Pelco by Schneider Electric understands that information is critical to success, which is why we are singularly focused on the development of video surveillance and security solutions that provide you the information necessary to make real-time, business-enabling decisions. From the recently introduced VideoXpert video management platform to our industry-leading selection of IP cameras and accessories, Pelco is committed to designing and delivering a broad range of high-quality, IP video security products and systems complemented with an unparalleled level of customer support and services.

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# HIGH DEFINITION INDOOR/OUTDOOR IP POSITIONING CAMERA SYSTEM (Esprit Enhanced Series)

**DIVISION 28 – ELECTRONIC SAFETY AND SECURITY**

**28 20 00 Electronic Surveillance**

**28 23 00** **Video Surveillance**

 **28 23 29 Video Surveillance Remote Devices and Sensors**

**Notes to Specifier:**

1. Where several alternative parameters or specifications exist, or where, the specifier has the option of inserting text, such choices are presented in **<bold text>.**

2. Explanatory notes and comments are presented in **colored** text.

**HIGH DEFINITION INDOOR/OUTDOOR IP POSITIONING CAMERA SYSTEM**

## PART 1: GENERAL

### 1.01 SUMMARY

* + 1. Section includes a 1080p high definition IP positioning camera system with outdoor rated housing.
		2. Product - A high definition IP positioning camera system, based on H.264 High, Main, or Base and MJPEG compression in an IP66 outdoor-rated dome housing.

## Related Requirements

* + - 1. 27 20 00 Data Communications
			2. 28 23 13 Video Surveillance Control and Management Systems
			3. 28 23 16 Video Surveillance Monitoring and Supervisory Interfaces
			4. 28 23 19 Digital Video Recorders and Analog Recording Devices
			5. 28 23 23 Video Surveillance Systems Infrastructure

### 1.02 REFERENCES

* + 1. Abbreviations
			1. AGC - Automatic Gain Control
			2. API – Applications Programming Interface
			3. ARP – Address Resolution Protocol
			4. AWB – Automatic White Balance
			5. BLC – Back Light Compensation
			6. CBR – Constant Bit Rate
			7. CVBR – Constant and Variable Bit Rate
			8. DHCP - Dynamic Host Configuration Protocol
			9. DNR – Digital Noise Reduction
			10. DNS - Domain Name Server
			11. DDNS – Dynamic Domain Name Server
			12. EAP – Extensible Authentication Protocol
			13. fps - frames per second
			14. FTP - File Transfer Protocol
			15. GUI – Graphical User Interface
			16. HTTP - Hypertext Transfer Protocol
			17. HTTPS – Secure Hypertext Transfer Protocol
			18. ICMP – Internet Control Message Protocol
			19. IGMP - Internet Group Management Protocol
			20. IP - Internet Protocol
			21. JPEG - Joint Photographic Experts Group
			22. LDAP – Lightweight Directory Access Protocol
			23. MJPEG - Motion JPEG
			24. MPEG - Moving Pictures Experts Group
			25. NTP - Network Time Protocol
			26. PoE - Power over Ethernet
			27. PPPoE - Point-to-Point Protocol over Ethernet
			28. QoS – Quality of Service
			29. RARP – Reverse Address Resolution Protocol
			30. RTP - Real-Time Transport Protocol
			31. RTSP - Real-Time Streaming Protocol
			32. SMTP - Simple Mail Transfer Protocol
			33. SNMP – Simple Network Management Protocol
			34. SSH – Secure Shell
			35. SSL – Secure Sockets Layer
			36. TCP - Transmission Control Protocol
			37. UDP - User Datagram Protocol
			38. UPnP – Universal Plug and Play
			39. VBR – Variable Bit Rate
			40. WDR – Wide Dynamic Range
			41. VMS - Video Management System
		2. Reference Standards
			1. Network
				1. IEEE

802.3 Ethernet Standards

802.1x – Port-based authentication

* + - 1. Video
				1. ISO / IEC 14496 –10, MPEG-4 Part 10 (ITU H.264)
				2. ISO / IEC 10918 – JPEG
				3. ONVIF – Profile S
			2. Emissions
				1. FCC-47 CFR Part 15, Class A
				2. CE, Class A
				3. ICES-003, Class A
			3. Environmental
				1. ANSI / IEC 60529 – Degrees of Protection Provided by Enclosures – IP66
				2. IK10 (20J) Impact Resistance / IEC62262
				3. National Electrical Manufacturers Association, NEMA 250-2003, 4X Enclosure Definition

### 1.03 SUBMITTALS

* + 1. Product Data
			1. Manufacturer’s printed or electronic data sheets
			2. Manufacturer’s installation and operation manuals
			3. Warranty documentation

### 1.04 QUALIFICATIONS

* + 1. Manufacturer shall have a minimum of five years’ experience in producing IP video equipment.
		2. Installers shall be trained and authorized by the Manufacturer to install, integrate, test, and commission the system.

