Spectra® Enhanced Series IP Dome System

S6220 AND S6230 MODELS, WIDE-DYNAMIC-RANGE PAN/TILT/ZOOM DOME

Product Features

- Up to 1920 x 1080 Resolution at up to 60 Images per Second with SureVision™ 2.0 and 130 dB WDR

- Up to 450° per Second Pan and Tilt

- Full Functionality Using Power Over Ethernet (HPoE and PoE+)

- Low Latency for Improved Pan and Tilt Driveability

- Defog Mode Provides Three Levels of Fog Removal Within the Image for Improved Image Quality

- Vivid Mode Can be Turned On/Off to Drastically Improve the Image Contrast and Color Saturation

- Electronic Image Stabilization (EIS)

- 16 Preset Tours, 256 Dome Presets, 32 Window Blanks

- Full Suite of Built-In Analytics Including AutoTracker, Adaptive Motion Detection, Abandoned Object, and More.

- 2 Simultaneous Video Streams: Dual H.264 or H.264 and Scalable MJPEG

ENDURA ENABLED

Full **HD** 1080p

SureVision™ 2.0
A Pelco™ by Schneider Electric™ technology

- ONVIF Profile-S and Profile-G Conformant

- Local Storage Through 32 GB Micro SD card (not supplied)

Network Dome System

Pelco's high-speed IP-PTZ dome cameras take a leap in image quality with the new Spectra® Enhanced product offering. The top tier dome provides industry-leading image quality with a wide dynamic range (WDR) imaging system, 60 images per second video (ips), electronic image stabilization, and a whole host of features such as image defog and Pelco's full suite of behavioral analytics. These features, along with SureVision™ 2.0 and 130 dB WDR, make the camera system an ideal solution for detecting and capturing faces, license plates, tattoos, and evidentiary details in nearly any lighting situation.

Spectra Enhanced is compatible with Pelco's powerful new VideoXpert™ video management system while maintaining backwards compatibility to Pelco's legacy Endura® and Digital Sentry® VMS platforms.

Using High-Profile H.264 compression, Spectra Enhanced can efficiently store up to 32 GB of still images or video on a compatible SD card (not supplied) that is easily accessible through the ONVIF Profile G protocol or FTP. As always, Pelco products are designed with robust open-architecture connectivity for third-party VMS and recording solutions and simple integration into virtually any IP-based system.

Spectra Enhanced 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.

Ease of Installation

Spectra Enhanced features the same ease of installation and maintenance that you have come to expect from Spectra. Each dome system consists of a back box, a dome drive, and a lower dome. There is a choice of five form factors: in-ceiling, environmental in-ceiling, pendant, environmental pendant, and stainless steel environmental pendant.

Built-In Analytics

Nine Pelco behaviors are preloaded and included as standard features including Abandoned Object, Adaptive Motion Detection, AutoTracker, Camera Sabotage, Directional Motion, Loitering Detection, Object Counting, Object Removal, and Stopped Vehicle. 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.

Window Blanking

Window blanking is used to conceal user-defined privacy areas that cannot be viewed by an operator. Spectra Enhanced supports up to 32 blanked windows.
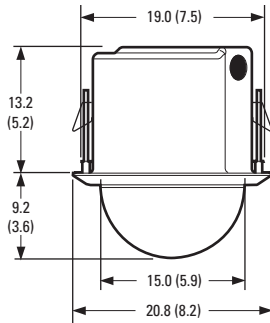
Video Systemization

Spectra Enhanced easily connects to Pelco IP and hybrid systems such as VideoXpert, 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.

PELCO

by Schneider Electric

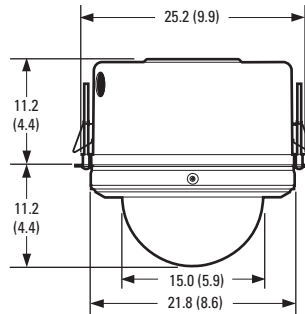ONVIF | S G

BACK BOX FEATURES

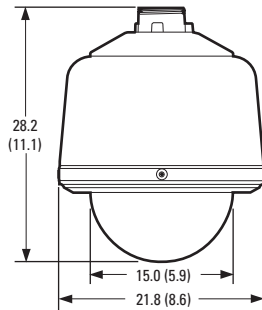🖐 NOTE: VALUES IN PARENTHESES ARE INCHES; ALL OTHERS ARE CENTIMETERS.

