Spectra® HD Series IP Dome System

S5220 MODELS, HIGH DEFINITION PAN/TILT/ZOOM HIGH-SPEED DOME

Product Features

- Up to 1920 x 1080 Resolution
- 16:9 Aspect Ratio; 1080p at 30 Images per Second (ips)
- 2.0 Megapixel (MPx), 20X Optical Zoom, 12X Digital Zoom, Wide Dynamic Range (WDR) Camera
- Ability to Control and Monitor Video Over IP Networks
- Built-in Analytics Including AutoTracker and Adaptive Motion Detection
- 2 Simultaneous Video Streams: Dual H.264 and Scalable MJPEG
- 360° Continuous Pan Rotation at 280° per Second
- Supported Protocols: TCP/IP, UDP/IP (Unicast, Multicast IGMP), UPnP, DNS, DHCP, RTP, NTP, and More
- Power over Ethernet (PoE) IEEE 802.3af
- USB Expansion Slots for Alarms and Audio Accessories

ENDURA ENABLED

- 16 Preset Tours, 255 Dome Presets, 32 Window Blanks
- Open IP Standards
- ONVIF v1.02 Conformant

Network Dome System

Pelco takes its industry-leading Spectra® Series dome into the world of high definition. **Spectra HD** delivers crystal-clear, live streaming images over the Internet using a standard Web browser (Microsoft® Internet Explorer® or Mozilla® Firefox®). With nine times the resolution of standard definition domes, **Spectra HD** is an ideal solution to view details such as faces, license plates, tattoos, playing cards (in casinos), or other specific features.

Spectra HD supports High-Profile H.264 compression, a vast improvement in quality over MPEG-4 and 20 times more efficient than M-JPEG. The dome system features open architecture connectivity for third-party software recording solutions allowing integration into virtually any IP-based HD system. It is also compatible with Digital Sentry® video management systems. As with all Pelco IP camera solutions, **Spectra HD** is Endura Enabled™ to record, manage, configure, and view multiple live streams. When connected to an Endura® HD network-based video security system, the dome system has access to EnduraStor™ and EnduraView™ for optimized image quality and bandwidth efficiency.

Spectra HD features the same ease of installation and ease of maintenance that you have come to expect from Spectra. Each dome system consists of a back box, a dome drive, and a lower dome.

Spectra HD includes a choice of four back box models: in-ceiling, environmental in-ceiling, pendant, and environmental pendant. All environmental models meet NEMA Type 4X, IP66 when properly installed.

Built-In Analytics

Pelco Analytics enhance the flexibility and performance of Spectra HD. Nine Pelco behaviors are preloaded and included as standard features. Pelco behaviors can be configured and enabled using a standard Web browser, and they are compatible with Endura or a third-party system that supports alarms using Pelco's API.

Web Interface

Spectra HD uses a standard Web browser for powerful remote setup and administration.

Window Blanking

Window blanking is used to conceal user-defined privacy areas that cannot be viewed by an operator. **Spectra HD** supports up to 32 blanked windows. A blanked area will appear on the screen as a solid gray window.

Video Systemization

Spectra HD easily connects to Pelco IP and hybrid systems such as Endura version 2.0 (or later) and Digital Sentry version 7.3 (or later). The camera is also compatible with Digital Sentry NVs (DS NVs), a full-featured video management software, which is available as a free download at *www.pelco.com*. DS NVs includes four free Pelco IP licenses and allows for the management of video from up to 64 cameras.

Spectra HD features open architecture connectivity to third-party software. Pelco offers an application programming interface (API) and software developer's kit (SDK) for interfacing with Pelco's IP cameras.

PELCO ANALYTICS

Spectra HD Series includes nine user-configurable behaviors. The camera is capable of running up to three behaviors at the same time; although, the number of behaviors is limited to the available processing power of the camera and the type of analytic being used.

NOTE: Available processing power is determined by the settings for compression standards, resolution, image rate, bit rate, and analytic configuration.

For each behavior, you can create several custom profiles that contain different camera settings. With these profiles, you can set up different scenarios for the behavior, which will automatically detect and trigger alarms when specific activity is detected.

