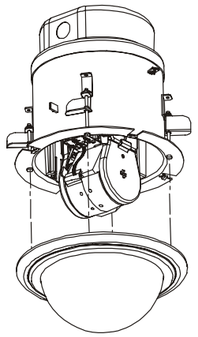


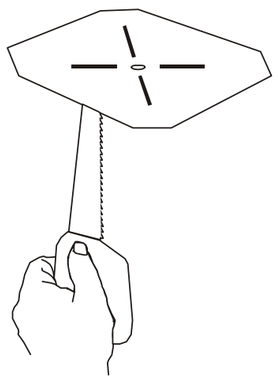
## RASI Series

# SpeedDome Optima Indoor Installation Guide

**Before performing these steps, ensure power is off and read additional information attached for important details and warnings!**

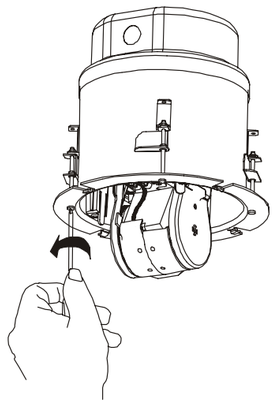
## 1

Using the template supplied, cut a hole in the ceiling.



## 2

Adjust all four “swing out” mounting clips for the ceiling thickness.

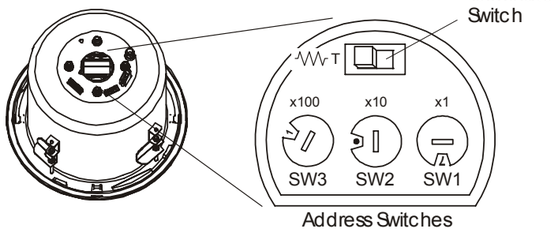


## 3

Set the dome address and terminate the dome, if necessary.

**A** The address range is from 001 to 255, except for Manchester, which is 01 to 64.

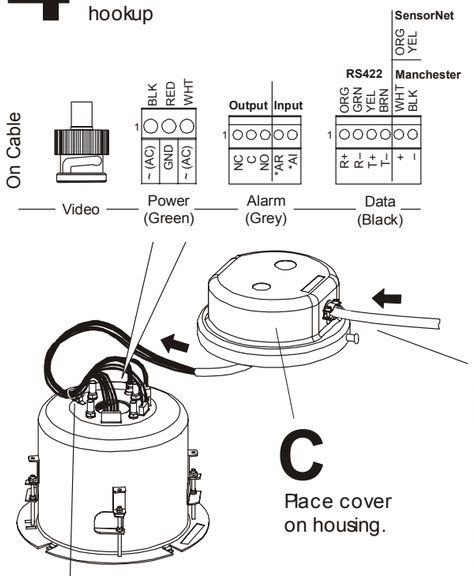
Set switches. Example: For address 107, set SW3 to 1, SW2 to •, and SW1 to 7.




**B** The camera/motor assembly is shipped “terminated” (switch to left) for when it is installed at the end of a data cable. Should the cable continue to another dome, move the slide switch to the right to “unterminate”.

## 4

Cable hookup




**C** Place cover on housing.

**D** Secure cable to housing using the cable tie supplied.

## B

Attach cable connectors. Ensure power is off.

Use screwdriver supplied to tighten connector screws. DO NOT over tighten the connectors!

## A

If running cables through conduit (not shown), remove appropriate knockout (1/2in Or 3/4in), and connect conduit to the cover.

If running cables direct (shown), attach the clamp and nut assembly supplied to one of the 1/2in knockouts in the side of the cover.

# 5 Secure the housing to a strong structural ceiling member.

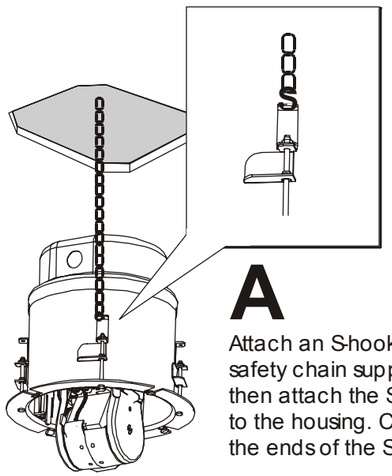
## B

Run the chain up into the ceiling and wrap it around a structural member above the housing.

Keep the chain taught as possible. Do not secure the housing to a fire control system.

## C

Attach the end of the chain to itself using another S-hook. Close the ends of the S-hook.

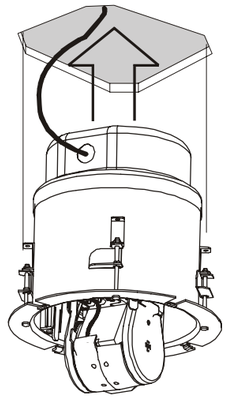


## A

Attach an S-hook to safety chain supplied, then attach the S-hook to the housing. Close the ends of the S-hook.

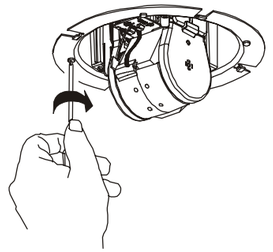
# 6 Secure the housing to the ceiling.

## A Insert housing.



## B

Turn each of the four locking screws clockwise to seat the “swing out” mounting clips tightly against the ceiling.



## C

Power the dome (heater fans turn on). The camera lens then follows a pattern until it reaches its home position. The controller can then be used to call up and control the dome.

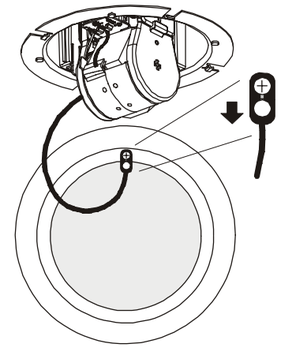
If OK, continue. If not, see “Troubleshooting” in information attached.

Green, red, and yellow LEDs will light in various patterns to indicate status. Typically, these LEDs do not need to be viewed unless a failure occurs. See “Troubleshooting” in information attached for an explanation Of the LED patterns.

# 7 Attach the bubble to the housing.

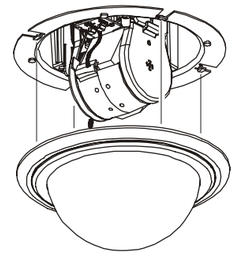
## A

Place the large hole in the end of the lanyard over the screw head on the bubble. Pull the end of the lanyard to the inside of the bubble to snap it in place.