### 1.05 DELIVERY, STORAGE AND HANDLING

* + 1. Deliver the camera in the manufacturer’s original, unopened, undamaged container with identification labels intact.
		2. Store the camera in a temperature environment protected from mechanical and environmental conditions as designated by the manufacturer.

### 1.06 WARRANTY AND SUPPORT

* + 1. Manufacturer shall provide a limited 2 year warranty for the product to be free of defects in material and workmanship.

END OF SECTION

## PART 2: PRODUCTS

### 2.01EQUIPMENT

* + 1. Manufacturer: Pelco

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* + 1. Model ES6230 Esprit Enhanced Series IP Positioning System

|  |  |  |  |
| --- | --- | --- | --- |
| Enclosure Type | Non IR | 200m IR | IR + White Light |
| HPoE, 24 VAC, 48 VDC | 100 to 240 VAC | 48 VDC | 100 to 240 VAC | 48 VDC | 100 to 240 VAC |
| Standard | ES6230-02 | ES6230-05 | --- | --- | --- | --- |
| With Wiper | ES6230-12 | ES6230-15 | ES6230-12-R2 | ES6230-15-R2 | ES6230-12-RWUS | ES6230-15-RWUS |
| Pressurized and Wiper | ES6230-12P | ES6230-15P | ES6230-12P-R2 | ES6230-15P-r2 | ES6230-12P-RWUS | ES6230-15P-RWUS |

* + 1. Alternate: None

### 2.02 GENERAL DESCRIPTION

* + 1. The indoor/outdoor, HD network positioning system shall consist of a receiver, enclosure, variable speed/high speed pan and tilt drive unit with continuous 360° rotation; 1/2.8-inch high definition
		1920 x 1080p resolution color/black-white camera with an infrared cut filter, 30X optical zoom,
		12X digital zoom, electronic image stabilization, and wide dynamic range.
		2. The indoor/outdoor, HD network positioning system shall possess the following primary characteristics:
			1. Continuous 360° pan rotation up to 140°/sec
			2. H.264 High, Main, Baseline profiles; and MJPEG compression
			3. 2.0 megapixels
			4. dual streaming (two independent IP video streams)
			5. day/night operation with IR cut filter
			6. 12 x digital zoom, 30X optical zoom
			7. Automatic gain control
			8. Wide Dynamic Range (WDR): 130 dB minimum
			9. integral video analytics with nine user configurable behaviors
			10. pan/tilt and enclosure with Integrated Optics Package (IOP) or Pressurized Integrated Optics Cartridge (IOC)
			11. electronic image stabilization H.264 viewers
			12. unicast capable with up to 20 simultaneous viewers
			13. IP66 rated housing
			14. Effective Projected Area: 243 inch^2 (with illuminator), 193 inch^ (without illuminator)
			15. 2 SFP Ports
			16. Vari-zoom IR illuminator option with 200 meter range

### 2.03 VIDEO

* + 1. Imager
			1. Sensor: 1/2.8" Sony Exmor CMOS
			2. Minimum illumination
				1. Color mode: 0.03 lux (33 ms, F1.6), .008 lux (250 ms, F1.6)
				2. Black & white mode:.004 lux (33 ms, F1.6), .001 lux (250 ms, F1.6)
			3. Scanning: Progressive
			4. Image Control Settings
				1. Automatic white balance (AWB)

Selectable for:

Normal (7,500K to 2,500K)

Extended (7,500K to 2,000K)

Auto Tracking White (10,000K to 2,000K)

Cool White – fixed mode for scenes with bluer light sources

Manual mode - provide ability to configure red and blue values for color adjustment

