



## GENERAL

Telenet H.264 outdoors Ultra Series cameras offer high definition resolution at full frame rate, progressive scans technology and edge enhancement for outstanding picture clarity. ONVIF (Profile S) compliance ensures hassle-free, flexible system integration even with other brands such as Bosch, Pelco, Panasonic and many others.

### Choose the Resolution That's Right for Your Application

- 1080p, 2K and Ultra4K series
- Quad stream compression (H.264-1+H.264-2+H.264-3+H.264-4/MJPEG)
- Configurable resolution and frame rate for each selected H.264 stream

### Maximize Bandwidth without Losing Image Quality

- Highly efficient H.264 video compression
- 3DNR (Digital Noise Reduction) and sDNR (Smart DNR) provide significant storage savings without sacrificing image quality in low light
- CMOS progressive scan imager ensures accurate color rendition through a wide variety of lighting conditions

### P-Iris Control Improves Contrast and Clarity

- The P-Iris setting keeps both close and distant objects in the scene in focus simultaneously, even in changing lighting conditions

### Smart IR Ensures Correct Illumination (IR Models Only)

- The IR LED brightness adjusts automatically to provide even illumination of moving subjects

### Onboard Video Storage

- Up to 64 GB microSDHC (Class 10) support. Card not included

### Zones of Interest

- Select up to 12 areas of a scene from viewing and recording

### Time is Money—Installation and Upgrading Made Easy

- Camera and lens integrated in a compact, single-piece unit
- Built-in PoE (Power over Ethernet) eliminates separate power supply and associated wiring. 12 V DC or 24 V AC inputs where PoE power is unavailable



- Remote configuration, auto focus, E-PTZ and zoom adjustments, and firmware updating through Telenet's Viewer web client or from an NVR/DVR. Password-protected access to the camera's video and network setup
- Export/import of configuration facilitates quick rollout of multiple cameras

#### Market Opportunities

The Telenet Dome Series cameras are perfect for applications that require excellent picture quality at minimal bandwidth. The cameras can be retrofitted on many existing DVR/NVR installations without requiring additional storage.

### MAIN FEATURES

1. Outdoor Ruggedized Mini Dome Full High Definition (FHD) Network Camera
2. 1080p FHD picture quality (1920 x 1080 pixels maximum resolution), supporting H.264 at 60 fps (IP)
3. High frame rate of 60 frames per second (fps) to provide smoother and less blurry moving pictures
4. Wide Dynamic range (Wide-D) equivalent to 120 dB
5. Simultaneously encoding up to 4 of the following streams in any combination, including multiple instances of the same compression format: JPEG and/or H.264 (High/Main/Baseline Profile)
6. AAC (16, 48 kHz)/G.726 (40, 32, 24, 16 kbps)/G.711 (64 kbps) audio compression formats
7. Minimum scene illumination of 0.014 lx in Color mode and 0 lx in Black and White (B/W) mode (50 IRE [IP], F 1.2, View-DR Off, VE Off, Auto Gain Control maximum rate MAX, 1/30s, 30fps, IR illuminators On\*) with built-in IR (Infrared) illuminators. (\* B/W mode)
8. Advanced IR technology:  
The camera have 20 pieces of built-in IR LED illuminator to provide high-quality IR images without overexposure by using Visibility enhanced wide Dynamic Range (View-DR).  
This technology allow for capturing images in the complete darkness (0 lx) while avoiding wash-out of the object, and users can recognize the object even it is very near to the camera in Night mode.
9. Picture mode:  
Picture mode is selectable from a range of camera scenes in the setting menu to optimize picture quality in various applications.  
This mode has the following options;  
- "Standard"  
- "Situation Priority - Moving object" to stabilize images  
- "Situation Priority - Low noise" to reducing noise on images, especially dark scenes  
- "Flickerless" to reduce the flicker on images according to power frequency (50 Hz or 60 Hz) of the lighting
10. Variable bit rate (VBR) capable of maximum bit rate setting:  
The camera shall have 2 bit rate compression modes, variable bit rate (VBR) or

constant bit rate (CBR) compression, selectable to correspond with various network conditions.

