

**ExSite Enhanced Series - Fixed**

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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**EXPLOSIONPROOF 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.

**EXPLOSIONPROOF CAMERAS**

1. **GENERAL**
   1. **SUMMARY**
      1. Section includes an explosionproof and dust-ignitionproof camera.
      2. Product – An explosionproof and dust-ignitionproof camera supporting H.264 High, Main, or Baseline profiles with Pelco Smart Compression; 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
         4. RCM – Check with Erik Laines (Australia/New Zealand)
  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 2-year warranty for the product to be free of defects in material and workmanship.

END OF SECTION

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

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* + 1. Sarix Explosionproof Cameras with SureVision 3.0:

Model # PTZ/Fixed Camera/Lens Power

EXF1230-4N Fixed 1080p/30x 48 VDC

EXF1230-7N Fixed 1080p/30x 110-240 VAC

* 1. **GENERAL DESCRIPTION**
     1. The explosionproof pan and tilt camera system shall offer a 1920 x 1080 maximum resolution Integrated Camera/Optics Packages, 30X optical zoom, 12X digital zoom with an infrared cut filter, day/night, and built-in motion detection.
     2. The explosionproof pan and tilt camera system shall be designed for hazardous, harsh, and marine environments, and shall be certified as such.
     3. The explosionproof pan and tilt camera system shall provide up to a 1000Base-T network interface for live streaming to a standard Web browser or a VMS.
     4. The explosionproof camera shall support FSFP/SFP modules that are Multi-Source Agreement (MSA) Compliant, adapting to multiple transmission methods; fiber, Ethernet over coax, UTP.
     5. The explosionproof pan and tilt camera system shall provide auto focus and auto iris with manual override.
     6. The explosionproof camera system shall be designed to mount upright.
     7. The explosionproof pan and tilt camera system shall use a standard Web browser interface for remote administration and configuration of camera parameters.
     8. The explosionproof pan and tilt camera system shall be conformant to ONVIF S, G, and Q and support open architecture connectivity for third-party software recording solutions allowing integration into virtually any IP-based system. It is also compatible with Endura 2.0, Digital Sentry® 7.3, and VideoXpert 1.9 (or later) video management systems. As with all Pelco IP camera solutions, Exsite Enhanced is Endura Enabled™ to record, manage, configure, and view multiple live streams.
     9. The explosionproof pan and tilt camera system shall include a programmable window wiper and washer/wipe sequence under a single command.
     10. The explosionproof camera shall operate between -60C and 60C
     11. The explosionproof camera shall maintain a T6 (<85C) surface temperature in all operating conditions.
     12. The explosionproof camera shall cold-start from >-30º C
     13. The explosionproof camera shall support dual cable entry ports allowing the installer to separate power and data cables or to install cables flexibly.
     14. The explosionproof camera shall include a safety attach point.
     15. The explosionproof camera shall include an integrated wiper to keep the viewing window clean.
     16. The explosionproof camera shall include a sun shroud and support a heater and window defroster, ensuring that the camera functions and captures video in extreme weather.
     17. The explosionproof camera shall a heating system to keep the window ice free to -35C.
     18. The explosionproof camera shall include an internal microSD slot, allowing the camera to record locally.
     19. The explosionproof camera shall be programmable to perform actions based upon up to 4 physical alarm triggers.
     20. The explosionproof camera shall have a local (on-camera), hardware (two wires for button in safe room), and software (at VMS) reset options.
     21. The explosionproof camera shall support 32 window blanks to conceal user-defined privacy areas that cannot be viewed by an operator.
     22. The explosionproof camera shall be conformant to the ONVIF Profile S, G, and Q support open architecture best practices with a published API available to third-party network video recording and management systems.

