PRODUCT:	**HIGH DEFINITION, IP PTZ DOME CAMERA** **VB-H47 2.1 Mega pixel, High Definition, IP PTZ Dome Camera**
Division 28	**ELECTRONIC SAFETY and SECURITY**
Level 1	**28 20 00 ELECTRONIC SURVEILLANCE**
Level 2	**28 23 00 VIDEO SURVEILLANCE**
Level 3	**28 23 29 VIDEO SURVEILLANCE REMOTE DEVICES and SENSORS**

PART 2 GENERAL - Safety, standards and certification

2.01 General Requirements

A. The camera shall be from the manufacturer's official standard product line, designed for commercial/industrial continuous use i.e. for 24-hour operation.

B. The camera shall be based upon standardised components and proven technology generally using open and published protocols.

2.02 Quality Assurance

A. All camera installation, configuration, setup, program and related work shall be performed by trained technicians thoroughly familiar with the installation, setup and service of the camera equipment provided.

B. All equipment provided shall be backed by a minimum of 1 year manufacturer's warranty.

2.03 Certifications and standards

A. The camera shall carry the following EMC and other approvals:

EN 55032 class A, FCC part15 subpart B class A, ICES-003 class A, VCCI class A, RCM AS/NZS EN55032 class A, CNS13438 class A, EN 55035, IEC EN 63000:2018, CNS15663

IEC/UL/EN62368-1 3'rd ed.

B. The camera shall meet the following coding/compression standards:

H.265, H.264, JPEG

ISO/IEC 14496-10 AVC, - 12 and -15

C. Networking:

IEEE 802.1X (EAP-TLS, EAP-TTLS, EAP-PEAP), IPv4, IPv6

PRODUCT

2.04 Sensor

The camera shall:

A. Use a high quality 1/2.8" CMOS sensor using a primary color filter with approximately 2.0 M pixels.
Have an active number of pixels of 1920 x 1080

B. Use Progressive scanning

2.05 Optics

The camera shall:

A. Be fitted with a removable IR-cut filter, providing "day mode & night mode" functionality, with automatic switching

B. Be fitted with a 20 x optical zoom lens, with autofocus and a 16 x digital zoom. The focal length range shall be 4.7 mm (W) to 94 mm (T), giving a horizontal field of view of 62.4° to 3.3°. The F number of the lens shall be in the range of F1.6 (W) to F3.5 (T) zoom

C. In color, provide images down to a lighting level of 0.02 Lux, (F1.6 shutter speed 1/30 of the second, 50 IRE)
In monochrome, provide images of a minimum subject illumination down to 0.003 Lux (F1.6 shutter speed 1/30 of the second, 50 IRE)

D. Have focus control adjustable between:
Auto/One Shot AF/Manual/Fixed at infinity

E. Have the focusing region
in day mode from 0.3 m - infinity (W)/1.0 m - infinity (T)
in night mode from 1.0 m – infinity (W)/1.5 m – infinity (T)

F. Have the shutter speed adjustable from
1 sec to 1/16000 sec in 24 steps (25 levels)

G. Have the white balance settings selectable between:
Auto/ Manual/Daylight Fluorescent/White Fluorescent/Warm Fluorescent/Mercury Lamp/Sodium Lamp/Halogen Lamp
Manual: One-shot WB (R Gain/ B Gain)

H. Have three settings of noise reduction: [Mild], [Standard] or [Strong].

I. Have seven settings of sharpness.

J. Have an image stabilizer with two settings and off.

K. Have WDR (Wide Dynamic Range) with three settings: [Strong], [Mild], and [Disable].

L. Have Haze Compensation with two settings as [Auto] and [Disable]. When [Auto] is selected, have three settings: [Mild], [Medium], and [Strong].

M. Adjustable day/night switching settings and an adjustable time period for switching between day and night (with five time settings).

N. Have an Automatic Gain Control limit (AGC limit).

2.06 Server unit

A. There shall be 9 image output sizes up to 1920 x 1080 pixels.

B. Shall provide video compression in either H.265, H.264, or JPEG.

C. Frame rates shall be up to 60 fps for either H.265 or H.264, 30 fps for JPEG.

D. Five streams can be set, from stream 1 to stream 4 and digital PTZ.

E. The I frame interval shall be variable between 0.5 seconds up to 5 seconds.

F. Maximum number of clients shall be 31 in total (including one admin client), 31 of which 10 can be H.265 or H.264.

G. Both IPv4 and IPv6 shall be supported in both TCP/IP and UDP with DHCP (and DHCPv6) and ONVIF Profile S/G/T compliant.

H. Shall be able to use encrypted communication such as SSL/TLS.

2.07 Embedded analytics to include

A. Camera tampering detection
B. Moving object detection
C. Abandoned object detection
D. Removed object detection
E. Passing detection
F. Intrusion detection
G. Volume detection
H. Face Detection

And have the ability to set non-detection areas and link event conditions by OR, AND, whether or not there is a sequence to events.