* + - * 1. Lighting modes: WDR, visibility enhancement, backlight compensation, normal
				2. Defog mode (enhanced clarity in the presence of fog)
				3. Exposure modes: automatic or manual
				4. Day and night settings
				5. Frequency
				6. Image sharpness
				7. Chroma
				8. Image mirror or flip
				9. Digital noise reduction
				10. Privacy zone definition: up to 32 zones of window blanking
			1. Additional capabilities:
				1. 130 dB WDR
				2. Backlight compensation
				3. Automatic gain control (AGC)
				4. Active noise filtering
				5. Electronic image stabilization
		1. Lens: 4.3 – 129 mm variable, F1.6 – F4.7, remote auto-focus
			1. Horizontal angle of view: 63.7o (wide) – 2.3o (tele)
			2. Focus settings
				1. Auto Focus: Automatically focuses during runtime operation.
				2. Sure Focus: Camera auto focuses when pan, tilt, and zoom operations are complete or if the IR cut filter changes state.

When auto focus lock is achieved, auto focus shall turn off, fixing the focal position until the next PTZ operation.

If 30 seconds pass without an auto focus lock, the camera shall retain its focal position until the next PTZ action.

* + - * 1. Focus Trace: Enables camera to use a focus trace curve when zooming based on the distance to ground-level targets in the scene
				2. Install Height: Determines the distance between the camera and ground-level targets for focus trace operations
		1. Video Streams
			1. The PTZ dome camera shall support the transmission of two configurable video streams, each of which may have the following properties:
				1. Compression type:

H.264 (High, Main, or Base profiles), available in Stream 1 and Stream 2

MJPEG, available in Stream 2

* + - * 1. Available resolutions:

1920 x 1080 (16:9) (1080p)

1280 x 720 (16:9) (720p)

800 x 448 (16:9)

640 x 352 (16:9)

1280 x 960 (4:3)

800 x 608 (4:3)

640 x 480 (4:3)

320 x 240 (4:3)

* + - * 1. Bit rate: 0.5 Mbps – 8.00 Mbps
				2. Frame rate: 1 – 60 fps
			1. Video streams shall support ONVIF Profile S, G, and Q.
			2. The PTZ dome camera shall have the following additional streams available:
				1. Low resolution JPEG stream for configuration of camera settings.
				2. Event stream displaying a list of alerts triggered by an active analytic behavior.
		1. Storage and Recording
			1. The PTZ dome control shall have onboard SD card storage.
				1. Card type: SDXC
				2. Capacity: up to 2 TB
			2. The local SD storage shall have the ability to be backed up to alternate media without removal of the SD card from the camera.
			3. Local recording on the SD card shall commence upon loss of network connectivity, based on a pre-programmed schedule.
			4. Video shall be recorded continuously in the case of network outage.
			5. Alarm recording: The PTZ dome camera shall capture selectable 1, 5, or 10 second video clips on camera sabotage, motion detection, or alarm input.
			6. Video recording and storage shall support ONVIF profile G.
		2. Pan Tilt
			1. Pan Range: 360o
			2. Tilt Range: +40o to - 90o
			3. Presets: up to 256
				1. accuracy ± .1o
			4. Tours: up to 16
			5. Pan Speed:
				1. manual: .1o - 80o per second
				2. maximum: 140o per second
			6. Tilt Speed:
				1. manual: .1o - 40o per second
				2. maximum: 140o per second
			7. Limit stops: configurable through web browser
		3. Analytics
			1. Analytics shall be pre-loaded in the PTZ dome camera.
			2. The PTZ dome camera shall have the ability to detect motion within user defined areas of the video image.
			3. Number of simultaneous running analytic behaviors: 3
			4. Configurable behaviors:
				1. Abandoned Object - Detection of objects placed in a defined zone and triggers an alarm if the object remains in the zone longer than the user-defined time allows.
				2. Adaptive Motion - Detection and tracking of objects that enter a scene and triggering of an alarm when the objects enter a user-defined zone
				3. Auto Tracker - Detection and tracking of movement in the camera’s field of view, with automatic pan and tilt to follow the moving object until the object stops or disappears from the monitored area
				4. Camera Sabotage - Detection of contrast changes in the field of view, suitable to detect lens obstruction or unauthorized repositioning of the camera
				5. Directional Motion - Detection of person or object moving in a specified direction
				6. Loitering Detection – Identification of people or vehicles remaining in a defined zone longer than a user-defined time
				7. Object Counting - Counting the number of objects that enter a defined zone or cross a tripwire
				8. Object Removal – Detection of object is removed from a defined zone
				9. Stopped Vehicle – Detection of vehicles stopped near a sensitive area longer than a user-defined time