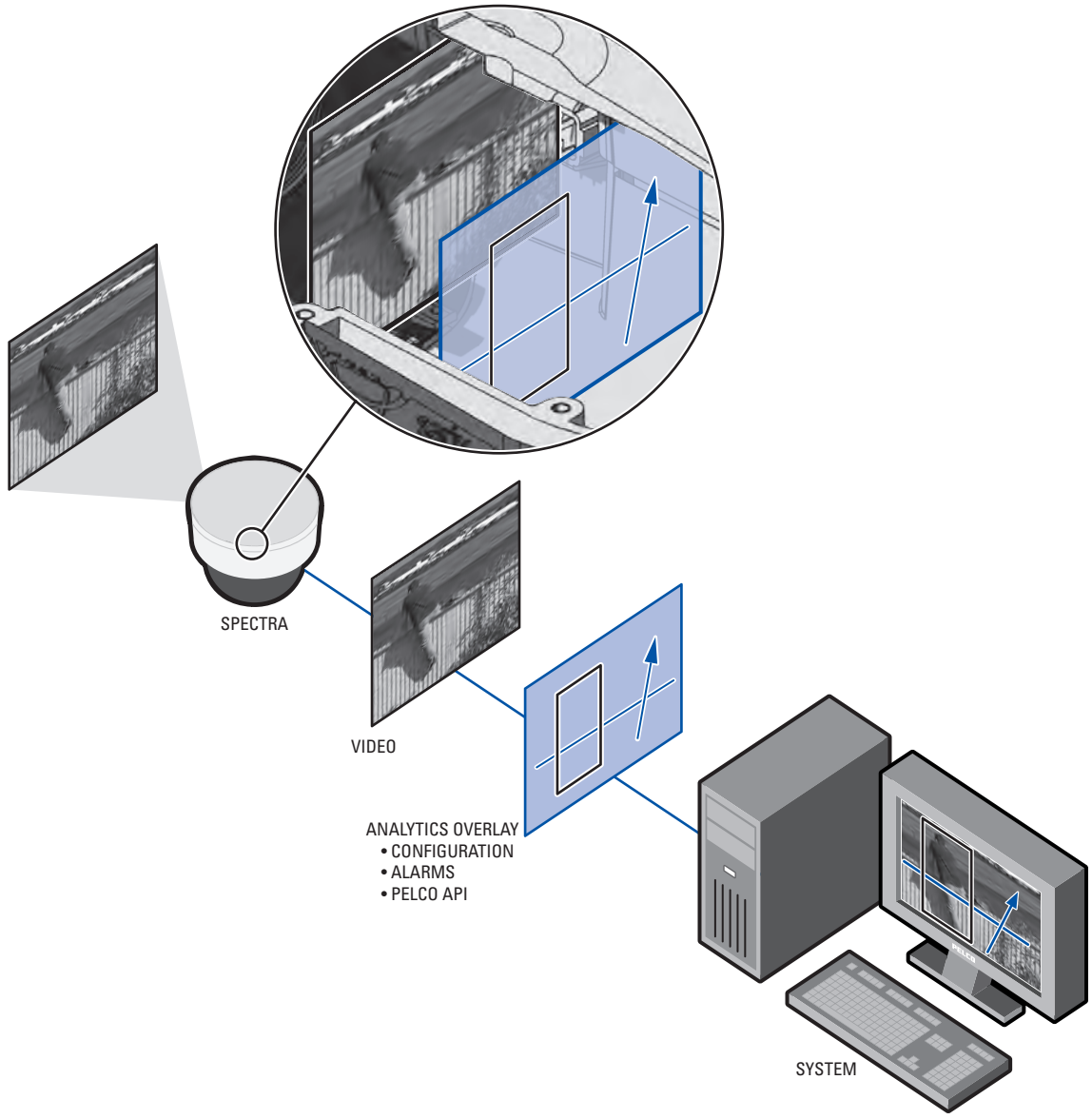
Pelco Analytics are configured and enabled using a standard Web browser, and Pelco behavior alarms are compatible with Endura or a third-party system that supports Pelco's API system.