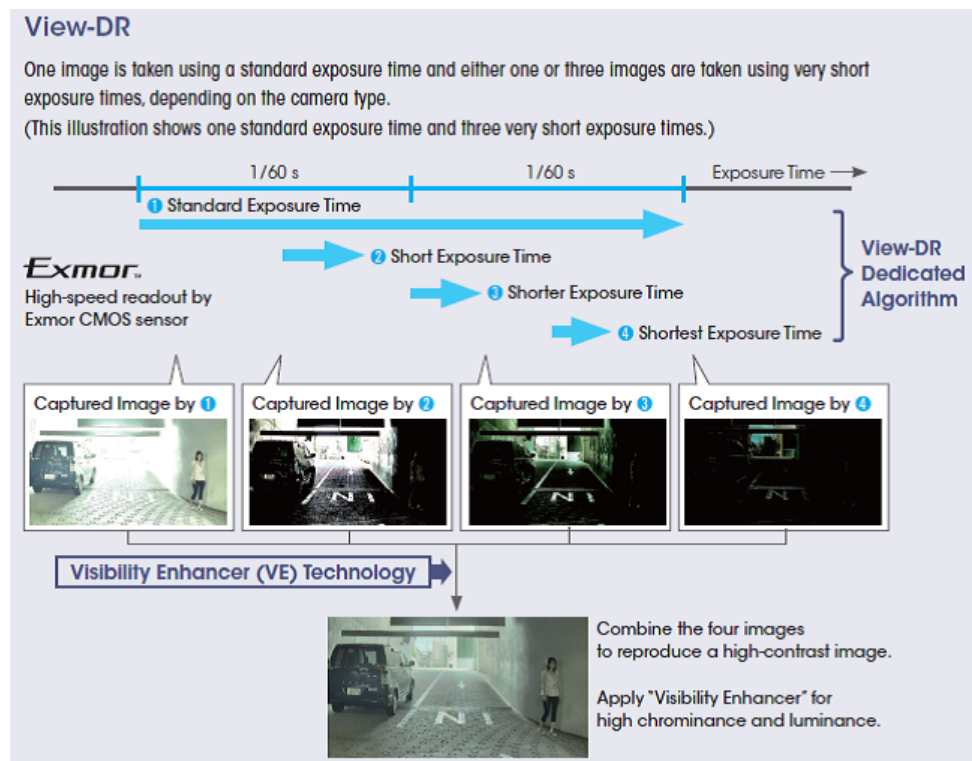
When VBR is selected, higher quality images are always maintained regardless of the bandwidth and storage capacity requirements, because the bit rate is variable by a scene.

Besides, in VBR mode, the camera limits the "Maximum value of the bit rate", while maintaining the image quality and the frame rate, so as to reduce the storage capacity.

Moreover in VBR mode with the "Maximum bit rate limit", the camera accept the frame skip for the bit rate control to minimize the storage capacity.

On the other hand, when CBR is selected, the bandwidth and storage capacity requirements is calculated easily, because the bit rate shall be always constant.

11. IP66-rated waterproof and dust-tight feature:  
The camera is IP66 rated in accordance with the IEC 605292 standard for outdoor surveillance, or indoor where water ingress may pose an issue.
12. IK10-rated vandal-resistant feature:  
The camera shall be IK10 rated in accordance with the IEC 62262 standard to vandal-resistant feature for protecting the camera from destructive behaviors.
13. Visibility enhanced wide Dynamic Range (View-DR) :  
This technology shall be a combination of unique full-capture Wide Dynamic range (Wide-D) technology, the high-speed Exmor CMOS sensor, and Visibility Enhancer (VE) technology.



The full-capture wide dynamic range technology use an electronic shutter to capture multiple images and reproduce each frame. One image is taken using a standard exposure time and either 1 or 3 additional images are taken using very short exposure times, depending on the camera type\*. (\*This model synthesizes a single image from 2 images taken by slow shutter speed.) With the advanced View-DR algorithm, all of the electrons converted from the captured light are fully used by the imager, which is significantly different from some other Wide-D technologies in the industry which discard approximately half of these electrons. As a result, View-DR nearly doubles the sensitivity that is offered by conventional Wide-D technologies. The level of the wide dynamic range (View-DR) setting changes automatically depending on lighting condition. When the light level drops, the wide dynamic range (View-DR) turns off automatically.