In-Ceiling (Indoor)

- Single Back Box for Suspended or Hard Ceiling Applications with Light Gray Trim Ring, RAL9002
- 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.)
- Aluminum Construction, Acrylic Bubble
- Suitable for Use in Environmental Air Handling Spaces
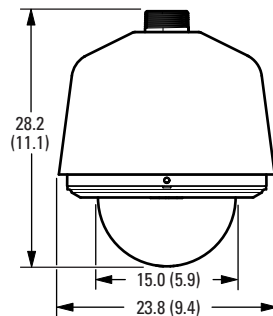- 0° to 50°C (32° to 122°F) Sustained Operating Temperature

Environmental In-Ceiling

- Single Back Box, RAL9011, for Hard Ceiling Applications
- Requires 11.18 cm (4.40 in.) Space Above Ceiling;10.92 cm (4.30 in.) Below
- Type 4X and IP66
- Includes Heater and Blower
- Minimum Ceiling Thickness 1.27 cm (0.50 in.); Maximum 4.45 cm (1.75 in.)
- Aluminum Construction, Acrylic Bubble
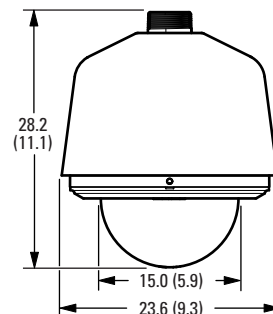- –45° to 50°C (–50° to 122°F) Sustained Operating Temperature

Standard Pendant

- Standard Pendant Available in Black or Light Gray Finish, RAL9002
- Aluminum Construction, Acrylic Bubble
- Uses 1 1/2-inch NPT Thread
- –5° to 35°C (23° to 95°F) Sustained Operating Temperature

Environmental Pendant

- Environmental Pendant Available in Light Gray Finish, RAL9002
- Aluminum Construction, Acrylic Bubble
- Type 4X and IP66
- Uses 1 1/2-inch NPT Thread
- Includes Sun Shield, Heater, and Blower
- –45° to 50°C (–50°F to 122°F) Sustained Operating Temperature

Stainless Steel Environmental Pendant

- Stainless Steel Environmental Pendant Available in Light Gray Finish, RAL9002
- All Stainless Steel Construction, Acrylic Bubble
- Type 4X and IP66
- Uses 1 1/2-inch NPT Thread
- Includes Sun Shield, Heater, and Blower
- –45° to 50°C (–50° to 122°F) Sustained Operating Temperature

CAMERA/OPTICS

Specification	20X	30X
Sensor Type	1/2.8-inch Type Exmor CMOS Sensor	1/2.8-inch Type Exmor CMOS Sensor
Optical Zoom	20X	30X
Digital Zoom	12X	12X
Maximum Resolution	1920 x 1080	1920 x 1080
Lens	f/1.6 ~ f/3.5, focal length 4.7 mm (wide) ~ 94.0 mm (tele)	f/1.6 ~ f/4.7, focal length 4.3 mm (wide) ~ 129.0 mm (tele)
Horizontal Angle of View	55.4° (wide) ~ 2.9° (tele)	59.5° (wide) ~ 2.1° (tele)
Aspect Ratio	16:9	16:9
Light Sensitivity		
Color (33 ms)	0.20 lux	0.20 lux
Color (250 ms)	0.025 lux	0.025 lux
Mono (33 ms)	0.06 lux	0.06 lux
Mono (250 ms)	0.008 lux	0.008 lux
	Note: Sensitivity in lux for 90% reflectance, f/1.6 (wide angle), 43 dB gain at 30 IRE (30% of signal level) with Sensitivity Boost OFF; 4X improvement to sensitivity with Sensitivity Boost ON	**Note:** Sensitivity in lux for 90% reflectance, f/1.6 (wide angle), 43 dB gain at 30 IRE (30% of signal level) with Sensitivity Boost OFF; 4X improvement to sensitivity with Sensitivity Boost ON
Day/Night Capabilities	Yes	Yes
IR Cut Filter	Yes	Yes
Wide Dynamic Range	130 dB	130 dB
Iris Control	Auto iris with manual override	Auto iris with manual override
Backlight Compensation	Yes	Yes
Automatic Gain Control	Yes	Yes
Active Noise Filtering	Yes	Yes
Electronic Image Stabilization (EIS)	Yes	Yes

SOFTWARE FEATURES

- 256 presets
- 16 tours
- ±0.1° preset accuracy
- Multilingual menus (English, Spanish, Portuguese, Italian, German, French, Russian, Turkish, Arabic, Simplified Chinese, and Korean)
- Password protection
- 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
- Pelco analytics including nine user-configurable behaviors
- Defog modes

PELCO ANALYTICS BEHAVIORS

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

- **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 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 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 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 idea for airport curbside drop-offs, parking enforcement, suspicious parking, traffic lane breakdowns, and vehicles waiting at gates.