2.08 Connectors

A. RJ45 network (LAN 100BaseTX)
B. 2 x 3.5 mm monaural mini jack (LINE IN or MIC IN, LINE OUT)
C. 2 x input, 2 x output for external devices
D. Power connection terminal
E. SD, SDHC, SDXC memory card

2.09 Mechanisms

The camera shall:

A. Provide 340◦ pan rotation and 100◦ (-90° – +10°) tilt.

B. Provide pan and tilt speed up to 150◦/second, dependent upon the zoom setting.

C. Have up to 64 pre-set positions of pan, tilt and zoom, plus a "Home" position and be capable of carrying out up to 5 pre-set tours with variable dwell periods.

2.10 Dimensions, weight & color

A. 132 mm diameter x 155 mm high

B. Approximately 1100 g

C. Be available in black or titanium white

2.11 Video

A. Size setting
The camera shall be able to deliver high-quality video in at least 9 different resolutions up to 1920 x 1080.

B. Compression
The camera shall provide simultaneous support for H.265, H.264, and JPEG.
The H.265 and H.264 implementation shall include support Bit Rate Control and shall support both unicast and multicast.
The camera shall provide at least 10 different levels of compression (quality setting) in total.

C. Image control
The camera shall incorporate Automatic and Manual White Balance and an electronic shutter operating in the range 1 second to 1/16000 second.

D. The camera shall be able to record video at “the edge” i.e. to a memory card at the camera. This can be downloaded to a computer for viewing remotely.

E. Privacy masking
The camera shall have 8 privacy masks with one of nine colors or mosaic.

F. Panorama image
A "panorama" image may be created to show the complete range of view of the camera.

G. View restriction
Shall be able to restrict the viewing area if sending to a public website.

2.12 Audio

A. The camera shall support both full duplex and half-duplex audio using G.711 μ-law or AAC compression.

B. The camera shall be capable of using RTP and Sound Transfer Protocol by Canon.

2.13 Functionality

A. IP addresses
   a. The camera shall support both fixed IP addresses and dynamically assigned IP addresses provided by a Dynamic Host Control Protocol (DHCP) server or for IPv6 as DHCPv6.

   b. The camera shall provide support for both IPv4 and IPv6.

B. Bandwidth management
   a. CBR (Constant Bit Rate): Provide the capability to limit the frame rate to a selected value.

   b. VBR (Variable Bit Rate): The bit rate varies depending on the video.

c. MBR (Maximum Bit Rate): The camera shall provide the ability to control network traffic by limiting the maximum bandwidth to a selected value.

C. Area-specific Data Size Reduction
   a. The camera shall provide Area-Specific Data Size Reduction, with 8 areas to specify high quality transmission.

   b. Have Data Size Reduction Level with three levels.

D. Event functionality

The camera shall be equipped with event functionality, which can be triggered by:

a. External device inputs
b. Timer
c. Intelligent Function (video)
d. Intelligent function (audio)
e. Day/Night Mode Switching
f. Two Linked events on an AND or OR basis

E. Response to triggers shall include:
   a. Notification, using HTTP/HTTPS/SMTP/SMTPS (e-mail)
   b. Image upload using FTP/FTPS/HTTP/HTTPS/SMTP/SMTPS (e-mail) or record to Memory card
   c. Video upload using H.265, H.264, and or JPEG
   d. Preset call up of digital preset position within the camera's view
   e. Activating external output

2.14. Text overlay

The camera shall provide embedded on-screen text in the video, with support for date & time (NTP server linked), and a customer-specific text, camera name.

2.15. Security

The camera shall support the use of:

A. HTTP and SSL/TLS, providing the ability to manage certificates and private key files.

B. Authentication shall be possible by using IEEE 802.1X (EAP-TLS, EAP-TTLS, EAP-PEAP) authentication.

C. The camera shall provide support for restricting access to pre-defined IP addresses only, so-called IP address filtering.

D. ONVIF Profile S/G/T compliant.

2.16. Installation and Maintenance

The camera shall:

A. Be supplied with Windows-based management software which allows the assignment of IP addresses, upgrade of firmware and backup of the cameras configuration.

B. Be equipped with a Camera Viewer capable of supporting access and control via Microsoft Edge and Google Chrome web browsers.

C. Be equipped with a Mobile Camera Viewer capable of supporting Microsoft Edge, Safari, and Chrome.

D. Support the use of SNMP-based management tools.

E. Customer-specific settings, including statically assigned IP address, the local time & date, event functionality and video configuration, shall be stored in a non-volatile memory and shall not be lost during power cuts or soft reset.

2.17. Interfaces

A. Inputs/Outputs

The camera shall be equipped with two digital (alarm) inputs and two digital outputs, accessible via a terminal block. These inputs shall be configurable to respond to normally open (NO) or normally closed (NC) dry contacts.

B. Audio

The camera shall be equipped with one monaural 3.5 mm jack for line/mic input and one mono 3.5 mm jack for line out.

C. Network interface

The camera shall be equipped with one 100baseTX Fast Ethernet-port, using a standard RJ45 socket and shall support auto sensing of network speed.

2.18. Power requirements

A. PoE IEEE802.3at Type1 compliant (approx. 9.1 W max)

B. 12 V DC, max approx. 7.9 W

C. 100 V AC, max approx. 9.2 W
240 V AC, max approx. 9.7 W

2.19. Operating environment

A. Operating temperature -10°C to +50°C

B. Humidity 5% to 85% non-condensing

2.20. Manufactured units

The camera shall be a Canon VB-H47.

[If this is to be a performance-based specification, remove Item 2.20.]