Multiple Pelco behaviors can be scheduled to work during a certain time or condition. For example, during the day, a camera can be configured with Object Counting to count the number of people that enter a lobby door. At night, the operator can change the profile to Camera Sabotage to trigger an alarm if a camera is moved or obstructed. Available Pelco behaviors include:

- **Abandoned Object:** Detects objects placed within a defined zone and triggers an alarm if the object remains in the zone longer than the user-defined time allows. An airport terminal is a typical installation for this behavior. This behavior can also detect objects left behind at an ATM, signaling possible card skimming.
- **Adaptive Motion Detection:** Detects and tracks objects that enter a scene and then triggers an alarm when the objects enter a user-defined zone. This behavior is primarily used in outdoor environments with light traffic to reduce the number of false alarms caused by environmental changes.
- **AutoTracker:** Detects and tracks movement in the camera's field of view. When the AutoTracker behavior is configured, the system automatically pans and tilts to follow the moving object until the object stops or disappears from the monitored area.
- **Camera Sabotage:** Detects contrast changes in the field of view. An alarm is triggered if the lens is obstructed by spray paint, a cloth, or if it is covered with a lens cap. Any unauthorized repositioning of the camera also triggers an alarm.
- **Directional Motion:** Generates an alarm in a high traffic area when a person or object moves in a specified direction. Typical installations for this behavior include an airport gate or tunnel where cameras can detect objects moving in the opposite direction of the normal flow of traffic or an individual entering through an exit door.
- **Loitering Detection:** Identifies when people or vehicles remain in a defined zone longer than the user-defined time allows. This behavior is effective in real-time notification of suspicious behavior around ATMs, stairwells, and school grounds.
- **Object Counting:** Counts the number of objects that enter a defined zone. This behavior can be used to count the number of people at a store entrance/exit or inside a store where the traffic is light. This behavior is based on tracking and does not count people in a crowded setting.
- **Object Removal:** Triggers an alarm if an object is removed from a user-defined zone. This behavior is ideal for customers who want to detect the removal of high value objects, such as a painting from a wall or a statue from a pedestal.
- **Stopped Vehicle:** Detects vehicles stopped near a sensitive area longer than the user-defined time allows. This behavior is ideal for airport curbside drop-offs, parking enforcement, suspicious parking, traffic lane breakdowns, and vehicles waiting at gates.

TECHNICAL SPECIFICATIONS

The following diagram illustrates how the camera system interprets streaming video when embedded analytics are configured and enabled.

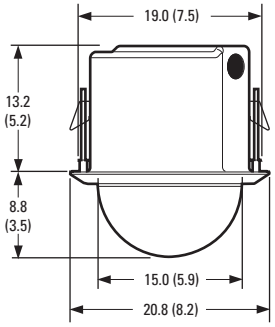


IMPORTANT NOTE: PLEASE READ. The network implementation is shown as a general representation only and is not intended to show a detailed network topology. Your actual network will differ, requiring changes or perhaps additional network equipment to accommodate the system as illustrated. Please contact your local Pelco Representative to discuss your specific requirements.

TECHNICAL SPECIFICATIONS

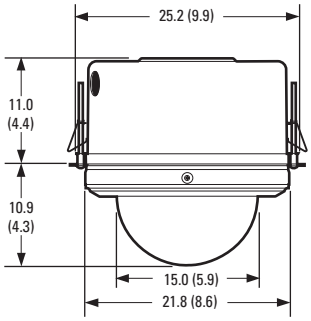
BACK BOX FEATURES

NOTE: VALUES IN PARENTHESES ARE INCHES; ALL OTHERS ARE CENTIMETERS.



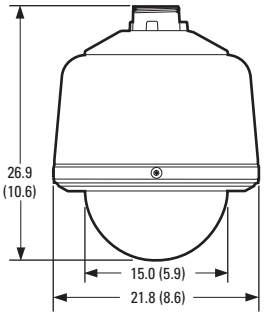
In-Ceiling (Indoor)

- Single Back Box for Suspended or Hard Ceiling Applications
- Requires 13.35 cm (5.25 in.) Space Above Ceiling and 8.25 cm (3.25 in.) Below
- Minimum Ceiling Thickness 1.27 cm (0.50 in.); Maximum 4.45 cm (1.75 in.)
- Quick Disconnect to Dome Drive
- Aluminum Construction
- Suitable for Use in Environmental Air Handling Spaces



