SpeedDome Optima and Optima LT

Indoor and Outdoor Programmable Dome Cameras

Features That Make a Difference:

- Color camera with up to 242x zoom (22x optical, 11x digital)
- 470 TVL horizontal resolution
- Zoom adjusted programming
- Auto focus and auto iris
- Auto white balance
- Automatic gain control
- Line-lock
- Supports Manchester, SensorNet, and RS-422[2] protocols
- Unshielded Twisted Pair (UTP) wiring video transmission
- Up to 96 user-definable presets
- Three user-definable patterns
- Power-on functional tests
- LEDs provide diagnostics
- Easy to install and service
- Priced comparably to a PTZ with more features and easier to install
- Stepper motors with micro-step control
- Selectable home position

SpeedDome Optima LT (Indoor)[1]

SpeedDome Optima (Outdoor)

SpeedDome Optima and SpeedDome Optima LT deliver the standard features of a programmable dome but are priced comparably to a PTZ. These series of domes provide an alternative for customers who prefer the convenience and programmability of a dome camera but previously considered domes to be price-prohibitive.

Choose from several innovative mounting options. Optima LT can be mounted in a hard ceiling, 2x2 tile, or on a wall using a pendant mount, while Optima includes a versatile outdoor pendant mount. Since the domes contain all of the necessary components, installation is a breeze – just 15 minutes from box to ceiling with the hard ceiling mount. The domes' power-on diagnostics and functional tests assist with fault isolation during install and service.

The domes accommodate a variety of protocols, including Manchester, SensorNet, and RS-422[2], making them compatible with select American Dynamics controller or matrix switcher/controller systems.

The domes feature a color camera with 22x optical zoom (11x digital) and 470 TVL resolution, providing a quality, high-resolution picture. The domes also provide user-programmable presets and patterns.

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Additional Features

- Advanced third generation Digital Signal Processing (DSP) CCD camera delivers sharp, detailed images.

- Zoom Adjusted Programming (ZAP) automatically adjusts pan and tilt speeds in proportion to zoom position, even at 22x magnification.

- Automatic white balance allows the domes to automatically adjust the white balance of the image, providing optimal image quality.

- Automatic focus provides clear images without the need for manual adjustments.

- Auto iris provides visible scenes without the user having to manually compensate for diverse lighting conditions.

- Unshielded Twisted Pair (UTP) wiring video transmission saves wiring and installation costs.

- The automatic flip feature enables the dome to automatically turn 180° when the camera tilts to its lower limits and stays in that position for a brief speed-proportional delay.

- Vertical sync phase adjustment helps compensate for different phases of power when line-lock is enabled, making it ideal for single and multi-phase power installations.

- The domes have built-in surge protection to help prevent damage resulting from power loss and lightning strikes.

- The domes contain diagnostic LEDs for power, communication, network type, and failure mode.

- A fully isolated power supply helps eliminate ground loops.

- The domes automatically sense 50/60 Hz and do not require manual adjustment.

- The domes allow daisy-chain configuration of control wiring.

   For RS-422: Ten domes at a maximum distance of 1 km (3,000 ft) on two 22 AWG shielded twisted pairs (STP).

   For SensorNet: 32 devices at a maximum distance of 1 km (3,000 ft) on one 22 AWG UTP.

   For Manchester: Three domes at a maximum distance of 1.5 km (5,000 ft) on one 18 AWG STP.

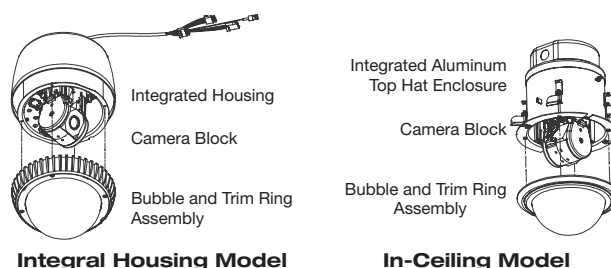## Additional Features of SpeedDome Optima

- SpeedDome Optima supports four wire RS-422 connection for alarm communication and is compatible with select American Dynamics controllers and matrix switchers.

- SpeedDome Optima alarms are processed externally by the controller and can automatically call a preset, run a pattern, or activate an auxiliary output when an alarm is activated.

Two Housing Options

The integral pendant housing model, which is constructed of ABS plastic, is suitable for both indoor and outdoor applications. This model incorporates a flying lead connection for mechanical and electrical cabling. The outdoor version (SpeedDome Optima only) of the integral pendant housing

model is weather and tamper-proof and contains a heater/blower that protects the dome. In extreme temperatures, the housing's built-in fan prevents the dome from overheating and the built-in thermostat and heater prevent ice from forming on the outside bubble.