### 2.04 ADDITIONAL FEATURES

* + 1. Alarm – The PTZ dome camera shall have four alarm/sensor inputs and a relay output for alarm or control.
			1. The alarm input shall be able to detect an open or closed alarm state function in unsupervised or supervised modes.
			2. Input: 3.5 VDC maximum, 3.5mA maximum
			3. Relay Output: Two, 30 VDC maximum, 1 A maximum
		2. Audio – The PTZ dome camera shall have bi-directional audio capability.
			1. Input/Output: Line level/external microphone input; 600-ohm differential, 1 V p-p maximum
			2. Encoding: G711 - Alaw / mlaw
		3. Discovery - Manufacturer shall offer a discovery program to identify all devices of his manufacture on the network.
		4. System Information
			1. The system settings of the PTZ dome camera shall be exportable as a separate file.
			2. The PTZ dome camera shall maintain an accessible log of system and motion-triggered events.
				1. The log shall be exportable to an Excel spreadsheet file.

### 2.05 NETWORK

* + 1. Connectivity: 100 BASE-TX Ethernet with RJ-45 connector
		2. Protocols supported
			1. Transmission Control Protocol (TCP), Internet Protocol (IP) v4 and v6, User Datagram Protocol (UDP)
			2. Configuration: Dynamic Host Configuration Protocol (DHCP)
			3. Web services: Hypertext Transfer Protocol (HTTP), Secure HTTP (HTTPS)
			4. Network services: Domain Name System (DNS), Network Time Protocol (NTP), Internet Control Message Protocol (ICMP), Simple Network Management Protocol (SNMP) v2c/v3, Universal Plug and Play (UPnP)
			5. Media: Real-Time Transport Protocol (RTP), Real-Time Streaming Protocol (RTSP)
			6. Multicast: Internet Group Management Protocol (IGMP)
			7. Notifications: File Transfer Protocol (FTP), Simple Mail Transfer Protocol (SMTP)
			8. Remote Access: Secure Shell (SSH)
			9. Security: Secure Sockets Layer (SSL), IEEE 802.1x (EAP-MD5, EAP-TLS, EAP-TTLS, EAP-PEAP and EAP-FAST)
			10. Quality of Service: IEEE 802.1p Layer 3 Differentiated Services Code Point (DSCP)
			11. NTCIP 1205
		3. DDNS – The PTZ dome camera shall support DDNS services offered by the Manufacturer and other publicly available service offerings.
		4. Security
			1. The PTZ dome camera shall support IP address filtering whereby users can enter a list of allowed or blocked IP addresses for viewing video and configuring camera settings
			2. The PTZ dome camera shall provide three levels of user access with password protection.
			3. User authentication shall be available through a Lightweight Directory Access Protocol (LDAP) server.

### 2.06 CAMERA SOFTWARE

* + 1. The PTZ dome camera shall have a built in web server which supports browser-based configuration.
		2. The camera’s web server shall allow access to camera information and all primary software functions.
		3. The Manufacturer shall offer video viewer and configuration to implement the following actions:
			1. Camera discovery
			2. Live Video
				1. Video stream selection
				2. Video stream configuration

Use preset video setting configurations

Configure custom video setting configurations

compression type

resolution

image rate

I-frame interval

H.264 profile

Quality of Service (QoS)

Bit rate control

Multicast

Unicast

JPEG frame rate

* + - * 1. Maximize view area of video to full size of browser

Revert to normal view

* + - * 1. Open stream in new window
				2. Capture and save image as .jpg file
				3. Center camera field of view
				4. Configure PTZ functions

control type:

linear

exponential

proportional (to zoom)

auto flip allowing 180o rotation when camera is pointing straight down

resume last PTZ action requested before power loss

set pan center point

pan and tilt limit stops

* + - * 1. Engage PTZ functions

pan

tilt

zoom

focus

iris open/close

* + - * 1. Resize viewing area
			1. Image Settings
				1. image quality
				2. exposure
				3. focus
				4. white balance
				5. window blanking
				6. preset configuration
				7. preset tours
				8. positioning
				9. digital zoom
				10. freeze frames during preset calls
				11. image stabilization
				12. lighting mode
				13. defog mode
				14. video noise reduction
				15. digital processing (color and detail adjustment)