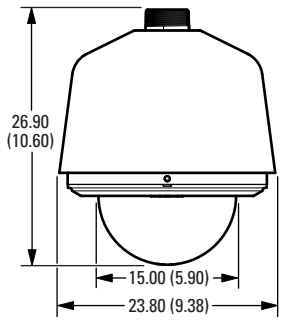
Environmental In-Ceiling

- Single Back Box for Hard Ceiling Applications
- Requires 11.18 cm (4.40 in.) Space Above Ceiling and 10.92 cm (4.30 in.) Below
- Includes Heater and Blower
- Minimum Ceiling Thickness 1.27 cm (0.50 in.); Maximum 4.45 cm (1.75 in.)
- Quick Disconnect to Dome Drive
- Aluminum Construction



Standard Pendant

- Standard Pendant Available in Black or Gray Finish
- Aluminum Construction



Environmental Pendant

- Environmental Pendant Available in Gray Finish Only
- Aluminum Construction
- Includes Sun Shield, Heater and Blower

TECHNICAL SPECIFICATIONS

SOFTWARE FEATURES

- 255 Presets
- 16 Tours
- ±0.1° Preset Accuracy
- Multilingual Menus (English, Spanish, Portuguese, Italian, German, French, Russian, Turkish, Arabic, Chinese, and Korean).
- Password Protection
- 280°/sec Pan Preset Speed and 160°/sec Tilt Preset Speed
- Rotating Discreet Liner with Sealed Fixed Bubble
- 32 Window Blanks, Configurable in Size
- "Auto Flip" Feature Rotates Dome 180° at Bottom of Tilt Travel
- Configurable Park with Actions
- Proportional Pan/Tilt Continually Decreases Pan/Tilt Speeds in Proportion to Depth of Zoom

CAMERA

Sensor Type	1/2.8-inch Type Exmor CMOS
Optical Zoom	20X
Digital Zoom	12X
Maximum Resolution	1920 x 1080
Lens	f/1.6 ~ f/3.5, focal length 4.7 mm (wide) ~ 94.0 mm (tele)
Horizontal Angle of View	55.4° (wide) ~ 2.9° (tele)
Aspect Ratio	16:9
Light Sensitivity	Sensitivity in lux for 90% reflectance, f/1.6 (wide-angle), 28 dB gain at 30 IRE (30% of signal level) with Sensitivity Boost OFF. 4X improvement to sensitivity with Sensitivity Boost ON.
Color (33 ms)	0.65 lux
Color (250 ms)	0.07 lux
Mono (33 ms)	0.20 lux
Mono (250 ms)	0.015 lux
Day/Night Capabilities	Yes
IR Cut Filter	Yes
IR Trace	Curves 850 nm and 950 nm
Wide Dynamic Range	80 dB
Iris Control	Auto iris with manual override
Backlight Compensation	Yes
Automatic Gain Control	Yes
Active Noise Filtering	Yes

TECHNICAL SPECIFICATIONS

VIDEO

Video Encoding	H.264 High, Main, or Base profiles and MJPEG
Video Streams	Up to 2 simultaneous streams; the second stream is variable based on the setup of the primary stream
Frame Rate	Up to 30, 25, 15, 12.5, 10, 8.333, 7.5, 6, 5, 3, 2.5, 2, 1 (depending on the coding, resolution, and stream configuration)

Available Resolutions

Resolution				MJPEG		H.264 High Profile (IP GOP structure)	
MPx	Width	Height	Aspect Ratio	Maximum IPS	Recommended Bit Rate (Mbps)	Maximum IPS	Recommended Bit Rate (Mbps)
2.07	1920	1080	16:9	30	12.0	30	3.50
0.92	1280	720	16:9	30	12.0	30	2.90
0.36	800	448	16:9	30	5.75	30	1.80
0.23	640	352	16:9	30	3.60	30	1.15
0.13	480	272	16:9	30	2.05	30	0.75
0.06	320	176	16:9	30	0.90	30	0.35