SpeedDome Optima LT is designed with an integrated aluminum top hat enclosure and plenum cap with swing-out tabs that grasp ceiling material, ensuring a secure and easy installation. This model utilizes an endcap connection for mechanical and electrical cabling. The in-ceiling model (SpeedDome Optima LT only) is for indoor applications only.

Integrated Housing

Camera Block

Bubble and Trim Ring Assembly

Integral Housing Model

Integrated Aluminum Top Hat Enclosure

Camera Block

Bubble and Trim Ring Assembly

In-Ceiling Model

SpeedDome Optima Model Numbers[3]

RASONPC . . . . Outdoor Pendant Mount, Clear Bubble (NTSC)
RASONPC-1 . . . . Outdoor Pendant Mount, Clear Bubble (PAL)
RASONPS. . . . . Outdoor Pendant Mount, Smoked Bubble (NTSC)
RASONPS-1 . . . . Outdoor Pendant Mount, Smoked Bubble (PAL)

SpeedDome Optima LT Model Numbers[4]

RASELHC . . . . Indoor Ceiling Mount, Clear Bubble (NTSC)
RASELHC-1 . . . . Indoor Ceiling Mount, Clear Bubble (PAL)
RASELHS . . . . Indoor Ceiling Mount, Smoked Bubble (NTSC)
RASELHS-1 . . . . Indoor Ceiling Mount, Smoked Bubble (PAL)
RASELPC . . . . Indoor Pendant Mount, Clear Bubble (NTSC)
RASELPC-1 . . . . Indoor Pendant Mount, Clear Bubble (PAL)
RASELPS . . . . Indoor Pendant Mount, Smoked Bubble (NTSC)
RASELPS-1. . . . . Indoor Pendant Mount, Smoked Bubble (PAL)

NUMBER OF PRESETS PER DOME			
Controllers, DVRs or Matrix Switchers	Protocol	SpeedDome Optima	SpeedDome Optima LT
ADTT16E	SensorNet	96	96
	RS-422[5]	96	96
MegaPower LT	AD-UTC	96	96
	SensorNet	96	96
MegaPower 48 Plus	SensorNet	96	96
	Manchester	64	64
	RS-422	96	96
MegaPower 3200	Manchester[6]	64	64
	RS-422[7]	60	60
Intellex® DVMS, Ultra and LT	SensorNet[8]	96	96
	RS-422[9]	96	96
EDVR	RS-422 (Simplex)	96	96
Third party interfaces	RS-485	N/A	N/A
	RS-422	N/A	N/A

(3) Available in pendant mount version only
(4) Optional RH2X2 mount for 2x2 tile ceilings
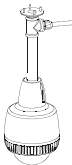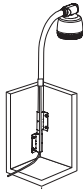(5) Using SensorNet to RS-422 converter (model number RCSN422)
(6) Using Manchester Code Distributor (model number AD2091)
(7) Using RS-422 code distributor (model number AD2083-02C)
(8) Using USB CCTV control module (model number ADACSNET)
(9) Requires USB to RS-422 adaptor
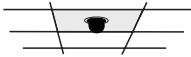
mounts and accessories