* + 1. The explosionproof camera shall provide the ability backup and restore camera settings through an embedded Web browser.
    2. The explosionproof camera shall provide Wide Dynamic Range (WDR) up to 130dB with selections for on/off available through the embedded Web browser.
    3. The explosionproof camera shall provide dynamic White Balance adjustments through the embedded Web browser
    4. The explosionproof camera shall provide dynamic focus settings to provide on/off options for Auto Focus and Focus Trace based on the distance to the ground level targets in a scene.
    5. The explosionproof camera shall provide 802.1x port security to establish point-to-point access through a wired or wireless port using Extensible Authentication Protocol (EAP). Supported EAP methods shall include EAP-MD5, EAP-TLS, EAP-TTLS, EAP-PEAP and EAP-FAST.
    6. The explosionproof camera shall support SNMP v2c and v3.
    7. The explosionproof camera shall support IPv6 configurations in conjunction with IPv4.
    8. The explosionproof camera shall provide user-selectable configurations for day/night auto mode.
    9. The explosionproof camera shall provide I-Frame interval configuration to increase or decrease the number of I-Frames per second.
    10. The explosionproof camera shall provide smart compression capability for enhanced storage optimization.The explosionproof camera shall provide Electronic Image Stabilization (EIS).
    11. The explosionproof camera shall include an optional DEFOG feature to make a subject appear clearer when the surrounding area of the subject is foggy and low contrast.
    12. The explosionproof camera shall provide two simultaneous video streams with up to 8.00 Mbps. The second stream is variable based on the setup of the primary stream.
    13. The explosionproof camera shall provide Quality of Service (QoS) for different Services Code Point (DSCP): A mechanism for prioritizing network traffic.
    14. The explosionproof camera shall provide the ability to run embedded Pelco Video analytics.
        1. Pelco Analytic Suites shall be configured and enabled using a standard Web browser.
        2. Pelco Analytics for ExSite Enhanced Series including:
           1. Abandoned Object: Detects 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: 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.
           3. Auto Tracker: Detects and tracks movement in the camera’s field of view. When the Auto Tracker behavior is configured, the system automatically pans and tilts to follow the moving object until the object stops or disappears from the monitored area.
           4. Camera Sabotage: Detects contrast changes in the field of view. An alarm is triggered if the lens is obstructed with spray paint, a cloth, or a lens cap. Any unauthorized repositioning of the camera also triggers an alarm.
           5. 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.
           6. Loitering Detection: Identifies when people or vehicles remain in a defined zone longer than the user-defined time allows.
           7. Object Counting: Counts the number of objects that enter a defined zone or cross a tripwire. This behavior might be used to count the number of people at an entrance/exit where the traffic is light. This behavior is based on tracking and does not count people in a crowded setting.
           8. Object Removal: Triggers an alarm if an object is removed from a defined zone.
           9. Stopped Vehicle: Detects vehicles stopped near a sensitive area longer than the user-defined time allows. This behavior is ideal for suspicious parking, traffic lane breakdowns, and vehicles waiting at gates.
  1. **CAMERA SPECIFICATIONS**
     1. Sensor Type 1/2.8-inch Type Exmor CMOS sensor
     2. Optical Zoom 30X
     3. Digital Zoom 12X
     4. Maximum Resolution 1920 x 1080
     5. Frame Rate 60 frames per second (fps) maximum
     6. Lens
     7. 30X: f/1.6 ~ f/4.7, (4.3 mm (wide) ~ 129.0 mm tele)
     8. Horizontal Angle of View 30X: 63.7° (wide) ~ 2.3° (tele)
     9. Aspect Ratio 16:9
     10. Light Sensitivity 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
     11. Color (33 ms) 0.20 lux
     12. Color Low Light (33 ms) 0.03 lux
     13. Color (250 ms) 0.025 lux
     14. Color Low Light (250 ms) 0.008 lux
     15. Mono (33 ms) 0.06 lux
     16. Mono Low Light (33 ms) 0.004 lux
     17. Mono (250 ms) 0.008 lux
     18. Mono Low Light (250 ms) 0.001 lux
     19. Day/Night Capabilities Yes
     20. IR Cut Filter Yes
     21. Wide Dynamic Range 130 dB
     22. Iris Control Auto iris with manual override
     23. Backlight Compensation Yes
     24. Automatic Gain Control Yes
     25. Active Noise Filtering Yes
     26. Electronic Image Stabilization (EIS) Yes
     27. Video:
         1. The explosionproof camera shall support independently configurable primary and secondary streams plus service stream.
         2. Compression type: H.264 High, Main, or Baseline profiles; and MJPEG with Smart Compression options
         3. Service Stream: JPEG stream; the JPEGs will be the same resolution as the primary stream
         4. Available resolutions (16:9 Aspect Ratio):

