 3. UL 773A: Standard for Nonindustrial Photoelectric Switches for Lighting Control.
 4. UL 2043: Standard for Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces.

1.4 ACTION SUBMITTALS

- A. Product Data Sheets: For each type of product.
- B. Shop Drawings:
1. Show manufacturer's recommended sensor type and location.
 2. Interconnection diagrams showing field-installed wiring.
 3. Include diagrams for power, signal, and control wiring.

1.5 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plan(s) and elevations, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
1. Suspended ceiling components.
 2. Structural members to which equipment will be attached.
 3. Items penetrating finished ceiling.
- B. Sample Warranty: For manufacturer's warranties.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For each type of lighting control device to include in operation and maintenance manuals.

1.7 WARRANTY

- A. Manufacturer's Warranty: STEINEL America warrants its products against defects in material or workmanship for a period of five years. STEINEL will replace or repair the item provided that it has not been altered or subjected to abuse, accident, improper installation or improper use. There are no obligations or liabilities on the part of STEINEL for consequential damages arising out of or in connection with the use or performance of this product or other indirect damages with respect to loss of property, revenue, or profit, or cost of removal, installation or reinstallation.

1. Warranty Period: 5 Years

PART 2 - PRODUCTS

2.1 APPROVED MANUFACTURER

- A. Acceptable Manufacturer: Steinel America, Inc., 9051 Lyndale Avenue, South Bloomington, Minnesota 55420. www.steinell.net.
- B. Substitutions: [**Not permitted**][**Permitted**].

2.2 PASSIVE INFRARED CONTROL PRO PRESENCE DETECTORS

- A. STEINEL IR Quattro COM1-24: Ceiling Mounted, low voltage, passive infrared presence detector.
 1. Mounting: [**4 inch (102 mm) square box**][**4 inch (102 mm) octagonal box**][**Round 3.0 mud ring**][**Directly to ceiling with quick mount spring tabs**].
 2. Voltage: **18 - 24 VDC/VAC (30 mA)**.
 3. Load Rating: control output - 1 A at 30 VAC/VDC.
 4. Settings:
 - a. Time Delay Setting:
 - 1) Control Output: 30 seconds to 30 minutes.
 - 2) Pulse Mode: Approximately 2 seconds 'ON' and 8 seconds 'OFF.'
 - 3) IQ Mode: Automatic adjustment to the usage profile.
 - b. Light Level Setting: **1 - 100 fc (10 - 1000 lux)**, turns lights off when sufficient daylight is present.
 - c. Dip Switch Settings:
 - 1) Automatic mode (AUTO) and Manual ON mode (MAN).
 - 2) Momentary and maintained switch option.

- 3) 'ON' only and 'ON' & 'OFF' manual switching.
 5. COM-Link: Grouping for up to 10 sensors.
 6. Real-time motion indicator LED: Visible from the front of unit while in test mode.
 7. Connection: [**Building automation system**][**Steinel power pack**].
 8. Test Mode: Dip switch setting or programming remote.
 9. Operating Temperature: **32 deg F to 104 deg F** (0 deg C to 40 deg C).
 10. Installation Height: **8 to 26 feet** (2.5 to 8 m).
 11. Coverage at **9 feet** (2.7 m): 360 deg square mechanically scalable detection zones.
 - a. Presence: Maximum **15 feet by 15 feet** (4.7 by 4.7 m) or **225 sf** (21.2 sm).
 - b. Radially: Maximum **15 feet by 15 feet** (4.7 by 4.7 m) or **225 sf** (21.2 sm).
 - c. Tangentially: Maximum **23 feet by 23 feet** (7 by 7 m) or **529 sf** (50.4 sm).
 12. Lens Design: 13 detection levels, 1760 switching zones
 13. Dimensions: **4.72 by 4.72 by 3.03 inches** (120 by 120 by 77 mm).
 14. Warranty: 5 years.
 15. Certifications: C-UL-US Listed, RoHS compliant, UL 2043 Plenum Rated, CA Energy Code compliant.
 16. Color: White.
 17. Accessories:
 - a. RC 3 Service Remote.
 - b. RC 8 Service Remote.
 - c. RC 4 User Remote.
 - d. Smart Remote
 - e. WGC Wire Guard Cage.
- B. STEINEL IR Quattro COM2-24: Ceiling Mounted, low voltage, passive infrared presence detector for lighting and heating, ventilating, and air-conditioning control.
1. Mounting: [**4 inch (102 mm)** square box][**4 inch (102 mm)** octagonal box][Round 3.0 mud ring][Directly to ceiling with quick mount spring tabs].
 2. Voltage: **18 - 24 VDC/VAC** (30 mA).
 3. Load Rating:
 - a. Control Output: 1 A at 30 VAC/VDC.
 - b. HVAC dry contacts: 1 A at 30 VAC/VDC
 4. Settings:
 - a. Time Delay Setting:
 - 1) Control Output: 30 seconds to 30 minutes.
 - 2) Pulse Mode: Approximately 2 seconds 'ON' and 8 seconds 'OFF.'
 - 3) IQ Mode: Automatic adjustment to the usage profile.
 - 4) HVAC dry contacts:
 - a) 0 seconds to 10 minute switch 'ON' delay.

- b) 1 minute to 2 hour stay 'ON' time.
 - c) Auto-HVAC mode: Reduces presence detection sensitivity and requires additional detection verification before signaling the HVAC output.
 - b. Light Level Setting: 1 - 100 fc (10 - 1000 lux), turns lights off when sufficient daylight is present.
 - c. Dip Switch Settings:
 - 1) Automatic mode (AUTO) and Manual ON mode (MAN).
 - 2) Momentary and maintained switch option.
 - 3) 'ON' only and 'ON' & 'OFF' manual switching.
- 5. COM-Link: Grouping for up to 10 sensors.
- 6. Real-time motion indicator LED: Visible from the front of unit while in test mode.
- 7. Connection: [Building automation system][Steinel power pack].
- 8. Test Mode: Dip switch setting or programming remote.
- 9. Operating Temperature: 32 deg F to 104 deg F (0 deg C to 40 deg C).
- 10. Installation Height: 8 to 26 feet (2.5 to 8 m).
- 11. Coverage at 9 feet (2.7 m): 360 deg square mechanically scalable detection zones.
 - a. Presence: Maximum 15 feet by 15 feet (4.7 by 4.7 m) or 225 sf (21.2 sm).
 - b. Radially: Maximum 15 feet by 15 feet (4.7 by 4.7 m) or 225 sf (21.2 sm).
 - c. Tangentially: Maximum 23 feet by 23 feet (7 by 7 m) or 529 sf (50.4 sm).
- 12. Lens Design: 13 detection levels, 1760 switching zones
- 13. Dimensions: 4.72 by 4.72 by 3.03 inches (120 by 120 by 77 mm).
- 14. Warranty: 5 years.
- 15. Certifications: C-UL-US Listed, RoHS compliant, UL 2043 Plenum Rated, CA Energy Code compliant.
- 16. Color: White.
- 17. Accessories:
 - a. RC 3 Service Remote.
 - b. RC 8 Service Remote
 - c. Smart Remote
 - d. RC 4 User Remote.
 - e. WGC Wire Guard Cage.

- C. STEINEL IR Quattro DIM-24: Ceiling Mounted, low voltage, passive infrared presence detector with 1-10 volt dimming.
 - 1. Mounting: [4 inch (102 mm) square box][4 inch (102 mm) octagonal box][Round 3.0 mud ring][Directly to ceiling with quick mount spring tabs].
 - 2. Voltage: 18 - 24 VDC/VAC (46 mA).
 - 3. Load Rating:
 - a. Control output (blue): 1 A at 30 VAC/VDC.
 - b. 1 - 10 volt dimming output (purple & gray): 100 mA, maximum 50 (1-10 V electronic dimming ballasts / drivers).

4. Settings:
 - a. Time Delay Setting:
 - 1) Control Output: 30 seconds to 30 minutes.
 - 2) IQ Mode: Automatic adjustment to the usage profile.
 - b. Light Level Setting: 1 - 100 fc (10 - 1000 lux), Force OFF photo control factory setting, turns lights off when sufficient daylight is present.
 - c. Dip Switch Settings:
 - 1) Automatic mode (AUTO) and Manual ON mode (MAN).
 - 2) Momentary and maintained switch option.
 - 3) 'ON' only and 'ON' & 'OFF' manual switching.
 - 4) Constant light level DIM control option measures the level of daylight and activates sufficient artificial light to achieve the required level of light intensity.
 - d. Additional features available with the Smart Remote commissioning tool and an Android or iOS Smartphone with STEINEL Smart Remote APP.
 - 1) Partial ON Operating Mode: In Partial ON operating mode, the detector automatically switches the lights on with a dimmed light level that can be between 10 percent and 70 percent. To achieve 100 percent light output the lights must be manually switched or dimmed by the momentary switch. The dimmed light level can be set with the Low Level Brightness setting between 10 percent and 70 percent.
 - 2) Partial OFF Operating Mode: In Partial OFF operating mode, upon occupancy lights are switched ON to 100 percent. Once the room is vacated, the sensor switches to a dimmed light level. The dimmed light level can be set with the Low Level Brightness setting between 10 percent and 50 percent.
 - 3) Hold OFF Photo Control: If Hold OFF is selected the integrated light level measurement holds the artificial light OFF when light intensity by daylight is sufficient. When the electric light is switched ON and the level of daylight becomes sufficient, the sensor will not switch OFF the artificial light while the space is occupied. This function is only available when the sensor is in automatic ON mode.
 - 4) Force OFF Photo Control: Factory setting. If Force OFF is selected, the sensor will switch OFF the lights when daylight is sufficient. When the electric light is switched ON and the level of daylight becomes sufficient, the sensor will switch OFF the artificial light while the space is occupied.
5. COM-Link: Grouping for up to 10 sensors.
6. Real-time motion indicator LED: Visible from the front of unit while in test mode.
7. Connection: **[Building automation system][Steinel power pack]**.
8. Incorporates manual ON/OFF & 1-10 volt dimming via a 2 wire momentary

switch.

9. Test Mode: Dip switch setting or programming remote.
 10. Operating Temperature: 32 deg F to 104 deg F (0 deg C to 40 deg C).
 11. Installation Height: 8 to 26 feet (2.5 to 8 m).
 12. Coverage at 9 feet (2.7 m): 360 deg square mechanically scalable detection zones.
 - a. Presence: Maximum 15 feet by 15 feet (4.7 by 4.7 m) or 225 sf (21.2 sm).
 - b. Radially: Maximum 15 feet by 15 feet (4.7 by 4.7 m) or 225 sf (21.2 sm).
 - c. Tangentially: Maximum 23 feet by 23 feet (7 by 7 m) or 529 sf (50.4 sm).
 13. Lens Design: 13 detection levels, 1760 switching zones
 14. Dimensions: 4.72 by 4.72 by 3.03 inches (120 by 120 by 77 mm).
 15. Warranty: 5 years.
 16. Certifications: C-UL-US Listed, RoHS compliant, UL 2043 Plenum Rated, CA Energy Code compliant.
 17. Color: White.
 18. Accessories:
 - a. RC 3 Service Remote.
 - b. RC 8 Service Remote.
 - c. Smart Remote.
 - d. RC 4 User Remote.
 - e. WGC Wire Guard Cage.
- D. STEINEL IR Quattro COM1-WR: Ceiling Mounted, line voltage, passive infrared presence detector; detect occupants in coverage area by their heat and movement.
1. Mounting: [4 inch (102 mm) square box][4 inch (102 mm) octagonal box][Round 3.0 mud ring].
 2. Voltage: 120/230/277 VAC, 50/60 Hz.
 3. Load Rating:
 - a. 120 VAC: 0-800 watt electronic ballast, tungsten, 1/4 hp.
 - b. 230/277 VAC: 0-1200 watt electronic ballast, 1/4hp.
 4. Settings:
 - a. Time Delay Setting:
 - 1) Control Output: 30 seconds to 30 minutes.
 - 2) IQ Mode: Automatic adjustment to the usage profile.
 - b. Light Level Setting: 1 - 100 fc (10 - 1000 lux), turns lights off when sufficient daylight is present.
 - c. Dip Switch Settings:
 - 1) Automatic mode (AUTO) and Manual ON mode (MAN).
 - 2) Momentary and maintained switch option.
 - 3) 'ON' only and 'ON' & 'OFF' manual switching.
 5. COM-Link: Grouping for up to 10 sensors.

6. Real-time motion indicator LED: Visible from the front of unit while in test mode.
 7. Switching: Performed at, or close to the zero-cross of the AC waveform in order to improve relay performance.
 8. Test Mode: Dip switch setting or programming remote.
 9. Operating Temperature: 32 deg F to 104 deg F (0 deg C to 40 deg C).
 10. Installation Height: 8 to 26 feet (2.5 to 8 m).
 11. Coverage at 9 feet (2.7 m): 360 deg square mechanically scalable detection zones.
 - a. Presence: Maximum 15 feet by 15 feet (4.7 by 4.7 m) or 225 sf (21.2 sm).
 - b. Radially: Maximum 15 feet by 15 feet (4.7 by 4.7 m) or 225 sf (21.2 sm).
 - c. Tangentially: Maximum 23 feet by 23 feet (7 by 7 m) or 529 sf (50.4 sm).
 12. Lens Design: 13 detection levels, 1760 switching zones.
 13. Dimensions: 4.72 by 4.72 by 3.03 inches (120 by 120 by 77 mm).
 14. Warranty Length: 5 years.
 15. Certifications: C-UL-US Listed, RoHS compliant, CA Energy Code compliant.
 16. Color: White.
 17. Accessories:
 - a. RC 3 Service Remote.
 - b. RC 8 Service Remote.
 - c. Smart Remote.
 - d. RC 4 User Remote.
 - e. WGC Wire Guard Cage.
- E. STEINEL IR Quattro KNX: Ceiling Mounted, passive infrared presence detector; detect occupants in coverage area by their heat and movement.
1. Mounting: [Clamp type adapter][Surface mount adapter].
 2. Voltage: 24 V via KNX buss.
 3. Settings: [ETS software][Remote control][Bus].
 - a. Lighting channels: Switching/dimming.
 - b. Time Delay Setting:
 - 1) IQ Mode: Automatic adjustment to the usage profile.
 - 2) Stay ON time: 1 to 120 minutes.
 - 3) Switch-on delay: Room surveillance.
 - 4) Presence: Stay ON
 - c. HVAC output: Presence dependent.
 4. Coverage: 360 deg square mechanically scalable detection zones.
 - a. Presence: Maximum 13.1 feet by 13.1 feet (4 by 4 m) or 171.6 sf (16 sm).
 - b. Radially: Maximum 16.4 feet by 16.4 feet (5 by 5 m) or 269 sf (25 sm).
 - c. Tangentially: Maximum 23 feet by 23 feet (7 by 7 m) or 529 sf (50.4 sm).
 5. Dimensions: 4.72 by 4.72 by 2.21 inches (120 by 120 by 56 mm).

6. Warranty Length: 5 years.
7. Certifications: C-UL-US Listed, RoHS compliant, CA Energy Code compliant.
8. Color: White.
9. Accessories:
 - a. PC 7 User Remote.
 - b. RC 6 Service Remote.

2.3 CORNER MOUNT PASSIVE INFRARED CONTROL PRO PRESENCE DETECTORS

A. STEINEL IR CM COM1-24: Corner Mounted, low voltage, passive infrared presence detector.

1. Mounting: **[Round 3.0 mud ring][Directly to the wall or ceiling with anchor bolts][Ceiling mounted with 1/2 inch snap in chase nipple, washer and lock nut]**.
2. Voltage: **18 - 24 VDC/VAC (20 mA)**, 50/60 Hz.
3. Load Rating: control output (blue) - 1 A at 24 VAC/VDC 50/60 Hz.
4. Settings:
 - a. Time Delay Setting:
 - 1) Control Output: 30 seconds to 30 minutes.
 - 2) Pulse Mode: Approximately 2 seconds 'ON' and 8 seconds 'OFF.'
 - 3) IQ Mode: Automatic adjustment to the usage profile.
 - b. Light Level Setting: **1 - 100 fc (10 - 1000 lux)**, turns lights off when sufficient daylight is present.
 - c. Dip Switch Settings:
 - 1) Automatic mode (AUTO) and Manual ON mode (MAN).
 - 2) Momentary and maintained switch option.
 - 3) 'ON' only and 'ON' & 'OFF' manual switching.
5. COM-Link: Grouping for up to 10 sensors.
6. Real-time motion indicator LED: Visible from the front of unit while in test mode.
7. Connection: **[Building automation system][Steinel power pack]**.
8. Test Mode: Dip switch setting or programming remote.
9. Operating Temperature: **32 deg F to 131 deg F (0 deg C to 55 deg C)**.
10. Installation Height: **8 to 12 feet (2.5 to 3.5 m)**.
11. Coverage at **9 feet (2.7 m)**: 360 deg square mechanically scalable detection zones.
 - a. Presence: Maximum **22 feet (7 m)** or **440 sf (134 sm)**.
 - b. Radially: Maximum **26 feet (8 m)** or **655 sf (200 sm)**.
 - c. Tangentially: Maximum **82 feet (25 m)** or **5290 sf (1612 sm)**.
12. Lens Design: 11 detection levels, 520 switching zones

13. Dimensions: 4.72 by 4.72 by 4.21 inches (120 by 120 by 107 mm).
14. Warranty: 5 years.
15. Certifications: C-UL-US Listed, RoHS compliant, CA Energy Code compliant.
16. Color: White.
17. Accessories:
 - a. Smart remote.
 - b. RC 8 programming remote.
 - c. RC 4 user remote.

B. STEINEL IR CM COM2-24: Corner Mounted, low voltage, passive infrared presence detector for lighting and heating, ventilating, and air-conditioning control.

1. Mounting: **[Round 3.0 mud ring][Directly to the wall or ceiling with anchor bolts][Ceiling mounted with 1/2 inch snap in chase nipple, washer and lock nut].**
2. Voltage: 18 - 24 VDC/VAC (29 mA), 50/60 Hz.
3. Load Rating:
 - a. Control output (blue): 1 A at 24 VAC/VDC 50/60 Hz.
 - b. HVAC dry contacts: Common (yellow).
 - 1) Normally open (yellow/red) 1 A @ 24 VAC/VDC
 - 2) Normally closed (yellow/black) 1 A @ 24 VAC/VDC.
4. Settings:
 - a. Time Delay Setting:
 - 1) Control Output: 30 seconds to 30 minutes.
 - 2) Pulse Mode: Approximately 2 seconds 'ON' and 8 seconds 'OFF.'
 - 3) IQ Mode: Automatic adjustment to the usage profile.
 - 4) HVAC dry contacts:
 - a) 0 seconds to 10 minute switch 'ON' delay.
 - b) 1 minute to 30 minute stay 'ON' time.
 - c) Auto-HVAC mode: Reduces presence detection sensitivity and requires additional detection verification before signaling the HVAC output.
 - b. Light Level Setting: 1 - 100 fc (10 - 1000 lux), turns lights off when sufficient daylight is present.
 - c. Dip Switch Settings:
 - 1) Automatic mode (AUTO) and Manual ON mode (MAN).
 - 2) Momentary and maintained switch option.
 - 3) 'ON' only and 'ON' & 'OFF' manual switching.
5. COM-Link: Grouping for up to 10 sensors.
6. Real-time motion indicator LED: Visible from the front of unit while in test mode.

