

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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**ENVIRONMENTAL 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.

**ENVIRONMENTAL BULLET CAMERAS**

1. **GENERAL**
	1. **SUMMARY**
		1. Section includes an environmental bullet camera.
		2. Product – A network bullet camera supporting H.264 High or Main profiles; and MJPEG compression.

## 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. **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
				3. National Electrical Manufacturers Association, NEMA 250-2003, 4X Enclosure Definition
	1. **SUBMITTALS**
		1. Product Data
			1. Manufacturer’s printed or electronic data sheets
			2. Manufacturer’s installation and operation manuals
			3. Warranty documentation
	2. **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.
	3. **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.
	4. **WARRANTY AND SUPPORT**
		1. Manufacturer shall provide a limited 3-year warranty for the product to be free of defects in material and workmanship.

END OF SECTION

1. **PRODUCTS**
	1. **EQUIPMENT**
		1. Manufacturer: Pelco, Inc.

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* + 1. Sarix Professional Environmental Bullet Cameras:

MPx Model # /Description

1 MP IBP131-1ER, Sarix Pro Environmental Short-Tele Bullet

2 MP IBP231-1ER, Sarix Pro Environmental Short-Tele Bullet

2 MP IBP232-1ER, Sarix Pro Environmental Middle-Tele Bullet

2 MP IBP235-1ES, Sarix Pro Environmental Long-Tele Bullet

3 MP IBP331-1ER, Sarix Pro Environmental Short-Tele Bullet

3 MP IBP335-1ER, Sarix Pro Environmental Long-Tele Bullet

5 MP IBP531-1ER, Sarix Pro Environmental Short-Tele Bullet

5 MP IBP532-1ER, Sarix Pro Environmental Middle-Tele Bullet

* 1. **GENERAL DESCRIPTION**
		1. The network bullet camera shall offer three simultaneous video streams with up to 5 MP,
		2592 x 1944 resolution, auto iris, and varifocal lens capabilities.
		2. The network bullet camera shall possess the following primary characteristics:
			1. H.265, H.264 Main and High profiles; and MJPEG compression
			2. Up to 5 megapixels
			3. Dual streaming (three independent IP video streams)
			4. Day/night operation with IR cut filter
			5. Effective Dynamic Range: True WDR up to 120 dB, per IEC62676
			6. IEEE802.3at, 18 ~ 32 VAC, 12 +/-10% VDC
			7. Pelco Smart Compression Technology
			8. Pelco Pro Analytics Suite including Adaptive Motion, Object Counting, Motion Detection, and Camera Sabotage.
			9. Multicast capable with unlimited H.264/H.265 viewers
			10. Unicast capable with up to 5 simultaneous viewers
			11. Local storage via Micro SDHC and SDXC card, 2 TB addressable, 128 GB or more testable
			12. Audio input and output
			13. Alarm input and output
			14. IP66/67, Type 4X
	2. **VIDEO/CAMERA**
		1. Imaging Device:

Model Imaging Device Maximum Resolution

5 MP 1/2.8-inch 2592 x 1944 (5.0 MP)

3 MP 1/2.8-inch 2048 x 1536 (3 MP)

2 MP 1/2.8-inch 1920 x 1080 (2 MP)

1 MP 1/2.8-inch 1280 x 960 (1 MP)

* + 1. Imager Type: CMOS
		2. Electronic Shutter Range: 1/10,000 to 1 sec
		3. Minimum illumination:
			1. Color mode:

Model Lens Sensitivity

1 MP 2.8 -12 mm 0.0169 lux (33 ms, F1.4), 0.00416 lux (200 ms, F1.4)

2 MP 2.8 - 12 mm 0.0169 lux (33 ms, F1.4), 0.00416 lux (200 ms, F1.4)

2 MP 9 - 22 mm 0.0195 lux (33 ms, F1.5), 0.00481 lux (200 ms, F1.5)

2 MP 5 - 50 mm 0.0234 lux (33 ms. F1.6), 0.00585 lux (200 ms, F1.6)

3 MP 2.8 - 12 mm 0.065 lux (33 ms, F1.4), 0.01625 lux (200 ms, F1.4)

3 MP 5 - 50 mm 0.104 lux (33 ms, F1.6), 0.026 lux (200 ms, F1.6)

5 MP 2.8 - 12 mm 0.26 lux (33 ms, F1.4), 0.065 lux (200 ms, F1.4)

5 MP 7 - 22 mm 0.3 lux (33 ms, F1.6), 0.078 lux (200 ms, F1.6)

* + - 1. Black & white mode:

