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Pelco 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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# INDOOR AND OUTDOOR BULLET NETWORK CAMERAS (Sarix Enhanced, Next Generation Indoor/Outdoor Bullet Network Cameras)

**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.

**INDOOR AND OUTDOOR BULLET NETWORK CAMERAS**

**(Sarix Enhanced, Next Generation Indoor/Outdoor Bullet Network Cameras)**

## PART 1: GENERAL

### 1.01 SUMMARY

* + 1. Section includes a network dome camera with housing.
		2. Product – A network dome camera supporting H.264 High or Main profiles; and MJPEG compression.
		3. 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. EAP – Extensible Authentication Protocol
			12. fps - frames per second
			13. FTP - File Transfer Protocol
			14. GUI – Graphical User Interface
			15. HTTP - Hypertext Transfer Protocol
			16. HTTPS – Secure Hypertext Transfer Protocol
			17. ICMP – Internet Control Message Protocol
			18. IGMP - Internet Group Management Protocol
			19. IP - Internet Protocol
			20. JPEG - Joint Photographic Experts Group
			21. LDAP – Lightweight Directory Access Protocol
			22. MJPEG - Motion JPEG
			23. MPEG - Moving Pictures Experts Group
			24. NTP - Network Time Protocol
			25. PoE - Power over Ethernet
			26. PPPoE - Point-to-Point Protocol over Ethernet
			27. QoS – Quality of Service
			28. RTP - Real-Time Transport Protocol
			29. RTSP - Real-Time Streaming Protocol
			30. SMTP - Simple Mail Transfer Protocol
			31. SNMP – Simple Network Management Protocol
			32. SSH – Secure Shell
			33. SSL – Secure Sockets Layer
			34. TCP - Transmission Control Protocol
			35. UDP - User Datagram Protocol
			36. UPnP – Universal Plug and Play
			37. VBR – Variable Bit Rate
			38. WDR – Wide Dynamic Range
			39. VMS - Video Management System
			40. WDR – Wide Dynamic Range
		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, Profile G, and Profile Q
			2. Emissions
				1. FCC (Class A) – 47 CFR Part 15
				2. CE – EN 55022 (Class A), EN 50130-4, EN 60950-1
				3. ICES-003, Class A
			3. Environmental Models
				1. ANSI / IEC 60529 – Degrees of Protection Provided by Enclosures – IP66
				2. IK10 (20J) Impact Resistance / IEC62262 on front and side
				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 seven 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 3-year warranty for the product to be free of defects in material and workmanship.
		2. Manufacturer shall provide options to extend the warranty by up to 5 years at the time of initial purchase.

END OF SECTION

## PART 2: PRODUCTS

### 2.01 EQUIPMENT

* + 1. Manufacturer: Pelco

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 E-mail: sales@pelco.com

* + 1. NextGen Sarix Enhanced Outdoor Environmental Bullet Cameras with IR Illumination:

MPx Model #

3 MPx IBE329-1R

3 MPx IBE322-1R

2 MPx IBE229-1R

2 MPx IBE222-1R

1.3 MPx IBE129-1R

* + 1. NextGen Sarix Enhanced Indoor Bullet Cameras:

MPx Model #

3 MPx IBE329-1I

3 MPx IBE322-1I

2 MPx IBE229-1I

2 MPx IBE222-1I

1.3 MPx IBE129-1I

### 2.02 GENERAL DESCRIPTION

* + 1. The network camera system shall offer two simultaneous video streams with up to 3 MPx,
		2048 x 1536 resolution, auto iris, and varifocal lens capabilities.
		2. The network camera system shall possess the following primary characteristics:
			1. H.264 High, Main or Base profiles; and MJPEG compression
			2. up to 3 megapixels
			3. dual streaming (two independent IP video streams)
			4. day/night operation with IR cut filter
			5. Wide Dynamic Range (WDR): 130 dB
			6. PoE (IEEE 802.3af, Class 3), 24 VAC, 12 VDC
			7. Pelco H.264 Smart Compression Technology
			8. multicast and unicast capable with unlimited H.264 viewers
			9. unicast capable with up to 20 simultaneous viewers
			10. local storage via SD/SDHC/SDXC
			11. audio input and output
			12. alarm input and output
			13. IP66 and IK10 (including front)
			14. Type 4X (environmental models only)

### 2.03 VIDEO/CAMERA

* + 1. Imaging Device:

Model Sensor Maximum Resolution

3 MPx 1/2.8-inch 2048 x 1536

2 MPx 1/2.8-inch 1920 x 1080

1 MPx 1/2.8-inch 1280 x 960

* + 1. Imager Type: CMOS
		2. Electronic Shutter Range:

Model Range

3 MPx 1/20,000 sec (or faster) to 2 sec

2 MPx 1/20,000 sec (or faster) to 2 sec

1 MPx 1/20,000 sec (or faster) to 2 sec

* + 1. Minimum illumination:
		2. Color mode:

Model Sensitivity Lens

1, 2, and 3 MPx 0.050 lux (33 ms, f/1.3) 3-9 mm

1, 2, and 3 MPx 0.005 lux (500 ms, f/1.3) 3-9 mm

1, 2, and 3 MPx 0.08 lux (33 ms, f/1.6) 9-22 mm

1, 2, and 3 MPx 0.008 lux (500 ms, f/1.6) 9-22 mm

* + 1. Black & white mode:

Model Sensitivity Lens

1, 2, and 3 MPx 0.010 lux (33 ms, f/1.3) 3-9 mm

1, 2, and 3 MPx 0.001 lux (500 ms, f/1.3) 3-9 mm

1, 2, and 3 MPx 0.04 lux (33 ms, f/1.6) 9-22 mm

1, 2, and 3 MPx 0.0025 lux (500 ms, f/1.6) 9-22 mm

* + 1. Black & white mode with IR on:

Model Sensitivity Lens

1, 2, and 3 MPx 0.000 lux 3-9 mm

1, 2, and 3 MPx 0.000 lux 9-22 mm

* + 1. Scanning: Progressive
		2. Image Control Settings
			1. White balance range: 2,000º to 10,000ºK
			2. Adaptive IR Illumination up to 30 meters (100 feet)
			3. Day and night settings
			4. Privacy zone definition: Up to 16 zones of window blanking
			5. 3D noise reduction
		3. Lens:
			1. Built-in, varifocal
			2. Focal Length: F1.3, 3 ~ 9 mm, F1.6, 9 ~ 22 mm
			3. Zoom: Remote
			4. Auto Iris: P-iris lens
			5. Auto Focus: Four user-selectable modes of automatic focus during runtime operation
				1. Every 10 degrees in Celsius temperature change
				2. Day/night transition
				3. Every 24 hours
				4. Manual trigger
			6. Field of view:

 (Angle of View)

Lens Focal Length Horizontal Vertical Mode

3 ~ 9 mm Wide 100.7º 74º 4:3

3 ~ 9 mm Tele 39º 29º 4:3

3 ~ 9 mm Wide 93º 52º 16:9

3 ~ 9 mm Tele 37º 21º 16:9

9 ~ 22 mm Wide 33º 24º 4:3

9 ~ 22 mm Tele 14º 10º 4:3

9 ~ 22 mm Wide 30º 14º 16:9

9 ~ 22 mm Tele 13º 7º 16:9

* + 1. Video:
			1. The network camera system shall support up to 2 simultaneous streams; the secondary stream is variable based on the setup of the primary stream.
			2. Compression type: H.264 High, Main, or Base profiles; and MJPEG
			3. Corridor Mode: Image rotate 90°, 180°, 270°. Image mirror.
			4. Service Stream: 640 x 480 or 640 x 352; 2 ips, JPEG
			5. Available resolutions:

MPx Width x Height Aspect Ratio

3.0 2048 x 1536 4:3

2.95 1984 x 1488 4:3

1.8 1600 x 1200 4:3 (3 MPx camera only)

1.2 1280 x 960 4:3

0.5 800 x 600 4:3

0.3 704 x 480 4:3

0.3 (480p) 640 x 480 4:3

0.08 320 x 240 4:3

2.0 (1080p) 1920 x 1080 16:9

0.9 (720p) 1280 x 720 16:9

0.6 1024 x 576 16:9

0.5 960 x 544 16:9

0.3 800 x 448 16:9

0.2 640 x 360 16:9

0.06 320 x 192 16:9

* + - 1. Constrained variable bit rate (CVBR) and constant bit rate.
			2. Frame rate:

Images per Second (ips) (depending on the coding, resolution, stream and WDR configuration)