7. Connection: **[Building automation system][Steinel power pack]**.
 8. Test Mode: Dip switch setting or programming remote.
 9. Operating Temperature: **32 deg F to 131 deg F (0 deg C to 55 deg C)**.
 10. Installation Height: **8 to 12 feet (2.5 to 3.5 m)**.
 11. Coverage at **9 feet (2.7 m)**: 360 deg square mechanically scalable detection zones.
 - a. Presence: Maximum **22 feet (7 m)** or **440 sf (134 sm)**.
 - b. Radially: Maximum **26 feet (8 m)** or **655 sf (200 sm)**.
 - c. Tangentially: Maximum **82 feet (25 m)** or **5290 sf (1612 sm)**.
 12. Lens Design: 11 detection levels, 520 switching zones
 13. Dimensions: **4.72 by 4.72 by 4.21 inches (120 by 120 by 107 mm)**.
 14. Warranty: 5 years.
 15. Certifications: C-UL-US Listed, RoHS compliant, CA Energy Code compliant.
 16. Color: White.
 17. Accessories:
 - a. Smart remote.
 - b. RC 8 programming remote.
 - c. RC 4 user remote.
- C. STEINEL IR CM DIM-24: Corner Mounted, low voltage, passive infrared presence detector with 1-10 volt dimming.
1. Mounting: **[Round 3.0 mud ring][Directly to the wall or ceiling with anchor bolts][Ceiling mounted with 1/2 inch snap in chase nipple, washer and lock nut]**.
 2. Voltage: **18 - 24 VDC/VAC (27 mA)**, 50/60 Hz.
 3. Load Rating:
 - a. Control output (blue): 1 A at 24 VAC/VDC 50/60 Hz.
 - b. 1 - 10 volt dimming output (purple & gray): 100 mA, maximum 50 (1-10 V electronic dimming ballasts / drivers).
 4. Settings:
 - a. Time Delay Setting:
 - 1) Control Output: 30 seconds to 30 minutes.
 - 2) IQ Mode: Automatic adjustment to the usage profile.
 - b. Light Level Setting: **1 - 100 fc (10 - 1000 lux)**, Force OFF photo control factory setting, turns lights off when sufficient daylight is present.
 - c. Dip Switch Settings:
 - 1) Automatic mode (AUTO) and Manual ON mode (MAN).
 - 2) Momentary and maintained switch option.
 - 3) 'ON' only and 'ON' & 'OFF' manual switching.
 - 4) Constant light level DIM control option measures the level of daylight and activates sufficient artificial light to achieve the required level of light intensity.

- d. Additional features available with the Smart Remote commissioning tool and an Android or iOS Smartphone with STEINEL Smart Remote APP.
 - 1) Partial ON Operating Mode: In Partial ON operating mode, the detector automatically switches the lights on with a dimmed light level that can be between 10 percent and 70 percent. To achieve 100 percent light output the lights must be manually switched or dimmed by the momentary switch. The dimmed light level can be set with the Low Level Brightness setting between 10 percent and 70 percent.
 - 2) Partial OFF Operating Mode: In Partial OFF operating mode, upon occupancy lights are switched ON to 100 percent. Once the room is vacated, the sensor switches to a dimmed light level. The dimmed light level can be set with the Low Level Brightness setting between 10 percent and 50 percent.
 - 3) Hold OFF Photo Control: If Hold OFF is selected the integrated light level measurement holds the artificial light OFF when light intensity by daylight is sufficient. When the electric light is switched ON and the level of daylight becomes sufficient, the sensor will not switch OFF the artificial light while the space is occupied. This function is only available when the sensor is in automatic ON mode.
 - 4) Force OFF Photo Control: Factory setting. If Force OFF is selected, the sensor will switch OFF the lights when daylight is sufficient. When the electric light is switched ON and the level of daylight becomes sufficient, the sensor will switch OFF the artificial light while the space is occupied.
- 5. COM-Link: Grouping for up to 10 sensors.
- 6. Real-time motion indicator LED: Visible from the front of unit while in test mode.
- 7. Connection: **[Building automation system][Steinel power pack]**.
- 8. Test Mode: Dip switch setting or programming remote.
- 9. Operating Temperature: **32 deg F to 131 deg F (0 deg C to 55 deg C)**.
- 10. Installation Height: **8 to 12 feet (2.5 to 3.5 m)**.
- 11. Coverage at **9 feet (2.7 m)**: 360 deg square mechanically scalable detection zones.
 - a. Presence: Maximum **22 feet (7 m)** or **440 sf (134 sm)**.
 - b. Radially: Maximum **26 feet (8 m)** or **655 sf (200 sm)**.
 - c. Tangentially: Maximum **82 feet (25 m)** or **5290 sf (1612 sm)**.
- 12. Lens Design: 11 detection levels, 520 switching zones
- 13. Dimensions: **4.72 by 4.72 by 4.21 inches (120 by 120 by 107 mm)**.
- 14. Warranty: 5 years.
- 15. Certifications: C-UL-US Listed, RoHS compliant, CA Energy Code compliant.
- 16. Color: White.
- 17. Accessories:
 - a. Smart remote.
 - b. RC 8 programming remote.

- c. RC 4 user remote.

2.4 HIGH DEFINITION PASSIVE INFRARED CONTROL PRO PRESENCE DETECTORS

- A. STEINEL IR Quattro HD COM1-24: Ceiling Mounted, low voltage, high definition, passive infrared presence detector; detect occupants in coverage area by their heat and movement.

1. Mounting: [4 inch (102 mm) square box][4 inch (102 mm) octagonal box][Round 3.0 mud ring][Directly to ceiling with quick mount spring tabs].
2. Voltage: 18 - 24 VDC/VAC (32 mA).
3. Load Rating: control output - 1 A at 30 VAC/VDC.
4. Settings:
 - a. Time Delay Setting:
 - 1) Control Output: 30 seconds to 30 minutes.
 - 2) Pulse Mode: Approximately 2 seconds 'ON' and 8 seconds 'OFF.'
 - 3) IQ Mode: Automatic adjustment to the usage profile.
 - b. Light Level Setting: 1 - 100 fc (10 - 1000 lux), turns lights off when sufficient daylight is present.
 - c. Dip Switch Settings:
 - 1) Automatic mode (AUTO) and Manual ON mode (MAN).
 - 2) Momentary and maintained switch option.
 - 3) 'ON' only and 'ON' & 'OFF' manual switching.
5. COM-Link: Grouping for up to 10 sensors.
6. Real-time motion indicator LED: Visible from the front of unit while in test mode.
7. Connection: [Building automation system][Steinel power pack].
8. Test Mode: Dip switch setting or programming remote.
9. Operating Temperature: 32 deg F to 104 deg F (0 deg C to 40 deg C).
10. Installation Height: 8 to 32 feet (2.5 to 10 m).
11. Coverage at 9 feet (2.7 m): 360 deg square mechanically scalable detection zones.
 - a. Presence: Maximum 25.5 feet by 25.5 feet (7.9 by 7.9 m) or 650.25 sf (62.4 sm).
 - b. Radially: Maximum 25.5 feet by 25.5 feet (7.9 by 7.9 m) or 650.25 sf (62.4 sm).
 - c. Tangentially: Maximum 65.5 feet by 65.5 feet (20 by 20 m) or 4,290.25 sf (400 sm).
12. Lens Design: 13 detection levels, 4800 switching zones.
13. Dimensions: 4.72 by 4.72 by 2.83 inches (120 by 120 by 72 mm).
14. Warranty Length: 5 years.
15. Certifications: C-UL-US Listed, RoHS compliant, UL 2043 Plenum Rated, CA

- Energy Code compliant.
16. Color: White.
 17. Grouping: Up to 10 sensors.
 18. Accessories:
 - a. RC 3 Service Remote.
 - b. RC 8 Programming Remote.
 - c. Smart Remote.
 - d. RC 4 User Remote.
 - e. WGC Wire Guard Cage.

B. STEINEL IR Quattro HD COM2-24: Ceiling Mounted, low voltage, high definition, passive infrared presence detector for lighting and heating, ventilating, and air-conditioning control; detect occupants in coverage area by their heat and movement.

1. Mounting: [4 inch (102 mm) square box][4 inch (102 mm) octagonal box][Round 3.0 mud ring][Directly to ceiling with quick mount spring tabs].
2. Voltage: 18 - 24 VDC/VAC (32 mA).
3. Load Rating:
 - a. Control output (blue): 1 A at 30 VAC/VDC.
 - b. HVAC dry contacts: 1 A at 30 VAC/VDC
4. Settings:
 - a. Time Delay Setting:
 - 1) Control Output: 30 seconds to 30 minutes.
 - 2) Pulse Mode: Approximately 2 seconds 'ON' and 8 seconds 'OFF.'
 - 3) IQ Mode: Automatic adjustment to the usage profile.
 - 4) HVAC dry contacts:
 - a) 0 seconds to 10 minute switch 'ON' delay.
 - b) 1 minute to 2 hour stay 'ON' time.
 - c) Auto-HVAC mode: reduces presence detection sensitivity and requires additional detection verification before signaling the HVAC output.
 - b. Light Level Setting: 1 - 100 fc (10 - 1000 lux), turns lights off when sufficient daylight is present.
 - c. Dip Switch Settings:
 - 1) Automatic mode (AUTO) and Manual ON mode (MAN).
 - 2) Momentary and maintained switch option.
 - 3) 'ON' only and 'ON' & 'OFF' manual switching.
5. COM-Link: Grouping for up to 10 sensors.
6. Real-time motion indicator LED: Visible from the front of unit while in test mode.
7. Connection: [Building automation system][Steinel power pack].
8. Test Mode: Dip switch setting or programming remote.

9. Operating Temperature: 32 deg F to 104 deg F (0 deg C to 40 deg C).
10. Installation Height: 8 to 32 feet (2.5 to 10 m).
11. Coverage at 9 feet (2.7 m): 360 deg square mechanically scalable detection zones.
 - a. Presence: Maximum 25.5 feet by 25.5 feet (7.9 by 7.9 m) or 650.25 sf (62.4 sm).
 - b. Radially: Maximum 25.5 feet by 25.5 feet (7.9 by 7.9 m) or 650.25 sf (62.4 sm).
 - c. Tangentially: Maximum 65.5 feet by 65.5 feet (20 by 20 m) or 4,290.25 sf (400 sm).
12. Lens Design: 13 detection levels, 4800 switching zones.
13. Dimensions: 4.72 by 4.72 by 2.83 inches (120 by 120 by 72 mm).
14. Warranty Length: 5 years.
15. Certifications: C-UL-US Listed, RoHS compliant, UL 2043 Plenum Rated, CA Energy Code compliant.
16. Color: White.
17. Grouping: Up to 10 sensors.
18. Accessories:
 - a. RC 3 Service Remote.
 - b. RC 8 Programming Remote.
 - c. Smart Remote
 - d. RC 4 User Remote.
 - e. WGC Wire Guard Cage.

The typical application is for offices, schools and other indoor public building spaces. STEINEL IR Quattro HD DIM-24: Ceiling Mounted, low voltage, high definition, passive infrared presence detector with 1-10 volt dimming; detect occupants in coverage area by their heat and movement.

1. Mounting: [4 inch (102 mm) square box][4 inch (102 mm) octagonal box][Round 3.0 mud ring][Directly to ceiling with quick mount spring tabs].
2. Voltage: 18 - 24 VDC/VAC (46 mA).
3. Load Rating:
 - a. Control output (blue): 1 A at 30 VAC/VDC.
 - b. 1 - 10 volt dimming output (purple & gray): 100 mA, maximum 50 (1-10 V electronic dimming ballasts / drivers).
4. Settings:
 - a. Time Delay Setting:
 - 1) Dimming: 1-10 V electronic dimming ballasts.
 - 2) Control Output: 30 seconds to 30 minutes.
 - 3) Pulse Mode: Approximately 2 seconds.
 - 4) IQ Mode: Automatic adjustment to the usage profile.
 - b. Light Level Setting: 1 - 100 fc (10 - 1000 lux), Force OFF photo control

- factory setting, turns lights off when sufficient daylight is present.
- c. Dip Switch Settings:
 - 1) Automatic mode (AUTO) and Manual ON mode (MAN).
 - 2) Momentary and maintained switch option.
 - 3) 'ON' only and 'ON' & 'OFF' manual switching.
 - 4) Constant light level DIM control option measures the level of daylight and activates sufficient artificial light to achieve the required level of light intensity.
- d. Additional features available with the Smart Remote commissioning tool and an Android or iOS Smartphone with STEINEL Smart Remote APP.
 - 1) Partial ON Operating Mode: In Partial ON operating mode, the detector automatically switches the lights on with a dimmed light level that can be between 10 percent and 70 percent. To achieve 100 percent light output the lights must be manually switched or dimmed by the momentary switch. The dimmed light level can be set with the Low Level Brightness setting between 10 percent and 70 percent.
 - 2) Partial OFF Operating Mode: In Partial OFF operating mode, upon occupancy lights are switched ON to 100 percent. Once the room is vacated, the sensor switches to a dimmed light level. The dimmed light level can be set with the Low Level Brightness setting between 10 percent and 50 percent.
 - 3) Hold OFF Photo Control: If Hold OFF is selected the integrated light level measurement holds the artificial light OFF when light intensity by daylight is sufficient. When the electric light is switched ON and the level of daylight becomes sufficient, the sensor will not switch OFF the artificial light while the space is occupied. This function is only available when the sensor is in automatic ON mode.
 - 4) Force OFF Photo Control: Factory setting. If Force OFF is selected, the sensor will switch OFF the lights when daylight is sufficient. When the electric light is switched ON and the level of daylight becomes sufficient, the sensor will switch OFF the artificial light while the space is occupied.
- 5. COM-Link: Grouping for up to 10 sensors.
- 6. Real-time motion indicator LED: Visible from the front of unit while in test mode.
- 7. Connection: [**Building automation system**][**Steinel power pack**].
- 8. Test Mode: Dip switch setting or programming remote.
- 9. Operating Temperature: 32 deg F to 104 deg F (0 deg C to 40 deg C).
- 10. Installation Height: 8 to 32 feet (2.5 to 10 m).
- 11. Coverage at 9 feet (2.7 m): 360 deg square mechanically scalable detection zones.
 - a. Presence: Maximum 25.5 feet by 25.5 feet (7.9 by 7.9 m) or 650.25 sf (62.4 sm).
 - b. Radially: Maximum 25.5 feet by 25.5 feet (7.9 by 7.9 m) or 650.25 sf (62.4 sm).

- c. Tangentially: Maximum **65.5 feet by 65.5 feet (20 by 20 m)** or **4,290.25 sf (400 sm)**.
- 12. Lens Design: 13 detection levels, 4800 switching zones.
 - 13. Dimensions: **4.72 by 4.72 by 2.83 inches (120 by 120 by 72 mm)**.
 - 14. Warranty Length: 5 years.
 - 15. Certifications: C-UL-US Listed, RoHS compliant, UL 2043 Plenum Rated, CA Energy Code compliant.
 - 16. Color: White.
 - 17. Grouping: Up to 10 sensors.
 - 18. Accessories:
 - a. RC 3 Service Remote.
 - b. RC 8 Programming Remote.
 - c. Smart Remote.
 - d. RC 4 User Remote.
 - e. WGC Wire Guard Cage.
- D. STEINEL IR Quattro HD COM1-WR: Ceiling Mounted, line voltage, high definition, passive infrared presence detector; detect occupants in coverage area by their heat and movement.
- 1. Mounting: [**4 inch (102 mm) square box**][**4 inch (102 mm) octagonal box**][**Round 3.0 mud ring**].
 - 2. Voltage: 120/230/277 VAC, 50/60 Hz.
 - 3. Load Rating:
 - a. 120 VAC: 0-800 watt electronic ballast, tungsten, 1/4 hp.
 - b. 230/277 VAC: 0-1200 watt electronic ballast, 1/4hp.
 - 4. Settings:
 - a. Time Delay Setting:
 - 1) Control Output: 30 seconds to 30 minutes.
 - 2) Pulse Mode: Approximately 2 seconds.
 - 3) IQ Mode: Automatic adjustment to the usage profile.
 - b. Light Level Setting: **1 - 100 fc (10 - 1000 lux)**, turns lights off when sufficient daylight is present.
 - c. Dip Switch Settings:
 - 1) Automatic mode (AUTO) and Manual ON mode (MAN).
 - 2) Momentary and maintained switch option.
 - 3) 'ON' only and 'ON' & 'OFF' manual switching.
 - 5. COM-Link: Grouping for up to 10 sensors.
 - 6. Real-time motion indicator LED: Visible from the front of unit while in test mode.
 - 7. Switching: Performed at, or close to the zero-cross of the AC waveform in order to improve relay performance.
 - 8. Test Mode: Dip switch setting or programming remote.

9. Operating Temperature: 32 deg F to 104 deg F (0 deg C to 40 deg C).
 10. Installation Height: 8 to 32 feet (2.5 to 10 m).
 11. Coverage at 9 feet (2.7 m): 360 deg square mechanically scalable detection zones.
 - a. Presence: Maximum 25.5 feet by 25.5 feet (7.9 by 7.9 m) or 650.25 sf (62.4 sm).
 - b. Radially: Maximum 25.5 feet by 25.5 feet (7.9 by 7.9 m) or 650.25 sf (62.4 sm).
 - c. Tangentially: Maximum 65.5 feet by 65.5 feet (20 by 20 m) or 4,290.25 sf (400 sm).
 12. Lens Design: 13 detection levels, 4800 switching zones.
 13. Dimensions: 4.72 by 4.72 by 2.83 inches (120 by 120 by 72 mm).
 14. Warranty Length: 5 years.
 15. Certifications: C-UL-US Listed, RoHS compliant, CA Energy Code compliant.
 16. Color: White.
 17. Grouping: Up to 10 sensors.
 18. Accessories:
 - a. RC 3 Service Remote.
 - b. RC 4 User Remote.
 - c. WGC Wire Guard Cage.
- E. STEINEL IR Quattro HD KNX: Ceiling Mounted, passive infrared presence detector; detect occupants in coverage area by their heat and movement.
1. Mounting: [Clamp type adapter][Surface mount adapter].
 2. Voltage: 24 V via KNX bus.
 3. Settings: [ETS software][Remote control][Bus].
 - a. Lighting channels: Switching/dimming.
 - b. Time Delay Setting:
 - 1) IQ Mode: Automatic adjustment to the usage profile.
 - 2) Stay ON time: 1 to 120 minutes.
 - 3) Switch-on delay: Room surveillance.
 - 4) Presence: Stay ON
 - c. HVAC output: Presence dependent.
 4. Coverage: 360 deg square mechanically scalable detection zones.
 - a. Presence: Maximum 26.2 feet by 26.2 feet (8 by 8 m) or 686 sf (64 sm).
 - b. Radially: Maximum 26.2 feet by 26.2 feet (8 by 8 m) or 686 sf (64 sm).
 - c. Tangentially: Maximum 65.6 feet by 65.6 feet (20 by 20 m) or 4,303 sf (400 sm).
 5. Dimensions: 4.72 by 4.72 by 1.97 inches (120 by 120 by 50 mm).
 6. Warranty Length: 5 years.
 7. Certifications: C-UL-US Listed, RoHS compliant, CA Energy Code compliant.