image enhancement

quick setup preset modes

sharpness

saturation

contrast

brightness

* + - * 1. exposure modes
				2. window blanking calibration
			1. Recording
				1. Initiate instant record and playback
				2. Manage SD card storage
			2. Events
				1. configure event sources:

external alarm events

analytic events

* + - * 1. e-mail setup
				2. define web addresses for notifications
			1. Camera network settings
			2. System
				1. firmware upgrade
				2. reset to factory default
				3. set date, time, and NTP server synchronization
				4. user access control
				5. view and export camera settings
				6. view system logs
		1. Minimum System Requirements
			1. Processor: Intel® Core™ i3 Processor, 2.4 GHz
			2. Acceptable Operating Systems:
				1. Windows® 7 (32-bit and 64-bit) with DirectX® 11
				2. Mac OS X 10.4 (or later)
			3. Memory: 4 GB RAM
			4. Network Interface Card: 100 megabits (or greater)
			5. Monitor: Minimum 1024 x 768 resolution, 16- or 32-bit pixel color
			6. Acceptable Web Browsers:
				1. Internet Explorer® 10.0(or later)
				2. Firefox 3.5 (or later)

**Internet Explorer 8.0 (or later) is recommended for configuring analytics**

* + - 1. Acceptable Media Players:
				1. Pelco Media Player
				2. QuickTime 7.6.5 for Windows 7
				3. QuickTime 7.6.4 for Mac OS X 10.4 (or later)
		1. The Manufacturer shall offer a mobile application with the capability to access live video from up to 500 cameras.
		2. The Manufacturer shall offer an open API.

### 2.07 ELECTRICAL

* + 1. Power
			1. Source Options
				1. HPoE, 24 VAC, 48 VDC
				2. Mains 100 to 240 VAC
			2. Maximum Power Consumption:
				1. with heaters

24 VAC: 72 VA

HPoE: 72 VA (HPoE 802.3bt Class 8 compliant)

48 VDC: 72 VA

Mains: 72 VA

* + - * 1. IR models with heaters

48 VDC: 110 VA

Mains: 110 VA

* + - * 1. IR + White Light models with heaters

48 VDC 120 VA

Mains 120 VA

* + 1. Connectors:
			1. Ethernet: RJ-45 connector, 2 SFPs
			2. Aux: 20-pin terminal block

### 2.08 MECHANICAL AND ENVIRONMENTAL

* + 1. Housing Material: powder-coated, aluminum construction
		2. Configuration: pan/tilt enclosure, and either an Integrated Optics Package (IOP) or a

pressurized Integrated Optics Cartridge (IOC)

* + 1. Temperature:
			1. Operating: -45° C to 60° C (-50° F to 140° F)
			2. Storage: -20° C to 60° C (-4° F to 140° F)
		2. Relative Humidity: 10 to 90%, non-condensing
		3. Environmental Rating: IP66

### 2.9 CERTIFICATIONS

* + 1. CE, Class A
		2. FCC, Class A
		3. KCC
		4. UL/cUL Listed
		5. C-Tick
		6. NEMA TS-2 (Temp.) para 2.2.7.3 – 2.2.7.7
		7. Meets NEMA Type 4X and IP66 Standards
		8. ONVIF Profile S
		9. ONVIF Profile G
		10. ONVIF Profile Q
		11. Cisco® Medianet Media Services Proxy 2.0 compatible
		12. Vibration per IEC 60068-2-6 FC
		13. Shock test per IEC 60068-2-27 Ea

END OF SECTION

## PART 3: EXECUTION

### 3.01 INSTALLERS

* + 1. Contractor personnel shall comply with all applicable state and local licensing requirements.

### 3.02 PREPARATION

* + 1. The network design and configuration shall be verified for compatibility and performance with the camera(s).
		2. Network configuration shall be tested and qualified by the Contractor prior to camera installation.

### 3.03 INSTALLATION

* + 1. Before permanent installation of the system, the Contractor shall test the system in conditions simulating the final installed environment
			1. A report indicating successful test results shall be produced.

### 3.04 STORAGE

* + 1. The PTZ dome camera hardware shall be stored in an environment where temperature and humidity are in the range specified by the Manufacturer.

END OF SECTION