14. Exmor CMOS:  
This sensor realizes high quality and low noise images.
15. Visibility Enhancer (VE):  
This technology optimizes the brightness and color reproduction of an image dynamically on a pixel-by-pixel basis while continuously adapting to the scene. This method differs from the technique of using the preset gamma curves. Technically, this technology stretches the contrast in both the backlit portions and the shadows within the given dynamic range, which is different from unique wide dynamic range technologies. This technology also contributes to the high sensitivity of the camera. By combining this technology with a unique noise reduction feature named Smart Dynamic Noise Reduction (sDNR), the camera can reproduce clear and bright images in very low-light conditions, while keeping noise at a minimal level.
16. Smart Dynamic Noise Reduction (sDNR):  
This technology reduces Auto Gain Control (AGC) noise to provide clear images without motion blur. This also reduces image data size.
17. sDNR and VE can be used in conjunction with each other and shall provide approximately 4 times the sensitivity compared to the condition where both features are set to off.
18. Distributed Enhanced Processing Architecture Advanced (DEPA Advanced):  
This technology shall extend the benefits of unique conventional intelligent video analytics and enables its functionality to be used with third-party software vendors. Alternatively the camera can be configured using the web interface to be a stand-alone intelligent surveillance solution. This means that end users get the same features as conventional intelligent video analytics running at the edge without needing to have any recording solution. The camera can activate alarms, video can be recorded to a built-in SD/SDHC card, and lights and alarms can be activated.
19. The camera is compliant with the Open Network Video Interface Forum Profile S (ONVIF Profile S) conformance. This allows easy integration with other brands such as Pelco, BOSCH, Panasonic, Sony and many others



The camera also support ONVIF event commands such as Tampering alarm, Motion alarm and Fan error.

## CAMERA

1. The camera utilizes a 1/3-type progressive scan Exmor CMOS sensor.
2. The number of effective pixels is approx. 2.14 Megapixels.
3. The analog video output of the camera is selectable from either the NTSC or PAL standards.
4. Camera synchronization is Internal.
5. The camera require a minimum scene illumination of:  
Color:  
0.014 lx (50 IRE [IP], F 1.4, View-DR Off, VE Off, Auto gain control maximum rate MAX, 1/30s, 30 fps)  
  
B/W:  
0 lx (50 IRE [IP], IR illuminators On)  
0 lx (30 IRE [IP], IR illuminators On)
6. The camera has an equivalent 120 dB wide dynamic range capability.
7. The camera shall limit the maximum amount of gain-controlled automatic exposure control.
8. The electronic shutter speed can be set from 1 to 1/10,000 second.
9. The camera adjusts the target brightness for the automatic exposure setting by selecting the exposure correction value from the list box on the menu.
10. White balance is selected among ATW (approx. 2000 K to 10000 K), ATW-PRO (approx. 2500 K to 6000 K), Indoor, Outdoor, Fluorescent lamp, Mercury lamp, Sodium Vapor lamp, Metal Halide lamp, White LED, One push WB, or Manual settings.  
The R/B gain offset can be set for the ATW or ATW-PRO settings.
11. The camera has an integrated 3X IR compensated DC auto-iris type lens as a standard equipment.
12. The camera has 4X digital zoom capability.
13. The camera has the total zoom ratio of 12X with 3X optical zoom and 4X digital zoom capabilities.
14. The camera has an Easy Focus function, which adjusts the camera focus via the Easy Focus button on the rear of the camera or remotely via the GUI. When the camera is switched between day and night modes, the Easy Focus function is activated to keep the camera focused.

15. The camera also have a zoom/focus adjustment capability via the ZOOM/FOCUS switch on the camera unit or remotely via the GUI.
16. The camera is adjusted all pan, tilt and rotation positions by turning the lens case to rotate the camera.
17. The viewing angle in 1920 x 1080 mode (16:9 aspect ratio) is:  
Horizontal: 105.3 ° to 35.6 °.  
Vertical: 56.9 ° to 20.1 °.  
Tilt: 127.6 °.
18. The ranges (typical) is:  
Pan: -192° to +192°  
Tilt: -7° to +75°  
Rotate: -99° to +99°
19. The focal length is 3.0 to 9.0 mm. OR 2.8 to 12mm
20. The aperture range for the lens (F number) is F 1.2 (Wide) to F 2.1 (Tele).
21. The minimum object distance is 11 7/8 inches (300 mm).
22. The camera has 20 pieces of built-in IR LED illuminator.
23. The camera has built-in IR illuminators which allow for capturing images in the complete darkness (0 lx). The camera have 2 modes: 'On' and 'Off' in 'Sync with IR Illuminator' setting. When 'On' mode is selected, IR illuminators are automatically activated when the camera switches to night mode. There shall be 4 selectable 'IR Illuminator' levels to control the intensity of the IR illuminators.
24. The IR illuminators have a wavelength of 850 nm.
25. The IR illuminators are effective (50 IRE [IP]) at 30 m (98.4 ft.)