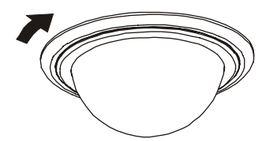
## B

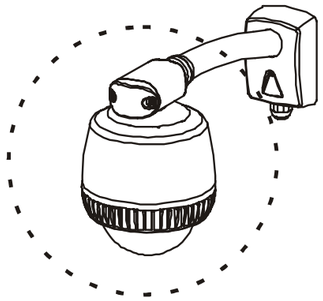
Align tabs in the bubble with mating tabs in the housing.



## C

Turn the bubble clockwise until it catches the tabs and stops.





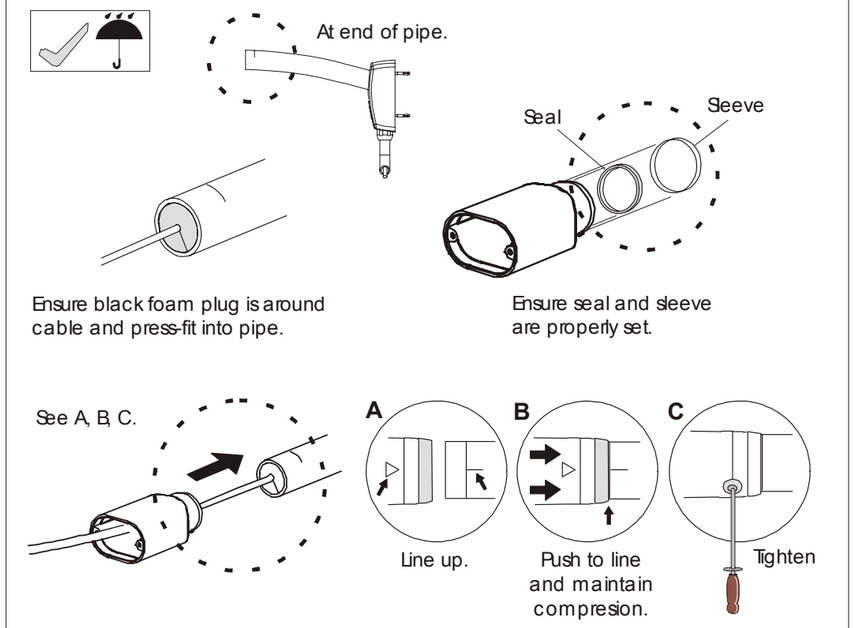
## RASO Series

# SpeedDome Optima Outdoor Installation Guide

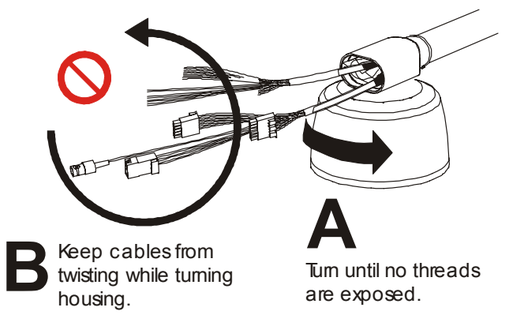
= Step Prevents Water Intrusion.

**Before performing these steps, ensure power is off and read additional information attached for important details and warnings!**

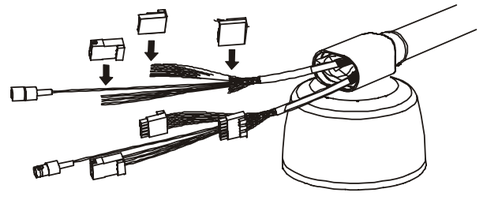
**IMPORTANT!** This housing meets IP66/Nema 4 ratings provided it is used with a properly installed ROENDC End Cap Assembly and one of the following mounts: RHOTR Over-the Roof Mount, RHOSW Short Wall Mount, or RHOLW Long Wall Mount.




**1** Thread cables through end cap assembly and attach housing to mounting structure.




**2** Attach cable connectors (in kit 0351-1686-01).



**Green Connector (Power)**

Pin 1 - 24Vac
Pin 2 - Common
Pin 3 - 24Vac

**Gray Connector (Relay)**

Pin 1 - NC
Pin 2 - Common
Pin 3 - NO (3.5mA sink)
Pin 4 - Alarm return
Pin 5 - Alarm input (3.5mA sink)

**Black Connector (Data)**

**Manchester**

Pin 1-4 - Not used
Pin 5 - White
Pin 6 - Black

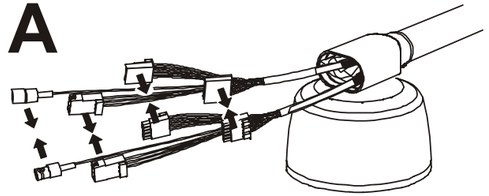
**RS-422**

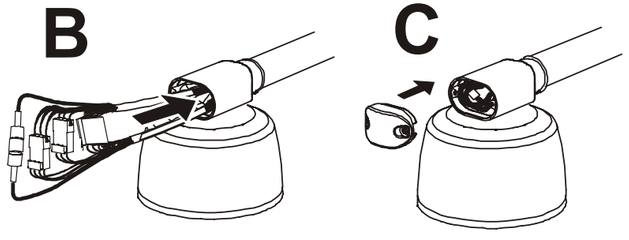
Pin 1 - Orange
Pin 2 - Green
Pin 3 - Yellow
Pin 4 - Brown
Pins 5-6 - Not used

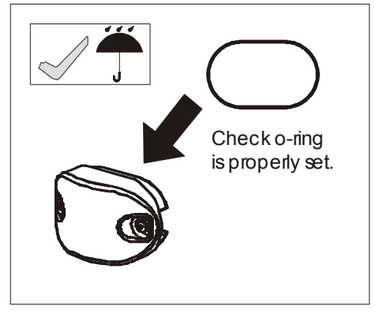
**SensorNet**

Pin 1-4 - Not used
Pin 5 - Orange
Pin 6 - Yellow

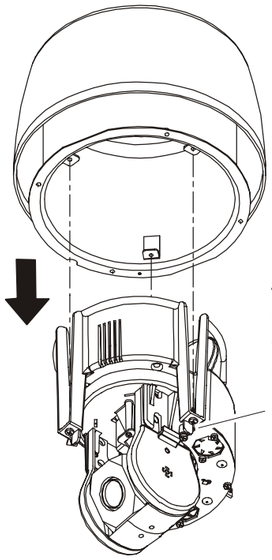
**3** Make connections, insert cables into end cap assembly, and attach cover.