8. Color: White.
9. Accessories:
 - a. PC 7 User Remote.
 - b. RC 6 Service Remote.

2.5 ULTRASONIC CONTROL PRO PRESENCE DETECTORS

- A. STEINEL US Quattro COM1-24: Ceiling Mounted, low voltage, ultrasonic presence detector.
 1. Mounting: [**4 inch (102 mm) square box**][**4 inch (102 mm) octagonal box**][**Round 3.0 mud ring**][**Directly to ceiling with quick mount spring tabs**].
 2. Voltage: **18 - 24 VDC/VAC (30 mA)**, 50/60 Hz.
 3. Load Rating: control output - 1 A at 30 VAC/VDC.
 4. Settings:
 - a. Time Delay Setting:
 - 1) Control Output: 30 seconds to 30 minutes.
 - 2) Pulse Mode: Approximately 2 seconds 'ON' and 8 seconds 'OFF.'
 - 3) IQ Mode: Automatic adjustment to the usage profile.
 - b. Light Level Setting: **1 - 100 fc (10 - 1000 lux)**, turns lights off when sufficient daylight is present.
 - c. Dip Switch Settings:
 - 1) Automatic mode (AUTO) and Manual ON mode (MAN).
 - 2) Momentary and maintained switch option.
 - 3) 'ON' only and 'ON' & 'OFF' manual switching.
 5. COM-Link: Grouping for up to 10 sensors.
 6. Real-time motion indicator LED: Visible from the front of unit while in test mode.
 7. Connection: [**Building automation system**][**Steinel power pack**].
 8. Test Mode: Dip switch setting or programming remote.
 9. Operating Temperature: **32 deg F to 104 deg F (0 deg C to 40 deg C)**.
 10. Coverage at **9 feet (2.7 m)**:
 - a. Presence: Maximum **20 feet by 20 feet (6 by 6 m) or 400 sf (36 sm)**.
 - b. Radially and Tangentially: Maximum **32 feet by 32 feet (10 by 10 m) or 1,000 sf (100 sm)**.
 11. Dimensions: **4.72 by 4.72 by 2.68 inches (120 by 120 by 68 mm)**.
 12. Warranty Length: 5 years.
 13. Certifications: C-UL-US Listed, RoHS compliant, UL 2043 Plenum Rated, CA Energy Code compliant.
 14. Color: White.
 15. Accessories:
 - a. RC 3 Service Remote.

- b. RC 8 Programming Remote.
 - c. Smart Remote.
 - d. RC 4 User Remote.
 - e. WGC Wire Guard Cage.
- B. STEINEL US Quattro COM2-24: Ceiling Mounted, low voltage, ultrasonic presence detector for lighting and heating, ventilating, and air-conditioning control.
1. Mounting: [4 inch (102 mm) square box][4 inch (102 mm) octagonal box][Round 3.0 mud ring][Directly to ceiling with quick mount spring tabs].
 2. Voltage: 18 - 24 VDC/VAC (34 mA), 50/60 Hz.
 3. Load Rating:
 - a. Control output: 1 A at 30 VAC/VDC.
 - b. HVAC dry contacts: 1 A at 30 VAC/VDC.
 4. Settings:
 - a. Time Delay Setting:
 - 1) Control Output: 30 seconds to 30 minutes.
 - 2) Pulse Mode: Approximately 2 seconds 'ON' and 8 seconds 'OFF.'
 - 3) IQ Mode: Automatic adjustment to the usage profile.
 - 4) HVAC dry contacts:
 - a) 0 seconds to 10 minute switch 'ON' delay.
 - b) 1 minute to 2 hour stay 'ON' time.
 - c) Auto-HVAC mode: reduces presence detection sensitivity and requires additional detection verification before signaling the HVAC output.
 - b. Light Level Setting: 1 - 100 fc (10 - 1000 lux), turns lights off when sufficient daylight is present.
 - c. Dip Switch Settings:
 - 1) Automatic mode (AUTO) and Manual ON mode (MAN).
 - 2) Momentary and maintained switch option.
 - 3) 'ON' only and 'ON' & 'OFF' manual switching.
 5. COM-Link: Grouping for up to 10 sensors.
 6. Real-time motion indicator LED: Visible from the front of unit while in test mode.
 7. Connection: [Building automation system][Steinel power pack].
 8. Test Mode: Dip switch setting or programming remote.
 9. Operating Temperature: 32 deg F to 104 deg F (0 deg C to 40 deg C).
 10. Coverage at 9 feet (2.7 m):
 - a. Presence: Maximum 20 feet by 20 feet (6 by 6 m) or 400 sf (36 sm).
 - b. Radially and Tangentially: Maximum 32 feet by 32 feet (10 by 10 m) or 1,000 sf (100 sm).

11. Dimensions: 4.72 by 4.72 by 2.68 inches (120 by 120 by 68 mm).
12. Warranty Length: 5 years.
13. Certifications: C-UL-US Listed, RoHS compliant, UL 2043 Plenum Rated, CA Energy Code compliant.
14. Color: White.
15. Accessories:
 - a. RC 3 Service Remote.
 - b. RC 8 Programming Remote.
 - c. Smart Remote.
 - d. RC 4 User Remote.
 - e. WGC Wire Guard Cage.

C. STEINEL US Quattro DIM-24: Ceiling Mounted, low voltage, ultrasonic presence detector with 1-10 volt dimming.

1. Mounting: [4 inch (102 mm) square box][4 inch (102 mm) octagonal box][Round 3.0 mud ring][Directly to ceiling with quick mount spring tabs].
2. Voltage: 18 - 24 VDC/VAC (46 mA), 50/60 Hz.
3. Load Rating:
 - a. Control output: 1 A at 30 VAC/VDC.
 - b. 1 - 10 volt dimming output (purple & gray): 100 mA, maximum 50 (1-10 V electronic dimming ballasts / drivers).
4. Settings:
 - a. Time Delay Setting:
 - 1) Control Output: 30 seconds to 30 minutes.
 - 2) Pulse Mode: Approximately 2 seconds.
 - 3) IQ Mode: Automatic adjustment to the usage profile.
 - b. Light Level Setting: 1 - 100 fc (10 - 1000 lux), Force OFF photo control factory setting, turns lights off when sufficient daylight is present.
 - c. Dip Switch Settings:
 - 1) Automatic mode (AUTO) and Manual ON mode (MAN).
 - 2) Momentary and maintained switch option.
 - 3) 'ON' only and 'ON' & 'OFF' manual switching.
 - 4) Constant light level DIM control option measures the level of daylight and activates sufficient artificial light to achieve the required level of light intensity.
 - d. Additional features available with the Smart Remote commissioning tool and an Android or iOS Smartphone with STEINEL Smart Remote APP.
 - 1) Partial ON Operating Mode: In Partial ON operating mode, the detector automatically switches the lights on with a dimmed light level that can be between 10 percent and 70 percent. To achieve 100 percent light output the lights must be manually switched or

- dimmed by the momentary switch. The dimmed light level can be set with the Low Level Brightness setting between 10 percent and 70 percent.
- 2) Partial OFF Operating Mode: In Partial OFF operating mode, upon occupancy lights are switched ON to 100 percent. Once the room is vacated, the sensor switches to a dimmed light level. The dimmed light level can be set with the Low Level Brightness setting between 10 percent and 50 percent.
 - 3) Hold OFF Photo Control: If Hold OFF is selected the integrated light level measurement holds the artificial light OFF when light intensity by daylight is sufficient. When the electric light is switched ON and the level of daylight becomes sufficient, the sensor will not switch OFF the artificial light while the space is occupied. This function is only available when the sensor is in automatic ON mode.
 - 4) Force OFF Photo Control: Factory setting. If Force OFF is selected, the sensor will switch OFF the lights when daylight is sufficient. When the electric light is switched ON and the level of daylight becomes sufficient, the sensor will switch OFF the artificial light while the space is occupied.
5. COM-Link: Grouping for up to 10 sensors.
 6. Real-time motion indicator LED: Visible from the front of unit while in test mode.
 7. Connection: **[Building automation system][Steinel power pack]**.
 8. Test Mode: Dip switch setting or programming remote.
 9. Operating Temperature: **32 deg F to 104 deg F (0 deg C to 40 deg C)**.
 10. Coverage at **9 feet (2.7 m)**:
 - a. Presence: Maximum **20 feet by 20 feet (6 by 6 m) or 400 sf (36 sm)**.
 - b. Radially and Tangentially: Maximum **32 feet by 32 feet (10 by 10 m) or 1,000 sf (100 sm)**.
 11. Sensors: 4 ultrasonic (40 kHz) transducers.
 12. Dimensions: **4.72 by 4.72 by 2.68 inches (120 by 120 by 68 mm)**.
 13. Warranty Length: 5 years.
 14. Certifications: C-UL-US Listed, RoHS compliant, CA Energy Code compliant.
 15. Color: White.
 16. Accessories:
 - a. RC 3 Service Remote.
 - b. RC 8 Programming Remote.
 - c. Smart Remote.
 - d. RC 4 User Remote.
 - e. WGC Wire Guard Cage.

2.6 ULTRASONIC CONTROL PRO OCCUPANCY SENSORS

- A. STEINEL US Hallway COM1-24: Ceiling Mounted, low voltage, ultrasonic occupancy detector.

1. Mounting: [**4 inch (102 mm) square box**][**4 inch (102 mm) octagonal box**][**Round 3.0 mud ring**][**Directly to ceiling with quick mount spring tabs**].
2. Voltage: **18 - 24 VDC/VAC (30 mA)**, 50/60 Hz.
3. Load Rating: control output - 1 A at 30 VAC/VDC.
4. Settings:
 - a. Time Delay Setting:
 - 1) Control Output: 30 seconds to 30 minutes.
 - 2) Pulse Mode: Approximately 2 seconds 'ON' and 8 seconds 'OFF.'
 - 3) IQ Mode: Automatic adjustment to the usage profile.
 - b. Light Level Setting: **1 - 100 fc (10 - 1000 lux)**, turns lights off when sufficient daylight is present.
 - c. Dip Switch Settings:
 - 1) Automatic mode (AUTO) and Manual ON mode (MAN).
 - 2) Momentary and maintained switch option.
 - 3) 'ON' only and 'ON' & 'OFF' manual switching.
5. COM-Link: Grouping for up to 10 sensors.
6. Real-time motion indicator LED: Visible from the front of unit while in test mode.
7. Connection: [**Building automation system**][**Steinel power pack**].
8. Test Mode: Dip switch setting or programming remote.
9. Operating Temperature: **32 deg F to 104 deg F (0 deg C to 40 deg C)**.
10. Coverage at **9 feet (2.7 m)**: Maximum **6.5 feet by 65 feet (2 by 20 m)** or **422.5 sf (40 sm)**.
11. Dimensions: **4.72 by 4.72 by 2.87 inches (120 by 120 by 73 mm)**.
12. Warranty Length: 5 years.
13. Certifications: C-UL-US Listed, RoHS compliant, UL 2043 Plenum Rated, CA Energy Code compliant.
14. Color: White.
15. Accessories:
 - a. RC 3 Service Remote.
 - b. RC 8 Programming Remote.
 - c. Smart Remote.
 - d. RC 4 User Remote.
 - e. WGC Wire Guard Cage.

B. STEINEL US Hallway COM2-24: Ceiling Mounted, low voltage, ultrasonic occupancy detector for lighting and heating, ventilating, and air-conditioning control.

1. Mounting: [**4 inch (102 mm) square box**][**4 inch (102 mm) octagonal box**][**Round 3.0 mud ring**][**Directly to ceiling with quick mount spring tabs**].
2. Voltage: **18 - 24 VDC/VAC (34 mA)**, 50/60 Hz.
3. Load Rating:
 - a. Control output: 1 A at 30 VAC/VDC.
 - b. HVAC dry contacts: 1 A at 30 VAC/VDC.

4. Settings:
 - a. Time Delay Setting:
 - 1) Control Output: 30 seconds to 30 minutes.
 - 2) Pulse Mode: Approximately 2 seconds 'ON' and 8 seconds 'OFF.'
 - 3) IQ Mode: Automatic adjustment to the usage profile.
 - 4) HVAC dry contacts:
 - a) 0 seconds to 10 minute switch 'ON' delay.
 - b) 1 minute to 2 hour stay 'ON' time.
 - c) Auto-HVAC mode: reduces presence detection sensitivity and requires additional detection verification before signaling the HVAC output.
 - b. Light Level Setting: **1 - 100 fc (10 - 1000 lux)**, turns lights off when sufficient daylight is present.
 - c. Dip Switch Settings:
 - 1) Automatic mode (AUTO) and Manual ON mode (MAN).
 - 2) Momentary and maintained switch option.
 - 3) 'ON' only and 'ON' & 'OFF' manual switching.
 5. COM-Link: Grouping for up to 10 sensors.
 6. Real-time motion indicator LED: Visible from the front of unit while in test mode.
 7. Connection: **[Building automation system][Steinel power pack]**.
 8. Test Mode: Dip switch setting or programming remote.
 9. Operating Temperature: **32 deg F to 104 deg F (0 deg C to 40 deg C)**.
 10. Coverage at **9 feet (2.7 m)**: Maximum **6.5 feet by 65 feet (2 by 20 m)** or **422.5 sf (40 sm)**.
 11. Dimensions: **4.72 by 4.72 by 2.87 inches (120 by 120 by 73 mm)**.
 12. Warranty Length: 5 years.
 13. Certifications: C-UL-US Listed, RoHS compliant, UL 2043 Plenum Rated, CA Energy Code compliant.
 14. Color: White.
 15. Accessories:
 - a. RC 3 Service Remote.
 - b. RC 4 User Remote.
 - c. WGC Wire Guard Cage.
- C. STEINEL US Hallway DIM-24: Ceiling Mounted, low voltage, ultrasonic occupancy detector with 1-10 volt dimming.
1. Mounting: **[4 inch (102 mm) square box][4 inch (102 mm) octagonal box][Round 3.0 mud ring][Directly to ceiling with quick mount spring tabs]**.
 2. Voltage: **18 - 24 VDC/VAC (46 mA)**, 50/60 Hz.
 3. Load Rating:
 - a. Control output: 1 A at 30 VAC/VDC.

- b. 1 - 10 volt dimming output (purple & gray): 100 mA, maximum 50 (1-10 V electronic dimming ballasts / drivers).
4. Settings:
- a. Time Delay Setting:
 - 1) Control Output: 30 seconds to 30 minutes.
 - 2) Pulse Mode: Approximately 2 seconds.
 - 3) IQ Mode: Automatic adjustment to the usage profile.
 - b. Light Level Setting: 1 - 100 fc (10 - 1000 lux), Force OFF photo control factory setting, turns lights off when sufficient daylight is present.
 - c. Dip Switch Settings:
 - 1) Automatic mode (AUTO) and Manual ON mode (MAN).
 - 2) Momentary and maintained switch option.
 - 3) 'ON' only and 'ON' & 'OFF' manual switching.
 - 4) Constant light level DIM control option measures the level of daylight and activates sufficient artificial light to achieve the required level of light intensity.
 - d. Additional features available with the Smart Remote commissioning tool and an Android or iOS Smartphone with STEINEL Smart Remote APP.
 - 1) Partial ON Operating Mode: In Partial ON operating mode, the detector automatically switches the lights on with a dimmed light level that can be between 10 percent and 70 percent. To achieve 100 percent light output the lights must be manually switched or dimmed by the momentary switch. The dimmed light level can be set with the Low Level Brightness setting between 10 percent and 70 percent.
 - 2) Partial OFF Operating Mode: In Partial OFF operating mode, upon occupancy lights are switched ON to 100 percent. Once the room is vacated, the sensor switches to a dimmed light level. The dimmed light level can be set with the Low Level Brightness setting between 10 percent and 50 percent.
 - 3) Hold OFF Photo Control: If Hold OFF is selected the integrated light level measurement holds the artificial light OFF when light intensity by daylight is sufficient. When the electric light is switched ON and the level of daylight becomes sufficient, the sensor will not switch OFF the artificial light while the space is occupied. This function is only available when the sensor is in automatic ON mode.
 - 4) Force OFF Photo Control: Factory setting. If Force OFF is selected, the sensor will switch OFF the lights when daylight is sufficient. When the electric light is switched ON and the level of daylight becomes sufficient, the sensor will switch OFF the artificial light while the space is occupied.
5. COM-Link: Grouping for up to 10 sensors.

6. Real-time motion indicator LED: Visible from the front of unit while in test mode.
7. Connection: **[Building automation system][Steinel power pack]**.
8. Test Mode: Dip switch setting or programming remote.
9. Operating Temperature: **32 deg F to 104 deg F (0 deg C to 40 deg C)**.
10. Coverage at **9 feet (2.7 m)**: Maximum **6.5 feet by 65 feet (2 by 20 m)** or **422.5 sf (40 sm)**.
11. Dimensions: **4.72 by 4.72 by 2.87 inches (120 by 120 by 73 mm)**.
12. Warranty Length: 5 years.
13. Certifications: C-UL-US Listed, RoHS compliant, UL 2043 Plenum Rated, CA Energy Code compliant.
14. Color: White.
15. Accessories:
 - a. RC 3 Service Remote.
 - b. RC 8 Programming Remote.
 - c. Smart Remote.
 - d. RC 4 User Remote.
 - e. WGC Wire Guard Cage.

D. STEINEL US Oneway COM1-24: Ceiling Mounted, low voltage, ultrasonic occupancy detector.

1. Mounting: **[4 inch (102 mm) square box][4 inch (102 mm) octagonal box][Round 3.0 mud ring][Directly to ceiling with quick mount spring tabs]**.
2. Voltage: **18 - 24 VDC/VAC (30 mA)**, 50/60 Hz.
3. Load Rating: control output - 1 A at 30 VAC/VDC.
4. Settings:
 - a. Time Delay Setting:
 - 1) Control Output: 30 seconds to 30 minutes.
 - 2) Pulse Mode: Approximately 2 seconds 'ON' and 8 seconds 'OFF.'
 - 3) IQ Mode: Automatic adjustment to the usage profile.
 - b. Light Level Setting: **1 - 100 fc (10 - 1000 lux)**, turns lights off when sufficient daylight is present.
 - c. Dip Switch Settings:
 - 1) Automatic mode (AUTO) and Manual ON mode (MAN).
 - 2) Momentary and maintained switch option.
 - 3) 'ON' only and 'ON' & 'OFF' manual switching.
5. COM-Link: Grouping for up to 10 sensors.
6. Real-time motion indicator LED: Visible from the front of unit while in test mode.
7. Connection: **[Building automation system][Steinel power pack]**.
8. Test Mode: Dip switch setting or programming remote.
9. Operating Temperature: **32 deg F to 104 deg F (0 deg C to 40 deg C)**.
10. Coverage at **9 feet (2.7 m)**: Maximum **6.5 feet by 65 feet (2 by 20 m)** or **422.5 sf (40 sm)**.