Model Lens Sensitivity

1 MP 2.8 -12 mm 0.01 lux (33 ms, F1.4), 0.0025 lux (200 ms, F1.4)

2 MP 2.8 - 12 mm 0.01 lux (33 ms, F1.4), 0.0025 lux (200 ms, F1.4)

2 MP 9 - 22 mm 0.011 lux (33 ms, F1.5), 0.00275 lux (200 ms, F1.5)

2 MP 5 - 50 mm 0.013 lux (33 ms. F1.6), 0.0032 lux (200 ms, F1.6)

3 MP 2.8 - 12 mm 0.03 lux (33 ms, F1.4), 0.0075 lux (200 ms, F1.4)

3 MP 5 - 50 mm 0.05 lux (33 ms, F1.6), 0.0125 lux (200 ms, F1.6)

5 MP 2.8 - 12 mm 0.15 lux (33 ms, F1.4), 0.0375 lux (200 ms, F1.4)

5 MP 7 - 22 mm 0.15 lux (33 ms, F1.6), 0.0375 lux (200 ms, F1.6)

* + 1. Scanning: Progressive
		2. Image Control Settings
			1. White balance range: 2,000º to 10,000ºK
			2. IR Illumination: 850 nm adaptive IR, up to 50 meters (IBP131-1ER, IBP231-1ER,

IBP331-1ER, IBP531-1ER), 60 m (IBP232-1ER, IBP532-1ER), 80 m

(IBP235-1ER, IBP335-1ER)

* + - 1. Day and night settings
			2. Privacy zone definition: up to 8 zones of window blanking
			3. 3D noise reduction
		1. Lens:
			1. Built-in, varifocal
			2. Focal Length: f/1.4 (2.8 ~ 12 mm), f/1.5 (9 ~ 22 mm), or f/1.6 (5 ~ 50 mm and 7 ~ 22 mm)
			3. Zoom: Remote
			4. Auto Iris: DC drive lens
			5. Auto Focus: Automatically focuses during runtime operation
			6. Field of view:

 IBP131 IBP231 IBP331 IBP531 IBP232 IBP235 IBP335 IBP532

Diagonal 94º ~ 32º 121º ~ 39º 120º ~ 38º 120°~ 39° 40°~ 18° 68°~ 9° 68°~ 9° 51°~ 21°

Horizontal 72º ~ 25º 101º ~ 34º 90º ~ 31º 90°~ 31° 35°~ 15° 60°~ 7° 57°~ 7° 40°~ 17°

Vertical 55º ~ 19º 53º ~ 19º 66º ~ 24º 66°~ 24° 20°~ 8° 36°~ 4° 44°~ 5° 30°~ 13°

* + 1. Video:
			1. The network camera system shall support up to three simultaneous streams; the second stream and third stream are variable based on the setup of the primary stream.
			2. Compression type: H.265, H.264 High or Main profiles; and MJPEG
			3. Orientation modes: Corridor Mode, Mirror Mode, Flip Mode, Electronic Image Rotation 90º,

180º, and 270º

* + - 1. Flicker Control: Selectable 50 Hz or 60 Hz modes
			2. Available resolutions:

MPx Width x Height Aspect Ratio

5.0 2592 x 1944 4:3

3.7 2560 x 1440 16:9

3.2 2048 x 1536 4:3

3 2304 x 1296 16:9

2.1 1920 x 1080 16:9

1.9 1600 x 1200 4:3

1.2 1280 x 960 4:3

0.9 1280 x 720 16:9

0.5 800 x 600 4:3

0.3 640 x 480 4:3

0.2 640 x 360 16:9

0.1 320 x 240 4:3

0.1 320 x 180 16:9

* + - 1. Constant bit rate (CBR), constrained variable bit rate (CVBR) with configurable maximum value.
			2. Frame rate:

MPx Images per Second (ips)