## 4 Set the dome address and terminate the dome, if necessary.



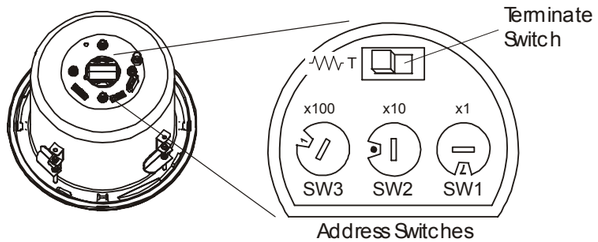
**A**

Remove the camera/motor assembly from the housing.

Loosen three captive screws and push in all three tabs simultaneously to release the assembly from the housing.

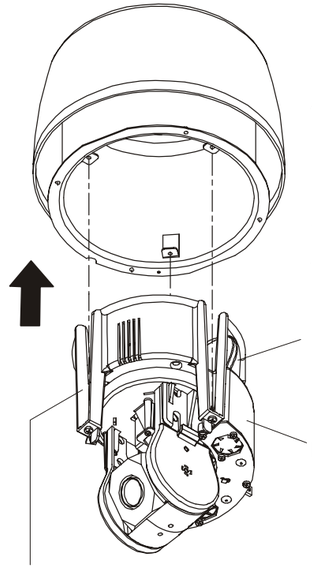
**B** The address range is from 001 to 255, except for Manchester, which is 01 to 64.

Set switches. Example: For address 107, set SW3 to 1, SW2 to •, and SW1 to 7.




**C** The camera/motor assembly is shipped "terminated" (switch to left) for when it is installed at the end of a data cable. Should the cable continue to another dome, move the slide switch to the right to "unterminate".

## 5 Re-attach the camera/motor assembly to the housing.



**A**

Remove lining from adhesive-backed desiccant bag and affix bag, adhesive side down, to the surface of the camera/motor assembly just above the heater assembly.

Heater assembly.

**B** Align the three arms of the chassis over the tabs inside the sunshield of the housing.

Arm spacing is not symmetrical. Dome goes into housing only one way.

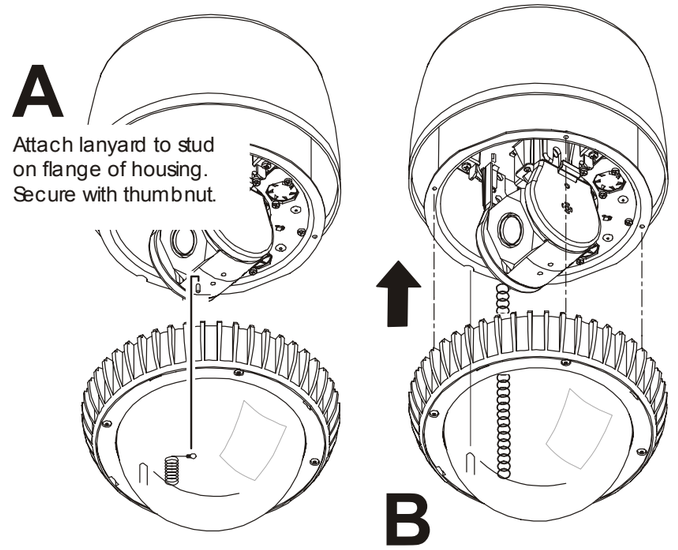
Push the assembly up into the housing until it snaps in place. Secure using captive screws in the arms.

**C** Power the dome (heater fans turn on). The camera lens then follows a pattern until it reaches its home position. The controller can then be used to call up and control the dome.

If OK, continue. If not, see "Troubleshooting" in information attached.

Green, red, and yellow LEDs will light in various patterns to indicate status. Typically, these LEDs do not need to be viewed unless a failure occurs. See "Troubleshooting" in information attached for an explanation Of the LED patterns.

## 6 Attach bubble assembly.



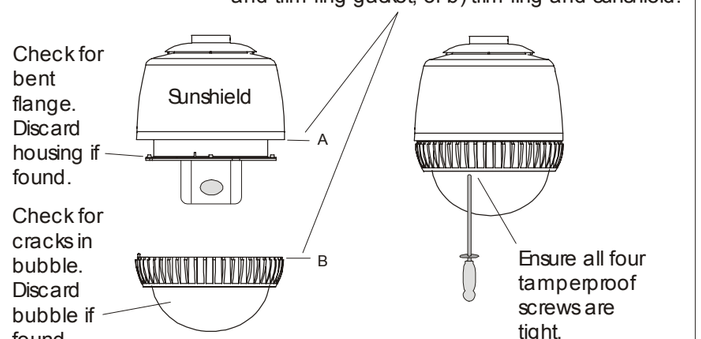
**A**

Attach lanyard to stud on flange of housing. Secure with thumbnut.

**B**

Attach bubble to housing.

Once the bubble is attached to the housing, surface A must meet surface B on all sides. Ensure lanyard is not caught between a) flange and trim ring gasket, or b) trim ring and sunshield.



# SpeedDome® Optima Housing

## Continuation of Installation Information

### RASI Indoor Series
### RASO Outdoor Series

## Contents



## To the Installer

This guide assumes that the outdoor mounting structure to which the housing is attached is in place and that data and power cables have been pulled to the installation site. To install the outdoor mounting structure, see documents shipped with the structure.

## Special Product Features

### Indoor/Outdoor Housing

The dome camera has one alarm input and one SPDT relay. Surge protection is provided on all external lines, including video.

### Outdoor Housing Only

The outdoor housing has a sunshield cover and bubble that protect the dome camera. Tamperproof screws affix the bubble to the housing.

The housing is temperature controlled and weatherproof. A built-in thermostat and heater prevent ice from forming on the outside of the bubble.

## Tools Required

- 6.6mm (1/4in) fixed-handle nut driver for Torx bit
- Wire cutters and strippers
- 2.5mm (0.1in) slotted screwdriver

# Warnings and Cautions

Please review the following warnings and cautions before you begin installation or service.