Indoor/Outdoor Mounting Options

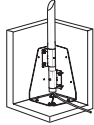| Mount	Description	Compatibility	Construction	Dimensions	Weight
RHOSW: Short Wall Mount with End Cap Assembly	This mounting structure attaches directly to a flat wall. When used with the RHOWCA corner bracket adapter or RHOWPA pole strap adapter, it can be affixed to corners as well as poles. A mounting cover conceals the mounting plate for a more attractive appearance.	SpeedDome Optima/Optima LT Pendant Mount Models	Powder-coated aluminum, ABS plastic, and fiber-filled PVC	With dome installed 366 x 218 x 282 mm (14 x 9 x 11 in)	1.3 kg (3 lbs)
RHOLW: Long Wall Mount with End Cap Assembly	This mount attaches directly to a flat wall, positioning the dome away from the wall, so that it can see over furniture, shelving, and displays. When used with the RHOWCA corner bracket adapter or RHOWPA pole strap adapter, it can be affixed to corners as well as poles. A mounting cover conceals the mounting plate for a more attractive appearance.	SpeedDome Optima/Optima LT Pendant Mount Models	Powder-coated aluminum, ABS plastic, and fiber-filled PVC	With dome installed 366 x 218 x 587 mm (14 x 9 x 23 in)	1.7 kg (3.9 lbs)
RHOPN: Outdoor Pendant Mount	This mount suspends an outdoor dome housing from an outdoor ceiling or horizontal surface. It can be installed using either new or existing 1.25'' NPT threaded pipe or rigid conduit up to 3 meters (10 feet) in length.	SpeedDome Optima/Optima LT Pendant Mount Models	Powder-coated aluminum, ABS plastic	115 x 120 x 120 mm (4.5 x 5 x 5 in)	1.8 kg (4 lbs)
RHOTR: Over-the-Roof Mount with End Cap Assembly	This mount affixes directly to any wall, rooftop wall or parapet, positioning the dome away from the wall, so that it can see over awnings, soffits and landscaping. Opposing wing brackets secure installation to the roof surface, while allowing the pole to be repositioned for easy service access.	SpeedDome Optima/Optima LT Pendant Mount Models	Powder-coated aluminum, ABS plastic, and fiber-filled PVC	1098 x 243 x 473 mm (43 x 10 x 19 in)	5.7 kg (12.7 lbs)
RH2X2: 2' x 2' Tile Mount Plate	This mount enables the dome to be recessed in a 2' x 2' drop tile ceiling. The ceiling tile is removed and the tile mount is simply dropped in its place.	SpeedDome Optima LT Indoor Ceiling Mount Models	Painted aluminum	47 x 605 x 605 mm (2 x 23 x 23 in)	1.7 kg (3.8 lbs)

Indoor/Outdoor Adapter Options

Adapter	Description	Compatibility	Construction	Dimensions	Weight
RHOWCA: Corner Bracket Adapter	This adapter attaches the long and short wall mounts (RHOSW & RHOLW) to affix to outside corners. Powder-coated aluminum construction ensures an extremely sturdy installation.	SpeedDome Optima/Optima LT Pendant Mount Models	Powder-coated aluminum	185 x 210 x 125 mm (7 x 8 x 5 in)	.79 kg (1.75 lbs)
RHOWPA: Pole Strap Adapter	This adapter attaches the long and short wall mounts (RHOSW & RHOLW) to outside corners. This kit contains stainless steel straps that can be daisy-chained to accommodate any size pole and all the necessary mounting hardware.	SpeedDome Optima/Optima LT Pendant Mount Models	Powder-coated aluminum and stainless steel	138 x 79 x 27 mm (5 x 3 x 1 in) Straps support 53 to 951 mm (2 to 30 in) pole diameter	.5 kg (1.1 lbs)
ROTRF: Floor Adapter for RHOTR	This adapter installs the RHOTR over-the-roof mount on horizontal and vertical roof/parapet surfaces. Multiple fastening positions provide versatility for mounting on any combination of surfaces and angles.	SpeedDome Optima/Optima LT Pendant Mount Models	Powder-coated aluminum	369 x 240 x 240 mm (15 x 10 x 10 in)	2.59 kg (5.75 lbs)
ROENDC: End Cap Assembly	This mounting assembly retrofits any existing outdoor SpeedDome wall, pole, corner, or over-the-roof mount to accommodate newer outdoor housings. A modular design lets you mount the housing to the end cap on the ground, before installing it on the mounting pole, making the process safe and easy.	SpeedDome Optima/Optima LT Pendant Mount Models	Fiber-filled PVC	64 x 103 x 194 mm (3 x 4 x 8 in)	.32 kg (.7 lbs)

Operational

Manual Pan/Tilt Speed . . . . . 1° to 50° per second (based on zoom position)
Preset Pan/Tilt Speed. . . . . . . 100° per second, maximum
Pan Travel . . . . 360° continuous
Tilt Travel . . . . > 90°
Pan/Tilt Accuracy . . . . ± 0.5°
Zoom/Focus Accuracy . . . . . ± 0.5%
Optical Zoom 22X
Digital Zoom 11X
Bubble Density . . . . Clear (f0.0) or smoked (f1.0)
Programmable Patterns . . . . . Three
Auto Synchronization
  Line-Locked . . . . Remote V-phase adjustment
  Internal . . . . Built-in sync generator
Address Range
  RS-422/RS-485 . . . . One to 96
  Manchester . . . . One to 64
  SensorNet . . . . One to 255
Alarm Inputs . . . . One (Optima only)
Auxiliary Relay
Outputs . . . . One (Optima only)