## CAMERA FEATURES

1. The camera has a True Day/Night (D/N) function to switch to Day mode (color mode) or Night mode (black and white mode) depending on the light level.
2. The camera is capable of an e-flip function, a feature when the camera passes the down position, electronically flips the image 180°.
3. The camera is capable of E-PTZ functionality
4. The camera have an Image Stabilizer function, which can display with less video sway when the camera is installed in a place with vibration.
5. The camera have polygonal privacy zone masking which blocks out unwanted or prohibited area within the video image to protect privacy.  
Mosaic patterns shall be also selected as masking.  
The camera is capable of masking up to 20 areas.  
Such capability shall be via vendor supplied SNC toolbox utility software or the browser-based setup menu.

6. The pre-/post-alarm recording capabilities using an 'Edge Storage' function is as follows:

- Capable of storing several seconds of pre-alarm and post-alarm images when an alarm is triggered by the motion detection, VMFs, camera tampering detection, audio detection or sensor input.
- Capable of recording image and sound files on the approx. 8 MB of built-in memory or SD memory card (not supplied), or transferring the files to an FTP server.
- Record in the compression format selected for monitoring.
- Correspond to a still image as a snapshot in the event.
- Have a maximum duration for pre- and post-alarm recording that shall be dependent on the bit rate setting for H.264 (High/Main/Baseline Profile or the picture quality and frame rate setting for JPEG as shown in the following tables:

For H.264

Full HD	Bitrate (Kbps)	64	128	256	384	512	768	1000	1500	2000
	Capacity (sec)	60	60	60	60	60	60	60	60	60
	Bitrate (Kbps)	3000	4000	5000	6000	7000	8000	16000	24000	32000
	Capacity (sec)	60	60	60	60	60	53	26	17	13

For JPEG

Image Size		320x184	640x480	1280x720	1920x1080
Framerate(fps)	1	1068	204	68	30
	2	534	102	34	15
	3	356	68	22	10
	4	267	51	17	7
	5	213	40	13	6
	6	178	34	11	5
	8	133	25	8	3
	10	106	20	6	3
	12	89	17	5	2
	15	71	13	4	2
	20	53	10	3	1
	30	35	6	2	1

7. The Storage function operate as follows:

- Capable of storing up to 900 seconds of pre-alarm and up to 7200 seconds of post-alarm images and audio on a SD memory card.
- Record in the compression format selected for monitoring.
- Recording to this storage area can be done manually or when an alarm is triggered.
- The trigger can be based on motion detection, VMFs, camera tampering detection, audio detection, sensor input or network disconnection, or a combination of those alarms using Boolean operands such as a logical 'AND', 'OR', or 'THEN'.
- Capable of streaming the recorded moving image data using the same protocols as live streaming such as RTP/RTCP, RTSP over TCP, RTSP over HTTP, so that the user can view recorded image while recording.
- Capable of streaming the recorded still image data using the HTTP protocol.
- Capable of simultaneously streaming live video with recorded video by using different sessions.
- Capable of downloading the recorded video at a variety of speed rates such as 0.5x



and 2x speed.

- Capable of setting periodical recording, alarm record schedule, and overwriting record for the still image data.

8. The camera has an internal memory size of approx. 40 MB for buffering.
9. The camera shall be capable of pre- and post-alarm buffering.
10. The camera supports the voice alert function, which can automatically play an audio file stored on the camera by an alarm trigger using motion detection, unique Video Motion Filters (DEPA Advanced VMFs), camera tampering detection, or via a sensor input.
11. The camera is IK10 rated in accordance with the IEC 62262 standard to vandal-resistant feature for protecting the camera from destructive behaviors.
12. The camera is IP66 rated in accordance with the IEC 60529 standard to have waterproof and dust-tight feature for outdoor surveillance, or indoor where water ingress may pose an issue.
13. The camera have the capability to display a wide variety of overlays in any of 7 positions on the video image (4 corners, top, bottom, or center of the image). The following overlays shall be possible:
  - Camera ID of up to 20 alphanumeric characters or a logo in gif format
  - Date/Time data with selectable formats such as yyyy mm dd hh:mm:ss, mm dd yyyy hh:mm:ss, and dd mm yyyy hh:mm:ss
  - User setting frame rate (fps) and bit rate (bps)
  - Event -- sensor IN, unique intelligent motion detection, unique video motion filters, camera tampering detection
  - Character string
  - Compression format information
14. The camera have a Smartphone viewer, which can display the camera image and operate Pan/Tilt/Zoom (PTZ) / E-PTZ on the smartphone.