## Warnings

**WARNING!** Always use proper lift and safety equipment for the location and type of installation. Use the safety features of the lift equipment.

**WARNING!** When connecting wires, ensure electrical power is not connected to the camera dome. The dome will move when power is applied. Also, ensure electrical power is not connected to nearby fixtures you might touch during installation.

**WARNING!** The camera dome runs on 24Vac. DO NOT connect line voltage to the dome.

*North America power requirements:* In North America, this device is intended to be supplied from a Class 2 power supply. For outdoor installations, use Class 3 wiring techniques, liquid-tight conduit, or liquid-tight pipe.

This installation should be made by a qualified service person and should conform to all local codes.

**WARNING!** DO NOT install this housing where combustible or explosive products are stored or used.

**WARNING!** EU power requirements: This product runs on 24Vac. In the EU, it is intended to be powered from a Limited Power Source. A limited power source is a certified source of SELV, and if inherently limited, with 8 amps maximum output current, and a maximum of 100VA available; or if not inherently limited, fused with a maximum value of 3.3 Amps, meeting section 2.11 of IEC950, and a maximum of 250VA available. The power supply can be obtained through Sensormatic or through another source where the provider can furnish the verification. This is required to assure electrical safety in the product.

## Cautions

- To protect the bubble assembly, leave it in its box until you are ready to install it.
- Do not run data/power cables adjacent to or in the same conduit as line voltage mains power.
- Network cable/device requirements (additional requirements are listed on page 8):

| Network | Cable Thickness Required | Maximum Devices per Cable Run |
|---|---|---|
| SensorNet | 22AWG | 32 |
| RS-422 | 22AWG | 10 |
| Manchester | 18AWG | 3 |

- If required, set data cable termination inside the housing.
- If using a VM96 controller with a software version before 5.2, it is recommended that be upgraded to the current version. Otherwise, first must load a file that enables the VM96 to recognize this camera dome. An Update Kit containing a floppy disk and instructions (8000-2717-01) for downloading the file is supplied.

**CAUTION:** The VM96 will not recognize this dome if the file is not loaded.

### Outdoor Version Only

Water leaks, even small ones, can increase humidity inside the outdoor housing. To help eliminate humidity, follow all instructions explicitly and also the following cautions:

- DO NOT use over seals such as RTV and silicone caulks.
- Ensure fans spin when power is on.

Also see “Preventing Condensation” on page 7.

- Keep cables within the housing away from the heater assembly.
- If possible, mount the housing so the least needed view (such as a wall, building corner, or pole) is opposite the fan/heater assembly.

# Preventing Condensation in Outdoor Domes

Damage, missing parts, or procedures that most often allow water to enter the housing are as follows (refer to figures opposite):

- ☐ Mounts that allow water to enter the air path. If an older horizontal mount is used, replace it with a new model or ensure there is ample slope away from the camera dome and a foam plug is present
- ☐ Missing foam plug from entry into the pipe of the mounting structure
- ☐ Missing O-ring on cover, or missing sleeve or seal on end cap assembly
- ☐ Missing Teflon tape around any housing pipe threads
- ☐ RTV or similar sealant covering an air path
- ☐ Loose nuts (4) at the top of the housing
- ☐ Heater fans not turning
- ☐ Bent flange on metal housing that compromises the gasket seal between the bubble and the housing
- ☐ Plugged drain holes in the bubble trim ring
- ☐ Cracked bubble
- ☐ Tamperproof screws that are missing or improperly tightened compromise the gasket seal between the bubble and the housing
- ☐ Ensure lanyard is not caught between: a) flange and trim ring gasket, and b) trim ring and sunshield.

# Connector Pin Assignments

### GREEN CONNECTOR (POWER)

| Pin | Color | Description |
|---|---|---|
| 1 | Black | 24Vac |
| 2 | Red | Common |
| 3 | White | 24Vac |

### BLACK CONNECTOR (DATA)

#### Manchester

| Pin | Color | Designation |
|---|---|---|
| 1-4 | | Not used. |
| 5 | White | Manchester (+) |
| 6 | Black | Manchester (–) |

#### RS-422 / SensorNet

| Pin | Color | Designation |
|---|---|---|
| 1 | Orange | RS-422 Data In High (+) |
| 2 | Green | RS-422 Data In Low (–) |
| 3 | Yellow | RS-422 Data Out High (+) |
| 4 | Brown | RS-422 Data Out Low (–) |
| 5 | Orange | SensorNet (unshielded) |
| 6 | Yellow | SensorNet (unshielded) |

*Color based on composite cable.

### GRAY CONNECTOR (RELAY OUTPUTS)

| Pin | Color | Description |
|---|---|---|
| 1 | N/A | Normally Closed |
| 2 | N/A | Common |
| 3 | N/A | Normally Open (3.5mA sink) |
| 4 | N/A | Alarm Return |
| 5 | N/A | Alarm input (3.5mA sink) |

# Cable Requirements

## Data Cable

The table below shows requirements for SensorNet, RS-422, and Manchester networks. For more information about communication protocols and cable networks, see Communication Protocols and Cable Networks, 8000-2573-19.

### Data cable requirements

| | SensorNet | RS-422 | Manchester |
|---|---|---|---|
| Cable type | 1 unshielded, twisted pair* | 2 shielded, twisted pair* | 1 shielded twisted pair** |
| Wire gauge | 22 AWG | 22 AWG | 18 AWG |
| Connection | Non-polarized | Polarized | Polarized |
| Max. devices on line | 32 | 10 | 3 |

* Power, data, and video cables can be ordered separately or within a composite cable that can be ordered in various lengths. Plenum-rated cables must be used in indoor ceilings used for environmental air return (called "other air space" in the National Electrical Code). Order parts through your distribution network.

**Note:** If you order cable from an outside source, wire colors may be different.

** Belden 88760 (plenum), or Belden 8760 cable (non-plenum) cable is recommended. Plenum-rated cables must be used in indoor ceilings used for environmental air return (called "other air space" in the National Electrical Code). Order cable directly from Belden by calling 1-800-235-3361.

## Power Cable

**Plenum ceilings.** Cable must be rated for plenum and routed through electrical conduit. Use the cable connection cover for conduit termination and cable connections to the dome. Knockouts in the cover accept ½" and ¾" conduit.