11. Dimensions: 4.72 by 4.72 by 2.87 inches (120 by 120 by 73 mm).
12. Warranty Length: 5 years.
13. Certifications: C-UL-US Listed, RoHS compliant, UL 2043 Plenum Rated, CA Energy Code compliant.
14. Color: White.
15. Accessories:
 - a. RC 3 Service Remote.
 - b. RC 8 Programming Remote.
 - c. Smart Remote.
 - d. RC 4 User Remote.
 - e. WGC Wire Guard Cage.

E. STEINEL US Oneway COM2-24: Ceiling Mounted, low voltage, ultrasonic occupancy detector for lighting and heating, ventilating, and air-conditioning control.

1. Mounting: [4 inch (102 mm) square box][4 inch (102 mm) octagonal box][Round 3.0 mud ring][Directly to ceiling with quick mount spring tabs].
2. Voltage: 18 - 24 VDC/VAC (34 mA), 50/60 Hz.
3. Load Rating:
 - a. Control output: 1 A at 30 VAC/VDC.
 - b. HVAC dry contacts: 1 A at 30 VAC/VDC.
4. Settings:
 - a. Time Delay Setting:
 - 1) Control Output: 30 seconds to 30 minutes.
 - 2) Pulse Mode: Approximately 2 seconds 'ON' and 8 seconds 'OFF.'
 - 3) IQ Mode: Automatic adjustment to the usage profile.
 - 4) HVAC dry contacts:
 - a) 0 seconds to 10 minute switch 'ON' delay.
 - b) 1 minute to 2 hour stay 'ON' time.
 - c) Auto-HVAC mode: reduces presence detection sensitivity and requires additional detection verification before signaling the HVAC output.
 - b. Light Level Setting: 1 - 100 fc (10 - 1000 lux), turns lights off when sufficient daylight is present.
 - c. Dip Switch Settings:
 - 1) Automatic mode (AUTO) and Manual ON mode (MAN).
 - 2) Momentary and maintained switch option.
 - 3) 'ON' only and 'ON' & 'OFF' manual switching.
5. COM-Link: Grouping for up to 10 sensors.
6. Real-time motion indicator LED: Visible from the front of unit while in test mode.
7. Connection: [Building automation system][Steinel power pack].

8. Test Mode: Dip switch setting or programming remote.
9. Operating Temperature: 32 deg F to 104 deg F (0 deg C to 40 deg C).
10. Coverage at 9 feet (2.7 m): Maximum 6.5 feet by 33 feet (2 by 10 m) or 214.5 sf (20 sm).
11. Dimensions: 4.72 by 4.72 by 2.87 inches (120 by 120 by 73 mm).
12. Warranty Length: 5 years.
13. Certifications: C-UL-US Listed, RoHS compliant, UL 2043 Plenum Rated, CA Energy Code compliant.
14. Color: White.
15. Accessories:
 - a. RC 3 Service Remote.
 - b. RC 8 Programming Remote.
 - c. Smart Remote.
 - d. RC 4 User Remote.
 - e. WGC Wire Guard Cage.

- F. STEINEL US Oneway DIM-24: Ceiling Mounted, low voltage, ultrasonic occupancy detector with 1-10 volt dimming.
1. Mounting: [4 inch (102 mm) square box][4 inch (102 mm) octagonal box][Round 3.0 mud ring][Directly to ceiling with quick mount spring tabs].
 2. Voltage: 18 - 24 VDC/VAC (46 mA), 50/60 Hz.
 3. Load Rating:
 - a. Control output: 1 A at 30 VAC/VDC.
 - b. 1 - 10 volt dimming output (purple & gray): 100 mA, maximum 50 (1-10 V electronic dimming ballasts / drivers).
 4. Settings:
 - a. Time Delay Setting:
 - 1) Control Output: 30 seconds to 30 minutes.
 - 2) Pulse Mode: Approximately 2 seconds.
 - 3) IQ Mode: Automatic adjustment to the usage profile.
 - b. Light Level Setting: 1 - 100 fc (10 - 1000 lux), Force OFF photo control factory setting, turns lights off when sufficient daylight is present.
 - c. Dip Switch Settings:
 - 1) Automatic mode (AUTO) and Manual ON mode (MAN).
 - 2) Momentary and maintained switch option.
 - 3) 'ON' only and 'ON' & 'OFF' manual switching.
 - 4) Constant light level DIM control option measures the level of daylight and activates sufficient artificial light to achieve the required level of light intensity.
 - d. Additional features available with the Smart Remote commissioning tool and an Android or iOS Smartphone with STEINEL Smart Remote APP.

- 1) Partial ON Operating Mode: In Partial ON operating mode, the detector automatically switches the lights on with a dimmed light level that can be between 10 percent and 70 percent. To achieve 100 percent light output the lights must be manually switched or dimmed by the momentary switch. The dimmed light level can be set with the Low Level Brightness setting between 10 percent and 70 percent.
 - 2) Partial OFF Operating Mode: In Partial OFF operating mode, upon occupancy lights are switched ON to 100 percent. Once the room is vacated, the sensor switches to a dimmed light level. The dimmed light level can be set with the Low Level Brightness setting between 10 percent and 50 percent.
 - 3) Hold OFF Photo Control: If Hold OFF is selected the integrated light level measurement holds the artificial light OFF when light intensity by daylight is sufficient. When the electric light is switched ON and the level of daylight becomes sufficient, the sensor will not switch OFF the artificial light while the space is occupied. This function is only available when the sensor is in automatic ON mode.
 - 4) Force OFF Photo Control: Factory setting. If Force OFF is selected, the sensor will switch OFF the lights when daylight is sufficient. When the electric light is switched ON and the level of daylight becomes sufficient, the sensor will switch OFF the artificial light while the space is occupied.
5. COM-Link: Grouping for up to 10 sensors.
 6. Real-time motion indicator LED: Visible from the front of unit while in test mode.
 7. Connection: **[Building automation system][Steinel power pack]**.
 8. Test Mode: Dip switch setting or programming remote.
 9. Operating Temperature: **32 deg F to 104 deg F (0 deg C to 40 deg C)**.
 10. Coverage at **9 feet (2.7 m)**: Maximum **6.5 feet by 33 feet (2 by 10 m)** or **214.5 sf (20 sm)**.
 11. Dimensions: **4.72 by 4.72 by 2.87 inches (120 by 120 by 73 mm)**.
 12. Warranty Length: 5 years.
 13. Certifications: C-UL-US Listed, RoHS compliant, UL 2043 Plenum Rated, CA Energy Code compliant.
 14. Color: White.
 15. Accessories:
 - a. RC 3 Service Remote.
 - b. RC 8 Programming Remote.
 - c. Smart Remote.
 - d. RC 4 User Remote.
 - e. WGC Wire Guard Cage.

2.7 DUALTECH CONTROL PRO PRESENCE DETECTORS

- A. STEINEL DT Quattro COM1-24: Ceiling Mounted, low voltage, passive infrared and ultrasonic presence detector.

1. Mounting: [4 inch (102 mm) square box][4 inch (102 mm) octagonal box][Round 3.0 mud ring][Directly to ceiling with quick mount spring tabs].
2. Voltage: 18 - 24 VDC/VAC (30 mA) 50/60 Hz.
3. Load Rating: control output - 1 A at 30 VAC/VDC.
4. Sensing Technology: Passive infrared (PIR), single pyro, 11 detection levels, 520 switching zones, ultrasonic 40 kHz.
5. Settings:
 - a. Time Delay Setting:
 - 1) Control Output: 30 seconds to 30 minutes.
 - 2) Pulse Mode: Approximately 2 seconds 'ON' and 8 seconds 'OFF.'
 - 3) IQ Mode: Automatic adjustment to the usage profile.
 - b. Light Level Setting: 1 - 100 fc (10 - 1000 lux), turns lights off when sufficient daylight is present.
 - c. Dip Switch Settings:
 - 1) Automatic mode (AUTO) and Manual ON mode (MAN).
 - 2) Momentary and maintained switch option.
 - 3) 'ON' only and 'ON' & 'OFF' manual switching.
6. COM-Link: Grouping for up to 10 sensors.
7. Real-time motion indicator LED: Visible from the front of unit while in test mode.
8. Connection: [Building automation system][Steinel power pack].
9. Test Mode: Dip switch setting or programming remote.
10. Operating Temperature: 32 deg F to 104 deg F (0 deg C to 40 deg C).
11. Ultrasonic Coverage at 9 feet (2.7 m):
 - a. Presence: Maximum 20 feet by 20 feet (6 by 6 m) or 400 sf (36 sm).
 - b. Radially and Tangentially: Maximum 32 feet by 32 feet (10 by 10 m) or 1,000 sf (100 sm).
12. PIR Detection Zones:
 - a. Presence: Maximum 10 feet by 10 feet (3 by 3 m) or 100 sf (9 sm).
 - b. Radially: Maximum 13 feet by 13 feet (4 by 4 m).
 - c. Tangentially: Maximum 26 feet by 26 feet (8 by 8 m).
13. Dimensions: 4.72 by 4.72 by 2.68 inches (120 by 120 by 68 mm).
14. Warranty Length: 5 years.
15. Certifications: C-UL-US Listed, RoHS compliant, UL 2043 Plenum Rated, CA Energy Code compliant.
16. Color: White.
17. Accessories:
 - a. RC 3 Service Remote.
 - b. RC 8 Programming Remote.
 - c. Smart Remote.
 - d. RC 4 User Remote.

- e. WGC Wire Guard Cage.
- B. STEINEL DT Quattro COM2-24: Ceiling Mounted, low voltage, passive infrared and ultrasonic presence detector for lighting and heating, ventilating, and air-conditioning control.
1. Mounting: [4 inch (102 mm) square box][4 inch (102 mm) octagonal box][Round 3.0 mud ring][Directly to ceiling with quick mount spring tabs].
 2. Voltage: 18 - 24 VDC/VAC (34 mA), 50/60 Hz.
 3. Load Rating:
 - a. Control output: 1 A at 30 VAC/VDC.
 - b. HVAC dry contacts: 1 A at 30 VAC/VDC.
 4. Sensing Technology: Passive infrared (PIR), single pyro, 11 detection levels, 520 switching zones, ultrasonic 40 kHz.
 5. Settings:
 - a. Time Delay Setting:
 - 1) Control Output: 30 seconds to 30 minutes.
 - 2) Pulse Mode: Approximately 2 seconds 'ON' and 8 seconds 'OFF.'
 - 3) IQ Mode: Automatic adjustment to the usage profile.
 - 4) HVAC dry contacts:
 - a) 0 seconds to 10 minute switch 'ON' delay.
 - b) 1 minute to 2 hour stay 'ON' time.
 - c) Auto-HVAC mode: reduces presence detection sensitivity and requires additional detection verification before signaling the HVAC output.
 - b. Light Level Setting: 1 - 100 fc (10 - 1000 lux), turns lights off when sufficient daylight is present.
 - c. Dip Switch Settings:
 - 1) Automatic mode (AUTO) and Manual ON mode (MAN).
 - 2) Momentary and maintained switch option.
 - 3) 'ON' only and 'ON' & 'OFF' manual switching.
 6. COM-Link: Grouping for up to 10 sensors.
 7. Real-time motion indicator LED: Visible from the front of unit while in test mode.
 8. Connection: [Building automation system][Steinel power pack].
 9. Test Mode: Dip switch setting or programming remote.
 10. Operating Temperature: 32 deg F to 104 deg F (0 deg C to 40 deg C).
 11. Ultrasonic Coverage at 9 feet (2.7 m):
 - a. Presence: Maximum 20 feet by 20 feet (6 by 6 m) or 400 sf (36 sm).
 - b. Radially and Tangentially: Maximum 32 feet by 32 feet (10 by 10 m) or 1,000 sf (100 sm).

12. PIR Detection Zones:
 - a. Presence: Maximum 10 feet by 10 feet (3 by 3 m) or 100 sf (9 sm).
 - b. Radially: Maximum 13 feet by 13 feet (4 by 4 m).
 - c. Tangentially: Maximum 26 feet by 26 feet (8 by 8 m).
13. Dimensions: 4.72 by 4.72 by 2.87 inches (120 by 120 by 73 mm).
14. Warranty Length: 5 years.
15. Certifications: C-UL-US Listed, RoHS compliant, UL 2043 Plenum Rated, CA Energy Code compliant.
16. Color: White.
17. Accessories:
 - a. RC 3 Service Remote.
 - b. RC 8 Programming Remote.
 - c. Smart Remote.
 - d. RC 4 User Remote.
 - e. WGC Wire Guard Cage.

C. STEINEL DT Quattro DIM-24: Ceiling Mounted, low voltage, high definition, passive infrared and ultrasonic presence detector with 1-10 volt dimming.

1. Mounting: [4 inch (102 mm) square box][4 inch (102 mm) octagonal box][Round 3.0 mud ring][Directly to ceiling with quick mount spring tabs].
2. Voltage: 18 - 24 VDC/VAC (46 mA).
3. Load Rating:
 - a. Control output (blue): 1 A at 30 VAC/VDC.
 - b. 1 - 10 volt dimming output (purple & gray): 100 mA, maximum 50 (1-10 V electronic dimming ballasts / drivers).
4. Sensing Technology: Passive infrared (PIR), single pyro, 11 detection levels, 520 switching zones, ultrasonic 40 kHz.
5. Settings:
 - a. Time Delay Setting:
 - 1) Control Output: 30 seconds to 30 minutes.
 - 2) Pulse Mode: Approximately 2 seconds.
 - 3) IQ Mode: Automatic adjustment to the usage profile.
 - b. Light Level Setting: 1 - 100 fc (10 - 1000 lux), Force OFF photo control factory setting, turns lights off when sufficient daylight is present.
 - c. Dip Switch Settings:
 - 1) Automatic mode (AUTO) and Manual ON mode (MAN).
 - 2) Momentary and maintained switch option.
 - 3) 'ON' only and 'ON' & 'OFF' manual switching.
 - 4) Constant light level DIM control option measures the level of daylight and activates sufficient artificial light to achieve the required level of light intensity.

- d. Additional features available with the Smart Remote commissioning tool and an Android or iOS Smartphone with STEINEL Smart Remote APP.
 - 1) Partial ON Operating Mode: In Partial ON operating mode, the detector automatically switches the lights on with a dimmed light level that can be between 10 percent and 70 percent. To achieve 100 percent light output the lights must be manually switched or dimmed by the momentary switch. The dimmed light level can be set with the Low Level Brightness setting between 10 percent and 70 percent.
 - 2) Partial OFF Operating Mode: In Partial OFF operating mode, upon occupancy lights are switched ON to 100 percent. Once the room is vacated, the sensor switches to a dimmed light level. The dimmed light level can be set with the Low Level Brightness setting between 10 percent and 50 percent.
 - 3) Hold OFF Photo Control: If Hold OFF is selected the integrated light level measurement holds the artificial light OFF when light intensity by daylight is sufficient. When the electric light is switched ON and the level of daylight becomes sufficient, the sensor will not switch OFF the artificial light while the space is occupied. This function is only available when the sensor is in automatic ON mode.
 - 4) Force OFF Photo Control: Factory setting. If Force OFF is selected, the sensor will switch OFF the lights when daylight is sufficient. When the electric light is switched ON and the level of daylight becomes sufficient, the sensor will switch OFF the artificial light while the space is occupied.
- 6. COM-Link: Grouping for up to 10 sensors.
- 7. Real-time motion indicator LED: Visible from the front of unit while in test mode.
- 8. Connection: **[Building automation system][Steinel power pack]**.
- 9. Test Mode: Dip switch setting or programming remote.
- 10. Operating Temperature: **32 deg F to 104 deg F (0 deg C to 40 deg C)**.
- 11. Ultrasonic Coverage at **9 feet (2.7 m)**:
 - a. Presence: Maximum **20 feet by 20 feet (6 by 6 m) or 400 sf (36 sm)**.
 - b. Radially and Tangentially: Maximum **32 feet by 32 feet (10 by 10 m) or 1,000 sf (100 sm)**.
- 12. PIR Detection Zones:
 - a. Presence: Maximum **10 feet by 10 feet (3 by 3 m) or 100 sf (9 sm)**.
 - b. Radially: Maximum **13 feet by 13 feet (4 by 4 m)**.
 - c. Tangentially: Maximum **26 feet by 26 feet (8 by 8 m)**.
- 13. Dimensions: **4.72 by 4.72 by 2.68 inches (120 by 120 by 68 mm)**.
- 14. Warranty Length: 5 years.
- 15. Certifications: C-UL-US Listed, RoHS compliant, UL 2043 Plenum Rated, CA Energy Code compliant.
- 16. Color: White.

17. Accessories:
 - a. RC 3 Service Remote.
 - b. RC 8 Programming Remote.
 - c. Smart Remote.
 - d. RC 4 User Remote.
 - e. WGC Wire Guard Cage.