Electrical

Input Voltage . . . . 24 to 30 VAC, Class 2 LPS
Design Tolerance . . . . 16 to 36 VAC
Line Frequency . . . . 50/60 Hz
Power Consumption
  Indoor . . . . 21 W maximum
  Outdoor . . . . 80 W maximum
Power-On In-Rush Current . . . 3 A
Allowable Drop-Out . . . . 33 ms
Surge Protection
  Video . . . . Low-capacitance Zener suppressor of 6.5 V, 1500 W
  SensorNet/Manchester . . . . Isolation transformer coupled, 2000 Vrms; PTC resettable fuse protects transformer; TVS rated at 5.6 V, 40 A, 0.1 J; 10 kA impulse rated gas tube, 8/20 µsec impulse
  RS-422/RS-485 . . . . Series resistors of 33 Ω; TVS rated at 5.6 V, 40 A, 0.1 J (Optima only)
      Resettable fuse, 0.6 A, 60 V, 1.2 Ω; 90 V, 10 kA impulse rated gas tube (Optima LT only)
  Alarm Input . . . . Series resistors of 33 Ω; TVS rated at 5.6 V, 40 A, 0.1 J (Optima only)
  Auxiliary Output. . . . . 100 V isolation form 1-C relay (Optima only)
  Power Line . . . . TVS rated at 60 V, 250 A, 1.5 J; 10 kA impulse rated gas tube, 8/20 µsec impulse

Camera

Imager . . . . Interline transfer 1/4 in CCD array
Scanning System . . . . 2:1 interlace
Video Output . . . . 1.0 Vp-p, 75 Ω composite
S/N Ratio . . . . 48 dB (typical)
Horizontal Resolution . . . . 470 lines at center
Minimum Illumination . . . . 1.5 lux (20 IRE, AGC on)
Gain Control . . . . Automatic (AGC)
White Balance . . . . Through the Lens (TTL) Automatic Tracing White Balance (ATWB)

NTSC

Pickup Device . . . . 768 (H) x 494 (V) pixels
Scanning . . . . 525 lines, 60 fields, 30 frames
Horizontal . . . . 15.734 kHz
Vertical . . . . 59.9 Hz

PAL

Pickup Devices . . . . 752 (H) x 582 (V) pixels
Scanning . . . . 625 lines, 50 fields, 25 frames
Horizontal . . . . 15.625 kHz
Vertical . . . . 50 Hz

Lens

Design. . . . . Aspherical
Aperture f1.6
  4 mm. . . . . 47.0° (H) x 35.2° (V)
  88 mm. . . . . 4.0° (H) x 3.0° (V)
Focal Length. . . . . 4 to 88 mm
Field of View Formulas
  Horizontal View = (.8 x A)/B
  Vertical View = (.6 x A)/B
    A = distance from camera in meters or feet
    B = zoom power (e.g. 1-242x)

Mechanical

Dimensions (H x D)
  In-Ceiling Model
    Total . . . . 301 x 190.5 mm (11.9 x 7.5 in)
    Above Ceiling . . . . 207.4 x 190.5 mm (8.2 x 7.5 in)
    Below Ceiling . . . . 92.7 x 178 mm (3.65 x 7.0 in)
  Integral Pendant Housing Model
    Total . . . . 303 x 243.5 mm (11.9 x 9.6 in)
Unit Weight
    In-Ceiling Model . . . . 2.5 kg (5.5 lbs)
  Integral Pendant Housing Model
    Indoor . . . . 2.7 kg (6.1 lbs)
    Outdoor . . . . 3.0 kg (6.6 lbs)

Environmental

Weatherproof Standard
  Outdoor Models IP66/NEMA4
Operating Temperature
  Indoor . . . . -10° to 50°C (14° to 122°F)
  Outdoor . . . . -40° to 50°C (-40° to 122°F)
Humidity . . . . 0 to 95% RH (noncondensing)
Storage Temperature . . . . -20° to 65°C (-4° to 149°F)
Wind Loading . . . . Sustain winds of 240 km/hr (150 miles) when properly installed and mounted (wall, pole, ceiling, and over-the-roof mount with proper support). (Outdoor model only)

Regulatory

Emissions . . . . FCC: 47 CFR Part 15,
        Subpart B Class A
        CE: EN55022 Class B
        CE: EN6100-3-2
        CE: EN6100-3-3
        AS/NZS 3548, Class A
        CISPR22
        ICES-003
Immunity. . . . . CE: EN50130-4
Safety . . . . UL: UL1950
        CUL: CSA 22.2 No. 950
        CE: EN60950
        IEC950