**WARNING:** Do not run data and power cables adjacent to or in the same conduit as line voltage mains power.

**Power cables.** Make power cable lengths as short as possible to minimize the affects of low line voltages and outdoor cold temperature performance. Maximum cable length between a Class 2 LPS (low voltage) ac source, such as a J-box, and the dome depends on the ac line voltage. See the tables below for maximum cable lengths based on the worst-case low line voltages.

The line voltage must not go below the voltage shown for the dome to be able to power up and operate at the corresponding distances shown. Typically cable distances are used that provide a 15% margin between nominal and low line conditions. For example, if the nominal voltage measures 120Vac, restrict the cable length to the distance for .85 x 120 or approximately 100Vac.

### Power Cable Requirements: Indoor Dome

The following table shows the maximum cable distance between various indoor power sources and the indoor SpeedDome Optima, for several worst-case low line voltages.

These distances are for Sensormatic composite cables, which use 18 AWG ac power wires.

This table applies to domes produced after October of 2001; distances are much less for earlier domes.

| Indoor Dome AC Power Source | Worst-Case Low Line V | Meters (Feet) |
|---|---|---|
| 28 VA Transformer 5604-0006-01 | 117 | 130 (425) |
| | 100 | 80 (250) |
| | 90 | 60 (200) |
| 50 VA Transformer 5604-0044-01 | 117 | 160 (525) |
| | 100 | 100 (325) |
| | 90 | 60 (200) |
| 1-position SensorNet or RS 422 J-Box RJ1SNUD, RS856UD | 117 | 160 (525) |
| | 100 | 100 (325) |
| | 90 | 80 (250) |
| 1-position SensorNet or RS 422 J-Box RJ1SNUD-1, RS856UD-1 | 240 | 160 (525) |
| | 200 | 100 (325) |
| | 180 | 80 (250) |
| 6-position SensorNet Indoor J-Box RJ6SN | 117 | 210 (675) |
| | 100 | 130 (425) |
| | 90 | 80 (250) |
| | 240 | 210 (675) |
| | 200 | 130 (425) |
| | 180 | 80 (250) |
| 10-position RS 422 Indoor 120V/60Hz J-Box RJ860AP | 117 | 200 (625) |
| | 100 | 130 (425) |
| | 90 | 100 (325) |
| 10-position RS 422 Indoor 240V/50Hz J-Box RJ860AP1 | 240 | 225 (750) |
| | 200 | 160 (525) |
| | 180 | 125 (375) |
| Universal Transformer 0300-0914-03 | 117 | 130 (425) |
| | 100 | 100 (325) |
| | 90 | 60 (200) |
| | 240 | 160 (525) |
| | 200 | 100 (325) |
| | 180 | 80 (250) |

### Power Cable Requirements: Outdoor Dome

The following table shows the maximum cable distance between the outdoor SpeedDome Optima and the 1-position and 6-position (see Note below) junction boxes, for several worst-case low line voltages. The distances are shown for 18, 16 and 14 AWG ac power cabling. 14 AWG is larger than 18 AWG and has lower resistance; thus the 14 AWG has a larger current capacity and supports a longer cable distance.

| Worst-Case Line Voltages | 18 AWG | 16 AWG | 14 AWG |
|---|---|---|---|
| 90 Vac | 30m (100ft) | 50m (160ft) | 80m (260ft) |
| 102 Vac | 60m (200ft) | 100m (320ft) | 160m (520ft) |
| 180 Vac | 30m (100ft) | 50m (160ft) | 80m (260ft) |
| 204 Vac | 60m (200ft) | 100m (320ft) | 160m (520ft) |

**Note:** The 6-position SensorNet junction box RJ6SN can power two Outdoor SpeedDome Optimas or SpeedDome Ultras. However, this 6-position junction box has two banks, one for dome positions 1, 2, and 3, and a second bank for positions 4, 5, and 6. If the junction box is used to power an outdoor dome, no other dome can be powered from the same bank.

## Synchronizing Domes

To prevent picture rolling when switching from camera to camera, all domes can be synchronized to a 50Hz or 60Hz ac source. A V-phase adjustment at the control console enables the dome to sync to any line phase.

# Troubleshooting

If a failure cannot be easily fixed external to the dome, send the dome to a repair center.

**No power (no LEDs light).**

Check for power coming in from J-box or controller.

**Homing routine does not complete.**

Green, red, and yellow LEDs are visible through small holes in the dome housing that surround the camera yoke. After power up, the LEDs light as follows.

| | GREEN (DS1) | RED (DS2) | YELLOW (DS3) |
|---|---|---|---|
| PLD Loading (20 sec) | On | Off | Off |
| Homing Process | Off | Blink | On |
| Looking for Network* | On | Off | On |
| Online Waiting for 1st Command** | Blink | Blink | On |

* If the dome remains in this state, it cannot locate the SensorNet, RS-422, or Manchester network.

** The yellow LED remains on until it receives a PTZ movement command, then goes off. Further PTZ commands will cause the LED to blink; otherwise, the LED is off.

**Connected to RS-422 but no communication.**

Check RS-422 wiring by doing the following.

1. Set the dome address to 901; observe the green, red, and yellow LEDs through the housing.

| LED Indication | Cause |
|---|---|
| Yellow blinks | Wiring OK. |
| Red flickers, Green blinks* | RS-422 wired backwards. |
| Red blinks. Green flickers* | A wire is not connected. |

*Fix wiring.

2. Reset the dome to the desired address.

**No video.**

1. Check the video cable and its connection to the dome. If not OK, fix or replace cable.
2. Check the iris setting. Open iris or set to auto iris.
3. If the problem is not corrected, send the dome to a repair center.

**Video rolls when switching cameras.**

Perform V-phase adjustment at the controller.

**Contrast or color off**

1. Check the iris setting. Open iris or set to auto iris.
2. If the problem is not corrected, send the dome to a repair center.

**Pan control absent or improper, but other control OK.**

Send the dome to a repair center.

**Tilt control absent or improper, but other control OK.**

1. Check tilt belt operation. Fix the belt if necessary.
2. If the problem is not corrected, send the dome to a repair center.

**Zoom, focus, and iris control is absent.**

Check the flex cable connecting the camera the housing. If you see any damage, send the dome to a repair center.