2.8 CORNER MOUNT DUALTECH CONTROL PRO PRESENCE DETECTORS

- A. STEINEL DT CM COM1-24: Corner Mounted, low voltage, passive infrared and ultrasonic presence detector.
 1. Mounting: [**Round 3.0 mud ring**][**Directly to the wall or ceiling with anchor bolts**][**Ceiling mounted with 1/2 inch snap in chase nipple, washer and lock nut**].
 2. Voltage: **18 - 24 VDC/VAC (32 mA)** 50/60 Hz.
 3. Load Rating: control output - 1 A at 24 VAC/VDC.
 4. Sensing Technology: Passive infrared (PIR), single pyro, 11 detection levels, 520 switching zones, ultrasonic 40 kHz.
 5. Settings:
 - a. Time Delay Setting:
 - 1) Control Output: 30 seconds to 30 minutes.
 - 2) Pulse Mode: Approximately 2 seconds 'ON' and 8 seconds 'OFF.'
 - 3) IQ Mode: Automatic adjustment to the usage profile.
 - b. Light Level Setting: **1 - 100 fc (10 - 1000 lux)**, turns lights off when sufficient daylight is present.
 - c. Dip Switch Settings:
 - 1) Automatic mode (AUTO) and Manual ON mode (MAN).
 - 2) Momentary and maintained switch option.
 - 3) 'ON' only and 'ON' & 'OFF' manual switching.
 6. COM-Link: Grouping for up to 10 sensors.
 7. Real-time motion indicator LED: Visible from the front of unit while in test mode.
 8. Connection: [**Building automation system**][**Steinel power pack**].
 9. Test Mode: Dip switch setting or programming remote.
 10. Operating Temperature: **32 deg F to 131 deg F (0 deg C to 55 deg C)**.
 11. Ultrasonic Coverage at **9 feet (2.7 m)**:
 - a. Presence: Maximum **22 feet (7 m)** or **426 sf (130 sm)**.
 - b. Radially: Maximum **38 feet (11.5 m)** or **1,236 sf (376 sm)**.
 - c. Tangentially: Maximum **26 feet (8 m)** or **718 sf (218 sm)**.
 12. PIR Detection Zones:

- a. Presence: Maximum 22 feet (7 m) or 440 sf (134 sm).
 - b. Radially: Maximum 26 feet (8 m) or 655 sf (200 sm).
 - c. Tangentially: Maximum 82 feet (25 m) or 5290 sf (1612 sm).
13. Dimensions: 4.72 by 2.76 by 4.21 inches (120 by 70.2 by 107 mm).
 14. Warranty Length: 5 years.
 15. Certifications: C-UL-US Listed, RoHS compliant, CA Energy Code compliant.
 16. Color: White.
 17. Accessories:
 - a. Smart remote.
 - b. RC 8 programming remote.
 - c. RC 4 user remote.
- B. STEINEL DT CM COM2-24: Corner Mounted, low voltage, passive infrared and ultrasonic presence detector for lighting and heating, ventilating, and air-conditioning control.
1. Mounting: [**Round 3.0 mud ring**][**Directly to the wall or ceiling with anchor bolts**][**Ceiling mounted with 1/2 inch snap in chase nipple, washer and lock nut**].
 2. Voltage: 18 - 24 VDC/VAC (40 mA), 50/60 Hz.
 3. Load Rating:
 - a. Control output: 1 A at 24 VAC/VDC.
 - b. HVAC dry contacts: common (yellow)
 - 1) Normally open (yellow/red) 1 A at 24 VDC/VAC 50/60 Hz.
 - 2) Normally closed (yellow/black) 1 A at 24VDC/VAC 50/60 Hz.
 4. Sensing Technology: Passive infrared (PIR), single pyro, 11 detection levels, 520 switching zones, ultrasonic 40 kHz.
 5. Settings:
 - a. Time Delay Setting:
 - 1) Control Output: 30 seconds to 30 minutes.
 - 2) Pulse Mode: Approximately 2 seconds 'ON' and 8 seconds 'OFF.'
 - 3) IQ Mode: Automatic adjustment to the usage profile.
 - 4) HVAC dry contacts:
 - a) 0 seconds to 10 minute switch 'ON' delay.
 - b) 1 minute to 30 minute stay 'ON' time.
 - c) Auto-HVAC mode: reduces presence detection sensitivity and requires additional detection verification before signaling the HVAC output.
 - b. Light Level Setting: 1 - 100 fc (10 - 1000 lux), turns lights off when sufficient daylight is present.
 - a. Dip Switch Settings:

- 1) Automatic mode (AUTO) and Manual ON mode (MAN).
 - 2) Momentary and maintained switch option.
 - 3) 'ON' only and 'ON' & 'OFF' manual switching.
6. COM-Link: Grouping for up to 10 sensors.
 7. Real-time motion indicator LED: Visible from the front of unit while in test mode.
 8. Connection: **[Building automation system][Steinel power pack]**.
 9. Test Mode: Dip switch setting or programming remote.
 10. Operating Temperature: **32 deg F to 131 deg F (0 deg C to 55 deg C)**..
 11. Ultrasonic Coverage at **9 feet (2.7 m)**:
 - a. Presence: Maximum **22 feet (7 m)** or **426 sf (130 sm)**.
 - b. Radially: Maximum **38 feet (11.5 m)** or **1,236 sf (376 sm)**.
 - c. Tangentially: Maximum **26 feet (8 m)** or **718 sf (218 sm)**.
 12. PIR Detection Zones:
 - a. Presence: Maximum **22 feet (7 m)** or **440 sf (134 sm)**.
 - b. Radially: Maximum **26 feet (8 m)** or **655 sf (200 sm)**.
 - c. Tangentially: Maximum **82 feet (25 m)** or **5290 sf (1612 sm)**.
 13. Dimensions: **4.72 by 2.76 by 4.21 inches (120 by 70.2 by 107 mm)**.
 14. Warranty Length: 5 years.
 15. Certifications: C-UL-US Listed, RoHS compliant, CA Energy Code compliant.
 16. Color: White.
 17. Accessories:
 - a. Smart remote.
 - b. RC 8 programming remote.
 - c. RC 4 user remote.
- C. STEINEL DT CM DIM-24: Corner Mounted, low voltage, passive infrared and ultrasonic presence detector with 1-10 volt dimming.
1. Mounting: **[Round 3.0 mud ring][Directly to the wall or ceiling with anchor bolts][Ceiling mounted with 1/2 inch snap in chase nipple, washer and lock nut]**.
 2. Voltage: **18 - 24 VDC/VAC (39 mA)**, 50/60 Hz.
 3. Load Rating:
 - a. Control output (blue): 1 A at 24 VAC/VDC.
 - b. 1 - 10 volt dimming output (purple & gray): 100 mA, maximum 50 (1-10 V electronic dimming ballasts / drivers).
 4. Sensing Technology: Passive infrared (PIR), single pyro, 11 detection levels, 520 switching zones, ultrasonic 40 kHz.
 5. Settings:
 - a. Time Delay Setting:
 - 1) Control Output: 30 seconds to 30 minutes.

- 2) IQ Mode: Automatic adjustment to the usage profile.
- b. Light Level Setting: 1 - 100 fc (10 - 1000 lux), Force OFF photo control factory setting, turns lights off when sufficient daylight is present.
- c. Dip Switch Settings:
 - 1) Automatic mode (AUTO) and Manual ON mode (MAN).
 - 2) Momentary and maintained switch option.
 - 3) 'ON' only and 'ON' & 'OFF' manual switching.
 - 4) Constant light level DIM control option measures the level of daylight and activates sufficient artificial light to achieve the required level of light intensity.
- d. Additional features available with the Smart Remote commissioning tool and an Android or iOS Smartphone with STEINEL Smart Remote APP.
 - 1) Partial ON Operating Mode: In Partial ON operating mode, the detector automatically switches the lights on with a dimmed light level that can be between 10 percent and 70 percent. To achieve 100 percent light output the lights must be manually switched or dimmed by the momentary switch. The dimmed light level can be set with the Low Level Brightness setting between 10 percent and 70 percent.
 - 2) Partial OFF Operating Mode: In Partial OFF operating mode, upon occupancy lights are switched ON to 100 percent. Once the room is vacated, the sensor switches to a dimmed light level. The dimmed light level can be set with the Low Level Brightness setting between 10 percent and 50 percent.
 - 3) Hold OFF Photo Control: If Hold OFF is selected the integrated light level measurement holds the artificial light OFF when light intensity by daylight is sufficient. When the electric light is switched ON and the level of daylight becomes sufficient, the sensor will not switch OFF the artificial light while the space is occupied. This function is only available when the sensor is in automatic ON mode.
 - 4) Force OFF Photo Control: Factory setting. If Force OFF is selected, the sensor will switch OFF the lights when daylight is sufficient. When the electric light is switched ON and the level of daylight becomes sufficient, the sensor will switch OFF the artificial light while the space is occupied.
6. COM-Link: Grouping for up to 10 sensors.
7. Real-time motion indicator LED: Visible from the front of unit while in test mode.
8. Connection: **[Building automation system][Steinel power pack]**.
9. Test Mode: Dip switch setting or programming remote.
10. Operating Temperature: 32 deg F to 131 deg F (0 deg C to 55 deg C).
11. Ultrasonic Coverage at 9 feet (2.7 m):
 - a. Presence: Maximum 22 feet (7 m) or 426 sf (130 sm).
 - b. Radially: Maximum 38 feet (11.5 m) or 1,236 sf (376 sm).

- c. Tangentially: Maximum 26 feet (8 m) or 718 sf (218 sm).
12. PIR Detection Zones:
- a. Presence: Maximum 22 feet (7 m) or 440 sf (134 sm).
 - b. Radially: Maximum 26 feet (8 m) or 655 sf (200 sm).
 - c. Tangentially: Maximum 82 feet (25 m) or 5290 sf (1612 sm).
13. Dimensions: 4.72 by 2.76 by 4.21 inches (120 by 70.2 by 107 mm).
14. Warranty Length: 5 years.
15. Certifications: C-UL-US Listed, RoHS compliant, CA Energy Code compliant.
16. Color: White.
17. Accessories:
- a. Smart remote.
 - b. RC 8 programming remote.
 - c. RC 4 user remote.

2.9 CONTROL PRO ACCESSORIES

- A. STEINEL Smart Remote: Commissioning Tool which gives the ability to set basic functions for Control Pro Series.
- 1. Communication: IR; Smart Remote to Sensor and Bluetooth; Smart Phone or Tablet / Smart Remote.
 - 2. Reach: Maximum 50 feet (15 m).
 - 3. Operating Voltage: 3 VDC, 2 batteries, type AAA.
 - 4. Dimensions: 4.58 by 2.05 by 1.02 inches (115 by 52 by 26 mm).
 - 5. Warranty Length: 5 years.
 - 6. Certifications: RoHS compliant, FCC ID: SQK-7BLZXX, IC: 337L-7BLZXX.
- B. STEINEL RC 3: Programming Remote for Control Pro Series.
- 1. Communication: IR.
 - 2. Reach: 50 feet.
 - 3. Operating Voltage: 3 Volt, CR2025 battery.
 - 4. Warranty Length: 5 years.
 - 5. Functions:
 - a. Reach setting.
 - b. Times Setting:
 - 1) CH 1: Stay 'ON' time for switching contact 1.
 - 2) CH 2: Stay 'ON' time for switching contact 2 (HVAC).
 - 3) IQ Mode: Automatic adjustment to the usage profile.
 - c. Test mode.
 - d. Light level setting.
 - e. Teach-In setting.
 - f. Sensor sensitivity adjustment.

- C. STEINEL RC 4: User Remote for Control Pro Series
1. Communication: IR
 2. Reach: 50 feet.
 3. Operating Voltage: 3 Volt, CR2025 battery.
 4. Warranty Length: 5 years.
 5. Functions:
 - a. Dimming.
 - b. Remote ON/OFF.
 - c. Factory reset.
- D. STEINEL RC 8: Programming Remote with Basic Light Level Settings for Control Pro Series.
1. Communication: IR.
 2. Reach: 50 feet.
 3. Operating Voltage: 3 Volt, CT2025 battery.
 4. Dimensions:
 5. Warranty Length: 5 years,
 6. Functions:
 - a. Reach setting.
 - b. Basic light level.
 - c. Times Setting:
 - 1) CH 1: Stay 'ON' time for switching contact 1.
 - 2) CH 2: Stay 'ON' time for switching contact 2 (HVAC).
 - 3) IQ Mode: Automatic adjustment to the usage profile.
 - d. Test mode.
 - e. Light level setting.
 - f. Teach-In setting.
 - g. Constant lighting control.
 - h. Automatic or manual mode.
 - i. Factory reset.
- E. STEINEL RC 6 KNX: Service Remote for Control Pro Series KNX Network Communication Protocol Detectors.
1. Communication: IR.
 2. Reach: 50 feet.
 3. Operating Voltage: 3 Volt, CT2025 battery.
 4. Warranty Length: 5 years.
 5. Functions:
 - a. Reach setting.
 - b. Basic light level.
 - c. Times Setting:
 - 1) CH 1: Stay 'ON' time for switching contact 1.

- 2) CH 2: Stay 'ON' time for switching contact 2 (HVAC).
 - 3) IQ Mode: Automatic adjustment to the usage profile.
- d. Test mode.
 - e. Light level setting.
 - f. Teach-In setting.
 - g. Constant lighting control.
 - h. Automatic or manual mode.
 - i. Unlocking/locking, service mode.
 - j. Sensor sensitivity adjustment.
- F. STEINEL RC 7 KNX: User Remote for Control Pro Series KNX Network Communication Protocol Detectors.
- 1. Communication: IR.
 - 2. Reach: 50 feet.
 - 3. Operating Voltage: 3 Volt, CT2025 battery.
 - 4. Warranty Length: 5 years.
- G. CR-2025: Micro Lithium Cell, 3 Volt Battery for RC Remotes.
- H. STEINEL WGC: Wire Guard Cage.
- 1. Color: White.
 - 2. Warranty Length: 5 years.

2.10 PASSIVE INFARED WALL SWITCH OCCUPANCY SENSORS

- A. STEINEL IR WLS 1-[W][LA][BK][GY]: Line voltage, single relay, Passive Infrared (PIR) wall switch occupancy sensor intended to control lighting in commercial spaces.
- 1. Voltage: 120/230/277 VAC, 50/60 Hz.
 - 2. Mounting: Single-gang NEMA-style switch box (standard switch box) and decorator-style wall plate by others.
 - 3. Load Rating:
 - a. Tungsten, magnetic or electronic ballast: 0-800 watts at 120/230/277 VAC, 50/60 Hz.
 - b. CFL or LED electronic ballasts: 0-600 watts at 120/230/277 VAC, 50/60 Hz.
 - c. 1/6 hp at 120/230/277 VAC, 50/60 Hz.
 - 4. Settings:
 - a. Light Level Setting: 8 - 200 fc (80 - 2000 lux) keeps lights OFF when sufficient daylight is present.
 - b. Dip Switch Settings:

- 1) Manual ON or Automatic ON option.
 - 2) Walk Through Mode: Switch the load OFF in 3 minutes if no additional detection occurs after the first 30 seconds.
 - 3) Audible Alert: Provides an audible warning that the load will shut-OFF in 10 seconds unless additional motion is detected
 - 4) Visible Alert: Provides a momentary OFF/ON blink, warning that the load will shut OFF in 10 seconds unless additional motion is detected
- c. Time Setting: IQ/Test, 5, 15, 30 minutes.
- 1) IQ Mode: Dynamically adjusts the 'ON' time delay by learning individual room occupancy.
 - 2) Test Mode: Time delay defaults to 5 seconds and all loads are switched on/off by motion detection. After 5 minutes the time delay reverts to the IQ Mode.
- d. Service mode: Deactivates the automated functions of the sensor and the load is only manually controlled using the ON/OFF button.
5. Switching: Performed at, or close to the zero-cross of the AC waveform in order to improve relay performance
 6. Switch Link: Allows communication of sensors for 2-way, 3-way, and 4-way switching.
 7. Real-time motion indicator LED: Visible from the front of unit while in test mode.
 8. Operating Temperature: 32 deg F to 104 deg F (0 deg C to 40 deg C).
 9. PIR Coverage at 4 feet (1.2 m) Mounting Height: 180 degree coverage pattern.
 - a. Minor Motion: Maximum 21 by 18 feet (6.5 by 5.5 m) or 378 sf (36 sm).
 - b. Radially: Maximum 24 feet (7 m) or 904 sf (77 sm).
 - c. Tangentially: Maximum 54 feet (20 m) or 4,500 sf (628 sm).
 10. Dimensions: 4.13 by 1.74 by 1.78 inches (105 by 44.1 by 45.1 mm).
 11. Warranty: 5 years.
 12. Certifications: C-UL-US Listed, RoHS compliant, California Compliant.
- B. STEINEL IR WLS 2-[W][LA] [BK][GY]: Line voltage, two relay, Passive Infrared (PIR) wall switch occupancy sensor intended to control lighting in commercial spaces.
1. Voltage: 120/230/277 VAC, 50/60 Hz.
 2. Mounting: Single-gang NEMA-style switch box (standard switch box) and decorator-style wall plate by others.
 3. Load Rating:
 - a. Tungsten, magnetic or electronic ballast: 0-800 watts at 120/230/277 VAC, 50/60 Hz.
 - b. CFL or LED electronic ballasts: 0-600 watts at 120/230/277 VAC, 50/60 Hz.
 - c. 1/6 hp at 120/230/277 VAC, 50/60 Hz.

4. Settings:
 - a. Light Level Setting: 8 - 200 fc (80 - 2000 lux) keeps lights OFF when sufficient daylight is present.
 - b. Dip Switch Settings:
 - 1) Manual ON or Automatic ON option.
 - 2) Walk Through Mode: Switch the load OFF in 3 minutes if no additional detection occurs after the first 30 seconds.
 - 3) Audible Alert: Provides an audible warning that the load will shut-OFF in 10 seconds unless additional motion is detected
 - 4) Visible Alert: Provides a momentary OFF/ON blink, warning that the load will shut OFF in 10 seconds unless additional motion is detected
 - c. Time Setting: IQ/Test, 5, 15, 30 minutes.
 - 1) IQ Mode: Dynamically adjusts the 'ON' time delay by learning individual room occupancy.
 - 2) Test Mode: Time delay defaults to 5 seconds and all loads are switched on/off by motion detection. After 5 minutes the time delay reverts to the IQ Mode.
 - d. Service mode: Deactivates the automated functions of the sensor and the load is only manually controlled using the ON/OFF button.
5. Switching: Performed at, or close to the zero-cross of the AC waveform in order to improve relay performance
6. Switch Link: Allows communication of sensors for 2-way, 3-way, and 4-way switching.
7. Real-time motion indicator LED: Visible from the front of unit while in test mode.
8. Operating Temperature: 32 deg F to 104 deg F (0 deg C to 40 deg C).
9. PIR Coverage at 4 feet (1.2 m) Mounting Height: 180 degree coverage pattern.
 - a. Minor Motion: Maximum 21 by 18 feet (6.5 by 5.5 m) or 378 sf (36 sm).
 - b. Radially: Maximum 24 feet (7 m) or 904 sf (77 sm).
 - c. Tangentially: Maximum 54 feet (20 m) or 4,500 sf (628 sm).
10. Dimensions: 4.13 by 1.74 by 1.78 inches (105 by 44.1 by 45.1 mm).
11. Warranty: 5 years.
12. Certifications: C-UL-US Listed, RoHS compliant, California Compliant.