## VIDEO

1. The supported resolutions are 1920 x 1080, 1280 x 720, 1024 x 576, 720 x 576 (PAL), 720 x 480 (NTSC), 704 x 576, 640 x 480, 640 x 360, 352 x 288, and 320 x 184 resolution.
2. The supported resolutions are shown in the following:

Image 1 (30 fps)	Image 2 (30 fps)	Image 3 (30 fps)	Image 1 (60 fps)	Image 2 (60 fps)
1920 × 1080	1280 × 720 or lower	640 × 480 or lower	1920 × 1080	Not Selectable
1280 × 720	1280 × 720 or lower	640 × 480 or lower	1280 × 720	1280 × 720 or lower
1024 × 576	1280 × 720 or lower	640 × 480 or lower	1024 × 576	1280 × 720 or lower
720 × 576	1280 × 720 or lower	640 × 480 or lower	720 × 576	1280 × 720 or lower
704 × 576	1280 × 720 or lower	640 × 480 or lower	704 × 576	1280 × 720 or lower
720 × 480	1280 × 720 or lower	640 × 480 or lower	720 × 480	1280 × 720 or lower
640 × 480	1280 × 720 or lower	640 × 480 or lower	640 × 480	1280 × 720 or lower
640 × 360	1280 × 720 or lower	640 × 480 or lower	640 × 360	1280 × 720 or lower
352 × 288	1280 × 720 or lower	640 × 480 or lower	352 × 288	1280 × 720 or lower
320 × 184	1280 × 720 or lower	640 × 480 or lower	320 × 184	1280 × 720 or lower

3. The camera support the following compression formats: JPEG and H.264 (High/Main/Baseline Profile).
4. The maximum resolution for each compression format is 1920 x 1080.
5. The camera is compliant with the SMPTE 274M in terms of number of pixels (1920 x 1080) and 16:9 format.
6. The maximum frame rate is 60 frames per second in H.264 (High/Main/ Baseline Profile) at 1920 x 1080 resolution and 60 frames per second in JPEG at 1280 x 720 resolution.
7. The camera provides smoother and less blurry moving pictures with the High Frame Rate of 50 fps (PAL) or 60 fps (NTSC).  
When the High Frame Rate setting is set to off, the maximum frame rate shall be 25 fps (PAL) or 30 fps (NTSC).
8. Frame rate (fps) shall be selected among;  
For NTSC (60Hz) mode: 1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 20, 30, or 60\*.  
For PAL (50Hz) mode: 1, 2, 3, 4, 5, 6, 8, 10, 12, 16, 20, 25, or 50\*.

\*Valid only when the High Frame rate mode is set to 'ON'.

9. The camera has constant bit rate (CBR) or variable bit rate (VBR) capable of maximum bit rate setting compression mode selectable to correspond with various network conditions.

When CBR is selected, the bandwidth and storage capacity requirements are calculated easily, because the bit rate shall be always constant. On the other hand, image quality shall degrade exhibiting signs of macro blocking depending on the scene situation.

When VBR is selected, higher quality images are always maintained regardless of the bandwidth and storage capacity requirements, because the bit rate shall be variable by a scene.

Besides, in VBR mode, the camera shall limit the "Maximum value of the bit rate",

while maintaining the image quality and the frame rate, so as to reduce the storage capacity.

Moreover in VBR mode with the "Maximum bit rate limit", the camera accepts the frame skip for the bit rate control to minimize the storage capacity.

10. Bit rate (Kbps) shall be selected among 64, 128, 256, 384, 512, 768, 1000, 1500, 2000, 3000, 4000, 5000, 6000, 7000, 8000, 16000, 24000, or 32000.
11. The camera is capable of electronic pan/tilt/zoom or e-PTZ during e-PTZ mode.
12. The camera has an Adaptive Rate Control (ARC) function when using H.264 (High/Main/Baseline Profile) compression.  
This function when enabled, shall allow the camera to maintain the frame rate at a reduced image quality when network congestion occurs. Should network bandwidth become further restrict, the frame rate then drop automatically to a suitable speed to maintain image integrity.
13. The camera is capable of limiting the bandwidth from 64 kbps to 32 Mbps in H.264 (High/Main/Baseline Profile), and from 0.5 Mbps to an unlimited bandwidth in JPEG.
14. JPEG compression levels are user selectable in 10 levels of compression ratios, based on an image of 24 bits per picture element (8 bits each for YUV).
15. Constant bit rate algorithm for JPEG data:  
The camera shall be capable of equalizing JPEG data sizes to have stable bandwidth utilization. Data size for each compression level is as follows:

Resolution	640 x 480	720 x 576	1280 x 576	1280 x 720	1920 x 1080
Image Quality Level	Data Size (KB)				
1	16	22	30	46	101
2	21	29	40	63	138
3	23	32	45	70	153
4	27	37	52	80	179
5	31	42	59	91	201
6	39	50	70	109	251
7	46	65	86	135	299
8	54	80	106	170	372
9	77	115	151	248	527
10	107	154	201	339	714

16. Actual frame rate in JPEG shall be shown in the following table:

Resolution	640 x 480	720 x 576	1280 x 576	1280 x 720	1920 x 1080
Image Quality Level	Actual Output Frame Rate (fps)				
1	30	30	30	30	30
2	30	30	30	30	30
3	30	30	30	30	30
4	30	30	30	30	20
5	30	30	30	30	20
6	30	30	30	30	20
7	30	30	30	30	15
8	30	30	30	20	12
9	30	30	20	15	8
10	30	20	15	10	4

17. The camera shall have the capability of simultaneously encoding up to 4 of the following compression formats in any combination, including multiple streams of the same format: JPEG and H.264 (High/Main/Baseline Profile). For example, the 1st streaming shall be used for the live monitoring, the 2nd streaming shall be used for recording to the storage, and the 3rd streaming shall be used for the mobile monitoring with the smartphone viewer and the 4<sup>th</sup> stream can be used for reserve.

The maximum frame rates of each combination are shown in the following:

For the standard frame rate:

	1 <sup>st</sup> 1920 x 1080 8Mbps		2 <sup>nd</sup> 1280x720 4Mbps		3 <sup>rd</sup> 640x360 1Mbps	
	Codec	fps	Codec	fps	Codec	fps
Single Codec Stream	H.264	30				
Dual Codec Stream	H.264	30	H.264	30		
Triple Codec Stream	H.264	30	H.264	30	H.264	30

For the high frame rate:

	1 <sup>st</sup> 1920 x 1080 8Mbps		1 <sup>st</sup> 1280 x 720 8Mbps		2 <sup>nd</sup> 1280x720 4Mbps	
	Codec	fps	Codec	fps	Codec	fps
Single Codec Stream	H.264	60				
Dual Codec Stream	H.264	60	H.264	60	H.264	60

18. The camera is capable of supporting up to 20 users simultaneously over the network.

19. The camera has up to 12 configurable zones of interests.

## AUDIO

1. The camera supports bi-directional audio, using G.711 (64 kbps), G.726 (40, 32, 24, 16 kbps) and AAC (48, 16 kHz) compression formats.
2. The camera is capable of storing and playing back up to 3 audio files. Audio files are generated and transferred to the camera using either the web browser or the manufacturer provided SNC audio upload tool software.
3. The camera provides time stamps on the streaming audio. Timestamps are inserted in the header area of the audio data.
4. The user has the ability to activate the microphone input via the web interface.

## SYSTEM REQUIREMENTS & NETWORK

1. The supported operating systems is Microsoft Windows 8.1 Pro 32 bit and 64 bit, Microsoft Windows 8 Pro 32 bit and 64 bit, Microsoft Windows 7 32 bit and 64 bit (Ultimate/Professional), Microsoft Windows Vista 32 bit (Ultimate/Business), and Microsoft Windows XP 32 bit (Professional).
2. Minimum PC requirements is Intel Core i7, 2.8 GHz or higher, with 2 GB RAM or more supporting 1600 x 1200 or higher resolution, 24-bit True Color display capability with Ethernet 100Base-TX.
3. The camera incorporates a built-in web server, such that the standard web browser Microsoft Windows Internet Explorer (version 7.0, 8.0, 9.0, 10.0, or 11.0 recommended) can be used to access the camera without need for special viewer software.
4. The plug-in free viewer enables the above browsers automatically when they are started.  
The plug-in free viewer display method will be selected automatically. ActiveX viewer can allow for H.264 (High/Main/Baseline Profile) video streams and JPEG format images
5. The camera supports ActiveX viewer which allows the camera image to be viewed in Internet Explorer.  
The ActiveX viewer allows for recording of video and audio directly to the PC's hard drive, and supports direct audio from the PC Mic to the camera.
6. The camera is be capable of generating HTML code for the video image, allowing for easy web page integration.
7. The camera supports the following network protocols: IPv4, IPv6, TCP, UDP, ARP, ICMP, IGMP\*, HTTP, HTTPS, FTP (client only), SSL, SMTP, DHCP, DNS, NTP, RTP/RTCP, RTSP over TCP, RTSP over HTTP, and SNMP (v1, v2c, v3).  
Network security shall be via password (basic authentication) and IP filtering.