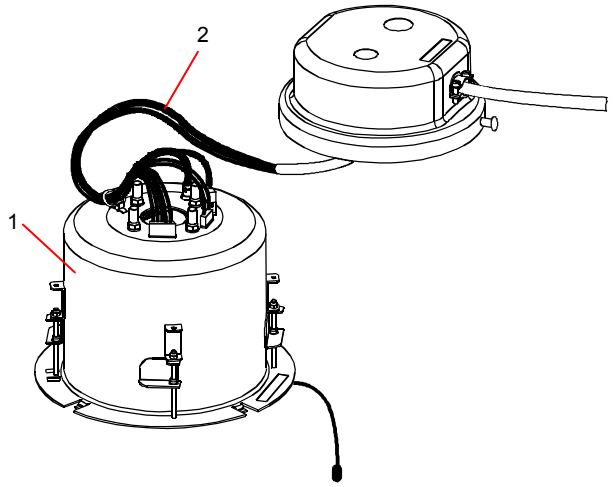
**Only some camera control works (for example, zoom and focus work, iris does not).**

Send the dome to a repair center.

# Illustrated Parts List

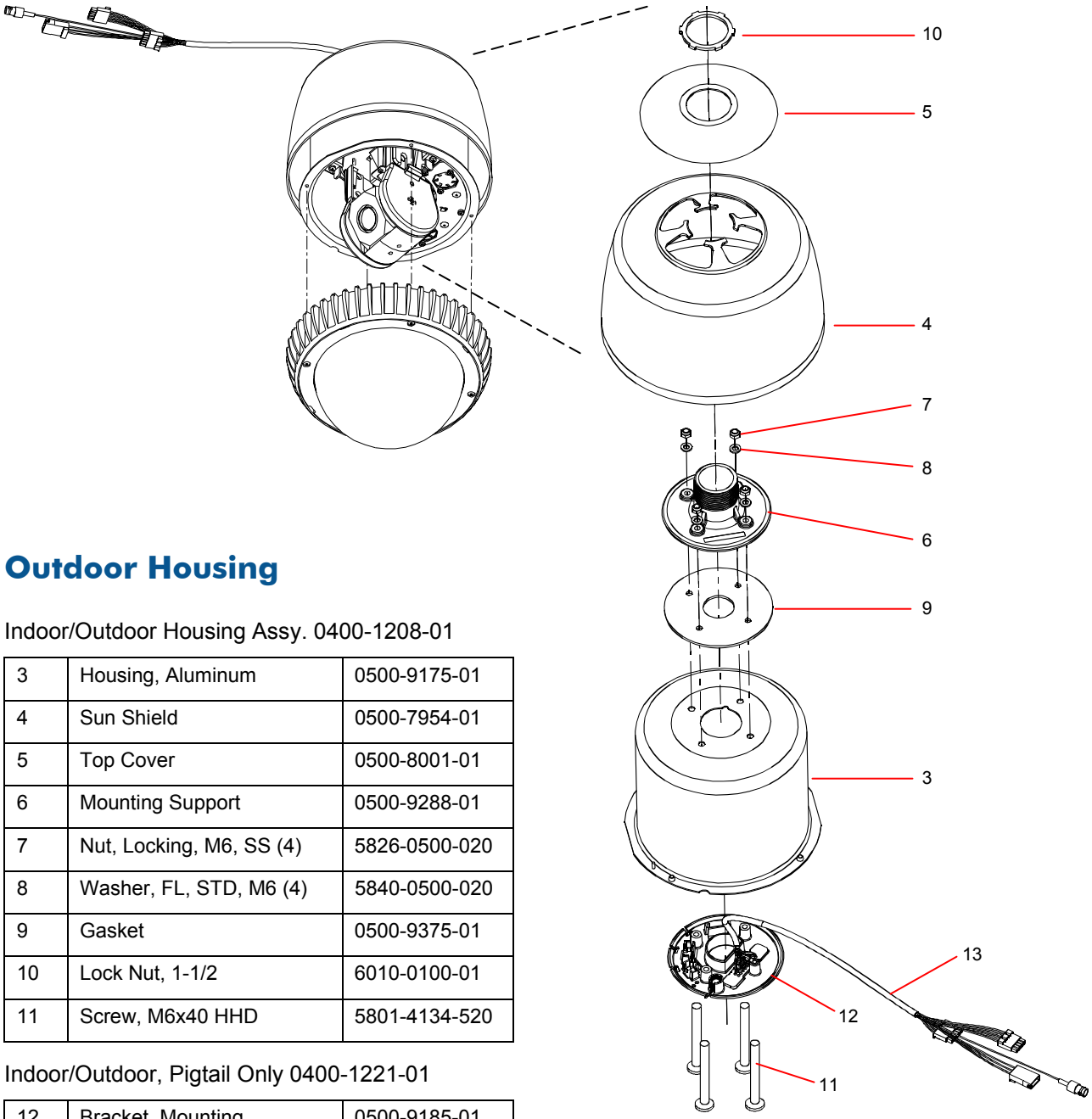
Not all of the parts, which are shown for clarity, are orderable. Parts are subject to change based on design improvements and availability.

## Indoor Housing




Hard Ceiling Housing Assy. 0400-1246-01

| | | |
|---|---|---|
| 1 | Housing, Assembly | 0400-1246-01 |
| 2 | Cable Assy., Pigtail | 0650-2206-01 |