2.11 ULTRASONIC WALL SWITCH OCCUPANCY SENSORS

- A. STEINEL US WLS 1-[W][LA] [BK][GY]: Line voltage, single relay, Ultrasonic wall switch occupancy sensor.
 1. Voltage: 120/230/277 VAC, 50/60 Hz.
 2. Mounting: Single-gang NEMA-style switch box (standard switch box) and

- decorator-style wall plate by others.
3. Load Rating:
 - a. Tungsten, magnetic or electronic ballast: 0-800 watts at 120/230/277 VAC, 50/60 Hz.
 - b. CFL or LED electronic ballasts: 0-600 watts at 120/230/277 VAC, 50/60 Hz.
 - c. 1/6 hp at 120/230/277 VAC, 50/60 Hz.
 4. Settings:
 - a. Reach Setting: Adjustable from 25 percent to 100 percent.
 - b. Light Level Setting: 8 - 200 fc (80 - 2000 lux) keeps lights OFF when sufficient daylight is present.
 - c. Dip Switch Settings:
 - 1) Manual ON or Automatic ON option.
 - 2) Walk Through Mode: Switch the load OFF in 3 minutes if no additional detection occurs after the first 30 seconds.
 - 3) Audible Alert: Provides an audible warning that the load will shut-OFF in 10 seconds unless additional motion is detected
 - 4) Visible Alert: Provides a momentary OFF/ON blink, warning that the load will shut OFF in 10 seconds unless additional motion is detected
 - d. Time Setting: IQ/Test, 5, 15, 30 minutes.
 - 1) IQ Mode: Dynamically adjusts the 'ON' time delay by learning individual room occupancy.
 - 2) Test Mode: Time delay defaults to 5 seconds and all loads are switched on/off by motion detection. After 5 minutes the time delay reverts to the IQ Mode.
 - e. Service mode: Deactivates the automated functions of the sensor and the load is only manually controlled using the ON/OFF button.
 5. Switching: Performed at, or close to the zero-cross of the AC waveform in order to improve relay performance
 6. Switch Link: Allows communication of sensors for 2-way, 3-way, and 4-way switching.
 7. Real-time motion indicator LED: Visible from the front of unit while in test mode.
 8. Operating Temperature: 32 deg F to 104 deg F (0 deg C to 40 deg C).
 9. Ultrasonic Coverage at 4 feet (1.2 m) Mounting Height: 180 degree coverage pattern.
 - a. Minor Motion: Maximum 18 by 12 feet (8 by 8 m) or 216 sf (64 sm).
 - b. Radially: Maximum 24 feet (7 m) or 904 sf (77 sm).
 - c. Tangentially: Maximum 24 feet (7 m) or 904 sf (77 sm).
 10. Dimensions: 4.13 by 1.74 by 1.78 inches (105 by 44.1 by 45.1 mm).

11. Warranty: 5 years.
 12. Certifications: C-UL-US Listed, RoHS compliant, California Compliant.
- B. STEINEL US WLS 2-[W][LA] [BK][GY]: Line voltage, two relay, Ultrasonic wall switch occupancy sensor.
1. Voltage: 120/230/277 VAC, 50/60 Hz.
 2. Mounting: Single-gang NEMA-style switch box (standard switch box) and decorator-style wall plate by others.
 3. Load Rating:
 - a. Tungsten, magnetic or electronic ballast: 0-800 watts at 120/230/277 VAC, 50/60 Hz.
 - b. CFL or LED electronic ballasts: 0-600 watts at 120/230/277 VAC, 50/60 Hz.
 - c. 1/6 hp at 120/230/277 VAC, 50/60 Hz.
 4. Settings:
 - a. Reach Setting: Adjustable from 25 percent to 100 percent.
 - b. Light Level Setting: 8 - 200 fc (80 - 2000 lux) keeps lights OFF when sufficient daylight is present.
 - c. Dip Switch Settings:
 - 1) Manual ON or Automatic ON option.
 - 2) Walk Through Mode: Switch the load OFF in 3 minutes if no additional detection occurs after the first 30 seconds.
 - 3) Audible Alert: Provides an audible warning that the load will shut-OFF in 10 seconds unless additional motion is detected
 - 4) Visible Alert: Provides a momentary OFF/ON blink, warning that the load will shut OFF in 10 seconds unless additional motion is detected
 - d. Time Setting: IQ/Test, 5, 15, 30 minutes.
 - 1) IQ Mode: Dynamically adjusts the 'ON' time delay by learning individual room occupancy.
 - 2) Test Mode: Time delay defaults to 5 seconds and all loads are switched on/off by motion detection. After 5 minutes the time delay reverts to the IQ Mode.
 - e. Service mode: Deactivates the automated functions of the sensor and the load is only manually controlled using the ON/OFF button.
 5. Switching: Performed at, or close to the zero-cross of the AC waveform in order to improve relay performance
 6. Switch Link: Allows communication of sensors for 2-way, 3-way, and 4-way switching.
 7. Real-time motion indicator LED: Visible from the front of unit while in test mode.
 8. Operating Temperature: 32 deg F to 104 deg F (0 deg C to 40 deg C).
 9. Ultrasonic Coverage at 4 feet (1.2 m) Mounting Height: 180 degree coverage

pattern.

- a. Minor Motion: Maximum 18 by 12 feet (8 by 8 m) or 216 sf (64 sm).
 - b. Radially: Maximum 24 feet (7 m) or 904 sf (77 sm).
 - c. Tangentially: Maximum 24 feet (70 m) or 904 sf (77 sm).
10. Dimensions: 4.13 by 1.74 by 1.78 inches (105 by 44.1 by 45.1 mm).
 11. Warranty: 5 years.
 12. Certifications: C-UL-US Listed, RoHS compliant, California Compliant.

2.12 DUALTECH WALL SWITCH OCCUPANCY SENSORS

A. STEINEL DT WLS 1-[W][LA] [BK][GY]: Line voltage, single relay, PIR and ultrasonic wall switch occupancy sensor.

1. Voltage: 120/230/277 VAC, 50/60 Hz.
2. Mounting: Single-gang NEMA-style switch box (standard switch box) and decorator-style wall plate by others.
3. Load Rating:
 - a. Tungsten, magnetic or electronic ballast: 0-800 watts at 120/230/277 VAC, 50/60 Hz.
 - b. CFL or LED electronic ballasts: 0-600 watts at 120/230/277 VAC, 50/60 Hz.
 - c. 1/6 hp at 120/230/277 VAC, 50/60 Hz.
4. Settings:
 - a. Reach Setting: Adjustable from 25 percent to 100 percent.
 - b. Light Level Setting: 8 - 200 fc (80 - 2000 lux) keeps lights OFF when sufficient daylight is present.
 - c. Dip Switch Settings:
 - 1) Manual ON or Automatic ON option.
 - 2) Walk Through Mode: Switch the load OFF in 3 minutes if no additional detection occurs after the first 30 seconds.
 - 3) Audible Alert: Provides an audible warning that the load will shut-OFF in 10 seconds unless additional motion is detected
 - 4) Visible Alert: Provides a momentary OFF/ON blink, warning that the load will shut OFF in 10 seconds unless additional motion is detected
 - d. Time Setting: IQ/Test, 5, 15, 30 minutes.
 - 1) IQ Mode: Dynamically adjusts the 'ON' time delay by learning individual room occupancy.
 - 2) Test Mode: Time delay defaults to 5 seconds and all loads are switched on/off by motion detection. After 5 minutes the time delay reverts to the IQ Mode.

- e. Service Mode: Deactivates the automated functions of the sensor and the load is only manually controlled using the ON/OFF button.
 - f. Trigger Mode (initial, maintain and re-trigger): The end-user can choose which technology will activate the sensor from Off mode (initial), the type of detection that will reset the time delay (maintain), and the type of detection that will cause the sensor to be turned back On immediately after lights turned Off due to lack of motion (re-trigger).
 - g. Factory Default Setting: Detection from both technologies must occur in order to initially activate the lighting. Detection by either technology will maintain lighting on, and detection by either technology will turn lights back on after lights were turned off for 30 seconds or less.
5. Switching: Performed at, or close to the zero-cross of the AC waveform in order to improve relay performance
 6. Switch Link: Allows communication of sensors for 2-way, 3-way, and 4-way switching.
 7. Real-time motion indicator LED: Visible from the front of unit while in test mode.
 8. Operating Temperature: 32 deg F to 104 deg F (0 deg C to 40 deg C).
 9. Ultrasonic Coverage at 4 feet (1.2 m) Mounting Height: 180 degree coverage pattern.
 - a. Minor Motion: Maximum 18 by 12 feet (8 by 8 m) or 216 sf (64 sm).
 - b. Radially: Maximum 24 feet (7 m) or 904 sf (77 sm).
 - c. Tangentially: Maximum 24 feet (70 m) or 904 sf (77 sm).
 10. PIR Coverage at 4 feet (1.2 m) Mounting Height: 180 degree coverage pattern.
 - a. Minor Motion: Maximum 21 by 18 feet (6.5 by 5.5 m) or 378 sf (36 sm).
 - b. Radially: Maximum 24 feet (7 m) or 904 sf (77 sm).
 - c. Tangentially: Maximum 54 feet (20 m) or 4,500 sf (628 sm).
 11. Dimensions: 4.13 by 1.74 by 1.78 inches (105 by 44.1 by 45.1 mm).
 12. Warranty: 5 years.
 13. Certifications: C-UL-US Listed, RoHS compliant, California Compliant.

B. STEINEL DT WLS 2-[W] [LA] [BK][GY]: Line voltage, dual relay, PIR and ultrasonic wall switch occupancy sensor.

1. Voltage: 120/230/277 VAC, 50/60 Hz.
2. Mounting: Single-gang NEMA-style switch box (standard switch box) and decorator-style wall plate by others.
3. Load Rating:
 - a. Tungsten, magnetic or electronic ballast: 0-800 watts at 120/230/277 VAC, 50/60 Hz.
 - b. CFL or LED electronic ballasts: 0-600 watts at 120/230/277 VAC, 50/60 Hz.
 - c. 1/6 hp at 120/230/277 VAC, 50/60 Hz.
4. Settings:

- a. Reach Setting: Adjustable from 25 percent to 100 percent.
 - b. Light Level Setting: 8 - 200 fc (80 - 2000 lux) keeps lights OFF when sufficient daylight is present.
 - c. Dip Switch Settings:
 - 1) Manual ON or Automatic ON option.
 - 2) Walk Through Mode: Switch the load OFF in 3 minutes if no additional detection occurs after the first 30 seconds.
 - 3) Audible Alert: Provides an audible warning that the load will shut-OFF in 10 seconds unless additional motion is detected
 - 4) Visible Alert: Provides a momentary OFF/ON blink, warning that the load will shut OFF in 10 seconds unless additional motion is detected
 - d. Time Setting: IQ/Test, 5, 15, 30 minutes.
 - 1) IQ Mode: Dynamically adjusts the 'ON' time delay by learning individual room occupancy.
 - 2) Test Mode: Time delay defaults to 5 seconds and all loads are switched on/off by motion detection. After 5 minutes the time delay reverts to the IQ Mode.
 - e. Service mode: Deactivates the automated functions of the sensor and the load is only manually controlled using the ON/OFF button.
 - f. Trigger Mode (initial, maintain and re-trigger): The end-user can choose which technology will activate the sensor from Off mode (initial), the type of detection that will reset the time delay (maintain), and the type of detection that will cause the sensor to be turned back On immediately after lights turned Off due to lack of motion (re-trigger).
 - g. Factory Default Setting: Detection from both technologies must occur in order to initially activate the lighting. Detection by either technology will maintain lighting on, and detection by either technology will turn lights back on after lights were turned off for 30 seconds or less.
5. Switching: Performed at, or close to the zero-cross of the AC waveform in order to improve relay performance
 6. Switch Link: Allows communication of sensors for 2-way, 3-way, and 4-way switching.
 7. Real-time motion indicator LED: Visible from the front of unit while in test mode.
 8. Operating Temperature: 32 deg F to 104 deg F (0 deg C to 40 deg C).
 9. Ultrasonic Coverage at 4 feet (1.2 m) Mounting Height: 180 degree coverage pattern.
 - a. Minor Motion: Maximum 18 by 12 feet (8 by 8 m) or 216 sf (64 sm).
 - b. Radially: Maximum 24 feet (7 m) or 904 sf (77 sm).
 - c. Tangentially: Maximum 24 feet (70 m) or 904 sf (77 sm).
 10. PIR Coverage at 4 feet (1.2 m) Mounting Height: 180 degree coverage pattern.
 - a. Minor Motion: Maximum 21 by 18 feet (6.5 by 5.5 m) or 378 sf (36 sm).

- b. Radially: Maximum 24 feet (7 m) or 904 sf (77 sm).
 - c. Tangentially: Maximum 54 feet (20 m) or 4,500 sf (628 sm).
11. Dimensions: 4.13 by 1.74 by 1.78 inches (105 by 44.1 by 45.1 mm).
 12. Warranty: 5 years.
 13. Certifications: C-UL-US Listed, RoHS compliant, California Compliant.

2.13 PASSIVE INFARED WALL SWITCH VACANCY SENSORS

- A. STEINEL IR VS 1-[W][LA][BK][GY]: Line voltage, single relay, Passive Infrared (PIR) wall switch vacancy (manual on only) sensor intended to control lighting in commercial spaces.
1. Voltage: 120/230/277 VAC, 50/60 Hz.
 2. Mounting: Single-gang NEMA-style switch box (standard switch box) and decorator-style wall plate by others.
 3. Load Rating:
 - a. Tungsten, magnetic or electronic ballast: 0-800 watts at 120/230/277 VAC, 50/60 Hz.
 - b. CFL or LED electronic ballasts: 0-600 watts at 120/230/277 VAC, 50/60 Hz.
 - c. 1/6 hp at 120/230/277 VAC, 50/60 Hz.
 4. Dip Switch Settings:
 - a. Walk Through Mode: Switch the load OFF in 3 minutes if no additional detection occurs after the first 30 seconds.
 - b. Audible Alert: Provides an audible warning that the load will shut-OFF in 10 seconds unless additional motion is detected
 - c. Visible Alert: Provides a momentary OFF/ON blink, warning that the load will shut OFF in 10 seconds unless additional motion is detected
 5. Time Setting: IQ/Test, 5, 15, 30 minutes.
 - a. IQ Mode: Dynamically adjusts the 'ON' time delay by learning individual room occupancy.
 - b. Test Mode: Time delay defaults to 5 seconds and all loads are switched on/off by motion detection. After 5 minutes the time delay reverts to the IQ Mode.
 6. Service mode: Deactivates the automated functions of the sensor and the load is only manually controlled using the ON/OFF button.
 7. Switching: Performed at, or close to the zero-cross of the AC waveform in order to improve relay performance
 8. Switch Link: Allows communication of sensors for 2-way, 3-way, and 4-way switching.
 9. Real-time motion indicator LED: Visible from the front of unit while in test mode.
 10. Operating Temperature: 32 deg F to 104 deg F (0 deg C to 40 deg C).

11. PIR Coverage at 4 feet (1.2 m) Mounting Height: 180 degree coverage pattern.
 - a. Minor Motion: Maximum 21 by 18 feet (6.5 by 5.5 m) or 378 sf (36 sm).
 - b. Radially: Maximum 24 feet (7 m) or 904 sf (77 sm).
 - c. Tangentially: Maximum 54 feet (20 m) or 4,500 sf (628 sm).
 12. Dimensions: 4.13 by 1.74 by 1.78 inches (105 by 44.1 by 45.1 mm).
 13. Warranty: 5 years.
 14. Certifications: C-UL-US Listed, RoHS compliant, California Compliant.
- B. STEINEL IR VS 2-[W][LA] [BK] [GY]: Line voltage, two relay, Passive Infrared (PIR) wall switch vacancy (manual on only) sensor intended to control lighting in commercial spaces.
1. Voltage: 120/230/277 VAC, 50/60 Hz.
 2. Mounting: Single-gang NEMA-style switch box (standard switch box) and decorator-style wall plate by others.
 3. Load Rating:
 - a. Tungsten, magnetic or electronic ballast: 0-800 watts at 120/230/277 VAC, 50/60 Hz.
 - b. CFL or LED electronic ballasts: 0-600 watts at 120/230/277 VAC, 50/60 Hz.
 - c. 1/6 hp at 120/230/277 VAC, 50/60 Hz.
 4. Dip Switch Settings:
 - a. Walk Through Mode: Switch the load OFF in 3 minutes if no additional detection occurs after the first 30 seconds.
 - b. Audible Alert: Provides an audible warning that the load will shut-OFF in 10 seconds unless additional motion is detected
 - c. Visible Alert: Provides a momentary OFF/ON blink, warning that the load will shut OFF in 10 seconds unless additional motion is detected
 5. Time Setting: IQ/Test, 5, 15, 30 minutes.
 - a. IQ Mode: Dynamically adjusts the 'ON' time delay by learning individual room occupancy.
 - b. Test Mode: Time delay defaults to 5 seconds and all loads are switched on/off by motion detection. After 5 minutes the time delay reverts to the IQ Mode.
 6. Service mode: Deactivates the automated functions of the sensor and the load is only manually controlled using the ON/OFF button.
 7. Switching: Performed at, or close to the zero-cross of the AC waveform in order to improve relay performance
 8. Switch Link: Allows communication of sensors for 2-way, 3-way, and 4-way switching.
 9. Real-time motion indicator LED: Visible from the front of unit while in test mode.
 10. Operating Temperature: 32 deg F to 104 deg F (0 deg C to 40 deg C).

11. PIR Coverage at 4 feet (1.2 m) Mounting Height: 180 degree coverage pattern.
 - a. Minor Motion: Maximum 21 by 18 feet (6.5 by 5.5 m) or 378 sf (36 sm).
 - b. Radially: Maximum 24 feet (7 m) or 904 sf (77 sm).
 - c. Tangentially: Maximum 54 feet (20 m) or 4,500 sf (628 sm).
12. Dimensions: 4.13 by 1.74 by 1.78 inches (105 by 44.1 by 45.1 mm).
13. Warranty: 5 years.
14. Certifications: C-UL-US Listed, RoHS compliant, California Compliant.

2.14 ULTRASONIC WALL SWITCH VACANCY SENSORS

- A. STEINEL US VS 1-[W][LA][BK][GY]: Line voltage, single relay, Ultrasonic wall switch vacancy (manual on only) sensor.
 1. Voltage: 120/230/277 VAC, 50/60 Hz.
 2. Mounting: Single-gang NEMA-style switch box (standard switch box) and decorator-style wall plate by others.
 3. Load Rating:
 - a. Tungsten, magnetic or electronic ballast: 0-800 watts at 120/230/277 VAC, 50/60 Hz.
 - b. CFL or LED electronic ballasts: 0-600 watts at 120/230/277 VAC, 50/60 Hz.
 - c. 1/6 hp at 120/230/277 VAC, 50/60 Hz.
 4. Reach Setting: Adjustable from 25 percent to 100 percent.
 5. Dip Switch Settings:
 - a. Walk Through Mode: Switch the load OFF in 3 minutes if no additional detection occurs after the first 30 seconds.
 - b. Audible Alert: Provides an audible warning that the load will shut-OFF in 10 seconds unless additional motion is detected
 - c. Visible Alert: Provides a momentary OFF/ON blink, warning that the load will shut OFF in 10 seconds unless additional motion is detected
 6. Time Setting: IQ/Test, 5, 15, 30 minutes.
 - a. IQ Mode: Dynamically adjusts the 'ON' time delay by learning individual room occupancy.
 - b. Test Mode: Time delay defaults to 5 seconds and all loads are switched on/off by motion detection. After 5 minutes the time delay reverts to the IQ Mode.
 7. Service mode: Deactivates the automated functions of the sensor and the load is only manually controlled using the ON/OFF button.
 8. Switching: Performed at, or close to the zero-cross of the AC waveform in order to improve relay performance
 9. Switch Link: Allows communication of sensors for 2-way, 3-way, and 4-way switching.