Supported Protocols	TCP/IP, UDP/IP (Unicast, Multicast IGMP), UPnP, DNS, DHCP, RTP, RTSP, NTP, IPv4, SNMP v2c/v3, QoS, HTTP, HTTPS, LDAP (client), SSH, SSL, SMTP, FTP, and 802.1x (EAP)
Users	
Unicast	Up to 20 simultaneous users depending on resolution settings (2 guaranteed streams)
Multicast	Unlimited users H.264
Security Access	Password protected
Software Interface	Web browser view and setup
Pelco System Integration	Endura 2.0 (or later) Digital Sentry 7.3 (or later)
Open API	Pelco API or ONVIF v1.02

ANALYTICS

Required Systems for Pelco Analytics

Pelco Interface	WS5200 Advanced System Management Software on an Endura 2.0 (or later) system
Open API	The Pelco API can transmit behavior alarm data to third-party applications, available at *pdn.pelco.com*

MINIMUM SYSTEM REQUIREMENTS

Processor	Intel® Core™ i3 Processor, 2.4 GHz
Operating System	Microsoft® Windows® 7 (32-bit and 64-bit) with DirectX 11, Windows® XP Service Pack 3 with DirectX 9.0c, or Mac® OS X 10.4 (or later)
Memory	4 GB RAM
Network Interface Card	100 megabits (or greater)
Monitor	Minimum of 1024 x 768 resolution, 16- or 32-bit pixel color resolution
Web Browser*	Internet Explorer® 8.0 (or later) or Mozilla® Firefox® 3.5 (or later); Internet Explorer 8.0 (or later) is recommended for configuring analytics
Media Player†	Pelco Media Player‡ or QuickTime® 7.6.5 for Windows XP, Windows Vista, and Windows 7; or QuickTime 7.6.4 for Mac OS X 10.4 (or later)

†This product is not compatible with QuickTime version 7.6.4 for Windows XP or Windows Vista. If you have this version installed on your PC, you will need to upgrade to QuickTime version 7.6.5.

‡Pelco Media Player is recommended for control, smoothness, and reduced latency as compared to QuickTime.

TECHNICAL SPECIFICATIONS

GENERAL

Construction		
Back Box	Aluminum	
Dome Drive	Aluminum, thermo plastic	
Lower Dome	Acrylic	
Light Attenuation		
Smoked	f/0.5 light loss	
Clear	Zero light loss	
Cable Entry (back box)		
In-Ceiling	0.75-inch conduit fitting	
Pendant	Through 1.5-inch NPT pendant mount	
Weight (approximate)	Unit	Shipping
In-Ceiling	2.1 kg (4.6 lb)	3.3 kg (7.3 lb)
Environmental In-Ceiling	2.4 kg (5.4 lb)	3.9 kg (8.5 lb)
Standard Pendant	3.5 kg (7.7 lb)	5.5 kg (12.2 lb)
Environmental Pendant	3.6 kg (7.9 lb)	5.6 kg (12.4 lb)
Environment		
In-Ceiling	Indoor	
Environmental In-Ceiling	Outdoor	
Pendant, Standard, and Environmental	Indoor/outdoor	
Operating Temperature		
In-Ceiling	0° to 50°C (32° to 122°F)	
Standard Pendant	(Assumes no wind chill factor)	
Maximum	45°C (113°F) absolute maximum; 35°C (95°F) sustained maximum	
Minimum	–4°C (25°F) sustained minimum	
Environmental In-Ceiling, Environmental Pendant	(Assumes no wind chill factor)	
Maximum	60°C (140°F) absolute maximum; 50°C (122°F) sustained maximum	
Minimum	–45°C (–50°F) sustained minimum; –51°C (–60°F) absolute minimum; prevents icing at sustained minimum of –30°C (–22°F); de-ices 2.5 mm (0.1 in.) within 3 hours after power-up at –30°C (–22°F) (no wind chill factor)	
Operating Humidity		
In-Ceiling (Indoor), Standard Pendant	10 to 90% RH (non-condensing)	
Environmental In-Ceiling, Environmental Pendant	10 to 100% RH (condensing)	
Effective Projected Area (EPA)	20.5 square inches (without mount), 47 square inches (with IWM Series mount)	

MECHANICAL

(Dome Drive Only)