## Outdoor Housing

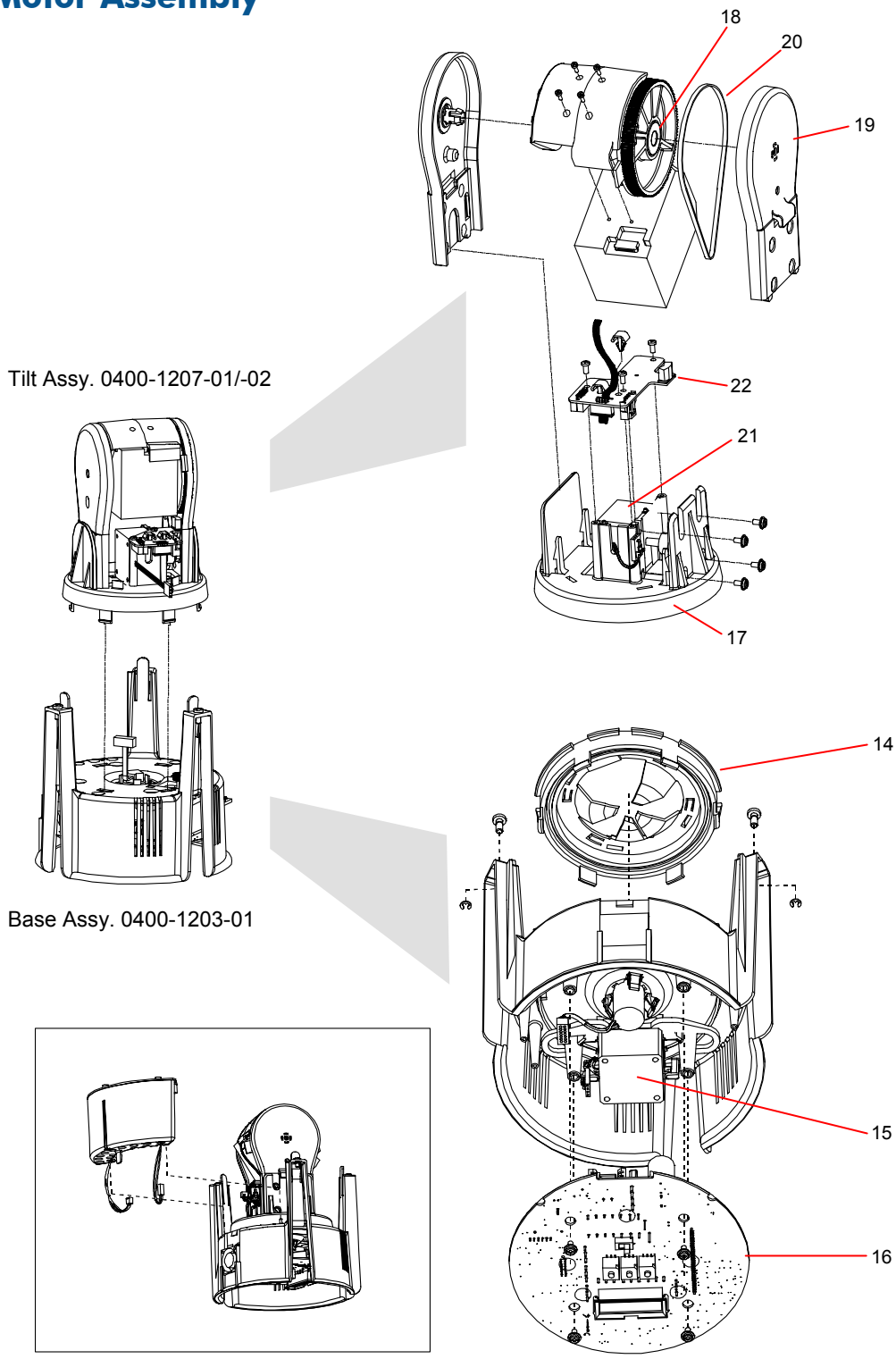
Indoor/Outdoor Housing Assy. 0400-1208-01

| | | |
|---|---|---|
| 3 | Housing, Aluminum | 0500-9175-01 |
| 4 | Sun Shield | 0500-7954-01 |
| 5 | Top Cover | 0500-8001-01 |
| 6 | Mounting Support | 0500-9288-01 |
| 7 | Nut, Locking, M6, SS (4) | 5826-0500-020 |
| 8 | Washer, FL, STD, M6 (4) | 5840-0500-020 |
| 9 | Gasket | 0500-9375-01 |
| 10 | Lock Nut, 1-1/2 | 6010-0100-01 |
| 11 | Screw, M6x40 HHD | 5801-4134-520 |

Indoor/Outdoor, Pigtail Only 0400-1221-01

| | | |
|---|---|---|
| 12 | Bracket, Mounting | 0500-9185-01 |
| 13 | Cable Assy., Pigtail | 0650-2206-01 |

# Camera/Motor Assembly



Base Assy. 0400-1203-01

| | | |
|---|---|---|
| 14 | Bearing, Pan | 2510-0040-01 |
| 15 | Pan Motor Assy. | 0400-1240-01 |
| 16 | PCB, Dome System | 0301-1516-01 |

Tilt Assy. 0400-1207-01 (NTSC), -02 (PAL)

| | | |
|---|---|---|
| 17 | Base, Tilt | 0500-9110-01 |
| 18 | Spacer, Tilt (2) | 0505-0085-01 |
| 19 | Tilt Upright (2) | 0500-9168-01 |
| 20 | Timing Belt | 2500-0041-01 |
| 21 | Tilt Motor with Pulley | 3501-0024-01 |
| 22 | PCB, Tilt Sensor | 0301-1524-01 |

# Specifications

## Operation

| | |
|---|---|
| Manual pan speed | 1–50° per second |
| Target pan speed | 100° per second max. |
| Pan travel | 360° continuous, no end stop |
| Manual tilt speed | 1–50° per second. |
| Target tilt speed | 50° per second max. |
| Tilt travel | >90° |
| Optical zoom | 22X |
| Digital zoom | 11X |
| Bubble density | Clear, f0 |
| Tilt/Pan accuracy | ±0.5° |
| Zoom/Focus accuracy | ±0.5% |
| Quick View™ access | < 2 seconds to pan and tilt position<br>< 3 seconds to full zoom position<br>< 1 second focus on VM16 and Video Manager controllers<br>< 7 seconds focus on VM96 and RV2715 controllers. |
| Synchronization | Automatically selected |
| Line locked | Remote V-phase adjustment |
| Internal | Built-in sync generator |
| Program storage | 256K bytes of electrically programmable Flash Memory |
| Data storage | 128kB of SRAM |
| Video output connector | Female BNC |
| Product life | 5 years operation<br>500,000 position changes<br>Relays are rated at 2X $10^5$ operations |

