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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 BOX 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 BOX CAMERAS**

## PART 1: GENERAL

### 1.01 SUMMARY

* + 1. Section includes an indoor box camera.
    2. Product – An indoor box camera supporting H.264 High, Main, or Baseline 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

### 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 3-year warranty for the product to be free of defects in material and workmanship.

END OF SECTION

## PART 2: PRODUCTS

### 2.01 EQUIPMENT

* + 1. Manufacturer: Pelco

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* + 1. Sarix Indoor Box Cameras with SureVision 3.0:

MPx Model #

3 MPx IXE12

2 MPx IXE22

1 MPx IXE32

### 2.02 GENERAL DESCRIPTION

* + 1. The indoor box camera shall offer multiple simultaneous video streams with up to 3.0 megapixel (MPx), 2048 x 1536 resolution, auto iris, and varifocal lens.
    2. The indoor box camera shall provide SureVision™ 3.0 technology with extended True Wide Dynamic Range (WDR), low-light performance, anti-bloom technology, 3D noise filtering, and enhanced tone mapping operating simultaneously.
    3. The indoor box camera shall possess the following primary characteristics:
       1. H.264 High, Main, or Baseline profiles; and MJPEG compression
       2. up to 3 megapixels
       3. dual streaming (two independent IP video streams)
       4. day/night operation with mechanical IR cut filter
       5. true wide dynamic range (WDR): 130 dB minimum
       6. anti-bloom technology
       7. PoE (IEEE 802.3af, Class 3), 24 VAC, 12 VDC
       8. Pelco H.264 Smart Compression Technology
       9. multicast or unicast capable with unlimited H.264 viewers
       10. unicast capable with up to 20 simultaneous viewers
       11. local storage via micro SD card
       12. audio input and output
       13. alarm input and output

### 2.03 CAMERA SPECIFICATIONS

* + 1. Imaging Device: 1/2.8-inch
    2. Imager Type: CMOS
    3. Electronic Shutter Range: 1/20,000 sec (or faster) to 2 sec
    4. Scanning: Progressive
    5. Minimum illumination
       1. Color mode: 0.050 lux (33 ms, f/1.3), 0.005 lux (500 ms, f/1.3)
       2. Black & white mode:0.010 lux (33 ms, f/1.3), 0.001 lux (500 ms, f/1.3)
    6. Auto Back Focus
    7. Image Control Settings
       1. White balance range: 2,000º to 10,000ºK
       2. Mechanical IR Cut Filter
       3. Privacy zone definition: up to 16 zones of window blanking
       4. Day and night settings
       5. 3D noise reduction
    8. Lens:
       1. Lens Mount: CS Mount
       2. Auto Iris: DC drive
       3. Auto Back Focus (ABF)
    9. Video:
       1. The indoor box camera shall support independently configurable primary and secondary streams plus service stream.
       2. Compression type: H.264 High, Main, or Baseline profiles; and MJPEG
       3. Service Stream: JPEG stream; the JPEGs will be the same resolution as the primary stream
       4. Available resolutions (4:3 Aspect Ratio):

**MPx Width x Height**

**3.0 2048 x1536**

**2.95 1984 x 1488**

**1.8 1600 x 1200**

**1.2 1280 x 960**

**0.5 800 x 600**

**0.3 704 x 480**

**0.3 640 x 480**

**0.07 320 x 240**

* + - 1. Available resolutions (16:9 Aspect Ratio):