5 60, 50, 30, 25, 20, 16.67, 15, 12.5, 10, 7.5, 5, 3, 2, 1

3 30, 25, 20, 16.67, 15, 12.5, 10, 7.5, 5, 3, 2, 1

2 30, 25, 20, 16.67, 15, 12.5, 10, 7.5, 5, 3, 2, 1

1 30, 25, 20, 16.67, 15, 12.5, 10, 7.5, 5, 3, 2, 1

* + - 1. ONVIF Profile S, Profile G, Profile Q, and Profile T conformant
			2. Sarix Professional range cameras feature the Pro suite of video analytics including Motion Detection, Camera Sabotage, Audio Detection, Object Counting, Adaptive Motion, Object Removal, and Directional Motion.
			3. Pelco’s Smart Compression Technology lowers bandwidth and storage requirements by up to 70%. Our technology allows the user to make intelligent decisions regarding storage savings and image quality.
			4. Low resolution JPEG stream for configuration of camera settings.
		1. Storage and Recording
			1. The network camera system control shall have onboard SD card storage.
				1. Card type: Micro SDHC and SDXC
				2. Capacity: up to 2 TB addressable, 128 GB testable
			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. The network camera system shall record video continuously in the case of network outage.
			5. Alarm recording: The network camera system 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. Manual Pan Tilt
			1. Pan Range: 0 o ~ 355o
			2. Tilt Range: 0o ~ -90o
			3. Rotate Range: 0 o ~ 355º
		3. Simple motion detection and camera sabotage analytics.
	1. **ADDITIONAL FEATURES**
		1. Alarm – The network camera system shall have one alarm/sensor inputs and a relay output for alarm or control.
			1. Input: 1, PhotoMOS™ relay (30 V, 1 A)
			2. Output: 1, PhotoMOS™ relay (30 V, 1 A)
			3. Triggers: Unsupervised mode that detects switch closures (Normally Open and Normally Closed)
		2. Audio – The network camera system shall have bi-directional audio capability.
			1. Input: Line level, 3K ohm differential w/ 1Vp-p maximum signal
			2. Output: Line level, 600 ohm differential w/1Vp-p
			3. Encoding: G.711 – A-law / U-law
		3. Camera Discovery – VX Toolbox
		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.
				1. The log shall be exportable to an Excel spreadsheet file.
	2. **NETWORK**
		1. Connectivity: 10/100 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), RTP Control Protocol (RTCP), Real-Time Streaming Protocol (RTSP)
			6. Multicast: Internet Group Management Protocol (IGMP)
			7. Notifications: File Transfer Protocol (FTP), Secure File Transfer Protocol (SFTP). 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. DDNS – The network camera system shall support DDNS services offered by the Manufacturer and other publicly available service offerings.
			11. Quality of Service (QoS) for Differentiated Services Code Point (DSCP)
			12. Session Initiation Protocol (SIP)
			13. ARP (Address Resolution Protocol)
			14. Web Services Dynamic Discovery (WS-Discovery)
			15. NTCIP 1205 (National Transportation Communications for Intelligent Transportation System Protocol)
		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.
			3. Security Access: Password protected, HTTPS, IEEE 802.X, digest authentication, IP filtering.
		4. Users
			1. Unicast: Up to 5 simultaneous users depending on resolution settings (3 guaranteed streams)
			2. Multicast: Unlimited users H.264/H.265
		5. Software Interface: Web browser view and setup
	3. **INTEGRATION**
		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. Video Management: VideoXpert; VX Toolbox; Endura 2.0 (or later); Digital Sentry 7.3

(or later)

* + 1. Open API: Third-party VMS through Pelco API, ONVIF Profile S, Profile G,

Profile Q, and Profile T

* + 1. Mobile Application: Pelco Mobile
		2. Local Storage: Capture 1-, 5- or 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

* + 1. Camera Discovery: VX Toolbox
		2. Firmware Upgrade: Web UI or VX Toolbox
		3. Web Browser Support: Microsoft® Internet Explorer® 8.0, Mozilla® Firefox® 3.5,

Google® Chrome™ 61.0 and later

* + 1. Multilingual User Interface: English, French, German, Italian, Portuguese, Arabic, Russian,

Spanish, Turkish, Korean, Simplified Chinese

* 1. **ELECTRICAL**
		1. Network Port: RJ-45 connector for 10/100Base-TX
		2. Power Input: IEEE802.3at PoE+, 18 ~ 32 VAC,12 VDC +/-10%
		3. Maximum Power Consumption
			1. 12 VDC 29.3 W

24 VAC 36.7 W

PoE+ 23 W

* 1. **MECHANICAL AND ENVIRONMENTAL**
		1. Construction Material: Aluminum; polycarbonate window
		2. Finish: RAL 9003
		3. Impact Resistance: IK10 (20J)
		4. Dimensions (D x L): 10.80 cm (4.25 in) x 26.05 cm (10.26 in), Sarix Pro Environmental Bullet

Short Lens (IBP131-1ER, IBP231-1ER, IBP232-1ER, IBP331-1ER,

IBP531-1ER, IBP532-1ER)

10.80 cm (4.25 in) x 27.45 cm (10.81 in), Sarix Pro Environmental Bullet

Long Lens (IBP235-1ER, IBP335-1ER)

* + 1. Temperature:
			1. Operating:
				1. Environmental -40°C to 60°C (-40°F to 140°F)
			2. Storage: -40°C to 70ºC (-40°F to 158ºF)
		2. Ingress Protection: IP66/67, Type 4X
	1. **CERTIFICATIONS**
		1. CE – EN 55032 (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. UL/IEC/EN 60950-22 (environmental models only)
		5. ICES-003 (Class A)
		6. RCM
		7. KCC
		8. NOM
		9. EAC
		10. BIS
		11. Type 4X
		12. IP66/67
		13. IEC 60068:2-6 and 2-27
		14. ONVIF Profile S, Profile G, Profile Q, and Profile T conformant

END OF SECTION

1. **EXECUTION**
	1. **INSTALLERS**
		1. Contractor personnel shall comply with all applicable state and local licensing requirements.
	2. **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. **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.
	4. **STORAGE**
		1. The bullet camera hardware shall be stored in an environment where temperature and humidity are in the range specified by the Manufacturer.

END OF SECTION