10. Real-time motion indicator LED: Visible from the front of unit while in test mode.
 11. Operating Temperature: 32 deg F to 104 deg F (0 deg C to 40 deg C).
 12. Ultrasonic Coverage at 4 feet (1.2 m) Mounting Height: 180 degree coverage pattern.
 - a. Minor Motion: Maximum 18 by 12 feet (8 by 8 m) or 216 sf (64 sm).
 - b. Radially: Maximum 24 feet (7 m) or 904 sf (77 sm).
 - c. Tangentially: Maximum 24 feet (70 m) or 904 sf (77 sm).
 13. Dimensions: 4.13 by 1.74 by 1.78 inches (105 by 44.1 by 45.1 mm).
 14. Warranty: 5 years.
 15. Certifications: C-UL-US Listed, RoHS compliant, California Compliant.
- B. STEINEL US VS 2-[W][LA][BK][GY]: Line voltage, two relay, Ultrasonic wall switch vacancy (manual on only) sensor.
1. Voltage: 120/230/277 VAC, 50/60 Hz.
 2. Mounting: Single-gang NEMA-style switch box (standard switch box) and decorator-style wall plate by others.
 3. Load Rating:
 - a. Tungsten, magnetic or electronic ballast: 0-800 watts at 120/230/277 VAC, 50/60 Hz.
 - b. CFL or LED electronic ballasts: 0-600 watts at 120/230/277 VAC, 50/60 Hz.
 - c. 1/6 hp at 120/230/277 VAC, 50/60 Hz.
 4. Reach Setting: Adjustable from 25 percent to 100 percent.
 5. Dip Switch Settings:
 - a. Walk Through Mode: Switch the load OFF in 3 minutes if no additional detection occurs after the first 30 seconds.
 - b. Audible Alert: Provides an audible warning that the load will shut-OFF in 10 seconds unless additional motion is detected
 - c. Visible Alert: Provides a momentary OFF/ON blink, warning that the load will shut OFF in 10 seconds unless additional motion is detected
 6. Time Setting: IQ/Test, 5, 15, 30 minutes.
 - a. IQ Mode: Dynamically adjusts the 'ON' time delay by learning individual room occupancy.
 - b. Test Mode: Time delay defaults to 5 seconds and all loads are switched on/off by motion detection. After 5 minutes the time delay reverts to the IQ Mode.
 7. Service mode: Deactivates the automated functions of the sensor and the load is only manually controlled using the ON/OFF button.
 8. Switching: Performed at, or close to the zero-cross of the AC waveform in order to improve relay performance
 9. Switch Link: Allows communication of sensors for 2-way, 3-way, and 4-way

- switching.
10. Real-time motion indicator LED: Visible from the front of unit while in test mode.
 11. Operating Temperature: 32 deg F to 104 deg F (0 deg C to 40 deg C).
 12. Ultrasonic Coverage at 4 feet (1.2 m) Mounting Height: 180 degree coverage pattern.
 - a. Minor Motion: Maximum 18 by 12 feet (8 by 8 m) or 216 sf (64 sm).
 - b. Radially: Maximum 24 feet (7 m) or 904 sf (77 sm).
 - c. Tangentially: Maximum 24 feet (70 m) or 904 sf (77 sm).
 13. Dimensions: 4.13 by 1.74 by 1.78 inches (105 by 44.1 by 45.1 mm).
 14. Warranty: 5 years.
 15. Certifications: C-UL-US Listed, RoHS compliant, California Compliant.

2.15 DUALTECH WALL SWITCH VACANCY SENSORS

- A. STEINEL DT VS 1-[W][LA][BK][GY]: Line voltage, single relay, PIR and ultrasonic wall switch vacancy (manual on only) sensor.
 1. Voltage: 120/230/277 VAC, 50/60 Hz.
 2. Mounting: Single-gang NEMA-style switch box (standard switch box) and decorator-style wall plate by others.
 3. Load Rating:
 - a. Tungsten, magnetic or electronic ballast: 0-800 watts at 120/230/277 VAC, 50/60 Hz.
 - b. CFL or LED electronic ballasts: 0-600 watts at 120/230/277 VAC, 50/60 Hz.
 - c. 1/6 hp at 120/230/277 VAC, 50/60 Hz.
 4. Reach Setting: Adjustable from 25 percent to 100 percent.
 5. Dip Switch Settings:
 - a. Walk Through Mode: Switch the load OFF in 3 minutes if no additional detection occurs after the first 30 seconds.
 - b. Audible Alert: Provides an audible warning that the load will shut-OFF in 10 seconds unless additional motion is detected
 - c. Visible Alert: Provides a momentary OFF/ON blink, warning that the load will shut OFF in 10 seconds unless additional motion is detected
 6. Time Setting: IQ/Test, 5, 15, 30 minutes.
 - a. IQ Mode: Dynamically adjusts the 'ON' time delay by learning individual room occupancy.
 - b. Test Mode: Time delay defaults to 5 seconds and all loads are switched on/off by motion detection. After 5 minutes the time delay reverts to the IQ Mode.
 7. Service mode: Deactivates the automated functions of the sensor and the load is

only manually controlled using the ON/OFF button.

8. Trigger Mode (maintain and re-trigger): The end-user can choose which technology type of detection that will reset the time delay (maintain), and the type of detection that will cause the sensor to be turned back On immediately after lights turned Off due to lack of motion (re-trigger).
 - a. Factory Default Setting: Detection by either technology will maintain lighting on, and detection by either technology will turn lights back on after lights were turned off for 30 seconds or less.
 9. Switching: Performed at, or close to the zero-cross of the AC waveform in order to improve relay performance
 10. Switch Link: Allows communication of sensors for 2-way, 3-way, and 4-way switching.
 11. Real-time motion indicator LED: Visible from the front of unit while in test mode.
 12. Operating Temperature: 32 deg F to 104 deg F (0 deg C to 40 deg C).
 13. Ultrasonic Coverage at 4 feet (1.2 m) Mounting Height:
 - a. Minor Motion: Maximum 18 by 12 feet (8 by 8 m) or 216 sf (64 sm).
 - b. Radially: Maximum 24 feet (7 m) or 904 sf (77 sm).
 - c. Tangentially: Maximum 24 feet (70 m) or 904 sf (77 sm).
 14. PIR Coverage at 4 feet (1.2 m) Mounting Height:
 - a. Minor Motion: Maximum 21 by 18 feet (6.5 by 5.5 m) or 378 sf (36 sm).
 - b. Radially: Maximum 24 feet (7 m) or 904 sf (77 sm).
 - c. Tangentially: Maximum 54 feet (20 m) or 4,500 sf (628 sm).
 15. Dimensions: 4.13 by 1.74 by 1.78 inches (105 by 44.1 by 45.1 mm).
 16. Warranty: 5 years.
 17. Certifications: C-UL-US Listed, RoHS compliant, California Compliant.
- B. STEINEL DT VS 2-[W][LA] [BK][GY]: Line voltage, dual relay, PIR and ultrasonic wall switch vacancy (manual on only) sensor.
1. Voltage: 120/230/277 VAC, 50/60 Hz.
 2. Mounting: Single-gang NEMA-style switch box (standard switch box) and decorator-style wall plate by others.
 3. Load Rating:
 - a. Tungsten, magnetic or electronic ballast: 0-800 watts at 120/230/277 VAC, 50/60 Hz.
 - b. CFL or LED electronic ballasts: 0-600 watts at 120/230/277 VAC, 50/60 Hz.
 - c. 1/6 hp at 120/230/277 VAC, 50/60 Hz.
 4. Reach Setting: Adjustable from 25 percent to 100 percent.
 5. Dip Switch Settings:

- a. Walk Through Mode: Switch the load OFF in 3 minutes if no additional detection occurs after the first 30 seconds.
 - b. Audible Alert: Provides an audible warning that the load will shut-OFF in 10 seconds unless additional motion is detected
 - c. Visible Alert: Provides a momentary OFF/ON blink, warning that the load will shut OFF in 10 seconds unless additional motion is detected
6. Time Setting: IQ/Test, 5, 15, 30 minutes.
- a. IQ Mode: Dynamically adjusts the 'ON' time delay by learning individual room occupancy.
 - b. Test Mode: Time delay defaults to 5 seconds and all loads are switched on/off by motion detection. After 5 minutes the time delay reverts to the IQ Mode.
7. Service mode: Deactivates the automated functions of the sensor and the load is only manually controlled using the ON/OFF button.
8. Trigger Mode (maintain and re-trigger): The end-user can choose which technology type of detection that will reset the time delay (maintain), and the type of detection that will cause the sensor to be turned back On immediately after lights turned Off due to lack of motion (re-trigger).
- a. Factory Default Setting: Detection by either technology will maintain lighting on, and detection by either technology will turn lights back on after lights were turned off for 30 seconds or less.
9. Switching: Performed at, or close to the zero-cross of the AC waveform in order to improve relay performance
10. Switch Link: Allows communication of sensors for 2-way, 3-way, and 4-way switching.
11. Real-time motion indicator LED: Visible from the front of unit while in test mode.
12. Operating Temperature: 32 deg F to 104 deg F (0 deg C to 40 deg C).
13. Ultrasonic Coverage at 4 feet (1.2 m) Mounting Height:
- a. Minor Motion: Maximum 18 by 12 feet (8 by 8 m) or 216 sf (64 sm).
 - b. Radially: Maximum 24 feet (7 m) or 904 sf (77 sm).
 - c. Tangentially: Maximum 24 feet (7 m) or 904 sf (77 sm).
14. PIR Coverage at 4 feet (1.2 m) Mounting Height:
- a. Minor Motion: Maximum 21 by 18 feet (6.5 by 5.5 m) or 378 sf (36 sm).
 - b. Radially: Maximum 24 feet (7 m) or 904 sf (77 sm).
 - c. Tangentially: Maximum 54 feet (20 m) or 4,500 sf (628 sm).
15. Dimensions: 4.13 by 1.74 by 1.78 inches (105 by 44.1 by 45.1 mm).
16. Warranty: 5 years.
17. Certifications: C-UL-US Listed, RoHS compliant, California Compliant.

2.16 PASSIVE INFRARED OCUPANCY SENSORS

A. STEINEL IS 3360-24: Ceiling Mount, Passive infrared, low voltage, 360° occupancy sensor.

1. Voltage: **24 VDC (12 mA)**.
2. Mounting: Ceiling.
3. Settings:
 - a. Time Delay Setting: 5 seconds to 15 minutes.
 - b. Light Level Setting: **.2-200 fc (2-2000 lux)**, holds lights when sufficient daylight is present
 - c. Teach Mode: Automatically sets the daylight level.
 - d. Hold off Light level: Lights remain off during daylight regardless of occupancy.
4. Operating Temperature: **-4 deg F to 122 deg F (-20 deg C to 50 deg C)**.
5. Coverage:
 - a. Horizontal: 360 degrees.
 - b. Vertical: 180 degrees.
 - c. Radial reach: 25 feet maximum.
 - d. Tangential reach: 130 feet maximum.
6. Shroud: Internally mounted hard plastic component for adjusting sensor coverage.
7. LED motion indicator.
8. Automatic temperature adjustment.
9. Sensors: 3 dual element infrared pyroelectric detectors.
10. Lens Design: 1416 switching zones, 11 detection levels.
11. Dimensions: **3.74 by 3.74 by 2.56 inches (95 by 95 by 65 mm)**.
12. Color: White.
13. Warranty: 5 years.
14. Certifications: C-UL-US Listed, RoHS Compliant, CA Compliant.
15. Colored Cover: **[ISDC-B, Black][ISDC-I, Inox (Silver)]**.

B. STEINEL IS 3180-24: Wall Mount, Passive infrared, low voltage, 180 degree, occupancy sensor.

1. Voltage: **24 VDC (12 mA)**.
2. Mounting: Wall.
3. Settings:
 - a. Time Delay Setting: 5 seconds to 15 minutes.
 - b. Light Level Setting: **.2-200 fc (2-2000 lux)**, holds lights when sufficient daylight is present
 - c. Teach Mode: Automatically sets the daylight level.
 - d. Hold off Light level: Lights remain off during daylight regardless of occupancy.
4. Operating Temperature: **-4 deg F to 122 deg F (-20 deg C to 50 deg C)**.
5. Coverage:

- a. Horizontal: 180 degrees.
 - b. Vertical: 90 degrees.
 - c. Radial reach: 42 feet maximum.
 - d. Tangential reach: 65 feet maximum.
6. Shroud: Internally mounted hard plastic component for adjusting sensor coverage.
 7. LED motion indicator.
 8. Automatic temperature adjustment.
 9. Sensors: 2 dual element infrared pyroelectric detectors.
 10. Lens Design: 448 switching zones, 7 detection levels.
 11. Dimensions: 3.74 by 3.74 by 2.56 inches (95 by 95 by 65 mm).
 12. Color: White.
 13. Warranty: 5 years.
 14. Certifications: C-UL-US Listed, RoHS Compliant, CA Compliant.
 15. Corner Mounting Bracket: [CWB-B, Black][CWB-W, White].
 16. Colored Cover: [ISDC-B, Black][ISDC-I, Inox (Silver)].
- C. STEINEL IS 345-24: Ceiling mount, passive infrared, low voltage, occupancy sensor for long hallways or aisles.
1. Voltage: 24 VDC (12 mA).
 2. Mounting: Ceiling.
 3. Settings:
 - a. Time Delay Setting: 5 seconds to 15 minutes.
 - b. Light Level Setting: .2-200 fc (2-2000 lux), holds lights when sufficient daylight is present
 - c. Teach Mode: Automatically sets the daylight level.
 - d. Hold off Light level: Lights remain off during daylight regardless of occupancy.
 4. Operating Temperature: -4 deg F to 122 deg F (-20 deg C to 50 deg C).
 5. Coverage:
 - a. Horizontal: 180 degrees.
 - b. Vertical: 45 degrees.
 - c. Radial reach: 40 by 13 feet maximum.
 - d. Tangential reach: 65 by 13 feet maximum.
 6. Shroud: Internally mounted hard plastic component for adjusting sensor coverage.
 7. LED motion indicator.
 8. Automatic temperature adjustment.
 9. Sensors: 2 dual element infrared pyroelectric detectors.
 10. Lens Design: 280 switching zones, 5 detection levels.
 11. Dimensions: 3.74 by 3.74 by 2.56 inches (95 by 95 by 65 mm).
 12. Color: White.
 13. Warranty: 5 years.
 14. Certifications: C-UL-US Listed, RoHS Compliant, CA Compliant.
 15. Colored Cover: [ISDC-B, Black][ISDC-I, Inox (Silver)].

- D. STEINEL IS D360-24: Recessed Ceiling Mount, passive infrared, low voltage, 360 degree, occupancy sensor for indoor use.
1. Voltage: 24 VDC (19 mA).
 2. Mounting: Ceiling mounts to standard MR16 fitting frame.
 3. Settings:
 - a. Time Delay Setting: 5 seconds to 20 minutes.
 - b. Light Level Setting: .2-200 fc (2-2000 lux), holds lights when sufficient daylight is present
 - c. Hold off Light level: Lights remain off during daylight regardless of occupancy.
 4. Operating Temperature: -4 deg F to 122 deg F (-20 deg C to 50 deg C).
 5. Coverage: 360 degrees with 180 degrees angle of aperture.
 - a. Radial reach: 13 feet (4 m) maximum.
 - b. Tangential reach: 26 feet (8 m) maximum.
 6. Shroud: Internally mounted hard plastic component for adjusting sensor coverage.
 7. Automatic temperature adjustment.
 8. Sensors: 3 dual element infrared pyroelectric detectors.
 9. Lens Design: 720 switching zones, 10 detection levels.
 10. Dimensions: 3.23 by 2.01 inches (82 by 51 mm).
 11. Color: White.
 12. Warranty: 5 years.
 13. Certifications: C-UL-US Listed, RoHS Compliant, UL 2043 Plenum Rated, CA Compliant.

2.17 POWER PACKS

- A. STEINEL TR 100: 20A relay and Class 2 output power supply suitable for parallel interconnection for low voltage occupancy sensors and control devices.
1. Voltage: 120/230/277 VAC, 50/60 Hz.
 2. Output: 24 VDC; +/- 5 percent (250 mA).
 3. Load:
 - a. Ballast and incandescent load: 20 A at 120/230/277 VAC 50/60 Hz.
 - b. Receptacle load: 1 hp at 120-240 VAC, 50/60 Hz, 15 A at 120 VAC, 50/60 Hz.
 4. Operating Temperature: -4 deg F to 122 deg F (-20 deg C to 50 deg C).
 5. Wiring: Complies with UL 1659, 250 degree C, 600V insulation.
 - a. 18 AWG: Black for Line and White for Neutral.
 - b. 12 AWG: two Red wires for normally open dry contact from the 20A relay.
 - c. 22 AWG: 4 low voltage conductors: Red (+24VDC), Black (-24VDC), Blue (Control Input), Gray (Momentary Switch Input).

6. LED status indicator.
 7. Settings:
 - a. Mode switch: Manual ON or automatic ON operation.
 8. Low Voltage Momentary Switch Input: Allows for manual control via a 2 wire momentary switch in automatic or manual mode.
 9. Switching: Performed at, or close to, the zero cross of the AC waveform in order to improve relay performance.
 10. Dimensions: 2.4 by 3.2 by 1.5 inches (60 by 81 by 39 mm).
 11. Threaded Nipple Dimensions: 0.83 by 0.83 inches (21 by 21 mm).
 12. Warranty: 5 years.
 13. Certifications: C-UL-US Listed, RoHS Compliant, UL 2043 Plenum Rated.
- B. STEINEL TR 150: 20A relay and Class 2 output power supply with an isolated relay suitable for parallel interconnection for low voltage occupancy sensors and control devices.
1. Voltage: 120/230/277 VAC, 50/60 Hz.
 2. Output: 24 VDC; +/- 5 percent (250 mA).
 3. Load:
 - a. Ballast and incandescent load: 20 A at 120/230/277 VAC 50/60 Hz.
 - b. Receptacle load: 1 hp at 120-240 VAC, 50/60 Hz, 15 A at 120 VAC, 50/60 Hz.
 4. LED status indicator.
 5. Settings:
 - a. Mode switch: Manual ON or automatic ON operation.
 6. Low Voltage Momentary Switch Input: Allows for manual control via a 2 wire momentary switch in automatic or manual mode.
 7. Force On and Force Off Control Inputs: Allow for integration with a building automation system for time of day control or load shed applications.
 8. Switching: Performed at, or close to, the zero cross of the AC waveform in order to improve relay performance.
 9. Isolated Relay: Single pole, double-throw with NO, NC and common outputs; rated 1 A at 30 VAC/VDC.
 10. Operating Temperature: -4 deg F to 122 deg F (-20 deg C to 50 deg C).
 11. Wiring: Complies with UL 1659, 250 degree C, 600V insulation.
 - a. 18 AWG: Black for Line and White for Neutral.
 - b. 12 AWG: Two Red wires for normally open dry contact from the 20A relay.
 - c. 22 AWG: 9 low voltage conductors: Red (+24VDC), Black (-24 VDC), Blue (Control Input), Orange (Force On), Brown (Force Off), Gray (Momentary Switch Input), Yellow (Isolated Relay Common), Yellow with Red Stripes (Normally Open Isolated Relay), Yellow with Black Stripes (Normally Closed Isolated Relay).
 12. Dimensions: 2.4 by 3.2 by 1.5 inches (60 by 81 by 39 mm).