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 60, 50, 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				H.264 High Profile (IP GOP structure)	
MPx	Width	Height	Aspect Ratio	Maximum IPS	Recommended Bit Rate (Mbps)
2.07	1920	1080	16:9	60	8.00
2.07	1920	1080	16:9	30	6.05
0.92	1280	720	16:9	30	3.00
0.36	800	448	16:9	30	2.00
0.23	640	352	16:9	30	1.80

NETWORK

Supported Protocols	TCP/IP, UDP/IP (Unicast, Multicast IGMP), UPnP, DNS, DHCP, RTP, RTSP, NTP, IPv4, IPv6*, SNMP v2c/v3, QoS, HTTP, HTTPS, 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 Profile G and Profile S
Mobile Application	Integrated to Pelco Mobile App
Video Motion Detection	Simple motion detection and camera sabotage
Local Storage	32 GB SD Card; Capture 1–5–10 second video clips on camera sabotage, motion detection, or alarm input; record video continuously in the case of network outage with option to overwrite; access video through FTP protocol and ONVIF Profile G

MINIMUM SYSTEM REQUIREMENTS

Processor	Intel® Core™ i3 Processor, 2.4 GHz
Operating System	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 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 and Windows 7; or QuickTime 7.6.4 for Mac OS X 10.4 (or later)

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*

GENERAL

Construction

Back Box	Aluminum
Dome Drive	Aluminum, thermo plastic
Lower Dome	Acrylic

Stainless Steel Construction

Back Box	316 stainless steel; gray, polyurethane powder coated finish
Lower Dome	316 stainless steel; black, polyurethane powder coated finish
Bubble	Acrylic, clear or smoked

Light Attenuation

Smoked	f/0.5 light loss
Clear	f/0.0 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	2.6 kg (5.7 lb)	4.6 kg (10.2 lb)
Environmental In-Ceiling	2.9 kg (6.5 lb)	4.9 kg (10.8 lb)
Standard Pendant	3.1 kg (6.8 lb)	5.0 kg (11 lb)
Environmental Pendant	3.7 kg (8.2 lb)	5.5 kg (12.2 lb)
Stainless Steel Environmental Pendant	6.5 kg (14.3 lb)	8.6 kg (19 lb)

ALARM

Unsupervised	Detects open or closed alarm state
Supervised	Detects open and short alarm state with external 1-kohm resistor
Input	3.5 VDC maximum, 3.5 mA maximum
Relay Output	±32 VDC maximum, 150 mA maximum

AUDIO

Input/Output	Line level/external microphone input; 600-ohm differential, 1Vp-p maximum signal level

*Supports mixed IPv4 and IPv6 installations, but not IPv6-only deployments.

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

OPERATING TEMPERATURE*

Temperature		In-Ceiling (24 VAC, PoE+)	Standard Pendant (24 VAC, PoE+)	Environmental Pendant and In-Ceiling		
				24 VAC	HPoE§	PoE+
Sustaining	Maximum	50°C (122°F)	35°C (95°F)	50°C (122°F)	50°C (122°F)	50°C (122°F)
	Minimum	0°C (32°F)	–5°C (23°F)	–45°C (–49°F)	–45°C (–49°F)	–20°C (–4°F)
Absolute	Maximum	N/A	45°C (113°F)	60°C (140°F)	60°C (140°F)	60°C (140°F)
	Minimum	N/A	N/A	–51°C (–60°F)	N/A	N/A
Ice Free		N/A	N/A	–30°C (–22°F)	–30°C (–22°F)	–10°C (14°F)
Cold Start†		0°C (32°F)	0°C (32°F)	–40°C (–40°F)	–35°C (–31°F)	–10°C (14°F)
De-icing‡		N/A	N/A	–30°C (–22°F)	–30°C (–22°F)	N/A

*Assumes no wind chill factor.

†Cold starts within 90 minutes at specified temperature.

‡Removes icing of 2.5 mm (0.1 in.) within 3 hours after power-up.

§PEO75U HPoE Injector Accessory required for heater operation.