**MPx Width x Height**

**1080p 1920 x 1080**

**720p 1280 x 720**

**0.6 1024 x 576**

**0.5 960 x 544**

**0.3 800 x 448**

**0.2 640 x 360**

**0.06 320 x 192**

* + - 1. Constant bit rate (CBR) and constrained variable bit rate (CVBR).
      2. Frame rate: Up to 60, 50, 30, 25, 20, 15, 12, 10, 8, 7, 6, 5, 4, 3, 2, 1 (depending on the coding, resolution, and stream configuration)
      3. Video streams shall support ONVIF profile S.
      4. Low resolution JPEG stream for configuration of camera settings.
    1. Storage and Recording
       1. The indoor box camera control shall have onboard SD card storage.
          1. Card type: micro 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, based on a pre-programmed schedule.
       4. The indoor box camera shall record video continuously in the case of network outage.
       5. Alarm recording: The indoor box 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. Analytics
       1. Analytics shall be configured and enabled using a standard Web browser.
       2. The indoor box camera shall have the ability to detect motion within user defined areas of the video image.
       3. Number of simultaneous running analytic behaviors: 2
       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. Intrusion Detection - Detection and tracking of objects that enter a scene and triggering of an alarm when the objects enter a user-defined zone.
          3. Camera Sabotage - Detection of contrast changes in the field of view, suitable to detect lens obstruction or unauthorized repositioning of the camera.
          4. Wrong Direction - Detection of person or object moving in a specified direction.
          5. Loitering Detection – Identification of people or vehicles remaining in a defined zone longer than a user-defined time.
          6. Object Counting - Counting the number of objects that enter a defined zone or cross a tripwire.
          7. Object Removal – Detection of object is removed from a defined zone.
          8. Stopped Vehicle – Detection of vehicles stopped near a sensitive area longer than a user-defined time.

### 2.04 ADDITIONAL FEATURES

* + 1. Alarm – The indoor box camera 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 supervised modes.
       2. Relay Output: ±350 VDC maximum, ±130 mA maximum
    2. Audio – The indoor box camera shall have bi-directional audio capability.
       1. Input/Output:
       2. Encoding: G.711 PCM 8 bit, 8 kHz mono at 64 kbit/s

### 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
       3. Protocol (DHCP)
       4. Web services: Hypertext Transfer Protocol (HTTP), Secure HTTP (HTTPS)
       5. 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)
       6. Media: Real-Time Transport Protocol (RTP), Real-Time Streaming Protocol (RTSP)
       7. Multicast: Internet Group Management Protocol (IGMP)
       8. Notifications: File Transfer Protocol (FTP), Simple Mail Transfer Protocol (SMTP)
       9. Remote Access: Secure Shell (SSH)
       10. Security: Secure Sockets Layer (SSL), IEEE 802.1x (EAP-MD5, EAP-TLS, EAP-TTLS, EAP-PEAP and EAP-FAST)
       11. Quality of Service: IEEE 802.1p Layer 3 Differentiated Services Code Point (DSCP)
       12. DDNS – The indoor box camera shall support DDNS services offered by the Manufacturer and other publicly available service offerings.
       13. NTCIP 1205
    3. Security
       1. The indoor box 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 network camera system shall provide three levels of user access with password protection.

### 2.06 CAMERA SOFTWARE

* + 1. The indoor box 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. 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 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. Microsoft® Windows® 7 (32-bit and 64-bit), or DirectX® 11
          2. Windows XP Service Pack 3 with DirectX 9.0c
          3. 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. Microsoft® Internet Explorer® 8.0 (or later)
          2. Mozilla® Firefox® 3.5 (or later)
          3. Google Chrome™ (51 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, XP, or Vista
         3. QuickTime 7.6.4 for Mac OS X 10.4 (or later)
      2. The Manufacturer shall offer an open API.
    1. 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, and Profile Q
       2. Mobile Application Pelco Mobile
    2. Required Systems for Analytics
       1. Pelco Interface: WS5200 Advanced System Management Software on VideoXpert system
       2. Open API: The Pelco API can transmit behavior alarm data to third party applications available at *pdn.pelco.com*

### 2.07 ELECTRICAL

* + 1. Power
       1. Source Options
          1. PoE (IEEE 802.3af, Class 3)
          2. 24 VAC range, 12 VDC
       2. Power Consumption: Up to 12 W nominal
       3. Current Consumption: 330 mA maximum
       4. Data: RS485/422/232
       5. Cable Type: Cat5 or better for 100Base-TX
    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 back and plastic front
    2. Finish: RAL 9005, matte black
    3. Dimensions: 14.88 x 7.84 x 5.24 cm (5.86” D x 3.08” W x 2.06” H)
    4. Temperature:
       1. Operating: -10°C to 55°C (14°F to 131°F)
       2. Storage: -40°C to 60ºC (-40°F to 140ºF)
       3. Humidity: 5 to 95%, RH noncondensing

### 2.09 CERTIFICATIONS

* + 1. CE (Class A)
    2. FCC (Class A)
    3. UL/cUL Listed
    4. ICES-003 (Class A)
    5. UL/IEC 60950-22
    6. RCM
    7. KC
    8. RoHS
    9. ONVIF Profile S, Profile G, and Profile Q conformant

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