\*Source-Specific Multicast (SSM) is supported.

8. The camera have the capability to stream H.264 (High/Main/Baseline Profile) video in TCP protocol or H.264 (High/Main/Baseline Profile) video in UDP (unicast/multicast) protocol.
9. The camera is capable of dynamic IP address change notification. It accomplish this via an email to a specified address or by HTTP when its IP address changes.
10. The camera supports HTTPS client authentication.
11. The camera have an FTP client capability which allows the following:
  - Transferring a JPEG image to a pre-specified FTP server when an alarm is triggered by either motion detection, camera tampering detection or sensor input.
  - Periodically capturing a JPEG image and transferring it to the FTP server.
  - At every position of the preset tour, capturing a JPEG image and transferring it to the FTP server.
12. The camera have an email (SMTP) notification capability which allows the following:
  - Sending an email to pre-specified users when an alarm is triggered by either motion detection, VMFs, camera tampering detection, or sensor input. A JPEG image, which is linked with the alarm trigger, can be attached to the email.
  - Periodically capturing a JPEG image and sending it via email.
  - Encrypting mails if the SMTP server requires SMTP over TLSThe range of the SMTP port number is from 1 to 65535.
13. The camera sends Alarm notifications by HTTP to up to 3 designated URL, when the defined events such as Tampering alarm or network disconnection occurs in the camera.
14. The camera support POP3, APOP, and CRAM-MD5 authentication for SMTP transmission.
15. The camera support RTSP protocol based upon RFC 2326 and shall support the following options: DESCRIBE, SETUP, PLAY, TEARDOWN, and GET\_PARAMETER.
16. The camera support QoS technology using Differentiated Services Code Point (DSCP).
17. The camera support Universal Plug and Play (UPnP) discovery protocol which is known as the Simple Service Discovery Protocol (SSDP). When cameras are added to the network, SSDP allows them to advertise their services to control points (e.g. VMS or server) on the network. The UPnP discovery protocol allows installers to register cameras to the VMS more easily.
18. The camera support IP Filtering, whereby access to the camera can be restricted to one or more groups of selected users. Up to 10 different groups can be established by defining an IP address range for each group.
19. The camera supports IEEE 802.1X authentication, and:
  - complies with the IEEE 802.1X standards,

- Is capable of being integrated into an IEEE 802.1X network to achieve high network security,
  - support EAP-TLS mode to use a key pair from a Certificate Authority (CA),
  - support EAP-MD5 mode,
  - support PEAP mode.
20. The camera has user configurable port settings.
  21. Upon CGI command request, system log is recorded on a built-in memory (non volatile memory).
  22. The camera is capable of arranging both information of system log and access log by designating log level (Critical, Warning, and Information) and log record size (200 to 1,024).  
Log files shall also be capable of downloading to the PC as text file.

The camera provides supplied applications with the camera as a standard accessory in the CD-ROM.

The SNC easy IP setup Guide application provides the initial networking setting and Windows firewall configuration.

## INTERFACES

1. The camera has a composite analog video output in addition to streaming video via Ethernet.  
The composite analog video output can be used for monitoring while installing the camera to adjust the field of view and focus.
2. The composite analog video output from the camera is a BNC type connector accessible via pigtail (supplied).  
A pigtail hole is waterproof with a cable holder with a waterproof rubber gasket. A LAN cable holder for conduit with a waterproof rubber gasket is also supplied.
3. The composite analog video output from the camera is 1.0 V peak-to-peak @ 75 ohms, unbalanced, sync negative via a BNC type connector.
4. The camera has mini jack connectors to support external microphone and active speakers. Mic/Line input shall be switchable.  
Mic input shall be monaural, 2.2 kilo ohms, DC 2.5 V plug-in-power, Line input shall be monaural, and active speaker output shall have a maximum output level of 1 Vrms.
5. The camera has an RJ-45 socket on the rear of the camera.
6. The network interface shall be via an 8-pin RJ-45 connector, 10Base-T/100Base-TX Ethernet.  
Both IPv6 and IPv4 are supported.
7. The camera supports 1 optically isolated sensor input, and 1-relay outputs.
8. The camera provides sensor-in/relay-out ports for interfacing with external equipment.  
The sensor input shall be configurable for either 'make contact' or 'break contact' configuration.