OPERATING HUMIDITY

In-Ceiling (indoor), Standard Pendant	10 to 90% RH (noncondensing)
Environmental In-Ceiling, Environmental Pendant, Stainless Steel 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 80°/sec (manual pan speed)
Preset Accuracy	±0.1°
Pan Movement	360° continuous pan rotation
Vertical Tilt	+1° to –90°
Maximum Pan Speed	Up to 450° per second
Maximum Tilt Speed	Up to 450° per second
Manual Pan/Tilt Speeds	
Pan	0.1° to 80°/sec manual operation
Tilt	0.1° to 45°/sec manual operation
Preset Speeds	
Pan	450°/sec
Tilt	450°/sec

ELECTRICAL

Ports	RJ-45 connector for 100Base-TX Auto MDI/MDI-X Autonegotiate/manual setting
Cabling Type	Cat5e 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	24 VA nominal (without heater and blower); 81 VA nominal (with heater and blower)
24 VDC	1 A nominal (without heater and blower); 3 A nominal (with heater and blower)
PoE+	18 W, Environmental models (with heater on); 15 W, Non-Environmental (with heater off)
HPoE	60 W, Environmental models (with heater on); 15 W, Non-environmental (with heater off)

CERTIFICATIONS/RATINGS/PATENTS

- CE, Class A
- FCC, Class A
- ICES-003, Class A
- UL/cUL Listed
- C-Tick
- KC
- ONVIF Profile S
- ONVIF Profile G
- Cisco® Medianet Media Services Proxy 2.0 compatible
- Environmental models, including stainless steel, were tested in accordance with:
  - IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-14, IEC 60068-2-30, and IEC 60068-2-78
- Environmental pendants, including stainless steel, were tested in accordance with:
  - IEC 60068-2-6 and IEC 60068-2-27
- Environmental models meet NEMA Type 4X and IP66 standards when installed properly (B6-F-E, B6-PG-E, and B6-PSG-E)
- U.S. Patents 5,931,432; 6,793,415 B2; 6,802,656 B2; 6,821,222 B2; 7,161,615 B2

TECHNICAL SPECIFICATIONS

SYSTEM MODEL NUMBERS

Type	Back Box Color	Lower Dome	Spectra Enhanced, 2.0 MPx, 20X	Spectra Enhanced, 2.0 MPx, 30X
In-ceiling, indoor	White with white trim ring	Smoked	S6220-FW0	S6230-FW0
		Clear	S6220-FW1	S6230-FW1
In-ceiling, environmental	Black with black trim ring	Smoked	S6220-YB0	S6230-YB0
		Clear	S6220-YB1	S6230-YB1
Pendant, standard	Gray	Smoked	S6220-PG0	S6230-PG0
		Clear	S6220-PG1	S6230-PG1
	Black	Smoked	S6220-PB0	S6230-PB0
		Clear	S6220-PB1	S6230-PB1
Pendant, environmental	Gray	Smoked	S6220-EG0	S6230-EG0
		Clear	S6220-EG1	S6230-EG1
Pendant, environmental, stainless steel	Gray	Smoked	S6220-ESG0	S6230-ESG0
		Clear	S6220-ESG1	S6230-ESG1

COMPONENT MODEL NUMBERS

Back Box	
B6-F	In-ceiling
B6-F-E	In-ceiling, environmental
B6-PG	Pendant, gray
B6-PB	Pendant, black
B6-PG-E	Pendant, gray, environmental
B6-PSG-E	Pendant, gray, environmental, stainless steel

High Definition (HD) Lower Dome*	
LDHDF-0	In-ceiling, smoked
LDHDF-1	In-ceiling, clear
LDHDPB-0	Pendant, smoked
LDHDPB-1	Pendant, clear
LDHDSS-0	Pendant, smoked, stainless steel
LDHDSS-1	Pendant, clear, stainless steel

Dome Drive	
D6220	20X
D6230	30X

*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' x 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
IDM4012SS — Stainless steel wall mount with feed-through capabilities

OPTIONAL ACCESSORIES

POE1AT-US — PoE+ Injector† with US power cord
POE1AT-EU — PoE+ Injector† with EU power cord
POE75U-1UP — HPoE Injector† (no power cord)
POE75U-1UP-US — HPoE Injector† with US power cord
POE75U-1UP-EUK — HPoE Injector† with EU/UK power cord
MCS Series — Indoor, 24 VAC power supply
WCS Series — Outdoor, 24 VAC power supply

Refer to individual power supply specifications for more information.

†PoE+ will not provide enough power for heater operation. Use the HPoE Injector to provide sufficient heater power.