13. Threaded Nipple Dimensions: 0.83 by 0.83 inches (21 by 21 mm).
 14. Warranty: 5 years.
 15. Certifications: C-UL-US Listed, RoHS Compliant, UL 2043 Plenum Rated.
- C. STEINEL TR 100-A: Automatic ON only, 20A relay and Class 2 output power supply suitable for parallel interconnection for low voltage occupancy sensors and control devices.
1. Voltage: 120/230/277 VAC, 50/60 Hz.
 2. Output: 24 VDC; +/- 5 percent (250 mA).
 3. Load:
 - a. Ballast and incandescent load: 20 A at 120/230/277 VAC 50/60 Hz.
 - b. Receptacle load: 1 hp at 120-240 VAC, 50/60 Hz, 15 A at 120 VAC, 50/60 Hz.
 4. Operating Temperature: -4 deg F to 122 deg F (-20 deg C to 50 deg C).
 5. Wiring: Complies with UL 1659, 250 degree C, 600V insulation.
 - a. 18 AWG: Black for Line and White for Neutral.
 - b. 12 AWG: Two Red wires for normally open dry contact from the 20A relay.
 - c. 22 AWG: 4 low voltage conductors: Red (+24VDC), Black (-24VDC), Blue (Control Input), Gray (Momentary Switch Input).
 6. LED status indicator.
 7. Low Voltage Momentary Switch Input: Allows for manual control via a 2 wire momentary switch.
 8. Switching: Performed at, or close to, the zero cross of the AC waveform in order to improve relay performance.
 9. Dimensions: 2.4 by 3.2 by 1.5 inches (60 by 81 by 39 mm).
 10. Threaded Nipple Dimensions: 0.83 by 0.83 inches (21 by 21 mm).
 11. Warranty: 5 years.
 12. Certifications: C-UL-US Listed, RoHS Compliant, UL 2043 Plenum Rated.
- D. STEINEL TR 150-A: Automatic ON only, 20A relay and Class 2 output power supply with an isolated relay suitable for parallel interconnection for low voltage occupancy sensors and control devices.
1. Voltage: 120/230/277 VAC, 50/60 Hz.
 2. Output: 24 VDC; +/- 5 percent (250 mA).
 3. Load:
 - a. Ballast and incandescent load: 20 A at 120/230/277 VAC 50/60 Hz.
 - b. Receptacle load: 1 hp at 120-240 VAC, 50/60 Hz, 15 A at 120 VAC, 50/60 Hz.
 4. LED status indicator.
 5. Low Voltage Momentary Switch Input: Allows for manual control via a 2 wire momentary switch.
 6. Force On and Force Off Control Inputs: Allow for integration with a building automation system for time of day control or load shed applications.
 7. Switching: Performed at, or close to, the zero cross of the AC waveform in order to improve relay performance.

8. Isolated Relay: Single pole, double-throw with NO, NC and common outputs; rated 1 A at 30 VAC/VDC.
 9. Operating Temperature: -4 deg F to 122 deg F (-20 deg C to 50 deg C).
 10. Dimensions: 2.4 by 3.2 by 1.5 inches (60 by 81 by 39 mm).
 11. Wiring: Complies with UL 1659, 250 degree C, 600V insulation.
 - a. 18 AWG: Black for Line and White for Neutral.
 - b. 12 AWG: Two Red wires for normally open dry contact from the 20A relay.
 - c. 22 AWG: 9 low voltage conductors: Red (+24VDC), Black (-24 VDC), Blue (Control Input), Orange (Force On), Brown (Force Off), Gray (Momentary Switch Input), Yellow (Isolated Relay Common), Yellow with Red Stripes (Normally Open Isolated Relay), Yellow with Black Stripes (Normally Closed Isolated Relay).
 12. Threaded Nipple Dimensions: 0.83 by 0.83 inches (21 by 21 mm).
 13. Warranty: 5 years.
 14. Certifications: C-UL-US Listed, RoHS Compliant, UL 2043 Plenum Rated.
- E. STEINEL TR 100-M: Manual ON only, 20A relay and Class 2 output power supply suitable for parallel interconnection for low voltage occupancy sensors and control devices.
1. Voltage: 120/230/277 VAC, 50/60 Hz.
 2. Output: 24 VDC; +/- 5 percent (250 mA).
 3. Load:
 - a. Ballast and incandescent load: 20 A at 120/230/277 VAC 50/60 Hz.
 - b. Receptacle load: 1 hp at 120-240 VAC, 50/60 Hz, 15 A at 120 VAC, 50/60 Hz.
 4. Operating Temperature: -4 deg F to 122 deg F (-20 deg C to 50 deg C).
 5. LED status indicator.
 6. Low Voltage Momentary Switch Input: Allows for manual control via a 2 wire momentary switch.
 7. Switching: Performed at, or close to, the zero cross of the AC waveform in order to improve relay performance.
 8. Dimensions: 2.4 by 3.2 by 1.5 inches (60 by 81 by 39 mm).
 9. Wiring: Complies with UL 1659, 250 degree C, 600V insulation.
 - a. 18 AWG: Black for Line and White for Neutral.
 - b. 12 AWG: Two Red wires for normally open dry contact from the 20A relay.
 - c. 22 AWG: 4 low voltage conductors: Red (+24VDC), Black (-24VDC), Blue (Control Input), Gray (Momentary Switch Input).
 10. Threaded Nipple Dimensions: 0.83 by 0.83 inches (21 by 21 mm).
 11. Warranty: 5 years.
 12. Certifications: C-UL-US Listed, RoHS Compliant, UL 2043 Plenum Rated.
- F. STEINEL TR 150-M: Manual ON only, 20A relay and Class 2 output power supply with an isolated relay suitable for parallel interconnection for low voltage occupancy

sensors and control devices.

1. Voltage: 120/230/277 VAC, 50/60 Hz.
2. Output: 24 VDC; +/- 5 percent (250 mA).
3. Load:
 - a. Ballast and incandescent load: 20 A at 120/230/277 VAC 50/60 Hz.
 - b. Receptacle load: 1 hp at 120-240 VAC, 50/60 Hz, 15 A at 120 VAC, 50/60 Hz.
4. LED status indicator.
5. Low Voltage Momentary Switch Input: Allows for manual control via a 2 wire momentary switch.
6. Force On and Force Off Control Inputs: Allow for integration with a building automation system for time of day control or load shed applications.
7. Switching: Performed at, or close to, the zero cross of the AC waveform in order to improve relay performance.
8. Isolated Relay: Single pole, double-throw with NO, NC and common outputs; rated 1 A at 30 VAC/VDC.
9. Operating Temperature: -4 deg F to 122 deg F (-20 deg C to 50 deg C).
10. Dimensions: 2.4 by 3.2 by 1.5 inches (60 by 81 by 39 mm).
11. Wiring: Complies with UL 1659, 250 degree C, 600V insulation.
 - a. 18 AWG: Black for Line and White for Neutral.
 - b. 12 AWG: Two Red wires for normally open dry contact from the 20A relay.
 - c. 22 AWG: 9 low voltage conductors: Red (+24VDC), Black (-24 VDC), Blue (Control Input), Orange (Force On), Brown (Force Off), Gray (Momentary Switch Input), Yellow (Isolated Relay Common), Yellow with Red Stripes (Normally Open Isolated Relay), Yellow with Black Stripes (Normally Closed Isolated Relay).
12. Threaded Nipple Dimensions: 0.83 by 0.83 inches (21 by 21 mm).
13. Warranty: 5 years.
14. Certifications: C-UL-US Listed, RoHS Compliant, UL 2043 Plenum Rated.

2.18 HIGH-BAY SENSORS

- A. STEINEL HBS 300: Passive infrared, line voltage, 360 degree, high bay occupancy sensor.
 1. Voltage: 120/230/277 VAC, 50/60 Hz.
 2. Load Rating:
 - a. 120 VAC: 0-800 watt ballast, tungsten, 1/4 hp.
 - b. 230/277 VAC: 0-1200 watt ballast.
 3. Settings:
 - a. Time Delay Setting: 15 seconds to 30 minutes.
 - b. Lighting Level Setting: .2-200 fc (2-2000 lux) allows lighting to remain off during daylight regardless of occupancy.

4. Switching: Performed at, or close to, the zero-cross of the AC waveform in order to improve relay performance.
5. Environment: IP20 rated.
6. Operating Temperature: **-4 deg F to 122 deg F** (-20 deg C to 50 deg C).
7. Coverage:
 - a. Radial Reach: 360 deg, **22 feet (6.7 m)** maximum.
 - b. Tangential Reach: **60 feet (18.2 m)** maximum.
8. Sensors: 3 dual element infrared pyroelectric detectors.
9. Lens Design: 1416 switching zones.
10. Dimensions: **3.9 by 3.9 by 2.6 inches** (99 by 99 by 66 mm), nipple length **0.62 inches (15.75 mm)**.
11. Mounting: Threaded Nipple.
12. Warranty: 5 years.
13. Certifications: C-UL-US Listed, RoHS Compliant, CA Compliant.
14. Accessories:
 - a. LC3 Standard Lens Cover.
 - b. LC4 Reduced Range Lens Cover.
 - c. LC5 180 degree Half Moon Lens Cover.
 - d. EM1 Extender Module.

B. STEINEL HBS 200: Passive infrared, line voltage, high bay occupancy sensor for aisleway applications.

1. Voltage: 120/230/277 VAC, 50/60 Hz.
2. Load Rating:
 - a. 120 VAC: 0-800 watt ballast, tungsten, 1/4 hp.
 - b. 230/277 VAC: 0-1200 watt ballast.
3. Settings:
 - a. Time Delay Setting: 15 seconds to 30 minutes.
 - b. Lighting Level Setting: **.2-200 fc (2-2000 lux)** allows lighting to remain off during daylight regardless of occupancy.
4. Switching: Performed at, or close to, the zero-cross of the AC waveform in order to improve relay performance.
5. Environment: IP20 rated.
6. Operating Temperature: **-4 deg F to 122 deg F** (-20 deg C to 50 deg C).
7. Coverage: **100 by 13 feet (30.48 by 3.96 m)** linear detection.
8. Sensors: 2 dual element infrared pyroelectric detectors.
9. Lens Design: 104 switching zones.
10. Dimensions: **3.9 by 3.9 by 2.72 inches** (99 by 99 by 69.1 mm), nipple length **0.62 inches (15.75 mm)**.
11. Mounting: Threaded Nipple.
12. Warranty: 5 years.
13. Certifications: C-UL-US Listed, RoHS Compliant, CA Compliant.

14. Accessories:
 - a. LC1 Aisle Starter Lens Cover.
 - b. EM1 Extender Module.

- C. STEINEL HBS 300 (347-480V): Passive infrared, line voltage, 360 degree, high bay occupancy sensor.
 1. Voltage: 347/480 VAC, 60 Hz.
 2. Load Rating: 5A electronic ballast load.
 3. Settings:
 - a. Time Delay Setting: 15 seconds to 30 minutes.
 - b. Lighting Level Setting: .2-200 fc (2-2000 lux) allows lighting to remain off during daylight regardless of occupancy.
 4. Switching: Performed at, or close to, the zero-cross of the AC waveform in order to improve relay performance.
 5. Environment: IP20 rated.
 6. Operating Temperature: -4 deg F to 122 deg F (-20 deg C to 50 deg C).
 7. Coverage:
 - a. Radial Reach: 360 deg, 22 feet (6.7 m) maximum.
 - b. Tangential Reach: 60 feet (18.2 m) maximum.
 8. Sensors: 3 dual element infrared pyroelectric detectors.
 9. Dimensions: 3.9 by 3.9 by 2.6 inches (99 by 99 by 66 mm), nipple length 0.62 inches (15.75 mm).
 10. Mounting: Threaded Nipple.
 11. Warranty: 5 years.
 12. Certifications: C-UL-US Listed, RoHS Compliant, CA Compliant.
 13. Accessories:
 - a. LC3 Standard Lens Cover.
 - b. LC4 Reduced Range Lens Cover.
 - c. LC5 180 degree Half Moon Lens Cover.
 - d. EM1 Extender Module.

- D. STEINEL HBS 200 (347-480V): Passive infrared, line voltage, 360 degree, high bay occupancy sensor for aisleway applications.
 1. Voltage: 347/480 VAC, 60 Hz.
 2. Load Rating: 5A electronic ballast load.
 3. Settings:
 - a. Time Delay Setting: 15 seconds to 30 minutes.
 - b. Lighting Level Setting: .2-200 fc (2-2000 lux) allows lighting to remain off during daylight regardless of occupancy.
 4. Switching: Performed at, or close to, the zero-cross of the AC waveform in order to improve relay performance.

5. Environment: IP20 rated.
6. Operating Temperature: **-4 deg F to 122 deg F** (-20 deg C to 50 deg C).
7. Coverage: **100 by 13 feet** (30.48 by 3.96 m) linear detection.
8. Sensors: 2 dual element infrared pyroelectric detectors.
9. Lens Design: 104 switching zones.
10. Dimensions: **3.9 by 3.9 by 2.72 inches** (99 by 99 by 69.1 mm), nipple length **0.62 inches** (15.75 mm).
11. Mounting: Threaded Nipple.
12. Warranty: 5 years.
13. Certifications: C-UL-US Listed, RoHS Compliant.
14. Accessories:
 - a. LC1 Aisle Starter Lens Cover.
 - b. EM1 Extender Module.

E. STEINEL HBS 300-WL: Passive infrared, line voltage, 360 degree, high bay occupancy sensor for wet locations.

1. Voltage: 120/230/277 VAC, 50/60 Hz.
2. Load Rating:
 - a. 120 VAC: 0-800 watt ballast, tungsten, 1/4 hp.
 - b. 230/277 VAC: 0-1200 watt ballast.
3. Settings:
 - a. Time Delay Setting: 15 seconds to 30 minutes.
 - b. Lighting Level Setting: **.2-200 fc** (2-2000 lux) allows lighting to remain off during daylight regardless of occupancy.
4. Switching: Performed at, or close to, the zero-cross of the AC waveform in order to improve relay performance.
5. Environment: IP65 rated.
6. Operating Temperature: **-4 deg F to 122 deg F** (-20 deg C to 50 deg C).
7. Coverage:
 - a. Radial Reach: 360 deg, **22 feet** (6.7 m) maximum.
 - b. Tangential Reach: **60 feet** (18.2 m) maximum.
8. Sensors: 3 dual element infrared pyroelectric detectors.
9. Lens Design: 1416 switching zones.
10. Dimensions: **5.54 by 5.54 by 2.86 inches** (115.3 by 115.3 by 72.7 mm), nipple length **0.58 inches** (14.7 mm).
11. Mounting: Threaded Nipple.
12. Warranty: 5 years.
13. Certifications: C-UL-US Listed, RoHS Compliant, CA Compliant.
14. Accessories:
 - a. EM1 Extender Module.

F. STEINEL HBS 200-WL: Passive infrared, line voltage, high bay occupancy sensor

for wet location aisleway applications.

1. Voltage: 120/230/277 VAC, 50/60 Hz.
2. Load Rating:
 - a. 120 VAC: 0-800 watt ballast, tungsten, 1/4 hp.
 - b. 230/277 VAC: 0-1200 watt ballast.
3. Settings:
 - a. Time Delay Setting: 15 seconds to 30 minutes.
 - b. Lighting Level Setting: **.2-200 fc (2-2000 lux)** allows lighting to remain off during daylight regardless of occupancy.
4. Switching: Performed at, or close to, the zero-cross of the AC waveform in order to improve relay performance.
5. Environment: IP65 rated.
6. Operating Temperature: **-4 deg F to 122 deg F (-20 deg C to 50 deg C)**.
7. Coverage: **100 by 13 feet (30.48 by 3.96 m)** linear detection.
8. Sensors: 2 dual element infrared pyroelectric detectors.
9. Lens Design: 104 switching zones.
10. Dimensions: **5.54 by 5.54 by 2.86 inches (115.3 by 115.3 by 72.7 mm)**, nipple length **0.58 inches (14.7 mm)**.
11. Mounting: Threaded Nipple.
12. Warranty: 5 years.
13. Certifications: C-UL-US Listed, RoHS Compliant, CA Compliant.
14. Accessories:
 - a. EM1 Extender Module.

2.19 FIXTURE INTEGRATED SENSORS

A. STEINEL HFLUM2-WR: High frequency, line voltage, fixture integrated, occupancy sensor.

1. Voltage 120/230/277 VAC, 50/60 Hz
2. Load Rating:
 - a. Incandescent, magnetic or electronic ballasts: 0-800 watts at 120 VAC, 50/60 Hz.
 - b. Magnetic or electronic ballasts 1/4 HP: 0-1200 watts at 230/277 VAC, 50/60 Hz.
 - c. LED: 0-650 watts at 120/230/277 VAC, 50/60 Hz.
3. Transmitter Power: 1 mW.
4. Power Consumption: Less than 0.5 W.
5. Time Delay Setting: 30 seconds to 30 minutes.
6. Light Level Setting: **.2-200 fc (2-2000 lux)** allows lighting to remain off during daylight regardless of occupancy.
7. HF System: 5.8 GHz.
8. Surge Protection: Built-in with auto-reset.

9. Lamp seasoning: Four day burn-in.
10. Coverage: 360 degree adjustable 3.3 to 26 feet reach (1 to 8 m).
11. Environment: -4 deg F to 185 deg F (-20 degC to 85 deg C).
12. Dimensions: 4.2 by 1.7 by 1.8 inches (107 by 42 by 44.5 mm).
13. Warranty: 5 years.
14. Certifications: C-UL-US Listed, RoHS Compliant, Contains: FCC ID - W8J-SIR13, IC - 8529A-SIR13.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine lighting control devices before installation. Reject lighting control devices that are wet, moisture damaged, or mold damaged.
- B. Examine walls and ceilings for suitable conditions where lighting control devices will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SENSOR INSTALLATION

- A. Comply with NECA 1.
- B. Coordinate layout and installation of ceiling-mounted devices with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, smoke detectors, fire-suppression systems, and partition assemblies.
- C. Install and aim sensors in locations to achieve not less than 90-percent minor motion coverage of areas indicated. Do not exceed coverage limits specified in manufacturer's written instructions.

3.3 IDENTIFICATION

- A. Identify components and power and control wiring according to Section 260553 "Identification for Electrical Systems."
- B. Identify circuits or luminaires controlled by photoelectric and occupancy sensors at each sensor.

3.4 FIELD QUALITY CONTROL

- A. Manufacturer Provided Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.
- B. Perform the following tests and inspections:

1. Operational Test: After installing time switches and sensors, and after electrical circuitry has been energized, start units to confirm proper unit operation.
 2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- C. Prepare test and inspection reports.

3.5 ADJUSTING

- A. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting lighting control devices to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.
1. For occupancy and motion sensors, verify operation at outer limits of detector range. Set time delay to suit Owner's operations.
 2. For daylighting controls, adjust set points to suit Owner's operations.

3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain lighting control devices.

END OF SECTION 260923