Variable Speed	0.1° to 280°
Preset Accuracy	±0.1°
Pan Movement	360° continuous pan rotation
Vertical Tilt	+1° to –90°
Manual Pan/Tilt Speeds	
Pan	0.1° to 80°/sec manual operation
Tilt	0.1° to 40°/sec manual operation
Preset Speeds	
Pan	280°/sec
Tilt	160°/sec

ELECTRICAL

Port	RJ-45 connector for 100Base-TX Auto MDI/MDI-X Autonegotiate/Manual setting
Cabling Type	Cat5 or better for 100Base-TX
Input Voltage	18 to 32 VAC; 24 VAC nominal 22 to 27 VDC; 24 VDC nominal
Input Power	
24 VAC	23 VA nominal (without heater and blower); 73 VA nominal (with heater and blower)
24 VDC	0.7 A nominal (without heater and blower); 3 A nominal (with heater and blower)
PoE	IEEE802.3af (without heater and blower)

CERTIFICATIONS/RATINGS/PATENTS

- CE, Class A
- FCC, Class A
- UL/cUL Listed
- C-Tick
- U.S. Patents 5,931,432; 6,793,415 B2; 6,802,656 B2; 6,821,222 B2; 7,161,615 B2
- Meets NEMA Type 4X and IP66 standards when installed properly (B52-F-E and B52-PG-E)
- ONVIF 1.02
- KCC
- For Environmental models:
  - IEC 60068-2-1
  - IEC 60068-2-2
  - IEC 60068-2-6
  - IEC 60068-2-14
  - IEC 60068-2-27
  - IEC 60068-2-30
  - IEC 60068-2-78

TECHNICAL SPECIFICATIONS

SYSTEM MODEL NUMBERS

Type	Back Box Color	Lower Dome	Spectra HD, 2.0 MPx, 20X
In-ceiling, indoor	Black with white trim ring	Smoked	S5220-FW0
		Clear	S5220-FW1
In-ceiling, environmental	Black with black trim ring	Smoked	S5220-YB0
		Clear	S5220-YB1
Pendant, standard	Gray	Smoked	S5220-PG0
		Clear	S5220-PG1
	Black	Smoked	S5220-PB0
		Clear	S5220-PB1
Pendant, environmental	Gray	Smoked	S5220-EG0
		Clear	S5220-EG1

COMPONENT MODEL NUMBERS

Back Box		Lower Dome*		Dome Drive	
B52-F	Back Box In-Ceiling	LDHQF-0	Lower Dome High-Quality Smoked In-Ceiling	D5220F	Dome Drive In-Ceiling
B52-F-E	Back Box In-Ceiling Environmental	LDHQF-1	Lower Dome High-Quality Clear In-Ceiling	D5220P	Dome Drive Pendant
B52-PG	Back Box Pendant Gray	LDHQPB-0	Lower Dome High-Quality, Smoked Pendant		
B52-PB	Back Box Pendant Black	LDHQPB-1	Lower Dome High-Quality Clear Pendant		
B52-PG-E	Back Box Pendant Gray Environmental				

*Use the pendant lower domes with the environmental in-ceiling and environmental pendant back boxes.

RECOMMENDED MOUNTS

In-Ceiling Domes

SD5-P	2' x 2' drop ceiling panel, aluminum construction; replaces 2'þx 2' ceiling tile
SCA1	Support rails for B5-F; for use in ceiling tile applications

Pendant Domes

BB5-PCA-BK	Pendant conduit adapter, black
BB5-PCA-GY	Pendant conduit adapter, gray
IWM Series	Wall mount, with or without integral 24 VAC, 100 VA transformer; black or gray finish; can be adapted for corner, parapet or pole application
MRCA	Ceiling mount, black
PP4348	Parapet roof mount
PP350/PP351	Parapet wall/roof mount
SWM Series	Compact wall mount, black or gray finish; can be adapted for corner or pole applications

OPTIONAL ACCESSORIES

ALM-1	External alarm accessory
AUD-1	External audio accessory
MCS Series	Indoor, 24 VAC power supply
WCS Series	Outdoor, 24 VAC power supply

Refer to individual power supply specifications for more information.

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