9. 1 relay outputs is rated at AC 24 V/DC 24 V, 1 A or less.
10. The camera shall have RS-422 and RS-485 interfaces and support the Pelco D protocol.
11. The camera has a built-in SD card slot for an on-board recording capability for movies and still pictures.  
The maximum number of recording is up to 4,000.  
The camera notify the specified\* SD card maintenance information.  
SD card up to 64 GB shall be available.  
\*Supported SD cards will be announced to update in the future.
12. The camera notifies the status of the memory card when memory card that corresponds to displaying maintenance information are used.

The following 3 status are indicated as maintenance information:

- Normal: Memory card is working without any problem.
- Warning: Recommend that Memory card is replaced to brand-new one
- Error: Memory card is broken.

There are several notice methods as follows:

- Checking on Administrator menu
- Sending the alert by e-mail
- Using the alarm output
- Getting the alarm via CGI
- Checking the log file

## GENERAL SPECIFICATIONS

1. The camera input power is a power voltage of AC 24 V  $\pm$  10%, 50 Hz/60, HPoE+ 4 line power-supply.
2. The power for HPoE+ 4 line is supplied by using PD9501G of Microsemi PowerDsine or a similar power supply device via a network cable.  
If the power is supplied by HPoE+, the integrated heater is not available. (The camera in the activation temperature range shall be +32 °F to +122 °F (0 °C to +50 °C)).
3. The power connection for AC 24 V operation shall be by means 3-pin Phoenix connector on a pigtail.  
AC 24 V: 21.6 to 26.4 V

Pin No.	Pin name
	AC24V
1	AC24V+
2	Frame Ground
3	AC 24V-



UL cable (VW-1 style 10368) shall be needed for AC 24 V connections.



Cable(AWG)	#22	#20	#18	#16
Maximum cable length (m (feet))	5 (16.4)	8 (26.2)	15 (49.2)	21 (68.9)

4. Power consumption for the camera shall be Max. 8 W (AC 24 V/PoE+, heater off)  
Max. 8.0 W (AC 24 V, heater On)
5. The camera operating temperature is within the following range:  
-40 °F to +122 °F (-40 °C to +50 °C) (AC 24 V)  
-22 °F to +122 °F (-30 °C to +50 °C) (PoE+)  
Cold start temperature must be greater than -40°F (-40 °C) (AC 24 V)  
-22°F (-30 °C) (HPoE+) .
6. The camera starting temperature is within the following range:  
-40 °F to +122 °F (-40 °C to +50 °C) (AC 24 V)  
-22 °F to +122 °F (-30 °C to +50 °C ) (PoE+)
7. The camera storage temperature is within the following range:  
-4 °F to +140 °F (-20 °C to +60 °C)
8. The camera operating humidity is within the range of 20 % to 95 % (non-condensing).
9. The camera storage humidity is within the range of 20 % to 95 % (non-condensing).
10. The camera have a built-in heater allowing the camera to operate in extremely cold environments as low as -40 °F (-40 °C) when the unit is powered by AC 24 V.
11. The camera weigh approximately 1 lb 6 oz .
12. The external material is:  
Top sunshade: PC  
Coupling: ADC12  
Top cabinet: ADC12  
Sun shade: PC  
Dome flange: ADC12
13. The external color is:  
Top sunshade: 6.4GY 8.0/0.3  
Coupling: 3.6GY 8.4/0.3  
Top cabinet: 3.6GY 8.4/0.3  
Sun shade: 6.4GY 8.0/0.3  
Dome flange: 3.6GY 8.4/0.3

## REGULATORY SPECIFICATIONS

1. JATE Technical standard (LAN)
2. UL2044, IEC60950-1 (CB)
3. VCCI (Class A), FCC (Class A), IC (Class A)
4. Emission: EN55022 (Class A) + EN50130-4
5. Immunity: EN55022 (Class A) + EN55024
6. Emission: AS/NZS CISPR22 (Class A)
7. C-Tick Class A
8. EMC-TR
9. KCC

## SUPPLIED ACCESSORIES

1. CD-ROM (supplied programs) (1)
2. Installation Manual (1)
3. Dome cover (1)
4. Top sunshade (1)
5. Coupling (1)
6. Wire fixing belt (1)
7. Wire bracket (1)
8. Bolts (2)
9. Power supply connector 3-pin (1)
10. I/O harness 14-pin (1)
11. Harness band (1)
12. Band mount (1)
13. Connection card (with BNC) (1)