**MPx Width x Height**

**1080p 1920 x 1080**

**720p 1280 x 720**

**0.36 800 x 448**

**0.23 640 x 360**

* + - 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.
    1. Storage and Recording
       1. The explosionproof camera control shall have onboard SD card storage.
          1. Card type: micro SD
          2. Capacity: up to 32 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 camera shall record video continuously in the case of network outage.
       5. Alarm recording: The explosionproof 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 explosionproof 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. 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: Detects and tracks movement in the camera’s field of view.
          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.
  1. **ADDITIONAL FEATURES**
     1. Alarm – The explosionproof camera shall have four alarm/sensor inputs and one relay output for alarm or control and one relay output for external washer.
        1. The alarm input shall be able to detect an open or closed alarm state function in supervised modes.
        2. Relay Output: ±30 VDC maximum, ±3.5 mA maximum
  2. **NETWORK**
     1. Connectivity: Up to 1000 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 explosionproof camera shall support DDNS services offered by the Manufacturer and other publicly available service offerings.
     3. Security
        1. The explosionproof 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.
  3. **CAMERA SOFTWARE**
     1. The explosionproof 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 (local, hardware remote, and software remote)
         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 or VideoXpert system
       2. Open API: The Pelco API can transmit behavior alarm data to third party applications information available at *pdn.pelco.com*
  1. **ELECTRICAL**
     1. Voltage Input 48 VDC, 2A, or 100-240 VAC, 2A @ 50/60 Hz
     2. Voltage Input Range ±10%
     3. Power Consumption Maximum 74 VA/74 W EXF1230-4N

Maximum 85 VA/77 W EXF1230-7N

* + 1. Heater and Defroster Hardware controlled
    2. Alarm
       1. Unsupervised Detects open or closed alarm state
       2. Supervised Detects open and short alarm state with external 1-kohm resistor to detect alarm tampering
    3. Input 3.5 VDC maximum, 3.5 mA maximum
    4. Relay Output 30 VDC, 500 mA maximum
  1. **MECHANICAL AND ENVIRONMENTAL**
     1. General Construction 316L stainless steel
     2. Finish Electropolish
     3. Viewing Window High transmissivity glass
     4. Operating Temperature –76º to 140ºF (–60º to 60ºC)
     5. Cable Entry Dual, 0.75-inch (1.91 cm) NPT threaded opening
     6. Effective Projected Area (EPA) 191 square inches (1,232 square cm)
     7. Integral Windshield Wiper Programmable with a washer/wipe sequence under a single command
  2. **CERTIFICATIONS**
     1. FCC Part 15
     2. CE
     3. UL/cUL Listed
     4. ICES-003
     5. RCM
     6. KC
     7. IP66 and Type IP66, IP67, and IP68, and Type 4X, Type 6, and Type 6P
     8. S Mark for Argentina
     9. Vibration: IEC 60068-2-6 Test Fc
     10. Tamb -60°C to 60°C
     11. UL/cUL Hazardous Locations Listed per NEC Division and Zone requirement
         1. Class I, Division 2, Groups A, B, C, and D, T6
         2. Class II, Groups E, F, G, T6
         3. Class I, Zone 1, AEX db op pr IIC T6
     12. AEx tb op pr IIIC T85°C
     13. IECEx
         1. Ex db op pr IIC T6 Gb
     14. Ex tb op pr IIC T85°C Db
         1. ATEX EX tb IIIC T85°C Db IP66
         2. INMETRO BR Ex d IIC T6 IP66
     15. EAC Ex
     16. CCOE
     17. DNV

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

END OF SECTION