## Color Camera

| | |
|---|---|
| Type | Interline Transfer ¼" CCD array |
| Scanning system | 2:1 interlace |
| Horizontal resolution | > 470 lines at center |
| Video out | 1.0 Vp-p / 75 ohms composite |
| Signal/Noise | 50dB (typical) |
| Minimum illumination | 1.0 lux (20 IRE) |
| Gain control | Automatic (AGC) |
| White balance | Through the Lens (TTL) Automatic Tracing White Balance (ATW) |
| NTSC version: | |
| Pickup device | 768 (H) x 494 (V) pixels |
| Scanning | 525 lines, 60 fields, 30 frames |
| Horizontal | 15.734kHz |
| Vertical | 59.9Hz |
| PAL version: | |
| Pickup device | 752 (H) x 582 (V) pixels |
| Scanning | 625 lines, 50 fields, 25 frames |
| Horizontal | 15.625kHz |
| Vertical | 50Hz |

## Lens

| | |
|---|---|
| Design | Aspherical |
| Focal length | 4 to 88mm |
| Aperture | f1.6 (wide), f3.8 (tele) |
| Scanning area | 3.2mm (H) x 2.4mm(V) |
| Viewing angle: | |
| 4 mm | 47.0°H x 35.2°V |
| 88 mm | 2.2°H x 1.65°V |

### Field-of-View Formulas:

$$\frac{3.2\text{ mm}^* \times \text{distance from camera (m)}}{\text{Focal length (mm)}} = \text{Horizontal view (m)}$$

$$\frac{2.4\text{ mm}^{**} \times \text{distance from camera (m)}}{\text{Focal length (mm)}} = \text{Vertical view (m)}$$

* Horizontal scanning area of pickup device (mm) in camera.
** Vertical scanning area of pickup device (mm) in camera.

# Electrical

### *Power Line*

Input voltage .....24–30Vac, Class 2 LPS

Design tolerance.....16–36Vac

Line frequency .....50/60Hz

Power consumption .....15W max.

Power on inrush current.....3A

Allowable drop out: .....33ms

Connector: .....Plug-in Euro-style terminal block 5.08mm

Max. cable distance .....250m from Junction Box using composite cable

### *Surge Protection*

Video output .....Gas discharge tube rated at:

- 8/20µs impulse discharge current: 10kA

  Ten 8/20µs impulses discharge current: 5kA

  3.9 ohm series resistors
- Low capacitance Zener suppressor 6.5V 1500W

Power line.....Gas discharge tube impulse rated at:

- 8/20µs impulse discharge current: 10kA
- Ten 8/20µs impulses discharge current: 5kA
- TVS rated at 60V, 250A, 1.5 Joules, 8/20µs impulse

SensorNet/Manchester.....Gas discharge tube impulse rated at:

- 8/20µs impulse discharge current: 10kA
- Ten 8/20µs impulses discharge current: 5kA
- Isolation transformer coupled, 2000$V_{rms}$
- PTC resettable fuse protects transformer
- TVS rated at 5.6V, 40A, 0.1 Joules, 8/20µs impulse

EIA-422 comm. .....Gas discharge tube impulse rated at:

- 8/20µs Impulse Discharge Current: 10kA
- Ten 8/20 µs Impulses Discharge Current: 5kA
- 33 ohm series resistors
- TVS rated at 5.6V, 40A, 0.1 Joules, 8/20µs impulse

Alarm input.....Gas discharge tube impulse rated at:

- 8/20µs Impulse Discharge Current: 10kA
- Ten 8/20µs Impulses Discharge Current: 5kA
- 33 ohm series resistors
- TVS rated at 5.6V, 40A, 0.1 Joules, 8/20us impulse

Relay output.....1kV isolation

### *SensorNet Communications*

Network distance.....1km

Maximum loads.....32/node

Cable topologies .....Daisy chain
Backbone
Star

Wire configuration .....Single unshielded twisted pair UTP 22AWG non-polarized

Connector: .....Plug-in Euro-style terminal block 3.81mm

Terminating resistor .....120 ohms, switch selectable

### *EIA-422 Communications*

Network Distance.....1km

Maximum Loads.....10/node

Cable topologies .....Daisy chain
Star

Wire configuration .....Two twisted pairs 22AWG, polarized, shielded

Connector .....Plug-in Euro-style terminal block 3.81mm

*Manchester Communications*

| | |
|---|---|
| Cable topology | Daisy chain |
| Wire configuration | Single twisted pair 18AWG (Belden 8760), polarized, shielded |
| Connector | Plug-in Euro-style terminal block 3.81mm |
| Terminating resistor | 120 ohms, switch selectable |

*Alarm Input*

Provides signal input to dome alarm.

| | |
|---|---|
| Connector | Plug-in Euro-style terminal block 3.81mm |

*Relay Output*

Provides contact closure output from dome output.

| | |
|---|---|
| Contact type | Form 1-C, NO, NC, and common connections |
| Isolation | 1kV |
| Contact material | Gold-clad silver alloy |
| Contact rating | 30Vac or Vdc, 1A |
| Connector | Plug-in Euro-style terminal block 3.81mm |

## Mechanical

| | |
|---|---|
| Housing diameter | 190mm (7.5in) |
| Bubble diameter | 178mm (7.0in) |
| Housing height (above ceiling) | 210mm (8.26in) |
| Bubble depth (below ceiling) | 94mm (3.7in) |
| Pipe connection | 1.5in NPT Male |

## Environmental Specifications

Operating temperature:

| | |
|---|---|
| Indoor | –10°C to 50°C (14°F to 122°F) |
| Outdoor | –40°C to 50°C (–40°F to 122°F) |
| Humidity | 0–95% non-condensing |
| Storage temperature | –20°C to 65°C (–4°F to 149°F) |

# Declarations

## Regulatory Compliance

| | |
|---|---|
| Emissions | 47 CFR, Part 15<br>ICES-003<br>EN55022 |
| Immunity | EN50130-4 (CE) |
| Safety | UL1950<br>CSA C22.2 No 950<br>EN60950<br>Outdoor model meets<br>NEMA 4 and IP-66 |

**FCC COMPLIANCE:** This equipment complies with Part 15 of the FCC rules for intentional radiators and Class A digital devices when installed and used in accordance with the instruction manual. Following these rules provides reasonable protection against harmful interference from equipment operated in a commercial area. This equipment should not be installed in a residential area as it can radiate radio frequency energy that could interfere with radio communications, a situation the user would have to fix at their own expense.

**EQUIPMENT MODIFICATION CAUTION:** Equipment changes or modifications not expressly approved by Sensormatic Electronics Corporation, the party responsible for FCC compliance, could void the user's authority to operate the equipment and could create a hazardous condition.

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