Up to 60, 50, 30, 25, 20, 16, 15, 12, 10, 8, 7, 6, 5, 4, 3, 2, 1

* + - 1. Video streams shall support ONVIF profile S.
			2. Low resolution JPEG stream for configuration of camera settings.
		1. Storage and Recording
			1. The network camera system control shall have onboard micro SD card storage.
				1. Card type: SD
				2. Capacity: up to 128 GB
			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, or based on a pre-programmed schedule. Note: The camera will record if it still has power during a network outage.
			4. The network camera system shall record video continuously in the case of network outage. Note: The camera will record if it still has power during a network outage.
			5. Alarm recording: The network camera system shall capture selectable 1, 5, 10 15, 30 and 30 second video clips on camera sabotage, motion detection, or alarm input.
			6. Video recording and storage shall support ONVIF profile G.
		2. Manual Pan Tilt
			1. Pan Range: 360o
			2. Tilt Range: +5, -90o
			3. Rotate Range: 360º
		3. Suite of eight built-in analytics.
			1. Abandoned Object
			2. Intrusion Detection
			3. Camera Sabotage
			4. Wrong Direction
			5. Loitering Detection
			6. Object Counting
			7. Object Removal
			8. Stopped Vehicle

### 2.04 ADDITIONAL FEATURES

* + 1. Alarm – The network camera system shall have one 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 modes.
			2. Relay Output: ±350 VDC maximum, ±130 mA maximum
		2. Audio – The network camera system shall have bi-directional audio capability.
			1. Input/Output
			2. Encoding: G.711 PCM 8 bit, 8 kHz mono at 64 kbit/s
		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 network camera system shall be exportable as a separate file.
			2. The network camera system shall maintain an accessible log of system and motion-triggered events.

### 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. DDNS – The network camera system shall support DDNS services offered by the Manufacturer and other publicly available service offerings. (DNS)
			12. NTCIP 1205
		3. Security
			1. The network camera system 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 network camera system shall provide three levels of user access with password protection.

### 2.06 CAMERA SOFTWARE

* + 1. The network camera system 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

Image quality

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. Resize viewing area
			1. Image Settings
				1. image quality
				2. exposure
				3. focus
				4. white balance
				5. window blanking
				6. digital zoom
				7. lighting mode
				8. video noise reduction
				9. digital processing (color and detail adjustment)

image enhancement

quick setup preset modes

sharpness

saturation

contrast

brightness

* + - * 1. exposure modes
			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 ftp/e-mail 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. Acceptable Web Browsers:
			- 1. Microsoft® Internet Explorer® 8.0 (or later)
				2. Google® Chrome™ 51 and later
				3. Apple® Safari® 7.0.6
				4. Mozilla® Firefox® 3.5 9 (or later)
		2. The Manufacturer shall offer a mobile application with the capability to access live video from up to 500 cameras.
		3. The Manufacturer shall support integrations as follows:
			1. Video Management: VideoXpert™; Endura® 2.0 (or later); Digital Sentry® 7.3 (or later); Third-party system through Pelco API/SDK, ONVIF Profile S, ONVIF Profile G, ONVIF Profile Q
			2. Mobile Application Pelco Mobile
			3. Camera Discovery and Firmware: Discover cameras upgrade firmware upgrade using Pelco Device Utility 2 (version 2.2 or later) or Pelco Utilities

### 2.07 ELECTRICAL

* + 1. Power
			1. Source Options
				1. 24 VAC
				2. PoE Class 3
				3. 18 to 32 VAC range, 12 VDC
			2. Power Consumption: <16 W (with heater ring)
		2. Connectors:
			1. Ethernet: RJ-45 connector
			2. External power: 2-conductor power to terminal block

### 2.08 MECHANICAL AND ENVIRONMENTAL

* + 1. Construction Material: Aluminum base and plastic sun shield
		2. Finish: RAL 9003 (indoor models), RAL 7047 (outdoor models)
		3. Impact Resistance: IK10 (20J)
		4. Dimensions (D x H): 23.41 cm (9.22 in) x 11.92 cm (4.69 in)
		5. Temperature:
			1. Operating: -10°C to 55°C (14°F to 131°F) (indoor models)

-40°C to 55°C (-40°F to 131°F) (outdoor models)

* + - 1. Storage: -40°C to 60ºC (-40°F to 140ºF) (indoor and outdoor models)
		1. Ingress Protection: IP66

### 2.09 CERTIFICATIONS

* + 1. CE – EN 55022 (Class A), EN 50130-4, EN 60950-1
		2. FCC (Class A) – 47 CFR Part 15
		3. UL and cUL Listed – UL 60950-1, CAN/CSA-C22.2 No. 60950-1-07
		4. ICES-003 (Class A)
		5. RCM
		6. KC
		7. RoHS
		8. ONVIF Profile S, Profile G, and Profile Q conformant
		9. Meets Type 4X (environmental models only), IP66 and IK10 ratings

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.
		2. Contractor shall follow all Manufacturer-published guidance on proper installation and configuration of the camera.

### 3.04 STORAGE

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

END OF SECTION